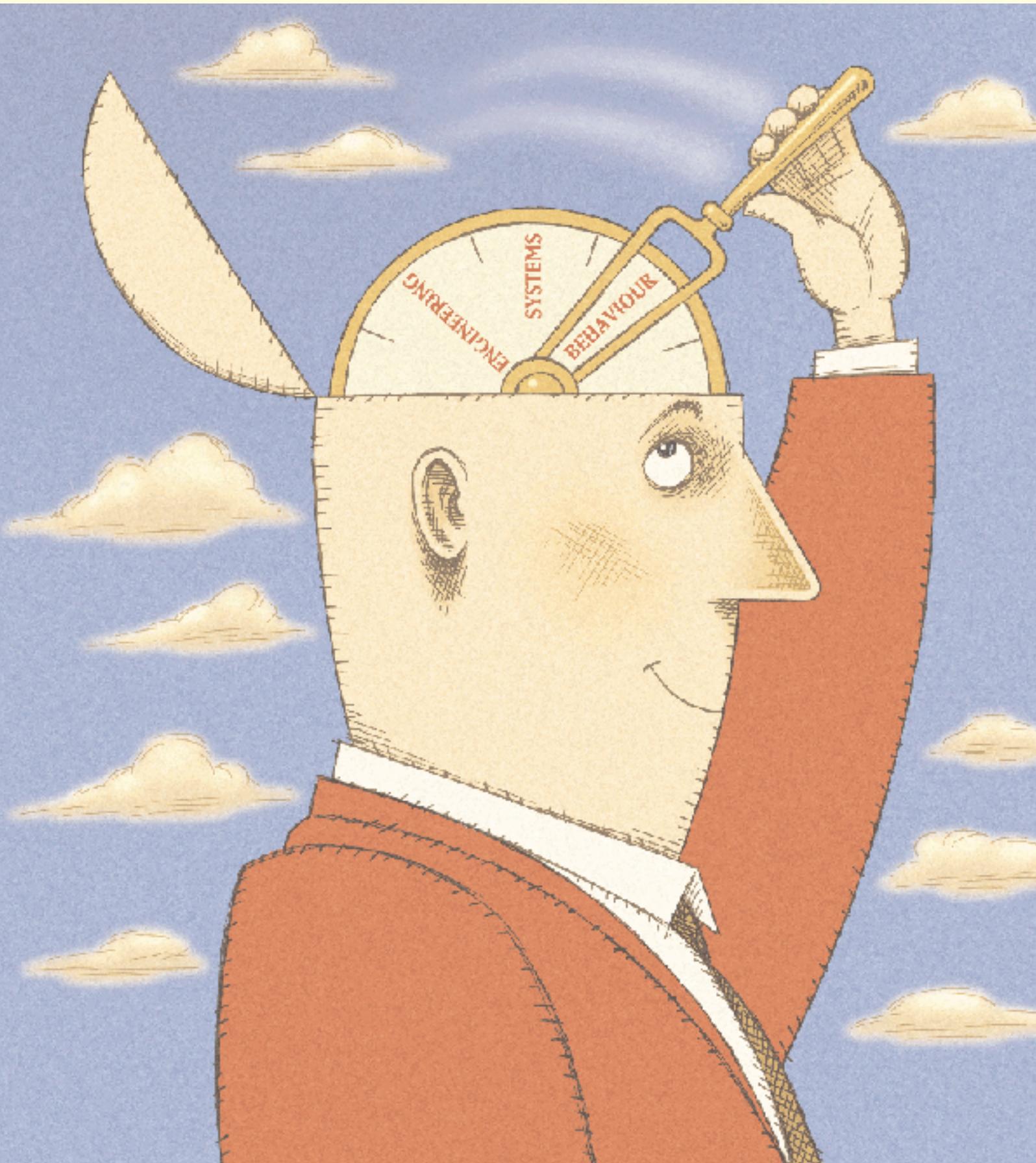


Changing Minds



A practical guide for behavioural change in the oil and gas industry



Preface

Behaviours and human factors are widely recognised as having an important effect on accident causation and accident prevention. Many researchers have done work to investigate these effects and to develop tools and methods to modify behaviours. The Behavioural Issues Task Group was set up to review the large amount of information that is currently available and to provide the industry with practical guidance on how to select and implement suitable programmes.

In compiling the report, the Task Group has reviewed the available research and then developed a model to assist the user through the process of identifying behavioural issues, developing action plans, implementing corrective actions, and evaluating the effectiveness. Where there are uncertainties or gaps in the available research, the Task Group has exercised its judgement to lead the user from one part of the process to the next. This decision was taken to help deliver the practical guidance that is required. The views expressed are those of the Task Group.

It should be noted that the report has been written with a focus on the UK oil and gas industry. This has led the task group to make assumptions about the current level of safety development that are considered to be valid for the UK oil and gas industry but may not be valid for other industries or other parts of the world.

The safety culture maturity model, presented in the report, should not be seen as a new initiative. It is a framework to assist the development of a strategy and plans to address behavioural issues, and to help the selection of appropriate interventions. Use of the model should help to avoid the introduction or continuation of unnecessary initiatives.

It must be emphasised that behavioural approaches should not be seen as the panacea for all safety problems. Behaviour modification is not an alternative to sound safety management policies, systems and procedures. However, when these are well established and functioning effectively, behaviour modification can play an important role in achieving further improvements in safety performance.

Changing behaviours is not easy nor a quick fix to improve safety performance. People need the time and space in their work schedules to be able to work on the changes. It will take time for benefits to show through as measurable changes in lagging performance measures. We hope that the contents of this report will help, and encourage, companies to make the changes necessary to improve performance.

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Table of Contents

| | |
|---|-----------|
| Preface | 1 |
| Part one: Framework for behavioural issues | 5 |
| 1.1. The importance of behavioural issues | 5 |
| 1.1.1. <i>The impact of behaviour on safety</i> | 5 |
| 1.1.2. <i>Behaviour, safety culture and safety climate</i> | 6 |
| 1.1.3. <i>Definition of terms</i> | 7 |
| 1.1.4. <i>Improving safety and business performance together</i> | 9 |
| 1.1.5. <i>Total quality management: Applying business models to safety</i> | 10 |
| 1.2. A model for safety improvement | 11 |
| 1.2.1. <i>Safety culture maturity model (SCMM)</i> | 12 |
| 1.2.2. <i>A safety culture improvement process</i> | 14 |
| 1.3. Conclusions from Part one | 16 |
| | |
| Part two: Toolkit and guidance on implementation of safety culture improvement process | 17 |
| 2.1. The safety culture improvement process | 17 |
| 2.1.1. <i>The 'Assess' Stage; use of diagnostic tools</i> | 17 |
| 2.1.2. <i>The 'Plan' Stage; selection of intervention tools</i> | 22 |
| 2.1.3. <i>The 'Do' Stage</i> | 27 |
| 2.1.4. <i>The 'Monitor' Step</i> | 34 |
| 2.1.5. <i>The 'Re-assess' Stage</i> | 36 |
| 2.2. Inter-company interfaces | 36 |
| 2.3. Individual behaviours | 36 |

Appendices

| | | |
|---------------------|--|-----------|
| Appendix 1: | Overview of safety culture improvement process | 38 |
| Appendix 2: | Key learning points from guide | 40 |
| Appendix 3 : | Summary of review of six safety climate survey tools | 42 |
| Appendix 4: | Upward appraisal questionnaire | 47 |
| Appendix 5: | Summary results from the Step Change survey of offshore experience with behaviour modification programmes | 52 |
| Appendix 6: | Summary of guidance for implementation: pre-conditions and key success factors | 54 |
| Appendix 7: | Task group activities | 58 |
| Appendix 8: | References and resources | 59 |
| | Acknowledgements | 61 |

Part one: Framework for behavioural issues

Over the past five years, wide interest in the role of behaviours has led to the development of numerous safety climate tools and behavioural modification programmes. However, experience with these programmes has been variable with some companies reporting good success whilst other companies using the same programmes have not been successful.

This report aims to provide a practical framework for the process of identifying behavioural issues and taking effective action to address them.

The report is aimed primarily at the UK oil and gas industry and is based on the assumption that the industry has already reached a fairly well developed position on safety management as shown by:

- There is a wide awareness of safety issues and the need to improve safety,
- Safety is considered during the design and fabrication of equipment and facilities,
- Safety management systems and procedures are in place,
- There have been large improvements in safety but performance has plateaued in recent years.

Different conditions may be applicable for other industries in the UK, or the oil and gas industry in other parts of the world.

The above assumption is important as **addressing 'behaviours' must not be seen as an alternative to ensuring that adequate engineering design and effective safety management systems are in place.**

1.1. The importance of behavioural issues

1.1.1. The impact of behaviour on safety

There are good reasons to target the behavioural aspects of safety, as part of an integrated approach to safety management. During the past 10 years, large improvements in safety have been achieved through improved hardware and design, and through improved safety management systems and procedures. However, the industry's safety performance has levelled out with little significant change being achieved during the past few years. A different approach is required to encourage further improvement. This next step involves taking action to ensure that the behaviours of people at all levels within the organisation are consistent with an improving safety culture (Fig. 1).

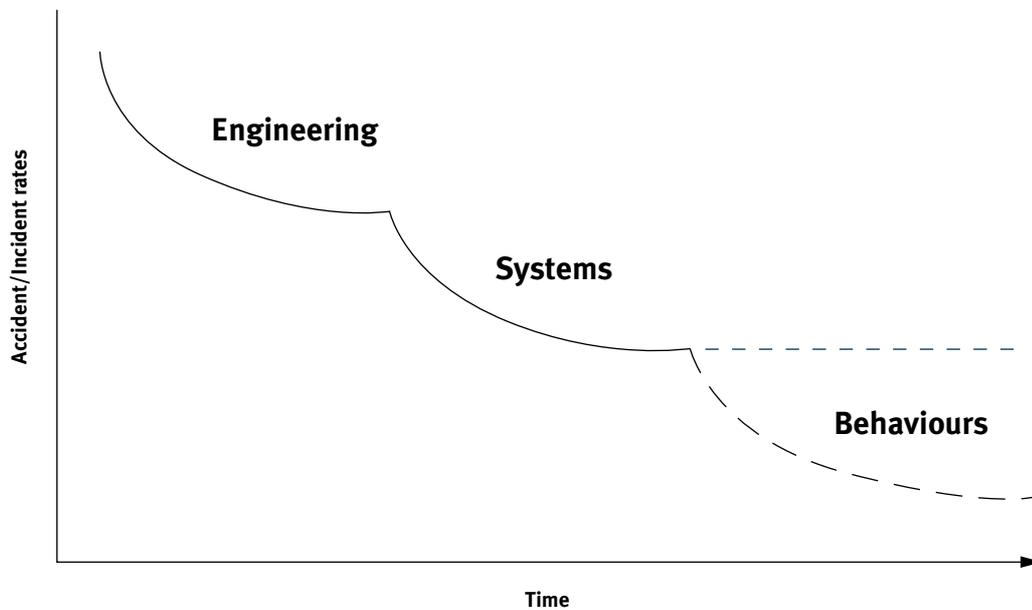


Figure 1: The impact of behaviour on safety

Unsafe behaviours play a major role in many of the accidents that are still occurring in the offshore oil and gas industry. In November 1998, a series of workforce workshops were held to identify priority areas for improving safety. These workshops concluded that safety leadership and behaviour modification programmes were amongst the most important issues for improving safety in the UK oil and gas industry.

Behavioural issues are important, because behaviour turns systems and procedures into reality. **It is not enough for an organisation to have good systems, because performance is determined by how organisations actually ‘live’ or ‘act out’ their systems.** This point is illustrated by the fact that although airlines across the world fly similar types of aircraft, with crews who are trained to similar standards, the risk to passengers varies by a factor of 42 across the world’s air carriers¹. Since these organisations have very similar technology, systems and structures, the difference in performance is largely attributable to systematic differences in the behaviour of their employees .

1.1.2. Behaviour, safety culture and safety climate

Safety culture has been described as the collective values and attitudes of the people in the organisation; “it is the way we do things around here.” This can also be considered as the result of the interactions between the ‘person’, the ‘job’ and the organisational factors. Safety climate is the surface features of the safety culture reflected in employees’ attitudes and perceptions. These elements have been combined in the model shown in figure 2.

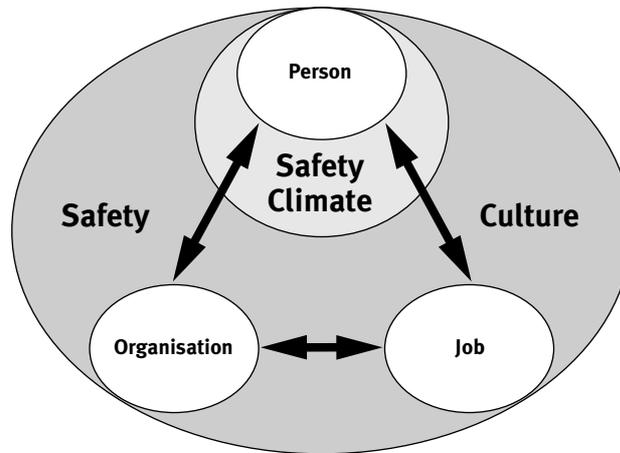


Figure 2: Human and organisational aspects of safety

An important implication of the interactions shown in figure 2 is that whilst the unsafe behaviour of an individual is often the final act in an accident sequence, their behaviour will have been influenced by the job, environment and the organisation within which they work.

People don't simply do what they are told, e.g. work safely or stop the work. They behave the way that they do because of the consequences that result for themselves after doing it. An organisation, therefore is always perfectly designed to do what it is doing. If there are problems with safety (or any other form of performance) it is because the behaviours producing the problem are being reinforced. Managers and supervisors change the behaviour of others by their own action (or inaction).

They can increase behaviour (positive or negative reinforcement) or can reduce behaviour (punishment or extinction).²

The view that safety can be improved by solely focussing on the behaviours of frontline staff is therefore mistaken. **Behaviour modification is unlikely to be successful unless the job environment and organisational factors are also considered. This will require behaviour changes at all levels of the organisation, not just at the workplace.**

1.1.3. Definition of Terms

It became apparent to the task group that the same terms had different meanings, depending on professional background and experience. For example, the term 'behaviour' can mean all non-technical aspects of safety or it can be limited to refer only to the safety behaviour of frontline employees. Confusion over the meaning of these terms is a major barrier to making information about the behavioural aspects of

safety accessible. To ensure clarity, the task group agreed a set of definitions for the major terms used in this report. Although there are alternatives, in the absence of widely agreed terms, the group used the following definitions:

| Term | Definition |
|----------------------------------|---|
| Behavioural aspects of safety | This term covers all the non-technical aspects of safety. It can be described as the way organisations 'live' or 'act out' their safety systems i.e. the factors that determine how systems operate in reality. It includes safety culture, safety leadership and behaviour modification. |
| Safety culture | Refers to the collective values and attitudes of the people in the organisation. |
| Safety climate | Refers to the surface features of the safety culture determined from the workforce's attitudes and perceptions at a given place and time. It is a snapshot of the state of safety providing an indicator of the underlying safety culture of an organisation. |
| Behaviour | Any observable act, or failure to act, (both deliberate and accidental) that people can perform, including physical actions (e.g. climbing a ladder) and speech (giving instructions). |
| Safety behaviour | A behaviour that is directly related to safety, such as wearing safety glasses, signing a PTW form or talking to colleagues about safety. |
| Behaviour consequence | What happens to the performer as a result of the behaviour. |
| Behaviour modification programme | A range of techniques designed to encourage or discourage a limited set of predetermined behaviours. |

1.1.4. Improving safety and business performance together

There is considerable support for the argument that good health and safety performance is good for business. Historically, the evidence to support this assertion has come from studies that examine the costs of accidents (HSG 96)³, however, an investigation conducted by the HSE into the safety implications of Self Managed Teams (SMT) provides evidence that there can also be a strong positive relationship between self managed team-working and health and safety⁴. The introduction of SMTs can improve productivity, safety, motivation and job satisfaction. The organisational changes arising from effective SMTs that improved safety and productivity included:

- Greater involvement of frontline staff in risk assessment, planning work, and its safety implications
- Frontline staff using their discretion to spot and fix problems as they occur
- Greater responsibility for their work, including safe working practices
- Increased involvement and enhanced skill in conducting shift handovers, ensuring that both vital safety and production information are communicated
- Improving knowledge of plant and process, enables employees to behave in a safer manner due to better understanding of the plant gained by cross-discipline training
- Smoother operations due to increased uptime allow all staff more time to think ahead, rather than reacting to unplanned events
- Improved efficiency increasing the completion rate of safety-critical maintenance tasks.

The organisational factors required to manage safety effectively are similar to those required for the effective team based working that can improve productivity and profitability. These findings have been confirmed by another study⁵ that examined historical production and safety data for major projects. The study showed that **the cost benefit of improving safety can be significantly higher than reducing the unplanned costs of incidents.** The study found a significant positive correlation between:

- productivity and safety,
- completion time and safety
- cost and safety.

Interviews with project managers indicated that the positive associations were due to actions required for effective safety also resulting in increased productivity.

The HSE has also commissioned a study to investigate the characteristics of effective safety leadership⁶. One of the case studies identified the management attributes that were used to improve safety while reducing costs and improving productivity. These included:

- Total visible commitment to safety
- Consistent message
- Workforce involvement
- Honesty
- Encouraging rather than cajoling
- Celebrating success with workforce

1.1.5. Total quality management: Applying business models to safety

The previous section has shown that behavioural interventions can yield both safety and other business benefits if they are implemented properly. The framework developed in the following sections of this report is based around the principle that good business processes can also be used to improve safety.

The familiar Total Quality Management (TQM) business improvement process model is widely used within the oil industry to ensure quality and continuous improvement. This model has four steps or stages. These are:

- Assess,
- Plan,
- Do
- Monitor.

The model is represented in figure 3. It shows that organisations first assess their current situation, then develop intervention plans, implement and monitor the progress of the interventions. The cycle is then repeated by re-assessing the actual situation against that desired.

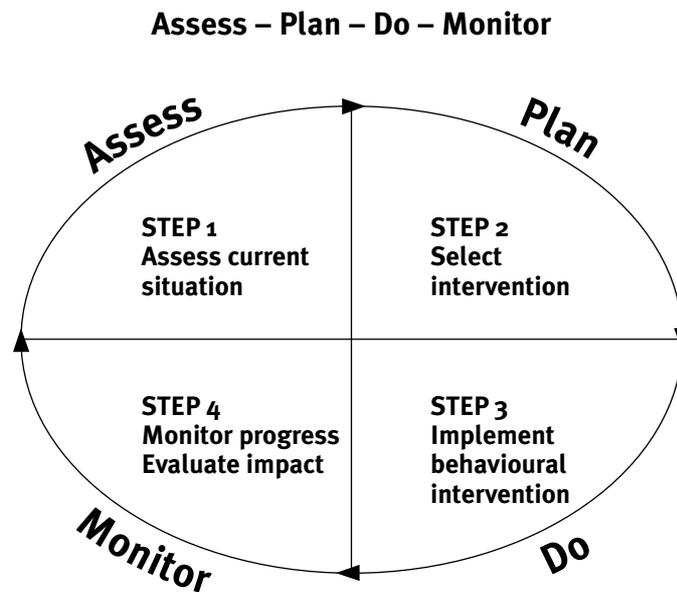


Figure 3: TQM Continuous improvement model

The TQM model can be directly applied to safety and has already been adopted in HSE's guide to successful health and safety management (HSG 65)⁷.

1.2. A model for safety improvement

There are a large number and variety of behaviour based tools and techniques for improving safety. Some are diagnostic tools that are used to identify the issues that require improvement, while others are intervention tools designed to improve safety by addressing specific safety behaviours.

Experience in using the tools has led to mixed results.

A review of behaviour modification programmes⁸ has shown that good programmes that have worked at one location can fail at another. The review identified factors that increased or decreased the likelihood of success. These factors can be linked to the existing culture of the organisation.

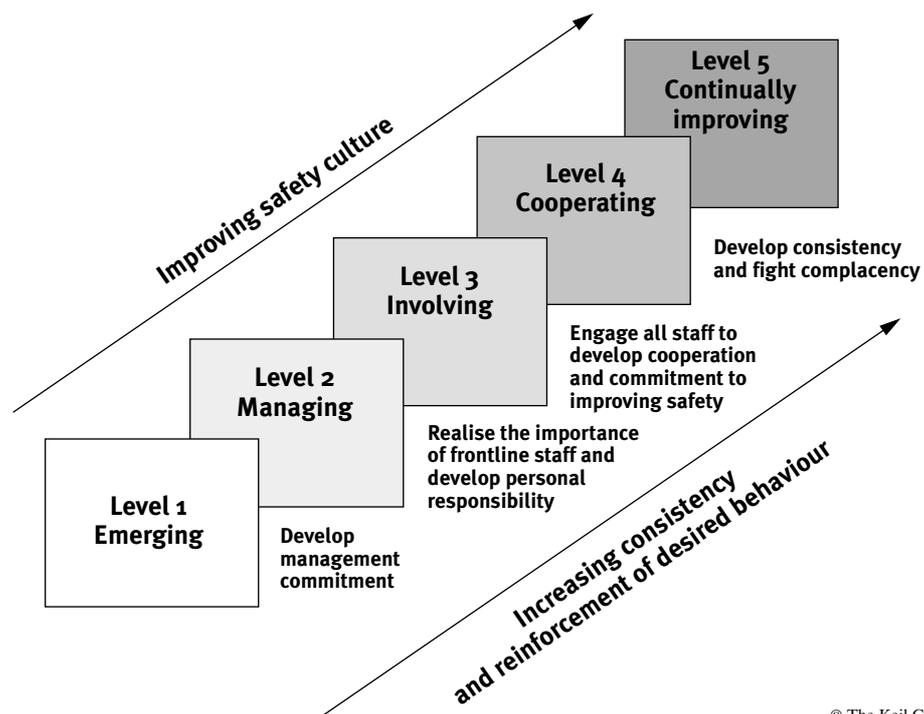
The task group considered it important to develop a model that would bridge these gaps and which could assist companies to identify which tools were appropriate for their current situation. The stages in developing such a model are described below.

1.2.1. Safety Culture Maturity Model (SCMM)

In some industries, such as the software industry, capability maturity models have been developed to assist improvement processes⁹. The capability maturity model concept is useful because it enables organisations to establish their current level of maturity and identify what they need to focus on to reach the next level. Organisations at different levels of maturity are likely to find different types of tools and techniques most helpful for moving to the next level of maturity. The Task Group has taken the capability maturity concept and used it to develop a safety culture maturity model suitable for the UK oil and gas industry. **The safety culture maturity model provides a framework to assist in the selection and implementation of appropriate behavioural interventions.**

The safety culture maturity model presented in this report refers to the maturity of the organisational behaviours; NOT the maturity of the safety management systems. This report assumes that safety management systems are already well developed.

The five stages of the safety culture maturity model are shown below in figure 4.



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Figure 4: Safety Culture Maturity Model (SCMM)

Each level of the safety maturity model consists of ten elements as described below:

- **Management commitment and visibility**
- **Trust**, including trust between management and employees and between colleagues
- **Communication**, refers to the style (e.g. two way) and effectiveness of communication
- **Participation**, which is the extent to which front line staff are involved in decisions
- **Productivity versus safety**
- **Learning organisation**: refers to the ability of an organisation to learn from mistakes
- **Safety resources**, including safety staff and the time employees can spend on safety
- **Shared perceptions about safety**, refers to the extent all employees have a shared vision
- **Industrial relations and job satisfaction**
- **Training**, includes the value placed on training, the type and resources available

Further details about the Safety Culture Maturity Model can be obtained from the HSE report¹⁰.

In figure 4, the stages are shown as overlapping. This is because an organisation or installation may not be at the same level on each of the ten elements of the safety culture maturity model; some elements may be slightly ahead or behind the others. The safety culture maturity may also vary between different work sites within an organisation.

The safety culture maturity of an organisation affects the way in which the organisation's systems are used. It affects whether the systems are used effectively to improve performance or simply complied with.

Establishing where a company or installation is in terms of its safety culture maturity is an important issue for selecting appropriate behaviour modification programmes and implementing them effectively. **An organisation's level of safety culture maturity influences which behaviour modification programmes are most appropriate and are most likely to be successful. A programme that is appropriate for one organisation or site may not be suitable for another at a higher or lower level of maturity.**

The SCMM is particularly useful for large multi-site organisations, as they can locate different interventions within a single framework. It is unlikely that all sites will be at the same level of maturity. The SCMM framework provides an alternative to attempting to implement a single behaviour modification programme across the whole organisation. The framework can be used to identify different interventions that

The model can be used to help identify when it is appropriate to use the different types of behavioural tools that have been developed. In the 'assess' phase, diagnostic tools such as safety climate surveys, structured interviews and workshops can be used to assess the current level of safety maturity. This information assists in the selection of an appropriate behaviour intervention e.g. a safety leadership or behaviour modification programme, and in planning how to implement the programme.

Once a programme has begun to be implemented, performance indicators should be identified to monitor the take-up and implementation of the programme.

After a period of using a programme, its impact on safety should be re-assessed by examining changes in the safety culture maturity, as well as any changes in leading safety performance indicators and lagging accident statistics.

The SCMM is not a new initiative. It is a framework which can be used to link existing tools and initiatives. The framework can assist organisations to select and implement behavioural interventions that are appropriate for their current level of safety culture maturity. By focussing on what is most appropriate, the framework can help reduce the number of initiatives and increase the effectiveness of existing programmes. If the framework indicates that an existing behavioural intervention is inappropriate, the SCMM can also be used to help communicate why it is being replaced with another programme that is more appropriate for current level of maturity.

1.3. Conclusions from Part One

1. Behaviour modification is not an alternative to a rigorously applied conventional safety management system. Sound engineering and systems should be in place before attempting to use behaviour modification programmes to further improve performance.
2. Research evidence and practical experience show that significant improvements in safety performance can be achieved by implementing appropriate behaviour interventions.
3. Behaviour modification is unlikely to be successful unless the job environment and organisational factors are also considered. This will require behaviour change at all levels of the organisation, not just at the workplace.
4. There is also evidence that appropriate behaviour interventions can improve other aspects of performance as well as safety.
5. Good intervention tools which work at one location may fail at another location.
6. The suitability of a behaviour intervention tool is influenced by the existing maturity of the organisation.
7. A Safety Culture Maturity Model has been developed to provide a framework to assist companies establish their current level of maturity and identify the appropriate actions required to move to the next level of maturity.

Part One of the report has described the key steps in using behavioural interventions to improve (safety) performance. The steps are:

- i) assessing the current level of safety culture maturity,
- ii) planning an appropriate intervention,
- iii) implementing the programme effectively,
- iv) monitoring performance, and
- v) returning to the start of process to re-assess the level of safety culture maturity.

Part two of the report provides more information on the stages of the continuous improvement process, and guidance on the selection and implementation of diagnostic and intervention tools that are being used in the UK oil and gas industry.

A summary of the key learning points from the whole report is given in Appendix 2.



Part two: Toolkit and guidance on implementation of safety culture improvement process

INTRODUCTION

If Part One provides the reasons ‘Why’, Part Two focuses on the ‘What to do and how to do it’.

Part One of this report has introduced the Safety Culture Maturity Model and combined it with the TQM business improvement process to provide a framework for linking the different types of tools and techniques into a continuous improvement process. In this part of the report, more information is provided on the tools and techniques that can be used at each stage of the process. It also provides guidance on how to select an appropriate tool and then implement it effectively.

2.1. The safety culture improvement process

In Part One of this report, the Total Quality Management (TQM) model was introduced as the basis for the continuous improvement process. This model consists of four stages:

- Assess,
- Plan,
- Do,
- Monitor.

In the following sections, each of these stages is considered and guidance offered on how to select suitable tools. Guidance is also offered on the barriers and pitfalls to successful implementation.

An overview of the whole process is given in appendix 1.

2.1.1. The ‘Assess’ Stage; use of diagnostic tools

There are numerous examples in the offshore industry of behavioural interventions that failed because they did not fit with the level of safety culture maturity on the installation.

The first stage in the improvement process is to identify the current level of safety culture maturity and those elements of the safety culture that require most attention. This information can then be used to identify the type of interventions that will be most suitable for the current culture.

A first pass at assessing the current level of safety culture maturity can be made by reviewing the phrases in figure 1 of appendix 1 and identifying which seem to be most applicable to the location.

There is a variety of diagnostic tools that are available and which can be used to obtain a better assessment of the safety culture of an organisation, and identify the main issues that need to be addressed. These tools can be divided into three main types:

- Card sorting techniques
- Climate survey tools
- Interviews and workshops

One difference between these tools is the degree of confidentiality and security they offer to the participants. Another difference is the degree of structure they impose and the ease of analysing the output. In broad terms, the higher the existing level of safety culture maturity, the less need there is for confidentiality and structured analysis.

Safety climate surveys are the most commonly used method to obtain information about the safety culture. A variety of safety climate tools is currently being used in the offshore oil industry. The strengths and weaknesses of these tools are summarised in appendix 3. The two main strengths of safety climate tools are that:

- (a) employees can respond anonymously and
- (b) the results are expressed in numerical form making it easy to compare results from different sites, or at different points in time

The main weaknesses of this approach are that:

- (a) it can be difficult to turn results into actions to improve safety and
- (b) it is often necessary to hold workshops or interviews with staff to clarify the significance of the results.

Interviews and workshops have been used less frequently to measure safety culture and validated techniques are not widely available. Organisations that have used these techniques have tended to develop them in-house. The two main strengths of these techniques are that:

- (a) they provide a rich picture of the cultural issues and
- (b) the participants can also suggest solutions to the issues they identify.

The main weaknesses of interviews and workshops are that:

- (a) the lack of a validated structure means that important issues may be missed
- (b) participants may be unwilling to be open and honest if confidence and trust are low and
- (c) it is not easy to make comparisons between sites or over time.

When deciding which type of tool to use, an organisation can use previously collected information, such as workforce surveys, to obtain an approximate measure of the safety culture maturity. However, if there is any doubt on the level of maturity, or if there are differences in opinion between different levels in the organisation, it is better to err on the side of caution and choose from the tools that make the least demands on the level of trust existing in the organisation. In this case conducting a safety climate survey should provide the most appropriate starting point to assess the level of maturity. The anonymous nature of the climate survey tools make them more likely to produce accurate information for assessing the current level of maturity.

Whichever type of diagnostic tool is used, it is essential that the process of assessing the current level of safety culture maturity is managed effectively because the results will be used to guide future actions. In addition, **if it is mismanaged it may be difficult to get employees to participate effectively in later stages of the process.**

2.1.1.1. Card sorting techniques

The safety culture maturity concept is relatively new. To date, the only technique specifically designed to measure the level of safety culture maturity is a SCMM workshop¹¹.

This workshop is structured around a card sorting technique that is used to assess the current level of maturity for each of the ten elements of safety culture. The card sorting exercise (based on the Q-Sort technique¹²) involves participants selecting statements that reflect the situation at their site and then discussing with a number of colleagues to reach consensus. The results are gathered and a profile of the site's level of maturity is developed. Participants then identify the actions required to move the organisation to improve the safety culture at their site.

The SCMM workshop can be used to measure the safety culture of an organisation or of a specific site.

2.1.1.2. Safety climate tools

There are numerous tools available to measure safety climate. The HSE have commissioned a review of the tools that have been widely used in the UK offshore industry. The following six tools have been examined in detail by this review:

- Health and Safety Climate Survey Tool; The Health and Safety Executive
- Offshore Safety Questionnaire; Aberdeen University
- Offshore Safety Climate Questionnaire: Aberdeen University
- Computerised Safety Climate Questionnaire (The Robert Gordon University)
- Safety Climate Assessment Toolkit: Loughborough University
- Safety Climate Questionnaire (Drilling); Quest

The full report of this review can be obtained from HSE books¹³

A summary of the main characteristics of each tool and the extent to which the tools measure the ten elements of safety culture maturity is presented in Appendix 3. The information in Appendix 3 can be used to help select a suitable climate survey tool.

The task group considers that the overall success of any survey and the follow-on actions that result, is dependent on the quality of the planning and communication that takes place before and after conducting the survey. The following recommendations are made:

- Preparation is essential before launching into the use of a climate survey tool. Any tool is unlikely to work well - or may even have a negative effect – if senior management fail to involve the affected workforce throughout the process and are not committed to act on the findings of the survey.
- Recipients of the questionnaire need to know why the survey is being done and how the results will be used.
- The results of the survey need to be fed back to employees in the surveyed group as rapidly as possible.
- Issues or areas of weakness identified by the survey need to be discussed with the respondent groups to clarify the details of their concerns.
- After clarification, a plan of action should be developed to address the most significant weaknesses. This plan may include the introduction of behaviour modification programmes.

- Repeat climate surveys should not be undertaken before an action plan to address weaknesses from the first survey has been implemented and given sufficient time to bed in and achieve results. It may take time for improvements to be felt by employees to a sufficient extent that they would make significantly different responses to the questionnaire items. An interval of 18 to 24 months is likely to be necessary.
- When a repeat survey is undertaken, it is important to provide rapid feedback on the changes between the two survey results.

2.1.1.3. Interviews and workshops

Interviews and employee workshops can be useful ways of obtaining the information about the safety culture on a site.

Interviews with a range of people from different levels and positions in the organisation can be used to evaluate the level of maturity. If the level of trust within the organisation is low, it is desirable to get an external agency to hold the interviews with staff.

Alternatively, organisations or individual locations can establish their level of maturity by holding diagonal slice workshops; a workshop for a cross section of staff from different functions and different levels in the organisation.

One technique that can be used in workshops is the ‘cultural web’. This is a technique for building a picture of the factors that make up the current safety characteristics of an organisation. It is made up of the things that people do: the stories they tell, the way power and controls are exercised, the rituals and routines, and the symbols that typify the organisation. Having completed the picture of what the current culture looks like, the exercise is repeated to produce a new picture describing a vision of the future. By focusing on specific things that make up the current and desired future situations, it is easier to identify those elements that can be most influential in moving from to the other. It can help to identify the organisational, managerial and personal changes that are necessary. A fuller description of this technique is provided in reference 14.

If organisations have already conducted a safety climate survey and require more information about specific issues (e.g. perceived management commitment), then employee interviews or workshops are appropriate techniques.

2.1.2. The 'Plan' Stage; selection of intervention tools

During the 'Assess' stage, the current level of safety culture maturity and the factors that present the greatest opportunity for improvement are identified. The planning phase involves using these results to select an intervention that will help to move the site to the next level of maturity.

Interventions currently being used in the UK offshore industry can be grouped into the following types of programmes:

- safety leadership development:
 - leadership development
 - upward feedback
 - team led development
- behavioural interventions
 - management initiated programmes (e.g. observation systems)
 - employee managed programmes (e.g. SafeR+)
 - leading indicator led programmes

A review of the experience with behaviour modification programmes⁸ has shown that some behavioural interventions require certain pre-conditions to be in place if they are to be implemented successfully. The pre-conditions can be related to different levels of safety culture maturity.

In figure 6 the different types of intervention programme have been mapped on to the appropriate levels of safety maturity. In addition to the above groups, figure 6 also shows traditional knowledge based safety leadership and training interventions. These represent the training requirements of a sound safety management system and should be in place before behavioural interventions are introduced.

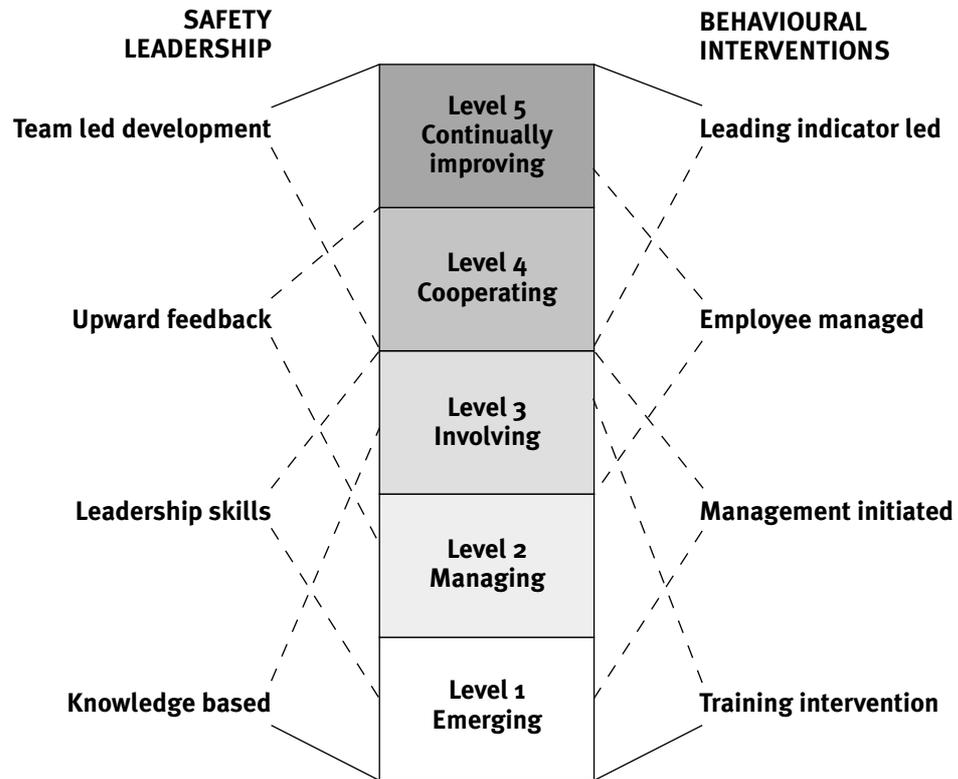


Figure 6: Interventions mapped against levels of maturity

The results of the ‘Assess’ stage can be used with figure 6 to identify intervention strategies that are likely to be most suitable for the site or organisation.

Sites at lower levels of maturity (level 1 and 2) **first need to address the trust and perceived level of management commitment as these provide the foundations necessary for other behavioural interventions.** Once employees have confidence in management commitment and are willing to trust managers and colleagues (levels 2 and 3) programmes that involve individuals in monitoring their own and their colleagues’ behaviour can be introduced. For sites that are at higher levels of maturity (levels 3 and 4) with high levels of trust and perceived management commitment and with employees who are accustomed to being involved in behavioural interventions, it is appropriate to introduce behavioural interventions that are managed by frontline staff.

Although no examples of sites operating at level 5 have been observed, it is anticipated that at this level of maturity, intervention programmes will be site specific, developed by employees in response to information obtained from leading indicators.

Specific programmes may be short lived or evolve rapidly as the required change is demonstrated.

It should be noted that it takes time for individuals and organisations to change their behaviour. It should be anticipated that in the absence of any powerful and well recognised pressure, it will probably take a site at least 18 months to carry out assessment, plan interventions and move to the next level of maturity.

The management of the safety culture maturity improvement process should be integrated into annual and rolling long-term plans. This will help to ensure that it is accepted as a long-term improvement process. This will reduce the likelihood that the programme is seen as 'just another initiative' and avoid raising unrealistic expectations of short-term gains.

The 'Plan' stage need not lead to implementation of any new tools or programmes. If an existing programme is appropriate for the level of safety culture maturity, it may simply require some adjustment or to be given more time to produce improvements. The 'Plan' stage can also be used to reduce the number of programmes or initiatives that are competing for time and resources.

2.1.2.1. Safety leadership development

Specific safety leadership development interventions are more appropriate at different levels of maturity. At lower levels of maturity, knowledge based interventions inform managers and supervisors how to behave and what to do to motivate their staff to behave safely. At the next level of maturity interventions should focus on the skills aspects of safety leadership and possibly involve subordinates. At higher levels of maturity, the interventions should be based on upward appraisal and long-term development based on the needs identified by the leader in conjunction with the team.

A syllabus for a belief and behaviour based safety leadership training course has been developed by one of the Step Change task groups¹⁵. Training courses based on this syllabus are applicable to 'leaders' at all levels in an organisation, including those in non-supervisory positions and senior managers. A wide range of training providers is now seeking accreditation to run courses based on the syllabus. Details of the syllabus and accredited training providers can be obtained from OPITO¹⁶.

Recently a number of companies have carried out upward feedback exercises for their senior managers. This has been a very useful exercise, as the results have frequently surprised the managers. For most managers, the results have shown that at least some

of their subordinates perceive that issues other than safety are the highest priority for their managers. This failure of managers to communicate their commitment and the priority they attach to safety is significant as results from the Safety Climate Benchmarking study¹⁷, conducted by Aberdeen University, has shown that the workforce perception of management commitment has a strong effect on safety performance.

We all like to believe that we are effective at communicating what is important to us and how we would like our team to be working. However, the results of the upward survey studies have confirmed that most people are more effective at communicating their commitment to reduce costs and improve business performance than communicating the importance of improving safety. One reason for this is the perceived difference between the words people hear us say and the actions they see us take. Communication research has demonstrated that words communicate only a small part of our message and our behaviour, i.e. **what others observe us doing communicates what is important to us far more powerfully than what we say**. This is what other people use to judge what we really think and whether they should trust us.

The feedback that managers have received from the upward appraisal exercises has prompted them to look at how they need to modify their behaviour to ensure that their commitment to safety is more visible and is communicated in a more convincing way. In particular the feedback can be used to modify the behaviours that may be sending conflicting messages about what is really important to us.

A simplified questionnaire that can be used to get upward feedback is contained in Appendix 4. To get honest feedback it is essential that an independent third party is used to receive and process the completed questionnaires.

2.1.2.2. Behavioural interventions

- **Management initiated**

Management initiated programmes generally consist of some form of safety observation scheme that involves employees completing an observation card if they observe an unsafe condition or an unsafe act. There is a wide variety of such systems that are currently in use on offshore installations and onshore sites. Some systems involve employees going on planned observation tours to observe both safe and unsafe behaviours. The results are submitted to a nominated person either directly or via the observed person's supervisor. Most systems allow results to be submitted anonymously. Although some of the systems are supposed to focus more on the face to face feedback than observation, this element is often missing.

Before attempting to implement a safety observation system, it is important that there are reasonable levels of perceived management commitment to safety and trust at the location. This trust and commitment can be built up by involving employees in the decision to implement a programme. This is critical as the workforce need to feel ownership over the programme if they are to participate effectively rather than simply comply with requirements.

If a site or installation is considering re-launching a programme that has fallen into disuse, it is important to involve employees in identifying its limitations and changes required to ensure success.

More detailed guidance on the key element of successful safety observation systems can be found in the Step Change 'Look this way' booklet¹⁸.

- **Employee managed programmes**

Employee managed programmes involve passing control of the behaviours being identified and the actions being taken to those participating in the programme. Before introducing such a programme, it is important that organisations check if they are ready for this type of intervention.

The HSE literature review⁸ identified a series of questions to establish whether or not an organisation or work-site is ready to use this approach. These are:

- Is a significant proportion of accidents primarily caused by the behaviour of workplace employees?
- Do the majority of managers and employees have a genuine desire to improve safety?
- Are managers and supervisors going to be comfortable with empowering employees and delegating some authority for safety to employees?
- Are managers likely to be willing to trust results produced by the workforce?
- Is the workforce willing to trust management?
- Is there a high level of management involvement in safety, which is incorporated into management structure?
- Does the organisation have the resources available to enable workers to take time to undertake the required training, carry out frequent observations and to make any improvements identified?
- Are there champions of the programme for the organisation as a whole and at each site?
- Are their adequate systems in place to deal with a large increase in the amount of communication and feedback between management and workers?

If the answer to some of the above questions is “NO”, then the organisation may not be ready to introduce an employee-managed programme. These issues will need to be addressed before introducing such a programme. **Organisations should ensure that they are ready for a behaviour modification programme before introducing it.** If they are not ready then the programme is likely to fail, and may even have a negative impact on safety performance.

2.1.3. The ‘Do’ Stage

A large number of programmes are currently being offered to modify behaviours and improve performance. Many of these have been used by companies in the UK oil and gas industry. The task group has surveyed the OIM and Safety Representative networks to gather information on their experience with using these programmes. This information has been used to identify the characteristics of successful implementations, and any pitfalls that need to be avoided.

The following sections provide guidance on the implementation of the different types of behaviour modification programmes and highlight some of the difficulties encountered.

A more comprehensive review of various approaches to safety culture enhancement was carried out by Vectra on behalf of the nuclear industry’s ‘Industry Management Committee’ (IMC)¹⁹. Although written for the nuclear industry, the content of the report is relevant to other industry sectors. The report provides a structured approach to safety culture enhancement, based on the tools and techniques available at the time of the project (1998). All the tools/techniques that were identified by Vectra were reviewed and entries provide information under the headings:

- Summary
- When to use
- Strengths / weaknesses
- Resources
- Contacts for more information

The report is written primarily for human factors specialists and senior managers, but the contents are in a form which will be of use to others in a company’s organisation.

2.1.3.1. Safety leadership programmes

The industry survey on behaviour modification programmes provided information on three safety leadership programme: SHAPE²⁰, Advanced Safety Auditing (ASA)²¹ and Crew Resource Management (CRM)²². For two of these, SHAPE and ASA, the survey

provided information on the implementation, results, factors associated with success and problems encountered. ASA was also reviewed as one of the case studies in a recent study for the HSE²³.

No information is available on the effectiveness of the Step Change belief and behaviour based safety leadership training programme¹⁵ as this was not running at the time of the survey.

SHAPE addresses general safety behaviours, while ASA focuses on how to have safety conversations at the worksite. These programmes initially focus on managers, but are rolled out to include all levels at the location. They are implemented through a 'train the trainer' approach.

Implementation

Safety leadership programmes involve initial skills training to develop specific safety behaviours. Programmes are more likely to be effective if they provide participants with feedback on their current performance and coach them in the skills to involve subordinates in safety and how to demonstrate their own commitment to improving safety. Ongoing, support and coaching are also likely to be necessary to reinforce the desired behaviour changes and ensure sustained improvement. Programmes that are purely knowledge based are unlikely to be effective.

Results obtained

Good results have been obtained to date with SHAPE and ASA, with increased safety awareness and safety behaviour, and reduced accident rates.

No information is available for the results of CRM training in the offshore industry. However, this technique has been widely used in the aviation industry with good effect.

Success factors

The factors associated with the success of the programmes include:

- increasing the direct contact between staff and giving them the confidence to approach colleagues and start a safety conversation.
- managers using the contacts as an opportunity to demonstrate their own personal commitment to safety.

Difficulties encountered

The main difficulties reported include:

- A lack of time (for training and to carry out ASA's).
- Conflict with pre-existing programmes.

- A lack of support from some senior staff can delay or prevent effective implementation.
- Initial confusion about the relationship between ASA and STOP suggests that integrating the two programmes may be beneficial.

Further information

See Appendix 5 for a summary of the programmes and contacts.

2.1.3.2. Behavioural interventions

- **Management initiated programmes**

The industry survey on behaviour modification programmes provided information on four management initiated programmes, these included Alert, Safety behaviour cards, Start and Stop. The survey provided information on the implementation, results, factors associated with success and problems encountered. In addition, Time Out for Safety (TOFS) and Stop were reviewed as case studies in a recent study for the HSE²³.

Implementation

These programmes initially involve providing individuals with training in how the specific system operates, how to complete observation cards and when to conduct observations. In general, initially supervisors were trained and then they rolled it out to their subordinates.

It is important that participants receive prompt feedback on the issues that are identified by the programme and are able to see action on important issues. Any observation system can fall into disuse if only the easy superficial issues are seen to be actioned whilst the more important but difficult issues appear to be ignored.

Results obtained

When implemented effectively these programmes increase the safety awareness of all employees, improve the attitudes of managers and workers, and develop the safety culture. Some organisations have also had significant reductions in accident rates.

Success factors

- Anonymity appears to be critical to the success of these programmes, especially at the early stages.
- Rapid feedback about actions taken to remedy unsafe conditions is important.
- These programmes require significant effort from supervisors in order to get them 'off the ground'.
- The involvement of the workforce in designing an in-house system increases ownership and the likely success of the programme.

Difficulties encountered

The main difficulties reported include:

- distortion of the data due to focusing on the number of cards as opposed to the quality.
- a lack of time for initial training, increases the likelihood of failure in the initial stages.
- a potential of the programme being a victim of its own success, by creating an overload of actions and safety improvements in the early stages.

Further information

See Appendix 5 for a summary of the programmes and contacts.

- **Employee managed programmes**

The industry survey on behaviour modification programmes provided information on six employee managed programmes, these included Care plus, SafeR+, B-Safe, Future Safe, STEPS and SUSA. The survey provided information on the implementation, results, factors associated with success and problems encountered. Care plus was also reviewed as one of the case studies in a recent study for the HSE²³.

Implementation

These programmes are complex and involve careful planning and preparation before implementation. All six employee managed programmes covered by the industry survey were based on proprietary systems provided by consultancy organisations. Early involvement of the workforce in the selection of the programme is an important characteristic of successful implementations of these systems. Some organisations indicated that involving frontline staff in the decision to implement a programme was beneficial.

Results obtained

Results reported are mixed. There is evidence of the same programme being successful at one location and failing at another. When implemented effectively these programmes show clear improvements in safety behaviour and an improved safety culture. Programmes that have been in place for over a year show reductions in accident rates.

Success factors

Factors that appear to be important for success include:

- Workforce involvement, especially in deciding to undertake a behaviour modification programme and in selecting and tailoring the programme.
- Management demonstrating their commitment to workforce management of the programme is important in the early stages. Commitment can be demonstrated by giving workforce the time to be involved in the programme from the beginning.

Difficulties encountered

Difficulties encountered include:

- maturity level of organisation not being ready for the type of programme introduced
- imposing a programme without involving frontline staff early enough.

Companies that have made these mistakes have found it difficult to get volunteers and to convince the workforce that it is not just another initiative.

Further information

See Appendix 5 for a summary of the programmes and contacts.

2.1.3.3. Summary of factors affecting the 'Do' Stage

Implementing interventions from any of the groups described requires careful consideration and adequate resources to ensure success. Case studies²³ and feedback from groups who have used behaviour modification programmes suggests that:

- **An organisation's 'readiness' for change, and the way it selects and implements a tool are more important than the specific tool that is used.**
- Much of the benefit comes from the engagement process in identifying goals, setting targets, working to achieve them and the measuring and feeding back of performance. The programme selected is a vehicle to assist these processes.
- Behaviour modification programmes should not focus exclusively on the behaviour of the individuals in the workplace. They must also consider the interactions with the 'job' and the 'organisation'.
- **The success of a programme aimed at frontline employees requires a pre-existing level of trust between managers and the frontline staff.**
- A tool that is successful at one site may fail when used elsewhere.
- **It is important to avoid unrealistic expectations for early reductions in accident statistics.**
- Setting quotas for the number of observation cards submitted is likely to be counter productive. There is a danger that the programme becomes discredited as no more than a 'numbers game'.

No interventions should be introduced without workforce involvement at each of the key steps. The form of involvement will change with the level of safety culture maturity. At lower levels of maturity, this may take the form of effective communication to explain what is being done and the reasons why. As the level of maturity increases, the involvement will take the form of consultation to identify what interventions are most appropriate and suitable for the location. When employee-led interventions are being introduced, workforce involvement will include more control of the decision making processes affecting the choice of intervention and how to implement it.

The factors that enhance or limit the effectiveness of behaviour modification programmes can be grouped under the following headings:

- programme initiation,
- programme maintenance,
- organisational structure.

Table 1 provides a summary of these points. Further details can be found in appendix 7 and in reference 8.

Table 1:
Key success factors and barriers to implementing an improvement programme

| Success factors | Barriers and pitfalls |
|--|--|
| Programme initiation | |
| <p>Joint management and workforce involvement in the process from the beginning, including the initial discussions about undertaking a behavioural intervention.</p> | <p>Perceived as another initiative that will never last. Executive decision by management to choose and implement a programme without consultation. Forcing through a programme that the workforce does not want to implement.</p> |
| <p>Selection or development of a programme and training material that fit with organisational needs, the existing culture and Safety Management System.</p> | <p>The programme being seen as method for blaming workers for having accidents. Lack of trust about motives for the programme.</p> |
| <p>Workplace employees' participation in the process of setting programme goals and objectives.</p> | <p>Employee concern about spying and reporting on their colleagues.</p> |
| Programme maintenance | |
| <p>Ensuring management and technical support to provide assistance with any difficulties encountered.</p> | <p>Managers being inconsistent in enforcement of safety rules prior to and during the programme.</p> |
| <p>Management commitment to the programme to allow staff time to be involved in the programme.</p> | <p>Not involving supervisors in the process, leading some to abdicate responsibility for safety.</p> |
| <p>Use of all means of communication to feed back results to workforce. Seek upward appraisal and feedback on the effectiveness of the programme.</p> | <p>Inadequate credible management support for the initiative, including a neutral or half-hearted support.</p> |

| Organisational structure | |
|---|--|
| Managers having consistent and high existing safety standards and not being sensitive to temporary setbacks or bad scores. | Expectation of short term gains leading to a loss of commitment when improvement is slower than anticipated. |
| The selection of behaviours that also have links to management production goals and ones that most employees would like to improve. | Organisational change and downsizing, leading to low workforce morale and the loss of volunteers. |
| Open learning culture i.e. 'fair and just' – and deciding at the beginning of the programme how to deal with situations or observations where people feel discipline is required. | A directive style of management which prevents the empowerment of staff and restricts open communication. |
| Employees are aware of when to use the system and when to use other systems. | Programme used as an alternative to taking immediate action to correct safety critical situations. |
| Provision of resources to address issues that are identified. | |

2.1.4. The 'Monitor' Step

Monitoring the performance of the intervention is critical to the overall impact of the programme. The results of the four offshore case studies of behaviour modification programmes revealed that programmes are likely to encounter difficulties which required management intervention. By identifying and monitoring key performance indicators for the programme, managers will be aware of difficulties encountered and will be able to provide support and assistance if required. Indicators should look at the inputs being made to the programme as well as the outputs and outcomes achieved. These performance indicators can be used to ensure that adequate resources are being made available and also to give recognition to the participants for the efforts they are making to the programme. The results of the monitoring programme should be fed back to the participants on a regular basis.

The specific performance indicators will depend on the type of intervention selected. For example, if safety leadership training has been selected then the number of

managers and supervisors who have completed the course may be appropriate. If a behaviour modification programme is implemented then the number of participants who volunteer to become observers could be used. The performance indicators should be specified in agreement with the employees before the programme is implemented.

The performance indicators need to be accepted as being meaningful – the number of observation cards submitted may not be regarded as meaningful and the use of the type of performance indicator may have a negative effect.

As the safety culture maturity increases and the type of interventions move from ‘Management initiated’ to ‘Employee led’, it is appropriate to change the type of performance indicators used from ones imposed by management to ones designed by the workgroup involved.

Leading Performance Indicators have been proposed as a powerful method for improving engagement and performance²⁴. Suitable leading performance measures that are based on activities a workgroup can control, and which they believe are important for safety, can:

- provide advance warning of weaknesses that may increase the risk of accidents before accidents occur,
- give recognition for the inputs being made and so help reinforce desired behaviours,
- increase the involvement of workgroups in assessing how well they are managing safety,
- improve workgroup involvement, ownership and effective implementation of the safety management system,
- help to reintegrate HS&E into the main business activities by focusing performance measures on activities that are an integral part of the workgroups activities, for example, the level of compliance with planning requirements.

For Leading Performance Measures to be effective on all of these issues, they must monitor activities that:

- are believed to be important for effective safety management,
- are considered to be relevant to the workgroup,
- are amenable to intervention / influence by the workgroup,
- are easy to understand,
- are owned by the workgroup,
- are objective and easy to collect.

2.1.5. The 'Re-assess' Stage

Once a behaviour modification programme has been in use for some time, it is necessary to review the effectiveness of the programme to determine if it is having the desired impact. A number of potential metrics can be used. These include using a follow-up safety climate survey or other diagnostic tool to re-assess the level of cultural maturity, the use of leading performance indicators or the lagging accident statistics. However, if accident statistics are used, it must be noted that **behaviour modification programmes are not a quick fix and that it may take a number of years before significant improvements are observed in lagging performance measures**. As noted in section 1.1.1.2., an interval of 18 to 24 months is recommended between repeating a climate survey. Programmes that are established and have good participation should not be abandoned at the first setback or if there is no immediate discernible effect.

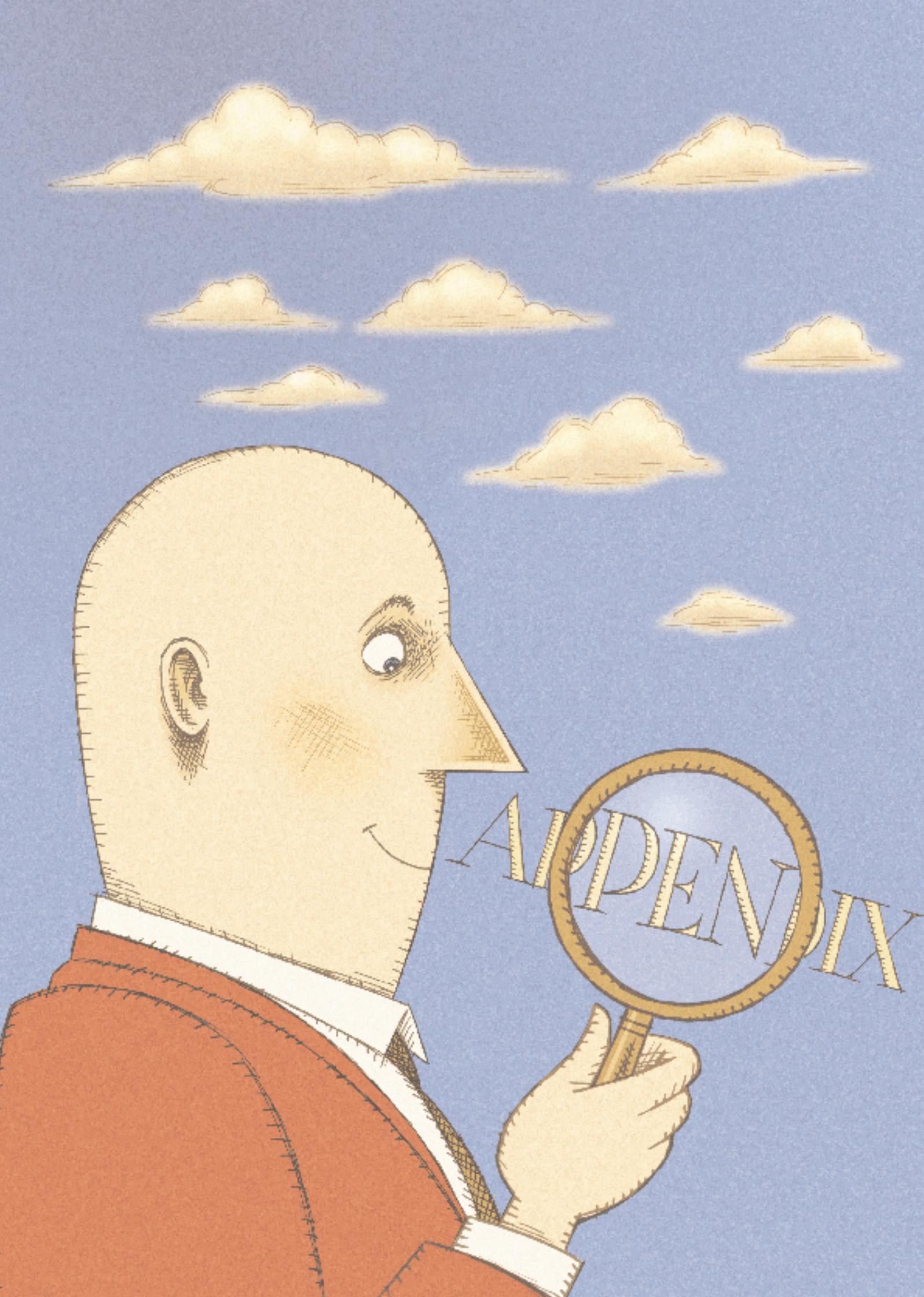
2.2. Inter-company interfaces

When two organisations interface, e.g. client and contractor, understanding the relative levels of safety culture maturity will help the selection of appropriate ways to manage the interfaces effected. It is important to recognise any differences in the level of safety culture maturity between the organisations and to be aware that these differences may require a different style of management to be adopted. For example, it may be unrealistic to expect a temporary crew, with a level 2 safety culture maturity, to arrive at a location with a level 4 safety culture and automatically adopt the ways of working that are considered normal there. Additional attention to safety management may be required during this period. Efforts to improve the safety culture maturity should use tools and techniques appropriate to the organisation with the lower maturity.

2.3. Individual Behaviours

This report has focussed on the collective behaviours within an organisation and the organisational interventions that can be taken. However, it is important to consider the behaviours and attitudes of individual employees and the personal interventions that may be necessary. The behaviour of individuals in important positions will be very influential on others in the organisation they work with. These people can have a positive leading role or, if they are negative or uncommitted to the desired changes, they can have a blocking effect. In this situation, it is necessary to 'change the man' through additional coaching or training, or to move the individual to another position where his influence is not so detrimental.

Where individuals are highly motivated and proactive, they should be encouraged through recognition and support for their efforts.



APPENDIX IX

Appendices

The main points of this report are summarised in the following figure and Appendices:

Appendix 1: Overview of the safety culture improvement process

Appendix 2: Key learning points from guide

Appendix 3: Summary of review of six safety climate survey tools

Appendix 4: Upward appraisal questionnaire

Appendix 5: Summary results from the Step Change survey of offshore experience with behaviour modification programmes

Appendix 6: Summary of guidance for implementation: pre-conditions and key success factors

Appendix 7: Task group activities

Appendix 8: References and resources

Acknowledgements

Appendix 1
Sheet 1: Overview of the safety culture improvement process

Safety Culture Maturity

| Safety culture maturity element | Phrases that describe the current situation | | | | |
|---|---|---------|---|---------|---|
| | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| Communication | Safety communication is one-way information provision. | | Communication is generally two-way. | | Communication is in the form of consultation and feedback is prompt. |
| Learning organisation | Incident investigation tends to be situation specific. | | The organisation is effective in capturing organisational learning from incidents and willing to share lessons. | | |
| Production versus safety | Production goals are perceived as the top priority | | Frontline employees highlight if they feel pressure to compromise safety. | | All employees are involved in planning their work. |
| Demonstrating management commitment | Frontline staff perceive a gap between management's words and their actions. | | The majority of employees are convinced by managers actions that accident prevention is a core company value. | | |
| Health and safety resources | Safety resources are perceived as a cost, which need to be minimised. | | Sufficient safety resources are provided for both day-to-day issues and specific projects. | | A relatively large amount of employee and management time is devoted to safety as an integral part of all activities. |
| Participation in safety | Safety is seen as a management issue and therefore employee involvement is limited. | | Frontline staff are given the time to actively participate in safety because their input is valued. | | |
| Shared perceptions about safety | Employees feel that safety is something that is done to them instead of something that they do. | | The majority of staff share the belief that safety is important. | | Continuous improvement in safety is believed to be the natural way of working. |
| Trust within the organisation | Management and frontline staff tend to be suspicious of one another. | | In general, there is a high level of trust between staff and between managers and subordinates. | | |
| Industrial relations and job satisfaction | Industrial relations are poor and job satisfaction is below average. | | Industrial relations are positive but job security can have a negative impact on morale. | | Industrial relations are positive and levels of job satisfaction and morale are high. |
| Training | Training tends to focus solely on information provision. | | Safety training is a key element in employee development and specific safety training provided to encourage proactive safety behaviour. | | |
| | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |

Appendix 1
Sheet 2: Overview of the safety culture improvement process

| Safety culture maturity level from sheet 1 | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
|--|--|--|--|--|---------|
| Assessment methods | Survey | Interviews | Workshops | Normal business dialogue | |
| Climate survey tools | HSE tool Offshore questionnaire Safety climate questionnaire Safety climate assessment tool kit | | | | |
| Behaviour modification programmes | Knowledge based safety leadership Training interventions | Leadership skills Management initiated programmes | Upward feedback Employee managed programmes | Team led development Leading indicator led programmes | |
| Monitoring | Number of improvements | Leading PIs from programme | | Leading PIs | |

improvement process stages

Appendix 2: Key learning points from guide

| No. | Learning point | Cross reference |
|-----|---|--------------------------|
| 1 | Addressing behaviours is not an alternative to ensuring that adequate engineering design and effective safety management systems are in place. | Section 1.0 Page 5 |
| 2 | It is not enough for organisations to have good systems because performance is determined by how organisations actually 'live' or 'act out' their systems. | Section 1.1.1 Page 6 |
| 3 | People don't simply do as they are told. They behave the way that they do because of the consequences that result for themselves after doing it. | Section 1.1.2 Page 7 |
| 4 | Behaviour modification is unlikely to be successful unless the job environment and organisational factors are also considered. This will require behaviour changes at all levels of the organisation, not just the workplace. | Section 1.1.2 Page 7 |
| 5 | The organisational factors and behaviours required to manage safety effectively are similar to those required for the effective team based working that can deliver improved productivity and profitability. | Section 1.1.4 Page 9 |
| 6 | The cost benefit of improving safety can be significantly higher than reducing the unplanned costs of incidents. | Section 1.1.4 Page 9 |
| 7 | A review of behaviour modification programmes has shown that good programmes that work at one location can fail at another. | Section 1.2.0 Page 11 |
| 8 | The Safety Culture Maturity Model provides a framework to assist in the selection and implementation of appropriate behavioural interventions. | Section 1.2.1 Page 12 |
| 9 | The safety culture maturity model refers to the organisational behaviours; NOT the maturity of the safety management systems | Section 1.2.1 Page 12 |

| | | |
|----|---|----------------------------|
| 10 | The safety culture maturity of an organisation affects the way in which the organisation's systems are used. It affects whether the systems are used effectively to improve performance or are simply complied with. | Section 1.2.1 Page 13 |
| 11 | An organisation's level of safety culture maturity influences which behaviour modification programmes are most appropriate and are most likely to be successful. A programme that is appropriate for one organisation may not be suitable for another at a higher or lower level of maturity. | Section 1.2.1 Page 13 |
| 12 | If the 'Assess' stage is mismanaged it may be difficult to get employees to participate effectively in later stages of the process. | Section 2.1.1 Page 19 |
| 13 | First need to address trust and the perceived level of management commitment as these provide the foundations necessary for other behavioural interventions. | Section 2.1.2 Page 23 |
| 14 | What others observe us doing communicates what is important to us far more powerfully than what we say. | Section 2.1.2 Page 25 |
| 15 | Organisations should to ensure that they are ready for a behaviour modification programme before introducing it. | Section 2.1.2 Page 27 |
| 16 | The organisation's 'readiness' for the change, and the way in which it selects and uses a tool are more important than the specific tool that is used. | Section 2.1.3.3 Page 31 |
| 17 | The success of a programme aimed at frontline employees requires a pre-existing level of trust between management and the frontline staff. | Section 2.1.3.3 Page 31 |
| 18 | It is important to avoid unrealistic expectations for early reductions in accident statistics. | Section 2.1.3.3 Page 31 |
| 19 | Behaviour modification programmes are not a quick fix and it may take a number of years before significant improvements are observed. | Section 2.1.5 Page 36 |
| 20 | When two organisations interface, e.g. client and contractor, understanding the relative levels of safety culture maturity will help the selection of appropriate ways to manage the interface effectively. | Section 2.2 Page 36 |

Appendix 3: Summary of review of six safety climate survey tools

| | | | | | | |
|------|----|----|--------|---------|---------------|---------------|
| Key: | No | No | * Fair | ** Good | *** Very good | N/K Not known |
|------|----|----|--------|---------|---------------|---------------|

Safety climate survey tools

| | HSCST | OSQv1 | OSQ99 | CSCQ | LSCAT | QSCQ |
|--|---|--|---|---|--|--|
| Title | Health and Safety Climate Survey Tool | Offshore Safety Questionnaire | Offshore Safety Climate Questionnaire | Computerised Safety Climate Questionnaire | Safety Climate Assessment Toolkit | Safety Climate Questionnaire |
| Developer | Health & Safety Executive | Aberdeen University ¹ | Aberdeen University | Robert Gordon University ² | Loughborough University | Quest Evaluations and Databases Ltd |
| (i) Can the tool be used without recourse to the developers? | Yes *** | Yes, subject to competent persons distributing the questionnaire, analysing & interpreting the data. Considerable statistical expertise required. ** | No, requires Aberdeen University's permission. Also, only available with involvement of Aberdeen University Research and Industrial Services (AURIS) consultancy consortium & original developers. No | Yes, designed to be used without needing to seek external assistance. *** | Yes, designed to be used without expert external assistance, although some companies may need initial support. ** | Developer retains copyright & initial access to tool is conditional on use of the developer's services. Users subsequently given full access to tool, with developers continuing to offer support as required. * |
| (ii) Is support available if required? | Yes, user helpline & confidential benchmarking service. ** | Yes, developer can offer all forms of support necessary for use of the tool. *** | Yes, all necessary support is available via AURIS. This is a pre-condition of use. *** | No current facility for providing ongoing support to users. No | Yes, services available from developer include providing mean scores on each dimension based on database held (free service), safety climate profiles & benchmarking. *** | Yes, developer can offer all forms of support necessary for use of the tool. This is a pre-condition of initial use. *** |
| (iii) Quality of guidance material available for users? | Excellent. Easy to read & understand. Useful advice on entire safety climate improvement process. *** | Public domain material is in the form of research reports & papers describing past use. Not designed as guidance for potential users. * | No material available in the public domain at the time of preparing the guide ³ . AURIS would use the tool on behalf of the customer. N/K | User information provides very brief, but helpful advice in easy-to-understand language. ** | Comprehensive user guide in Q&A format. Best suited to those with some background in the area. Research report from related JIP (Assessing safety culture in offshore environments) also available. ** | Relevant material remains confidential to participants in related JIP at present. Developer would use the tool on behalf of any new customer initially. N/K |

¹Early development of the Offshore Safety Climate Questionnaire was carried out while the research team was based at Robert Gordon University.

²Development carried out by Mark Fleming, now at The Keil Centre, Edinburgh.

³Final reports from Joint Industry Project (JIP) to be published in autumn 2000.

Safety climate survey tools

| | HSCST | OSQv1 | OSQ99 | CSCQ | LSCAT | QSCQ |
|---|--|---|--|---|--|--|
| (iv) Is advice given on what to do with the results? | Brief but useful advice on range of uses & benefits of the tool. Also, key considerations in follow-up (communicating results, taking things forward, identifying issues & implementing improvement plans. ** | Advice offered is specific to the studies the questionnaire has been used in. * | To date, advice given is specific to the current JIP (<i>Factoring the human into safety: translating research into practice</i>) and its participants. Assume provision of advice is integral part of AURIS service in any future use. *** | Limited indication of what follow-up actions might be taken. * | Advice is given on the feedback & climate improvement processes, including brief details on developing action plans & a safety climate maintenance checklist. ** | To date, advice given is specific to the related JIP (<i>Safety & performance enhancement in drilling operations by human factors intervention (SPEDOHFI)</i>) and its participants. Assume provision of advice is integral part of developer's service in any initial future use with new customers. *** |
| (v) Validation of tool? | Extensive validation across range of industry sectors. Completed by 10,000 people across 40 sites during development. *** | The OSQv1 developed from an earlier tool (used in a joint industry project [JIP] on risk perception & safety offshore). OSQv1 development included rigorous piloting. ** | The OSQ99 was developed in Ph2 of the above JIP, building on experience of the Ph1 version (704 responses) and the earlier OSQv1. ** | The CSCQ was developed from the OSQv1, taking a subset of items considered to be best predictors of state of safety. Used by an oil co. on drilling rigs during development (results confidential). ** | Lengthy development process, within above JIP & in earlier work carried out by industry sponsors. JIP included piloting, revision & follow-up use of questionnaire. ** | The QSCQ was developed in above JIP. Piloted on 14 personnel attending drilling school. Construct validity confirmed via development methods used, while use with offshore personnel has provided content validity. Questionnaire also checked for comprehensiveness. * |
| (vi) Extent to which the tool has been used? | Purchased by ~400 organisations (to Dec 1999). Users come from wide range of employment sectors, within & outside UK. *** | Used in JIP (<i>Human & organisational factors in offshore safety</i>) – 722 responses. Customised versions used by Woodside Petroleum & Phillips China. Also used in consultancy work. ** | To date, the OSQ99 has only been used in the above JIP (679 responses). Developer intends to use OSQ99 (or abridged version) more widely in future. * | Above oil co. use not continued following project completion. Tool distributed to organisations that expressed interest. Not thought to have received widespread use. * | Used in JIP. Also, ~10 requests for toolkit & 2 cos. wanting limited support from developer, to provide comparative results (Jan. 2000). ** | To date, used solely in offshore oil and gas industry. Involved 5 oil and gas cos. in UK sector JIP (93 responses). Used with 3 cos. in USA. Experience built up over 2 – 3 years. ** |
| (vii) Is there a database of results and norms for results? | Yes, but not available for external use. Underlies a confidential benchmarking service available to all users. *** | Full OSQv1 no longer used by developer – more usual for parts to be used. Not setting up a norm database for the OSQv1. No | There is an intention to build up a norm database. ** | No, although tool provides N Sea average scores for each of 5 factors, drawn from data collected during development and use of the OSQv1. * | Yes, but not available for external use. Database contains ~600 cases, from 5 cos. that have used toolkit (Jan. 2000). Underlies full profiling service offered by developer. *** | Yes, a norm database of 93 records is held by the developer, with baseline results being available for comparison purposes. ** |

Safety climate survey tools

| | HSCST | OSQv1 | OSQ99 | CSCQ | LSCAT | QSCQ |
|--|--|---|--|---|--|---|
| (viii) What costs/resources are required to conduct a survey? | <p>Low purchase cost – £200 for single site up to 100 employees.</p> <p>Other costs – questionnaire preparation, completion, data input & analysis, report production, communicating results, identifying issues & implementing improvement plans, repeating survey to check on progress.</p> <p>***</p> | <p>No purchase costs attached to use of questionnaire.</p> <p>Other costs – questionnaire preparation, customisation, completion, data input & analysis, report production, communicating results, identifying issues & implementing improvement plans, repeating survey to check on progress.</p> <p>Considered likely that use will require assistance from developer or other external consultants. Ranking assumes that associated costs will be incurred.</p> <p>*</p> | <p>The OSQ99 and future versions of the questionnaire will be made available for use outside the current JIP. This will be with costs & conditions attached, including the tool only being available with involvement of AURIS consultancy consortium & original developers.</p> <p>Details of costs not known but ranking assumes they will be more than if using in-house resources only.</p> <p>*</p> | <p>Available free to offshore oil and gas companies only.</p> <p>Other costs – questionnaire preparation, completion, data input & analysis, report production, communicating results, identifying issues & implementing improvement plans, repeating survey to check on progress.</p> <p>***</p> | <p>Available free from the developer, by post or via their Internet site.</p> <p>Other costs – questionnaire preparation, completion, data input & analysis, report production, communicating results, identifying issues & implementing improvement plans, repeating survey to check on progress. May need to allow for costs of some external expert assistance on first use of toolkit.</p> <p>**</p> | <p>The OSCQ is available to new users but with costs & conditions attached. Initial access to the tool is conditional on use of the developer’s services.</p> <p>Details of costs not known but ranking assumes they will be more than if using in-house resources only.</p> <p>*</p> |
| (ix) Time required to complete questionnaire? | <p>15 – 20 minutes (est.)</p> <p>***</p> | <p>45 minutes (est.)</p> <p>*</p> | <p>20 minutes (est.)</p> <p>***</p> | <p>20 – 30 minutes (est.)</p> <p>**</p> | <p>15 – 20 minutes (est.)</p> <p>***</p> | <p>45 – 60 minutes (est.)</p> <p>*</p> |
| (x) Ease of processing questionnaires and producing results to feedback to participants? | <p>Good. Computer-based analysis package presents results in various graphical formats that are easy to understand. Example results provided with advice on interpretation.</p> <p>***</p> | <p>Requires familiarity with SPSS statistical package. Material in public domain is aimed at oil and gas management. Unsuitable for feedback to workforce.</p> <p>*</p> | <p>No information available in the public domain at the time of preparing Guide.</p> <p>The AURIS consortium/ developers would undertake all this work.</p> <p>N/K</p> | <p>Software package allows range of straightforward analyses & displays results in graphical form. This could be reported back to management & workforce participants in readily understood form.</p> <p>**</p> | <p>Good. Full processing instructions and graphical means of displaying results are detailed. Terminology more suited to feedback to management than to workforce.</p> <p>**</p> | <p>At present, no information available in the public domain. JIP research report is aimed at oil and gas management. Unsuitable for feedback to workforce. The developer would undertake this work for initial use of the tool with new customers. Future in-house analysis/ reporting would require familiarity with SPSS or equivalent statistical package.</p> <p>N/K</p> |

Safety climate survey tools

| | HSCST | OSQv1 | OSQ99 | CSCQ | LSCAT | QSCQ |
|---|---|--|---|---|---|--|
| (xi) Usefulness of output for planning of improvement actions? | Good. Sound advice given on identifying issues & implementing improvement plans. However, little indication of what might be practical improvement actions. Would benefit from case study examples. ** | Can be difficulties making the link between results of analyses & identification of practical improvement actions. Would benefit from case study examples. * | No relevant information in the public domain at the time of preparing Guide. N/K | User information aids interpretation of results & identifies overall problem areas. However, it does not help determine practical improvement actions. Would benefit from case study examples. * | Questionnaire is one element of a ‘multiple approach’ toolkit. Results – coupled with guidance in user guide, toolkit & JIP research report – gives sound support to development of action plans, providing feedback & follow-up. However, limited indication of what might be practical improvement actions. Would benefit from case study examples. * | JIP research report not yet in the public domain. But the developer advises that much value comes from detailed examination of questionnaire items. Also, that the tool indicates where there are problem areas, from which improvement actions can be drawn. The Guide’s authors believe that practical improvement actions outlined are specific to the JIP and to those involved in drilling activities. The QSCQ’s usefulness does not depend upon integrated use with other human factor tools. * |
| (xii) How well/ easily do outputs map onto elements of the safety culture maturity model? | The Guide’s authors consider that 35 of the 72 ‘main’ items may aid identification of the current state of maturity of an organisation or installation, as defined by the draft Safety Culture Maturity Model. Where this is an important issue, it is suggested that inclusion of a limited set of items – specifically designed to investigate organisational maturity – might be of benefit. * | The Guide’s authors consider that 25 of the 153 ‘main’ items may aid identification of the current state of maturity of an organisation or installation, as defined by the draft Safety Culture Maturity Model. Where this is an important issue, it is suggested that inclusion of a limited set of items – specifically designed to investigate organisational maturity – might be of benefit. * | The Guide’s authors consider that 27 of the 80 ‘main’ items may aid identification of the current state of maturity of an organisation or installation, as defined by the draft Safety Culture Maturity Model. Where this is an important issue, it is suggested that inclusion of a limited set of items – specifically designed to investigate organisational maturity – might be of benefit. * | The Guide’s authors consider that 16 of the 49 ‘main’ items may aid identification of the current state of maturity of an organisation or installation, as defined by the draft Safety Culture Maturity Model. Where this is an important issue, it is suggested that inclusion of a limited set of items – specifically designed to investigate organisational maturity – might be of benefit. * | The Guide’s authors consider that 25 of the 44 ‘main’ items may aid identification of the current state of maturity of an organisation or installation, as defined by the draft Safety Culture Maturity Model. Where this is an important issue, it is suggested that inclusion of a limited set of items – specifically designed to investigate organisational maturity – might be of benefit. * | The Guide’s authors consider that 34 of the 319 ‘main’ items may aid identification of the current state of maturity of an organisation or installation, as defined by the draft Safety Culture Maturity Model. Where this is an important issue, it is suggested that inclusion of a limited set of items – specifically designed to investigate organisational maturity – might be of benefit. * |

Safety climate survey tools

| | HSCST | OSQv1 | OSQ99 | CSCQ | LSCAT | QSCQ |
|--|---|--|--|--|--|---|
| (xiii) Adaptability of tool by user? | Can customise title & instructions. Also, add demographic questions to suit own organisation. Unable to modify 'core' questions. ** | Has been customised to fit needs of specific projects/ users. Likely to require assistance from developers or other consultants. * | Can be customised by AURIS consortium/ developers. No adaptation allowed without their involvement. * | Minor customisation is feasible. Major changes would affect the applicability of the user information provided. * | Not intended to be customised. Tool includes short form questionnaire for use if limited time or need interim assessment on sample of workforce. * | Full questionnaire is long, with 12 sections. Surveys can use fewer sections, focusing on topics such as 'management' & 'training'. Some wording needs to be adapted for non-drilling use. For initial use, customisation must be done by the developer. ** |
| (xiv) Applicability to the oil and gas industry? | Generic questionnaire designed for use in any industry. ** | Developed specifically for offshore oil and gas industry. Used more widely in energy industry. *** | Developed for use in the offshore oil and gas industry. Could be readily adapted for use in other sectors. *** | Developed for use in the offshore oil and gas industry, with some wording tailored to drilling use. Could be easily adjusted for wider applicability offshore. *** | Developed for use in the offshore oil and gas industry. Could be applied in other sectors, subject to industry-specific modification. *** | Developed for drilling-related use in the offshore oil and gas industry. Potentially could be developed further to allow use across oil and gas industry and wider application in other safety critical industries. ** |

Appendix 4: Upward appraisal questionnaire²⁵

Upward appraisal guidance notes

1. Process

- 1.1. Manager completes the 'Self' appraisal form.
- 1.2. Subordinates complete the 'Subordinate' appraisal form (recommended number ~5).
- 1.3. All forms are sent to a central point for analysis.
- 1.4. Individual personal feedback is returned to each manager.
- 1.5. Aggregated feedback for the population is returned.

2. Guidance/recommendations

- 2.1. To assure honest feedback from subordinates, confidentiality must be maintained. Even at a senior level, this is an important issue. Co-ordination of the exercise by a third party is one way of achieving this.
- 2.2. The survey needs to be well introduced to ensure that recipients understand the purpose of the exercise (i.e. a safety leadership improvement mechanism).
- 2.3. Participating managers must commit to doing something about the feedback they receive, or subordinates will perceive the exercise as counter-productive.
- 2.4. Information needs to be fed back to individual managers carefully, with resource available to provide coaching and advice to them where required.
- 2.5. Analysis of corporate or team profiles can be useful for developing improvement plans through a workshop format.

3. Technical notes

- 3.1. For basic analysis to provide individual and summary data for feedback, a statistical package such as SPSS 8.0 is recommended.
- 3.2. For individual feedback, mean and range are the most useful summary format. For the 'business drivers' analysis, mode and range are more meaningful.
- 3.3. For group analysis, using frequency of subordinates responses allows some comparison of the population (e.g. proportions who are high performing, sending neutral messages, negative messages).
- 3.4. Some linkage can be made using Spearman analysis to correlate safety behaviour and ability to convey HSE priority.

- 3.5. Receiving feedback: the prime purpose is to compare self rating with subordinate rating and consider why differences are present. Ranges in subordinates responses are also revealing as the mean can mask significant individual variability (mean difference >0.5). Post-survey discussion with subordinates may be useful way of further identifying causes of discrepancy.

Leadership Behaviour: Self-appraisal form

The following scale contains statements about your leadership behaviour. Please indicate to what extent you agree with these statements. *(Circle only one number on each line)*

| | Fully disagree | Partially disagree | Neither | Partially agree | Fully agree |
|---|----------------|--------------------|---------|-----------------|-------------|
| I always promote safety during site visits | 1 | 2 | 3 | 4 | 5 |
| I am good at establishing informal dialogue with the workforce on safety issues | 1 | 2 | 3 | 4 | 5 |
| I establish good relationships with the safety reps | 1 | 2 | 3 | 4 | 5 |
| I clearly demonstrate a personal passion for safety during site visits | 1 | 2 | 3 | 4 | 5 |
| I always listen to workforce concerns | 1 | 2 | 3 | 4 | 5 |
| I respond quickly and with clarity to workforce concerns | 1 | 2 | 3 | 4 | 5 |
| I always check whether the workforce are satisfied with my response to their concerns | 1 | 2 | 3 | 4 | 5 |
| I react strongly to poor safety performance | 1 | 2 | 3 | 4 | 5 |
| HSE performance has a strong impact on the way I appraise people's performance | 1 | 2 | 3 | 4 | 5 |

Personal Commitment and Attitudes

The scale below contains six statements about how you feel about safety, please indicate to what extent you agree with them. *(Circle only one number on each line)*

| | Fully disagree | Partially disagree | Neither | Partially agree | Fully agree |
|---|----------------|--------------------|---------|-----------------|-------------|
| I clearly convey my safety expectations in line with my company's policy of no harm to people | 1 | 2 | 3 | 4 | 5 |
| I clearly show that safety is my core personal principle | 1 | 2 | 3 | 4 | 5 |
| I make time for safety discussions when under pressure | 1 | 2 | 3 | 4 | 5 |
| I want all procedures to be followed even if it means jobs take longer | 1 | 2 | 3 | 4 | 5 |
| I frequently discuss/assess performance against safety compared with other single business issues | 1 | 2 | 3 | 4 | 5 |

If you were to fail on the following business drivers, please rank in order which failures you think would affect you most? (Please rank 1st 2nd 3rd and 4th) **Do not use tied ranks.**

- _____ Cost leadership
- _____ Production targets
- _____ Reputation
- _____ H,S&E

Leadership Behaviour: form for completion by subordinates

The following scale contains statements about your superior's leadership behaviour. Please indicate to what extent you agree with these statements. *(Circle only one number on each line)*

| | Fully disagree | Partially disagree | Neither | Partially agree | Fully agree |
|--|----------------|--------------------|---------|-----------------|-------------|
| He/She always promotes safety during site visits | 1 | 2 | 3 | 4 | 5 |
| He/She is good at establishing informal dialogue with the workforce on safety issues | 1 | 2 | 3 | 4 | 5 |
| He/She establishes good relationships with the safety reps | 1 | 2 | 3 | 4 | 5 |
| He/She clearly demonstrates a personal passion for safety during site visits | 1 | 2 | 3 | 4 | 5 |
| He/She always listens to workforce concerns | 1 | 2 | 3 | 4 | 5 |
| He/She responds quickly and with clarity to workforce concerns | 1 | 2 | 3 | 4 | 5 |
| He/She always checks whether the workforce are satisfied with his/her response to their concerns | 1 | 2 | 3 | 4 | 5 |
| He/She reacts strongly to poor safety performance | 1 | 2 | 3 | 4 | 5 |
| HSE performance has a strong impact on the way He/She appraises my performance | 1 | 2 | 3 | 4 | 5 |

Personal Commitment and Attitudes

The scale below contains six statements about how your superior appears to feel about safety, please indicate to what extent you agree with them. *(Circle only one number on each line)*

| | Fully disagree | Partially disagree | Neither | Partially agree | Fully agree |
|--|----------------|--------------------|---------|-----------------|-------------|
| He/She clearly conveys his/her safety expectations in line with your company's goal of no harm to people | 1 | 2 | 3 | 4 | 5 |
| He/She clearly shows that safety is his/her core personal principle | 1 | 2 | 3 | 4 | 5 |
| He/She makes time for safety discussions when under pressure | 1 | 2 | 3 | 4 | 5 |
| He/She wants all procedures to be followed even if it means jobs take longer | 1 | 2 | 3 | 4 | 5 |
| He/She frequently discusses/assesses performance against safety compared with other single business issues | 1 | 2 | 3 | 4 | 5 |

If your superior were to fail on the following business drivers, please rank in order which failures you think would affect him most? (Please rank 1st 2nd 3rd and 4th)

Do not use tied ranks.

- _____ Cost leadership
- _____ Production targets
- _____ Reputation
- _____ H,S&E

Appendix 5: Summary results from the Step Change survey of offshore experience with behaviour modification programmes

Note: The comments summarised below represent feedback on particular implementations of the tools. The comments can not be used to judge the tools themselves as many factors influence the suitability of a tool and the chances of successful implementation.

Safety leadership training

| Type of intervention | Name of programme | Results achieved | Important success factors | Barriers encountered | Limitations of the system | Further information available from |
|----------------------|-------------------|--|---|--|---|--|
| Knowledge based | SHAPE | Increased workforce safety awareness. Improved safety behaviour. | Delivered by peers. Management commitment to programme. | Conflict with operating company initiatives. Time consuming. | — | Steve Brown, AMEC |
| Skill based | ASA | Good results due to direct control. | Direct conversations. Personal commitment. | — | — | BP Amoco safety department |
| Skill based | CRM | Too early to say. | — | — | Only a small proportion of the crew could attend. | Prof. Rhona Flin, University of Aberdeen |

Behavioural interventions

| Type of intervention | Name of programme | Results achieved | Important success factors | Barriers encountered | Limitations of the system | Further information available from |
|----------------------|----------------------|---|---|---|--------------------------------------|--|
| Management initiated | STOP | Increased awareness by management and frontline staff. Increased number of safety preventative actions. | Anonymous cards. Involvement & commitment of workforce and supervision Management commitment and support. | Co-ordination of staff for training. Setting target for number of cards submitted led to a reduction in quality. Perceived as a supervisors tool. | Easy to abuse or distort statistics. | Alan Baxter (Amec Citygate); Mike Jamieson; (BP Amoco) |
| | Safe behaviour cards | Increased workforce awareness. Data used to take preventative action. | Trade specific safety behaviours used instead of a generic set of behaviours. | — | Anonymity is essential. | Keith Boyde, PPG UK Ltd; Colin Flitt, ARCO British Ltd |

Behavioural interventions (cont.)

| Type of intervention | Name of programme | Results achieved | Important success factors | Barriers encountered | Limitations of the system | Further information available from |
|-----------------------------------|--------------------------|--|---|--|---|--|
| Management initiated | Alert (45 Minute) | Identified trends in at risk behaviours | Only works if no-name no-blame approach is used | Results skewed due to same work groups being targeted each time. | People need to be open enough to accept monitoring. | — |
| | START | Reduction in accidents and improved safety culture. | Management commitment and involvement | — | — | Eddy Hall BP Amoco |
| Employee managed programme | Care Plus | Significantly improved workforce involvement. Reduction in first aid cases. | Early workforce involvement | — | — | Care plus steering group on Shell Cormorant Alpha platform Roy Aspen – AMEC |
| | Future Safe | Increased workforce ownership | Management demonstrating commitment by giving workforce time to implement the programme | — | — | Future Safe Steering Committee on Shell Dunlin Alpha platform |
| | STEPS | Unclear. Training well received | — | — | — | Bob Keiller, Scott Asset Manager, Amerada Hess Ltd |
| | SUSA | No change in accident rates yet. Universal acceptance of the process | Management commitment, workforce buy in and enthusiastic trainers | Convincing the workforce that is not just an initiative | — | Mike Smith, British Gas Hydrocarbon Resources Ltd |
| | SafeR+ | Minor changes in behaviour but not particularly effective | Not successful | Lack of meaningful behaviours identified | Programme did not seem practical | Tony Mahoney OIM (Lomond Platform) |
| | B-Safe | Improvement in the fabric of the installation | Workforce involvement and resolution of outstanding Health & Safety issues. | Had to be re-designed for offshore use. | Required considerable effort to involve workforce | Scott Wilkinson, AMEC Process and Energy, Aberdeen |

Appendix 6: Summary of guidance for implementation: Pre-conditions and key success factors

The following summary is taken from reference 8.

Pre-conditions for using behaviour modification programmes

There are a number of issues that must be considered before deciding to implement a behaviour modification programme. The following series of questions may assist in establishing how appropriate this technique is for an organisation.

- **Is a significant proportion of accidents primarily caused by the behaviour of front-line employees?**

A behaviour modification programme is unlikely to be appropriate if technical failures or a poor Safety Management System is causing the majority of accidents. It is important to recognise that behavioural approaches to safety improvement are likely to be most effective when technical and systems improvements are failing to produce a corresponding reduction in accident rates.

- **Do the majority of managers and employees have a desire to reduce the current accident rate?**

It is important that managers and front-line employees are convinced of the need to reduce the current accident rate, as the success of the programme is dependent on their continued involvement and commitment. If employees do not perceive a need to reduce the current accident rate then effort will initially have to be made to convince them that all accidents can and should be prevented.

- **Are managers going to be comfortable with empowering employees and delegating some authority for safety to employees?**

In order for employees to be involved in safety, their managers will need to be willing and able to empower them to make safety observations and recommend ways of improving safety. If managers are likely to respond negatively to workforce empowerment then they are likely to cause the programme to fail. It is important that managers are aware of and agree to the changes in the relationship between managers and employees that are required. Managers must be willing to release some control, within defined boundaries.

- **Are managers likely to be willing to trust results produced by the workforce?**

If managers are cynical about the motives behind safety improvement suggestions made by their employees then they are unlikely to take them on board, and therefore the programme will fall into disuse.

- **Is the workforce willing to trust management?**

If there are significant levels of cynicism amongst the workforce about the management's true motivation for implementing the programme, this may undermine its success.

- **Is there a high level of management involvement in safety, which is incorporated into management structure?**

Management support for the programme is likely to be inadequate if managers do not see safety as a line management responsibility. While behaviour modification programmes are designed to involve employees in safety, line managers play a critical role in supporting the programme by showing their commitment and providing resources.

- **Does the organisation have the resources available to enable workers to take time to undertake the required training, carry out frequent observations and to make any improvements identified?**

The majority of both in-house and proprietary systems require a significant amount of resources to set-up and maintain. The initial costs will include designing the programme, setting up a steering committee, training personnel and observers. Once the programme is running the observers will require time to make observations, analyse data, produce charts and time to feedback the results to other employees. In addition, many programmes also involve identifying the conditions that cause employees to choose unsafe behaviours, so that these conditions can be removed. Employees are likely to interpret management reluctance to make the suggested alterations as a lack of commitment and therefore lose confidence in the programme.

- **Who is going to be the champion of the programme for the organisation as a whole and at each site?**

The success of behaviour modification programmes appears to be dependent on someone to drive the programme forward and keep the momentum going at both the

site and corporate level. Programmes often appear to grind to a halt if the champion of the programme leaves. It is therefore a good idea to have some redundancy in the system by having a group of committed individuals to champion the programme.

- **Are their adequate systems in place to deal with the amount of communication and feedback between management and workers?**

One of the positive outcomes of many behaviour modification programmes is increased communication between managers and workers about safety. This unfortunately can mean the programme becomes a victim of its own success. There is a danger that managers end up with communication overload if there are no systems in place to deal with all the information generated by the system. If the organisational structure requires managers to approve all expenditure then they may become overloaded with the number of suggested improvements that can be made to the plant. It is critical that increased communication is anticipated and systems are put in place to cope.

Key success factors

Practitioners and researchers have identified a number of factors that enhance the effectiveness of behaviour modification programmes. These factors can be classified under the following headings, the way the programme is initiated and implemented, programme maintenance and the existing organisational structure.

Programme initiation and implementation

The success of a behaviour modification programme can be influenced from the very beginning. The following factors have been identified as factors that enhance the likely success of the project

- joint management and workforce involvement in the process from the beginning, including the initial discussions about undertaking a behavioural modification project
- selection or development of a programme that fits with organisational needs, culture and the existing Safety Management System
- a sample of the workforce to go and visit other companies that have implemented a similar programme
- selection of a steering group who will work effectively as a team
- all levels of organisation being briefed about the aims and objectives of the programme and their role in the programme
- front-line employees participation in the process of setting programme goals and objectives
- involvement of first line supervisors and middle managers in the process and getting them to act as role models.

Programme maintenance

- enduring management and expert support to provide assistance with any difficulties encountered
- management commitment to the programme to allow staff time to make observations
- the use of all available means of communication to feedback results to the workforce.

Organisational structure

- observers who are confident and have secure jobs and therefore can stand up to managers who may try to subvert the results
- managers having consistent and high existing safety standards who are not sensitive to bad scores
- the selection of behaviours that also have links to management production goals and ones that most employees would like to improve
- an open learning culture i.e. ‘fair and just’ – and deciding at the beginning of the programme how to deal with observations where people feel discipline is required.

In addition to the above generic success factors there are a number of enablers that assist in overcoming some specific offshore issues. These include developing efficient lines of communication in the offshore environment by

- holding structured meetings
- using of IT systems to facilitate information transfer, where this is a preferred communication medium
- holding important meetings onshore.

Appendix 7: Task group activities

Task group aims and objectives

Over the past five years, interest in the behavioural aspects of safety has led to the development of numerous safety climate tools and behavioural modification programmes. However, experience with these programmes has been variable with some companies reporting good success whilst other companies using the same programmes have not been successful.

The Behavioural Issues Task Group was set-up in May 1999 to:

- review the large amount of available information,
- make the information more accessible,
- provide practical guidance on how to select and implement appropriate behavioural interventions to ensure maximum impact.

Activities of the task group

In producing the 'Changing Minds' guide, the task group conducted four separate reviews of the behavioural aspects of safety. The specialist nature of this topic necessitated the task group to commission experts to assist them in conducting a number of these reviews.

- 1) A literature review to establish how behavioural modification programmes work and what results have been achieved⁸.
- 2) The development of a model to assist companies in selecting a behavioural intervention appropriate for their current level of maturity¹⁰.
- 3) Case studies of the experiences of oil and gas companies in implementing behavioural modification programmes²³.
- 4) A review of safety climate survey tools, in use in the UK offshore industry, to identify their strengths and weaknesses and provide guidance on how to select a suitable tool and use it effectively¹³.

The reports from these reviews are available as separate studies to support this report.

Appendix 8: References and resources

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