



## Investigating Behaviour Modification Programmes in the Offshore Oil and Gas Industry

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### 1. Executive summary

Offshore oil and gas companies are making increasing use of behaviour modification programmes, which are designed to improve safety by modifying worker behaviour. Reports on the success of these programmes vary from dramatic reductions in accident rates to no change and/or worker disillusionment. There is a shortage of clear, readable and impartial information, to assist those purchasing and implementing behavioural modification programmes. In order to address this issue, four case studies were carried out to provide information about the range of programmes currently being used and identify barriers and enablers associated with these behaviour modification programmes. The four programmes are Time Out For Safety (TOFS), Advanced Safety Auditing (ASA), STOP and Care Plus. Each case study involved interviewing both onshore and offshore managers and installation employees. Accident statistics were reviewed to assess the impact of these programmes on safety.

**TOFS** was developed by the drilling crew on the BP Amoco's Andrew platform, in response to some of the challenges they were facing. Over time it has been adopted by the entire platform, and more recently by other installations. TOFS is effective because it is designed to modify an important behaviour of front line employees, namely stopping the job if they have any safety concerns. It is simple, as it does not require employees to complete forms, which also reduces anxiety about colleagues being reprimanded for their actions. The successful introduction of TOFS on the Andrew platform was partially due to the positive safety culture the installation's already had at the time TOFS was introduced.

**ASA** has provided an additional means for management on BP Amoco's Miller platform to make a viable, tangible commitment to safety. They do this by conducting ASA's themselves, providing ASA training for most of their work force and opening up their own managerial work practices by inviting all staff to conduct an ASA on them. What began as a management tool has been widened to include all core employees, and ownership of ASA has thus been extended.

Conoco relaunched their **STOP** programme to address employee concerns about its effectiveness and implementation. Conoco management regard the relaunch of STOP as a success. Managers and supervisors' participation in the programme has been enhanced and they believe they now have enlisted the core crew's acceptance of STOP. Core crew now understand that via STOP they can make a real contribution to safety with very little additional time and effort.

**Care Plus** is a complex behavioural intervention, which includes all the major features of behaviour modification. There appears to be a strong sense of ownership for the programme among the work force. The programme seems to have a momentum and life of its own because it has endured, although many of the initial volunteers and champions have left the platform. The acceptance of Care Plus by the majority of the work force has been a major achievement. The programme has been fully operational for less than 12 months, yet there has already been a reduction in frequency rate of first aid cases. The criteria for the success for this type of intervention are management commitment, trust between all staff and employees who are interested in safety and willing to take ownership of their own safety behaviour.

The four case studies highlight a number of enablers and barriers that are commonly encountered when implementing a behavioural safety initiative. The preconditions required before implementing a behavioural safety initiative are provided.

## 2. About this report

This report will assist the reader in designing, implementing and improving safety behaviour modification programmes. In addition, it will provide the HSE, including offshore inspectors with knowledge and information to advise the industry on this important topic and enable them to make informed decisions about the impact these programmes are having on safety in the offshore oil industry.

## 3. Introduction

Offshore oil and gas companies are making increasing use of behaviour modification programmes, which are designed to improve safety by modifying worker behaviour. A comprehensive literature review (1) was carried out to explain the underpinning theory and effectiveness of behaviour modification programmes. The results of the review indicated that additional research was required to provide adequate guidance on the selection, implementation and effectiveness of these programmes in an offshore environment.

Behavioural modification programmes, which address safety, typically involve some form of workplace observation of unsafe acts or conditions, with a procedure for follow-up action and reporting system. The follow-up action can be targeted at the individual, team or organisation, depending on the features of the specific programme. The programmes currently being used offshore vary widely in objective, type and application. Reports on the success of these programmes vary from dramatic reductions in accident rates to no change and or worker disillusionment. While managers are able to make some intuitive assumptions about the likely features of successful programmes, there was a need for clear, readable and impartial information, to assist those purchasing and implementing behavioural modification programmes.

## 4. Case study objectives

The four case studies were carried out to investigate what aspects of behaviour modification programmes appear to be critical to success and to establish the main learning points from participating companies' experience of implementing behaviour modification programmes.

## 5. Offshore behaviour modification programme case studies

The four behaviour modification programmes included in the study were selected to represent the broad range of behaviour modification programmes currently in use by the offshore industry. A categorisation scheme was developed to classify potential case studies in order to ensure that a representative sample of those being used in the offshore industry was selected. The four programmes selected are presented in the table 1 under the behaviour modification category.

**Table 1: Behaviour modification programme selected by programme category**

Promotion of a single behaviour **TOFS**

Intervention targeted at management **ASA**

Observation based programme **STOP**

Full behaviour modification programme **CarePlus**

The case studies were carried out to identify features of successful programmes, difficulties encountered and what companies learnt from the experience. Each case study involved interviewing the key stake holders from the section of the organisation participating in the study. These stake holders included an onshore manager and a work force representative. In addition, where available relevant documentation, reports (e.g. safety climate surveys) and statistics (e.g. accident statistics) were reviewed to evaluate the effectiveness of the programme.

A literature review (1) identified the principle features of behaviour modification programme and the elements associated with their effectiveness. The nine elements identified are listed below.

### **Ownership**

Is the programme owned and driven by management or management led with employee involvement and ownership?

### **Definition of safe /unsafe behaviours**

If safe and unsafe behaviours defined, are they specified by specialists or employees and based on the analysis of previous accidents, risk assessment expert judgment or observation?

### **Training**

Is the training focused at managers, observers or front line employees? What does the training include?

### **Observation**

Are the observations carried out by managers, front line staff or external experts? Do they focus on safe or unsafe behaviour, unsafe conditions or environmental conditions?

### **Establishing base-line performance**

Was baseline performance established before the intervention was carried out?

### **Feedback**

Is feed back provided face to face to the individual at the time, graphically to the entire platform or both?

### **Reinforcement**

How is reinforcement provided? Is it via management support, praise, encouragement, public recognition or financial reward?

### **Goal setting**

Are performance targets set and if they are, are they set by managers or front line staff?

### **Review**

Is the programmes effectiveness systematically reviewed on a regular basis?

An interview schedule was structured around the above features to ensure that all the important factors were discussed during the case study interviews and the results could be placed within a theoretical framework. The results of the interviews were analysed to produce an overall picture of the elements and features of the case study behaviour modification programmes and the organisational requirements that increased the likelihood of success.

## **6. Case study results**

The results of the four case studies are presented below. The findings are classified based on the features of behaviour modification programmes identified in the literature review(1). The impact of the programme on safety performance and the learning points identified are also described.

## **7. Time Out For Safety (TOFS) BP Amoco's Andrew platform**

This case study describes the Time Out For Safety (TOFS) technique developed on BP Amoco's Andrew platform. TOFS is designed to encourage all employees to stop any operation if they are unsure about anything or have concerns about safety . It also aims to encourage employees to take more ownership for their own and others safety.

### **7.1 Introduction**

The Andrew drilling crew developed Time Out For Safety prior to platform hook-up. The impressive safety performance of the drilling crew on the Andrew (one LTI in the entire drilling programme) has been partially attributed to the use of TOFS. In the light of this success, BPAmoco has included Time Out For Safety (TOFS) in their Safety Behaviour Tool Kit and promoted the technique across the BPAmoco federation.

### **7.1.1 What is Time Out For Safety?**

Mr Mike Simpson, the Santa Fe drilling manager for the Andrew , is credited with having the idea for TOFS. The concept was initially presented to the Andrew work force at an away day prior to installation hook-up. Initially TOFS only appeared to be relevant to drilling operations because it was designed to operate in a drilling context, where team members work closely together and all team members need to have a clear understanding of what is happening. In contrast, production teams tend to be more dispersed and communication tends to occur over a longer time-scale (hours versus minutes). despite these differences, it became clear that TOFS had a wider application and was adopted by the entire platform six months after platform commissioning.

One of the most distinctive features of TOFS is its simplicity. The technique provides team members with a mechanism to stop any operation if they are uncertain about anything or have safety concerns. Employees 'call a TOFS' by making a T sign with their hands, this signal is useful in noisy environments where it can be difficult to hear colleagues. The technique provides a medium to promote this positive behaviour, which was encouraged before the advent of TOFS. The technique makes it clear that employees are able, and in fact expected, to stop a job if they feel this is necessary.

### **7.2 Ownership**

Initially, TOFS was seen as solely relevant to the drilling crew due to the nature of their operations i.e. dynamic and close team working. It took over six months before the remainder of Andrew personnel adopted TOFS. The process is now owned by all personnel on the platform and continued to be used after the main drilling programme was completed.

### **7.3 Definition of safe/unsafe behaviours**

TOFS does not define the types of unsafe conditions or acts to be observed. It does list a range of situations where it is appropriate to call a TOFS. Appropriate situations include; when there is a change of plan, an unscheduled event, incomplete understanding, an observation with a safety impact, a need to pass on information critical to the job, emergence of a previously unidentified risk or hazard, need to ask for help. On the Andrew platform, TOFS is used alongside DuPont's STOP programme, which defines broad categories of unsafe acts and conditions.

### **7.4 Training**

Initially the drilling crew promoted TOFS during a platform meeting on the Andrew. They gave presentations to explain what TOFS is and how it should be used. Safety representatives were also given information about TOFS and they were encouraged to promote its use on the installation. TOFS training is also included in onshore inductions for all new platform employees.

Training involved a 20-30 minute presentation given by supervisors during their weekly toolbox talks and presentations were given at onshore inductions. This training outlined the principles behind TOFS, how to call one and what to do if someone calls a TOFS. It also identified situations where using a time out would be appropriate. The training countered the objection that front line employees already stop the job if anyone has concerns, by presenting participants with a recent accident that would have been prevented if a TOFS had been called. Survey results which indicated that front line staff did not always stop the job, even if they were concerned about safety, were presented to demonstrate the need for TOFS. A number of videos and other training materials have now been developed.

### **7.5 Observation**

TOFS, unlike other behaviour modification programmes, does not aim to increase the number of safety observations made by employees. It is designed to enable front line employees to act if they observe an unsafe condition or if they have any safety concerns. The system is different from other systems such as STOP, which focus on the behaviour of people, while with TOFS the job is stopped not a person.

### **7.6 Establishing baseline performance**

Baseline levels of the frequency with which employees stopped the job were not established before the introduction of TOFS. The results of an attitude survey indicated that front line staff had a different perception from their supervisors about front line employees' willingness to stop

the job for safety reasons. The results suggest that front line staff were inhibited about stopping the job for safety reasons.

### **7.7 Feedback**

The individual who calls a TOFS is given a positive feedback for their actions. The team listens to the individual's concerns, discusses the job, and agrees the actions required to ensure that the job is completed safely. Supervisors and managers encourage front line staff to call a TOFS by reacting positively and leading by example. Senior management demonstrated their commitment to TOFS by shutting down the platform for a TOFS. Important TOFS may be recorded and distributed to promote the effectiveness of the programme and highlight potential risks.

### **7.8 Reinforcement**

An employee who calls a TOFS is given reinforcement through praise and thanks from their team and their supervisor. The OIM and senior management reinforces TOFS by promoting it and encouraging individuals to use the TOFS system. Occasionally financial rewards are given to people who have called a TOFS at a critical moment and thus prevented an incident or injury.

Senior management provide reinforcement for TOFS by showing their commitment at critical moments. For example, a shut down was allowed to over-run because employees had called a number of TOFS. If managers had tried to complete the shutdown within the initial time scale, employees may have believed that they wanted them to stop calling all these TOFS and get on with the job. In the drilling industry it is important that the operating company give their support to the programme by counting a TOFS as productive time and not downtime. It is less likely that drilling crew members would call a TOFS if it was seen as downtime.

### **7.9 Goal-setting**

There is no goal setting with TOFS. In fact, it would go against the underlying philosophy of TOFS to set goals because it is designed to give front line employees the authority to call a TOFS whenever they feel it is necessary. If a target number of TOFS were set, it would undermine the credibility of TOFS. In addition, an important feature of TOFS is that they are not recorded, therefore it would not be possible to measure performance against targets. It is argued that not recording TOFS makes it easier for people to call a time-out, as they are not concerned about any repercussions of their actions.

### **7.10 Review**

The programme has not been systematically reviewed. The lack of review appears to be partially due to the fact that the system does not generate measurable information. A systematic review of TOFS is not seen as necessary because it is recognised as a good idea and is reasonably cheap to implement.

### **7.11 Effects on Safety Performance**

It is difficult to establish the impact of TOFS on safety because it was introduced before platform hook up and therefore there is no accident data prior to its introduction. The Andrew has an impressive safety record, as there has only been four lost time accidents since hook up.

The main behavioural effect of TOFS is enabling all platform personnel to stop any operation for safety reasons. The programme states that personnel have a responsibility to stop a job if they believe it is unsafe. Andrew platform management believe that TOFS has been instrumental in developing the installation's safety culture by increasing front line employee ownership for safety.

### **7.12 Learning points**

The implementation of TOFS on the Andrew platform is regarded as a success by senior managers and the OIM. Features unique to the Andrew platform appear to have been important for the success of TOFS. In the first instance, the idea appears to have arisen out of potential difficulties associated with the minimal manning, facilities (eg. only one crane) and difficult drilling conditions on the Andrew. The effectiveness of TOFS was enhanced by the open, trusting and involving culture present on the Andrew before hook-up. In addition, the Andrew selection process was designed to select personnel with good interpersonal skills and a willingness to adopt the new ways of working. The effectiveness of TOFS on the Andrew was

influenced by this installation's high level of safety culture maturity (see Fleming and Lardner , 1999(2) ) prior to the introduction of the system.

While factors unique to the Andrew , such as the existing positive safety culture, contributed to the success of TOFS , it does not mean that it could not be implemented on other installations. In fact, as number of other installations have already successfully implemented TOFS. The requirements for successful implementation are management commitment and leadership, support from super visors and an open and trusting culture. These attributes could be developed through the use of other interventions such as ASA or STOP .

The simplicity of TOFS is part of the appeal , but it is also its Achilles' heel, because people often think that it must be more complicated. Others reject it on the basis that personnel already do stop the job if they have any concerns. It is therefore useful to establish front line workers' willingness to stop the job prior to the introduction of TOFS, as this evidence can be used to convince personnel of the need for TOFS. The evidence can be obtained through an employee survey or the examination of accident investigations in order to identify the number of accidents with witnesses , indicating that someone could have prevented the accident.

The full impact of TOFS on the Andrew 's safety culture only became apparent over time, because it takes an extended period for something to become second nature to the majority of platform personnel. Front line employees' ownership for safety increases and the safety culture becomes stronger the more they use the system.

### **7.13 Summary**

TOFS was developed by the drilling crew on the BP Amoco's Andrew platform, in response to some of the challenges they were facing. Over time it has been adopted by the entire platform and more recently by other installations. TOFS is effective because it is designed to modify an important behaviour of front line employees, namely stopping the job if they have any concerns. It is simple , as it does not require employees to complete forms , which also reduces anxiety about colleagues being reprimanded for their actions . The successful introduction of TOFS on the Andrew was partially due to the installations high level of safety cultural maturity.

## **8.0 Advanced Safety Auditing (ASA) BP Amoco's Miller Platform**

This case study describes BP Amoco 's Advanced Safety Auditing technique, which is designed to enhance the ability of line managers and supervisors to engage in positive interactions with workers about safety , recognise and encourage safe behaviour , and identify and gain commitment to behavioural change . Advanced Safety Auditing also provides an opportunity for line managers and supervisors to visibly demonstrate safety leadership.

### **8.1 Introduction**

In 1997 a number of BP Amoco' s offshore production platforms implemented DU Pont's STOP behavioural safety programme . Around the same time , BP Amoco's senior management had been introduced to Advanced Safety Auditing (ASA) techniques , and recommended their adoption across their North Sea facilities . The Miller platform introduced ASA approximately six months after implementing STOP.

#### **8.1.1 What is Advanced Safety Auditing?**

Advanced Safety Auditing was originally developed in the UK coal mining industry. Three principles underpin ASA : accurate observation, effective two -way communication and individual goal setting . ASA training requires that auditors must demonstrate safety is of equal importance to other work priorities: if safety conflicts with other priorities, safety must always win. Audits involve observing other people at work , and focus on behaviours . Auditors attend to those aspects of work which are critical to safety , using all of their senses. Following a period of observation , the auditor initiates a conversation , using an open questioning technique. Ideally the auditee should be speaking for at least 75% of the time, whilst the auditor listens carefully. The aim of this form of conversation is to guide the auditee to recognise any hazards and unsafe behaviour, and formulate solutions. Good work performance and safe working practices are commended. The final very important element of the ASA process is to gain commitment to what the auditee will do in the future to ensure safe working and confirming any actions necessary to the auditor. Fellow-auditors are encouraged to share learning from ASA's with as wide an audience as possible.

## **8.2 Ownership**

When first introduced , ASA was intended as a tool for managers and supervisors, and was implemented in a top-down fashion. Core platform staff were informed about ASA , and what to expect.

Since then , it has become apparent that the ASA approach contains tools which are useful to everyone, and involvement has been widened by providing ASA training for , safety representatives , Health , Safety and Environment Advisors and the majority of Miller core platform staff.

Furthermore , it is recommended that Advanced Safety Audits are conducted in pairs to give confidence, support and an opportunity for Auditors to act as a positive role model. Any member of platform staff may be asked to accompany a trained auditor, which provides a further opportunity to involve others , helps with hazard -spotting and allows demonstration and coaching of ASA techniques.

## **8.3 Definition of safe/ unsafe behaviours**

ASA does not define the types of unsafe conditions or acts to be observed. On the Miller platform, it is used alongside Du Pont's STOP programme, which defines broad categories of unsafe acts and conditions.

## **8.4 Training**

To become accredited ASA trainers, a number of BP Amoco personnel initially attended a five day train - the - trainer course. Subsequently one-day training courses were delivered for managers and supervisors at an onshore industrial training facility. The first part of the day covers ASA principles and methods, observation and feedback skills and discussion of examples of typical unsafe acts and conditions. Course delegates practice formulating the type of open questions they would ask , in response to slides of realistic work stations . The afternoon consisted of conducting a mock Advanced Safety Audit in work areas at the training site.

Subsequently the platform Health, Safety and Environment Advisors were also trained as trainers, and delivered half day courses for core crew on the platform which covered observing behaviour, how to intervene and use questioning techniques to start a conversation and how to gain commitment to any behavioural changes required.

## **8.5 Observation**

Advanced Safety Audits are typically conducted in pairs. During an audit, observations are made of people at work and a conversation started . The auditors are expected to introduce themselves , explain that they are conducting an audit , and use a series of open questions to gain an understanding of the nature of the work taking place. Through more open questioning , the auditor asks about the nature of any risks and hazards present, possible injuries and how this can be prevented. If a requirement for a change in behaviour is identified , the auditor seeks a commitment from the auditee to change their behaviour in future.

If a need for preventative follow-up action is identified , the auditor may raise a STOP card or initiate action via other platform systems.

## **8.6 Establishing baseline performance**

Baseline levels of behavioural safety were not established prior to the introduction of Advanced Safety Auditing.

## **8.7 Feedback**

During an Advanced Safety Audit , face-to-face, immediate verbal feedback about their observations is provided at the same time by the auditor . One member of platform staff commented that the non -confrontational ASA style led to his acceptance that his aims are to help improve safety. Consequently he did not tend to react aggressively or defensively, as he had when the STOP programme was first introduced.

## **8.8 Reinforcement**

At the time of the Advanced Safety Audit, safe behaviour is commended by the auditor, and encouragement given to consider how to reduce risk. If required, the auditor will seek an individual commitment to change. Auditees are thanked for giving up their time to discuss safety. Reinforcement is also present when auditors are observed implementing any follow up actions which result from the ASA conversation.

## **8.9 Goal- setting**

A goal of two Advanced Safety Audits by senior management per offshore trip has been set. If an audit reveals a need for change, the auditee is encouraged to identify their individual goals for behavioural change, and commit to action. It is expected that an auditor will follow-up to establish if the agreed actions have been taken.

From time to time the STOP programme may run a campaign about particular types of unsafe behaviour, which auditors conducting Advanced Safety Audits will be expected to include in their observations.

## **8.10 Review**

The number of Advanced Safety Audits conducted is reviewed regularly against targets. To date the effectiveness of the ASA programme has not been systematically reviewed.

## **8.11 Effects on safety performance**

By mid November 1999, the Miller platform had not had a lost-time injury for over 800 days, and had no high-potential incidents for over 400 days. It is not possible to isolate the contribution Advanced Safety Auditing has made to this commendable safety and organisation initiatives had been introduced which may also have had a positive impact on safety, for example STOP, Time Out For Safety, new risk assessment practices, the development of self-managed teams.

The main behavioural effects of ASA were described as its success in changing management and supervisory behaviour, by giving them a simple tool to engage in constructive, non-threatening conversations with their work force about safe and unsafe behaviour, and wider aspects of safety. The positive style of interaction and the commitment gained is believed to have had a knock-on effect on safe behaviour across the platform.

Miller management judge that ASA has had an important role in increasing safety awareness, and combating complacency. By receiving ASA training, the safety representatives' role has also been enhanced.

## **8.12 Learning Points**

The implementation of ASA on the Miller platform is regarded as a success by senior managers, the OIM, and health and safety advisors. Its appeal is its simplicity, and how it has enabled management to have positive discussions about safety improvement with front line employees, and thus demonstrate visibly their commitment to improving safety.

From a management perspective, the most important components of ASA are seen as the non-threatening questioning techniques, which allow the auditor to probe more deeply into everyday occurrences. With hindsight, pre-ASA audit tours seem relatively superficial. In addition, the train-the-trainer approach allowed ready cross fertilisation of experience between trainers, and identification of internal staff with the enthusiasm and ability to become ASA champions.

Rather than introducing ASA within six months of STOP's launch, which caused some confusion, Miller management suggest either (a) integrating STOP and ASA into one programme, and training only a proportion of staff in ASA, who can then coach others or (b) launching STOP, and once these habits have become ingrained, using ASA to further develop STOP behaviours.

One employee commented that it is difficult to conduct an ASA on a close colleague. Following the ASA style of questioning seemed unnatural when applied to a person whose work you are very familiar with, and he concluded that ASA worked best with less familiar colleagues.

### 8.13 Summary

ASA has provided an additional means for Miller management to make a visible, tangible commitment to safety, by conducting ASA's themselves, providing ASA training for most of their work force and opening up their own managerial work practices by inviting all staff to conduct an ASA on them.

What began as a management tool has been widened to include all core employees, and ownership of ASA has thus been extended. On Miller, STOP and ASA were implemented in parallel with self-managing teams, and these developments are seen as being mutually supportive.

## 9.0 Observation based programme - STOP

This case study describes how in response to employee feedback, Conoco relaunched Du Pont's STOP programme, which they had implemented five years previously. A recent STOP campaign to maintain safety during a platform shutdown is also described.

### 9.1 Introduction

In the early 1990's Conoco introduced the STOP (Safety Training Observation Programme) programme on a number of their gas production platforms in the Southern North Sea. STOP is designed to encourage safety observations and conversations at the work site, and allow the identification and correction of unsafe trends in behaviour or working conditions. Training and supervisor-led coaching is used to introduce employees to the five-step STOP "safety observation cycle", which involves:

1. **Decide** to make observations
2. **Stop** or pause during other work, to make time for observations
3. **Observe** people at work, and working conditions to identify unsafe behaviour or conditions
4. **Act** on observations, for example speaking to a colleague observed working safely or unsafely, and providing encouragement or taking corrective action as required
5. **Report** observations and corrective actions on using a pocket sized STOP card, which is then handed to a supervisor for review, collation and any further action required. The card is signed by the observer, however an important principle of STOP is that the identity of the person (s) observed remains anonymous.

STOP training suggests several key areas for observation, namely how people react when observed, use of personal protective equipment, people's physical position, tools and equipment and procedures/orderliness. These key observation areas are repeated on STOP cards, which are used to record observations.

About 3 years ago feedback from the work force indicated that STOP had become stale. Furthermore, it was evident from near miss reports that a high proportion of incidents occurred in the presence of witnesses, and that a tool was needed to enable people to intervene and prevent accidents. Management agreed to revitalise STOP, which was consistent with a prior commitment to minimise the number of new initiatives. During regular crew-days, senior managers solicited view on the aspects of STOP which required improvement. A number of difficulties with STOP were identified. STOP was initially introduced in a top-down fashion, and workers were required to complete 2 STOP cards per trip offshore. In some instances this quota led to poor quality or fictitious cards being raised. Furthermore, when STOP was launched, there was a widespread perception amongst the work force that whilst principles behind STOP were laudable, the training materials were condescending and overly simplistic. This acted as a major "turn-off". There was also a concern that management and supervisory interventions during STOP tours were largely negative, and had to be turned into a more positive interaction which promoted safety.

To tackle these concerns, a STOP relaunch was planned. The relaunch had two elements. First a behavioural consultant was used to design and deliver a series of one-day "STOP for LEADERSHIP" training courses for all 120 Conoco Managers, supervisors and safety representatives. Revised training materials were used to teach positive interaction skills and reaffirm the principles of the STOP system. It was considered particularly important to include

the first line supervisors in this training programme, as they were the leaders who would teach STOP principles to their staff. The second element of the relaunch was provision of basic level "introduction to STOP" training for all new recruits, delivered by supervisors who also conducted a guided STOP tour.

## **9.2 Ownership**

Two of Conoco's core safety management principles are (a) safe working is a condition of employment and (b) employee involvement is essential in safety management. When the STOP programme was initially launched, it was therefore expected that everyone would participate, and this expectation was coupled with a prescriptive requirement for every employee to complete two STOP cards per trip. However, managers and supervisors initially accounted for the majority of STOP programme participation. The mandatory requirement has now been relaxed, and since the relaunch participation by core platform employees has increased significantly.

## **9.3 Definition of safe/unsafe behaviours**

STOP cards define broad categories of unsafe behaviour, which are explained during training, and which guide the observer. However, the categories are not intended to limit the observer's attention exclusively to these behaviours. For example, STOP cards are occasionally also raised about environmental issues and waste management. The reverse of the STOP card is designed to allow a freehand description of any unsafe behaviours or conditions observed. If a trend is noted in the unsafe behaviours being observed, a campaign can be mounted to focus observations and interventions on this specific aspect of behaviour, and thus reduce its incidence. Within the freehand section of the card there is provision for reinforcing positive aspects of the behaviour observed, thus providing positive feedback to individuals and groups about their work habits and practices.

## **9.4 Training**

Managers, supervisors and safety representatives receive a one-day "STOP for LEADERSHIP" training course. Revised training materials are used to teach positive interaction skills, and reaffirm the principles of the STOP system. It is considered particularly important to include the first-line supervisors in this training programme, as they are the leaders who teach STOP principles to their staff.

Training for employees is delivered primarily by supervisors and safety representatives on board the platform, using a training package which includes booklets and videos. Supervisors demonstrate the STOP process by taking trainees on a STOP tour.

## **9.5 Observation**

All employees are encouraged to use the STOP process to make observations on safe/unsafe behaviour or unsafe conditions, and take immediate action to prevent a recurrence.

## **9.6 Establishing baseline performance**

The STOP system does not systematically measure baseline levels of safe behaviour. This is regarded as the main weakness of the system by the Conoco senior manager with specific accountability for occupational safety and health. It is not based on a behavioural model derived from local offshore incidents, but extensive experience in Du Pont's industrial plants elsewhere.

## **9.7 Feedback**

A STOP observer is expected to provide face-to-face feedback on their observations as soon as it is safe and practicable for the person being observed to stop work. Thereafter a STOP card is completed, and typically then handed to the observer's supervisor, and subsequently collated by the platform safety advisor. All STOP cards submitted within the previous 24 hours are discussed at the daily OIM meeting, and any further actions required by the supervisor or maintenance department are agreed. Where a STOP card has been submitted which requires further action, an effort is made to feed back to the originator the result of any action taken.

Platform STOP cards are reviewed monthly by the platform safety adviser, and a report generated which includes STOP statistics (numbers and types of cards submitted) together with a summary of important trends or themes. These reports are discussed at monthly safety meetings, highlighted at the OIM's monthly crew brief and displayed on notice boards.

## 9.8 Reinforcement

When a STOP observation takes place, the observer is expected to encourage safe behaviour via praise, thanks and encouragement. If unsafe behaviour is observed, the observer attempts to establish from the person observed why they are behaving unsafely, and use this understanding to gain commitment to prevent a recurrence. On some platforms, approximately 40% of STOP cards report safe working, helping to counter a purely negative focus on unsafe acts and conditions.

Reinforcement is also provided by the OIM, who acts on data generated by STOP, and highlights trends. A "STOP card of the month" is selected from amongst the best submissions, and the author awarded a £50 voucher and a small gift.

Visiting onshore managers are also expected to provide reinforcement by asking about the operation of the STOP programme.

## 9.9 Goal-setting

If trends are spotted in the STOP data, the platform safety advisor or OIM may set goals for improvement, or decide to run a campaign. A recent campaign is described later in this report.

## 9.10 Review

STOP cards are reviewed daily at the OIM's meeting, and monthly trends are collated by the platform safety adviser. An annual safety focus plan also addresses some aspects of the STOP programme.

The operation of the STOP programme was the subject of a fundamental review three years ago, which was over five years after its initial launch. Following the relaunch, the views of the managers, supervisors and safety representatives who attended the one-day "STOP for LEADERSHIP" training courses were sought. They reported having gained a better understanding of how to make an intervention and how this impacts on them, more involvement in STOP tours and that they were now cascading the training lessons to others. There is now a commitment to review the programme every two years.

## 9.11 An example of a STOP campaign

One of the Conoco installations which implemented STOP is the Viking Bravo platform complex. Viking Bravo is the gas transportation hub and accommodation for 22 normally unattended installations in the Southern North Sea, and has approximately 90 people on board.

In late summer 1999 the Viking Bravo installation was approaching a four-week major shutdown, which would involve a large number of new contractors coming on board. OIM Brian Gordon and his management team were concerned about the potential for accidents, and decided to enlist the support of the core platform crew in keeping the shutdown activity safe. Brian delivered a series of pre-shutdown presentations highlighting his concerns, and asking all core platform crew to use the STOP process to monitor safe working practices. Brian asked that everyone increase their STOP activity and submit more STOP cards, to allow analysis and targeting of any trends identified. During the shutdown period, the number of STOP cards submitted increased three-fold, and several themes were identified which were fed back to the workforce. One theme concerned use of tools which were in an unsafe condition. Core crew were asked to conduct a STOP observation on their own or a colleague's toolbox, which led to the replacement of worn and unsuitable equipment. The shutdown was completed without the anticipated downturn in safety performance.

## 9.12 Learning points

Through the launch and relaunch of the STOP programme, Conoco have learned valuable lessons that they wish to share with other organisations seeking to improve behavioural aspect of safety. If a behavioural safety programme is introduced in a top-down fashion, with a quota of observations being imposed on employees, this can lead to employee resistance and in some instances poor quality or fictitious cards being raised. Condescending or simplistic training materials can also act as a major "turn-off". Conoco have learned that a relatively simple training intervention can turn around management and supervisory STOP interventions which were perceived as largely negative in their focus, into more positive interactions which promote safety.

Viking Bravo OIM Brian Gordon recommends continual monitoring of the number of STOP cards returned. If the number of STOP cards submitted is low, it is not possible to make sense of the data, spot trends and take preventative action. Furthermore, to maintain quality observations, Brian regards two factors as vitally important (1) STOP card returns are none mandatory and (2) encouragement and feedback by management is maintained.

Charlie Ross, the Conoco SEQA co-ordinator recommends that other organisations considering a behavioural safety programme research the packaged solutions, and help their employees design their own programme. A programme designed by employees should draw upon the research material gathered, and be combined with in-house baseline data on behavioural aspects of safety and current perceived safety concerns within the organisation.

### **9.13 Effects on safety performance**

In recent months OIM Brian Gordon has noted a downward trend in his accident statistics, but is cautious about drawing any conclusions without longer-term data. During the recent STOP shutdown campaign the number of incidents halved, however it is not possible to directly link this improvement to the STOP campaign.

Behaviour has changed as it is evident that following the relaunch the number and quality of STOP cards have improved, and these are discussed on a daily basis.

### **9.14 Summary**

Conoco management regard the relaunch of STOP as a success. Managers and supervisors' participation in the programme has been enhanced, and they believe they have now enlisted the core crew's acceptance of STOP. Core crew now understand that via STOP they can make a real difference to safety with very little additional time and effort.

## **10. Care Plus - Shell's Cormorant Alpha platform**

**This case study describes Care Plus, which is an employee-led safety process that aims to improve employees' safety behaviour through peer observation, goal-setting and feedback. The programme is based on a proprietary system developed by a consultancy company that assisted in the development and implementation of the Care Plus system.**

### **10.1 Introduction**

The initial idea about implementing a behaviour modification programme originated from one of the Platform Offshore Installation Managers on the Cormorant Alpha as a method to improve safety from the plateau performance being identified with the tools then in use. Initially contact was made with a service provider who sent promotional videos explaining their programme and carried out a feasibility study on the platform. At this stage a combined group of platform personnel from Management along with Workforce volunteers attended a behaviour modification conference and visited a number of other industrial sites using the effectiveness of behaviour modification programme. The volunteers were impressed with the effectiveness of behaviour modification and the enthusiasm of those involved but did not feel that the system being offered by this provider was appropriate for the offshore environment. Attendance at further conferences identified other providers who had assisted other offshore operating companies in setting up behaviour modification programmes and the Cormorant Alpha Asset manager organised for one provider to give a presentation about his approach to the offshore workforce. The result of the offshore presentations was the provider was asked to design a programme for the Cormorant Alpha that was put to the workforce as a proposal and subsequently endorsed for implementation.

#### **10.1.1 What is Care Plus?**

Cormorant Alpha staff describe Care Plus as a behavioural intervention system owned and driven by the workforce. It has also been referred to as a full behavioural intervention, as it involves peer observation of specified safety behaviours, face to face feedback, goal setting by the workforce and graphical presentation of performance against targets.

Care Plus is managed by a steering committee, which is made up of workforce employees who volunteered to participate in the programme. In effect there is one steering group across the four platform shifts with communication facilitated through the use of IT and quarterly review meetings onshore as a complete steering committee. The steering group members initially

received training to develop the skills and knowledge required to run a behaviour modification programme. The steering group specified the behaviours that they were going to measure and defined what constituted safe and unsafe behaviour. Once the behavioural measure had been finalised observer training was provided for 35 volunteers. The training was delivered offshore over two shifts by the consultant that designed the programme. Baseline line data was collected following the completion of observer training and used as the basis for the participative goal setting exercise, where the steering committee led the entire workforce in setting targets for the level of safe behaviour they aim to achieve over the next three month period. Supervisors were excluded from the steering group, but they support the process by ensuring that observers have time to carry out observation trips. The results of the observation trips are summarised regularly and performance against targets is presented graphically.

## **10.2 Ownership**

This programme is owned and managed by platforms workforce with the support of local and senior management. A specific aim of the programme was to develop employee ownership and involvement in safety. Employee ownership was developed by involving them from the beginning, including them in the selection process and giving them the option to stop the programme at any point. The programme appears to be well established, as it does not appear to rely on critical individuals. The programme has continued to function successfully even though a number of steering group members no longer work on the installation.

## **10.3 Definition of safe/unsafe behaviours**

The behaviours included on the form used on the observation schedule were selected on the basis of expert judgement of the steering group members combined with an analysis of previous accidents and first aid cases. The steering group defined criteria for six aspects of safety, such as housekeeping and manual handling. They clearly specified and described what constituted safe and unsafe behaviour for each item on the observation checklist, in some instances photographs were provided to illustrate what was safe or unsafe.

## **10.4 Training**

The workforce employees who volunteered to be involved in the initiative received two 2-day training sessions, three months apart. The first training session covered the theoretical background to behaviour modification, elements of this company's programme, observation and feedback skills including transactional analysis, data analysis and project management techniques. The second training session focused on team building and the development of their behaviour observation checklist.

The consultant who designed the programme travelled offshore to provide the training for the observers. Initially the training was provided over two days and the 35 volunteers were trained in groups of five or six at a time. Observers received input on the theory behind behaviour modification, how to carry out observations, give feedback and reinforce safe behaviour. Due to operational changes, a number of these 35 volunteers left the platform and therefore new volunteers needed to receive observer training. In order to increase the effectiveness of this process six of the steering committee attended a two-day "train the trainer" course so that they could train new observer volunteers on the platform with training redesigned so that it could be provided by the workforce. It was split into three 2 hour sessions and trainees were accompanied on their first three observations followed by an accuracy/consistency check.

## **10.5 Observation**

The steering group split the Cormorant Alpha platform into ten separate areas and specified the number of observations to be carried out in each area during a two-week period. Observers are given areas of the platform to carry out their observations. The trained observers carry out observations at varying intervals during their offshore trip. In general observers conduct the observations on their own, but more recently they have been encouraged to bring a work colleague along, so that they can be involved in the process.

The Care Plus programme focuses on behaviour but unsafe conditions are included if they are the result of previous unsafe behaviour, i.e. poor housekeeping. Observations are carried out on a 'no name no blame' basis. The observation checklist provides two categories for observers to rate behaviour, these are safe and unsafe. A behaviour is marked as unsafe if it does not conform to the definition described in the observation checklist, otherwise it is marked as safe. Inter-observer accuracy and consistency checks are carried out frequently by two observers independently observing the same operations and comparing their results.

## **10.6 Establishing baseline performance**

The newly trained observers carried out baseline observations for three months before the first goal-setting meeting. The baseline data was used to assist in setting realistic targets for the percentage safe observations. Instead of setting an average target percentage for all behaviours, employees were able to set a target for each behavioural category on the observation checklist.

## **10.7 Feedback**

During an observation trip, the observer gives face-to-face, immediate verbal feedback to the person they have observed. When giving feedback the observer focuses on the positive first and then asks them if they are aware that they are behaving in an unsafe manner. They then discuss the reasons why the person is behaving in this way and encourage them to behave more safely in the future. If their behaviour is due to factors beyond their control, e.g. platform design, then this information is fed back to the OIM.

Observations are recorded anonymously and only summary results of the percentage of safe behaviours observed compared against targets are recorded. These results are presented graphically at a variety of sites across the platform (e.g. the mess hall and the locker room). Care Plus observers give presentations at safety meetings and publish a newsletter to keep people informed about progress or new initiatives. In addition, the steering group has set up presentations on the Platforms Information TV Channel, broadcasting current performance against targets, any important trends and other safety issues which have been highlighted.

## **10.8 Reinforcement**

The observer provides reinforcement for safe behaviour at the time by praising the individual for their safe behaviour before mentioning any unsafe aspects. The observer also explains why a specific behaviour is unsafe and the potential consequences of such behaviour (e.g. hearing loss). The observers have been trained to be assertive but not aggressive when they provide feedback, which is important if the encounter is going to be reinforcing for the transgressor.

Senior management provides reinforcement for the programme by giving support and by accompanying an observer on a trip when they visit the platform. The OIM attends weekly steering group meeting by invitation. The programme has been promoted across Shell Exploration and Production and publicly praised/supported by the Senior managers who have viewed the programme.

## **10.9 Goal-setting**

A series of participative goal setting sessions are held every three months. A number of sessions have to be held to enable the entire workforce to attend. The sessions are held by department and are chaired by a Care Plus committee member. The overall results achieved in the previous three months are presented and attendees discuss these and agree new targets. In general, each target setting meeting has led to increased targets because they have achieved the targets they set themselves in the previous quarter. On the one occasion when they did not reach their target, the workforce discussed the issue, and identified the most likely cause and maintained the same target for the next period.

## **10.10 Review**

The Care Plus steering committee holds quarterly review meetings onshore to discuss performance and address any issues that have arisen during the previous quarter (e.g. loss of observers due to staff leaving the installation). The effectiveness of Care Plus is constantly reviewed but as it has only been in operation for twelve months it has not been possible to carry out a systematic review to establish its success in improving safety.

## **10.11 Effects on safety performance**

Accident rates have reduced since the introduction of Care Plus in January 1999. Statistical analysis of the accident statistics reveals that there has been a significant reduction in first aid cases, however the reduction in lost time accidents is not statistically significant. This lack of statistical significance is partially due to the low number of lost time accidents experienced before the introduction of Care Plus and the short time since the programme started.

It is important to note that the first aid frequency rate has been criticised as a safety performance indicator. It is possible that reductions in the first aid frequency rate are due to a

reduced level of reporting. This issue was raised with the medics on the Cormorant Alpha and they strongly argued that this was not the case, as they have found that employees are now even more willing to report very minor injuries or go to the medic to be examined even if no injury has occurred.

The Care Plus committee conducted a short safety attitude survey (100 statements) after the baseline data was collected and they repeated the survey six months later. They found that safety attitudes on the installation had significantly improved after the introduction of the Care Plus programme.

Cormorant Alpha asset management judge that Care Plus has had an important role in increasing safety awareness, and combating complacency.

#### **10.12 Learning points**

The implementation of Care Plus on the Cormorant Alpha platform is regarded as a success by the workforce, committee members, OIM's and senior managers. Its appeal is the employee-led nature of the programme. It has enabled workforce staff to take a proactive role in safety management and has succeeded in reducing the number of accidents experienced by the workforce.

A member from the Care Plus committee suggested that Care Plus would not have succeeded a number of years ago because they were not ready. It was suggested that a certain level of cultural maturity is required before this type of behavioural intervention is likely to work. Before the introduction of the Care Plus programme, an empowerment initiative had been undertaken. This initiative developed trust between managers and employees, it gave more responsibility and freedom to workforce staff and managers became more comfortable with work force run initiatives. One employee suggested that the empowerment initiative taught them how to become involved with management via dialog and discussion, which enabled them to maintain control over how the programme was managed.

Cormorant Alpha employees and management identified a number of factors that they think are critical to the success of the programme. They argued that it was important to involve workforce staff from the beginning and to include them in selecting the approach to be taken. Both management and employees indicated that getting right external support was crucial. Managers believed that it was important to give the committee control over the timing of the launch and telling others about the process. During the early stages of the programme, there was a lot of interest from senior managers from other assets who wanted to know if the process was a success and requests to give presentations about the programme. Initially the Care Plus steering committee was unwilling to give presentations about the programme as they felt it was too early. They appreciated their manager's support when they refused to give presentations, as it gave them a feeling of control. Managers also had to control their and others expectation for early reduction in accident rates. They needed to have trust in the process and see it as a long-term programme.

The Care Plus programme has had to overcome a number of difficulties encountered since the programme started. The main difficulty has been the rate of staff loss, which has led to a high turnover rate in steering committee members and observers. This has increased the amount of training required and a need to develop new steering committee members. In addition, there have been changes in senior managers within the asset. Onshore managers indicated they were having difficulty demonstrating to those outside the asset that the Care Plus programme is improving safety on the Cormorant Alpha. One reason for this difficulty is the platform's use of the lower level safety performance metric (i.e. First Aid cases) from other assets.

The steering committee indicated that they would do some things differently if they were to start the process again. They would only have four main behavioural categories instead of the six they selected because it makes observations trips time consuming and it is also difficult to observe some behaviours e.g. manual handling operations.

Senior managers and steering committee members agreed that management commitment was the most critical factor in ensuring the success of this behavioural initiative. Since Care Plus is an employee-led programme it was more difficult for managers to show commitment, as they were not involved in the day to day running of the programme. Managers demonstrated their commitment by listening to concerns or problems raised by the steering committee and committee members onshore to attend the quarterly review meeting, delaying important platform work so that observer training could be carried out and ensuring that staff are given the time to carry out the observations.

Asset management showed commitment by giving the group control over the time scale and not pushing them to embark on the process before they were ready. They also demonstrated their commitment by believing that the process would work and by not losing heart when progress was slow. It is important to note the time scale required to get this programme into operation. It appears that nearly two years elapsed from the initial idea to the official start of the programme and one year between selecting a provider and the first participative goal setting exercise. The programme has now been in operation for a year and while there has been a reduction in first aid cases, a significant reduction in lost time accident rates is likely to take longer.

### 10.13 Summary

Care Plus is a complex behavioural intervention, which includes all the major features of behaviour modification. There appears to be a strong sense of ownership for the programme among the workforce. The programme seems to have a momentum and life of its own because it has endured, although many of the initial volunteers and champions have left the platform. The acceptance of Care Plus by the majority of the workforce has been a major achievement.

The programme has been fully in operation for less than 12 months, yet there has already been a reduction in first aid cases. It is difficult to know what the long-term impact of this programme is going to be, but all the signs are that it will play a major role in achieving the goal of zero accidents. It is important to note that while Care Plus has been successful on the Cormorant Alpha it does not mean that it would be equally successful on other installations. An installation would need to be at a reasonably high level of cultural maturity for a programme of this nature to be successful. Although the empowerment initiative on the Cormorant Alpha before the introduction of Care Plus was important, it does not mean that empowerment is necessary for a behavioural safety intervention to succeed. The important criteria appear to be management commitment, trust between all staff and employees who are interested in safety and willing to take ownership of their own safety behaviour.

The table below provides an overall summary of the results obtained from the four case studies

Feature	TOFS	ASA	STOP	Care Plus	Comments
<b>Ownership</b>	Developed and initially used by the drilling crew. Rolled out to the rest of the workforce following the success achieved by the drilling crew.	Initially management-driven and top-down. Now extended to include most core platform staff.	Initially management-driven and top-down. Relaunched to gain acceptance by core platform staff.	Frontline staff were included from the outset. Once senior management approved the initiative, frontline employees took ownership, developed and implemented the process.	If the programme is going to be operated by frontline staff they must have a sense of programme ownership to ensure success.
<b>Definition of safe/unsafe behaviours</b>	Not defined.	Not defined.	Broad categories of unsafe behaviour and work conditions are described. Generic and not tailored for the offshore environment.	Defined by the steering group on the basis of expert judgement and analysis of previous accidents.	The definition of safety behaviours is not required by all programmes.
<b>Training</b>	The drilling crew made presentations to the entire workforce and supervisors gave 30-40 minute presentations to their team.	5-day train-the-trainer course. One or half-day courses delivered onshore or offshore.	1-day course for managers and supervisors. Other employees received regular instruction and coaching by supervisor, supported by training materials.	Two 2-day training courses for the steering group members and four 2 hour sessions for observers delivered offshore.	The more complex the behaviour modification programme, the greater the training requirement.

Feature	TOFS	ASA	STOP	Care Plus	Comments
<b>Observation</b>	Enables workers to act on their observations as opposed to encouraging them to make observations.	Principally focused on safe and unsafe behaviour.	Principally focused on safe and unsafe behaviour and unsafe work conditions.	Focuses specific on safe and unsafe behaviours that are fully defined in the observation checklist.	In general, observations focus on both safe and unsafe behaviour.
<b>Establishing baseline performance</b>	Not measured.	Not measured.	Not measured.	Baseline observations were carried out for three months before the official start of the programme.	Only one of the four programmes established a baseline. The lack of a baseline makes it difficult to establish effectiveness.
<b>Feedback</b>	Face-to-face, immediate verbal feedback when the person calls a TOFS	Face-to-face, immediate verbal feedback at time during audit.	Face-to face, immediate verbal feedback at time during observation. Monthly summary of trends.	Face-to-face, immediate verbal feedback at time of observation and graphical presentation of performance against targets.	All of the case studies used face-to-face feedback and one also used graphical feedback.
<b>Reinforcement</b>	Thanks, encouragement, praise. Occasionally spot prizes are awarded for calling a TOFS that prevent an incident.	For safe behaviour - thanks, encouragement, praise. For unsafe behaviour - coaching and commitment to behavioural change.	For safe behaviour - thanks, encouragement, praise. For unsafe behaviour - peer or supervisor coaching.	Safe behaviour is encouraged and praised while unsafe behaviour is discussed and the potential consequences identified.	Safe behaviour is reinforce through positive feedback from peers. Unsafe behaviour is discouraged by coaching.
<b>Goal-setting and preview</b>	No targets for the number of TOFS are set as the details of a TOFS tend not to be recorded. It is important that people do not feel they are reporting on their colleagues.	Where appropriate, auditees are encouraged to commit to behavioural change, which is followed-up to ensure implementation.	If trends are spotted in the STOP data, may set goals for improvement, or decide to run a focused campaign. STOP cards reviewed regularly. Programme is reviewed bi-annually.	Targets are set by the workforce every three months and are based on their performance in the previous quarter.	Goal setting was a core element of only one programme but STOP and ASA also set goals on occasion. Only one of the programmes had been systematically reviewed.
<b>Learning points</b>	The success of TOFS is due to its simplicity. Setting targets or recording TOFS is unlikely to be of benefit. For TOFS is unlikely to work supervisors need to believe that frontline staff do not always stop the job if they feel it is unsafe.	Value of non-threatening questioning techniques. Consider integrating with other observational techniques.	Continually monitor volume and quality of STOP cards. Research behavioural safety techniques, and help employees design their own programme.	Employee involvement in safety can be achieved, if the programme is implemented correctly and the installation has reached an appropriate level of safety culture maturity.	Behaviour modification programmes can be used to develop employee involvement. It is important to actively monitor performance and to understand the strengths and weakness of the programme being used.
<b>Effects on Safety Performance</b>	Impossible to quantify. Has changed workers' willingness to stop the job if they have any concerns, with an anticipated knock-on effect on safety.	Impossible to quantify. Has changed management behaviour, with an anticipated knock-on effect on safe behaviour on the platform.	Difficult to quantify. Use of STOP campaign during recent shutdown helped avert potential decline in safety performance.	Accident statistics show that safety has improved since the introduction of Care Plus. It has not been possible to show a causative link between the reduced first aid cases and Care Plus, as the reduction may be due to other factors.	Only one of the case studies showed a significant reduction in accidents. In the other case studies it was difficult to quantify their impact.

## Conclusions

The four case studies included very different types of behaviour modification programmes. The case studies are representative of the type of programmes currently being used in the offshore oil industry. General conclusions that can be drawn from the four case studies are outlined below.

All the interviewees were convinced that the behavioural intervention they were using was having a significant positive impact on safety.

Only one of the four case studies could demonstrate a significant reduction in accident rates following the introduction of the programme.

The success of all four programmes was dependent upon management support and commitment.

The success of programmes aimed at frontline employees requires a pre-existing level of trust between management and workers.

Early employee involvement in the choosing and implementing of a behaviour modification programme increases the likelihood of success.

Setting quotas for the number of observation cards to be submitted is likely to be counter productive and may lead to fictitious cards being submitted.

It is important to moderate people's expectations for early reductions in accident statistics.

The interpersonal skills (e.g. non-threatening questioning techniques) of installation staff need to be developed in order for the behaviour modification programme to be effective. It is important to note that although some proprietary programmes do not include interpersonal skills training, employees still require these skills to ensure programme effectiveness.

## References

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