



Fatality Report

*How will you be making
your next trip home?*



“These fatalities are tragic reminders of why we must get safety right every time”

Over the past three years eleven individuals have died while doing their job on offshore installations in the UK, Norway and Holland. All eleven have involved drilling operations and have touched many different operators and contractors. These fatalities are tragic reminders of why we must get safety right every time.



Tom Botts
Chairman
Step Change in Safety

The Step Change Leadership Team felt it was critical that these events be analysed as a group and that the learnings be widely communicated. A review team was established after consultation across the industry and with the HSE. This team has been working with the IADC(NSC)¹ and used the findings from the individual investigations as a starting point for the overall study. I would like to thank the IADC(NSC) and all of the companies involved in these incidents. It is because of openness and willingness to share learnings from each event that we can present this important document. I would also like to thank the HSE for their support and guidance.

Common Threads & Learnings

There are several common threads running through these fatalities. The most common is that of *mistaking ‘routine’ for ‘safe’*. We manage complex operations effectively but at times exercise inadequate control over risks arising from routine operations. *Responsibility* for this lies with *personnel at all levels*. People do sometimes *fail to follow procedures* for a variety of reasons and this can often be compounded by a *reluctance to intervene* by others when they see procedures not being followed. At times we also *fail to plan, design and supervise* such routine tasks adequately, to make them as tolerant to human error and variations in human behaviour as possible. Details on common threads and learnings are presented later in this pack, along with some suggestions that allow *managers, supervisors and workers* to consider their respective roles in safety matters. It is hoped that this detail will provoke thought and allow everyone in industry to reflect and learn.

Fatalities on Offshore Installations - UKCS, Norway & Holland (2000-2002)

	Date	Installation	Summary	Area
1	Jan '00	Semi-sub	Banksman struck by joint casing, which had slipped through sling.	
2	May '00	Semi-sub	Banksman struck by bundle of 31/2" drill-pipe being transferred to catwalk.	
3	Oct '00	Jack-up	Crewman manriding in cellar deck pulled into mousehole.	
4	Dec '00	Platform	Service hand struck by load - which was being moved without a banksman.	
5	Feb '01	Jack-up Platf.	Crewmember fell through opening in platform deck.	
6	Jul '01	Semi-sub	Assistant Derrickman struck by pipehandler on drill floor.	
7	Nov '01	Semi-sub	Lift car in column of semi-submersible fell during maintenance operations.	
8	Jan '02	Jack-up	Assistant Driller fell overboard.	
9	Mar '02	Semi-sub	Banksman struck by basket being landed by crane.	
10	Apr '02	Semi-sub	200kg drilling sub fell through mousehole striking day visitor.	
11	Nov '02	Platform	Moving stacked chemical pod, pod fell over - crushing banksman.	

This report presents an overview of each fatality and summarises common learnings. I hope that you find the information valuable and strongly encourage you to work with your teams to really understand how these learnings can apply to your location, so that we can achieve the aim of eliminating fatalities from our industry.

¹IADC(NSC): International Association of Drilling Contractors (North Sea Chapter).

“To achieve the common purpose of no more fatalities offshore”

"What's going on here is encouraging. Until now HSE's offshore initiatives have been based on our own perception of the key risks. In the middle of 2002 the HSE, employers and Trades Unions gave a commitment to work together to make the UKCS the safest offshore sector in the world by 2010. An early outcome was HSE and Industry getting together to examine the common threads running through these dreadful and preventable incidents. We have, as a result, identified how we can work more closely together whilst recognising the necessary distinctions between regulator and employer to achieve the common purpose of no more fatalities offshore."



Taf Powell
Head of HID
Offshore Division

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NOTE: The illustrations in this document are explanatory aids and should not be regarded as graphically exact technical representations.



Operation:

Lifting casing from the pipe racks onto the catwalk prior to picking them up onto the drill floor.

1. The lifting slings on the casing were (in this case) single wrapped rather than double wrapped.
2. Use of double-wrapped slings was the correct and accepted practice on the rig (double wrap was used at start of job).
3. Some previous joints had been lifted with single-wrapped slings. Though observed, no one said anything.
4. The crew were doing a short-shift change in order to go from night shift to day shift.

The event:

As the joint of casing was lifted, one of the slings slipped along the length, causing the joint to drop and swing. It hit the pipe deck, bounced and struck one of the crew who was not standing in a safe area as he had been on previous lifts. He was taken to hospital and died later in the day. He was found lying on a removable thread protector – perhaps he moved to a safe position and returned to retrieve this.



NOTE:

The Operator and Contractor produced an **extremely valuable** workpack on this incident called "Lateral Learning - Third Party Workpack". It is published on the Step Change website (www.stepchangeinsafety.net) in the Presentations/Publications (Case Studies) section. Its widespread use for discussion among crews (particularly those involved in lifting) is advocated.

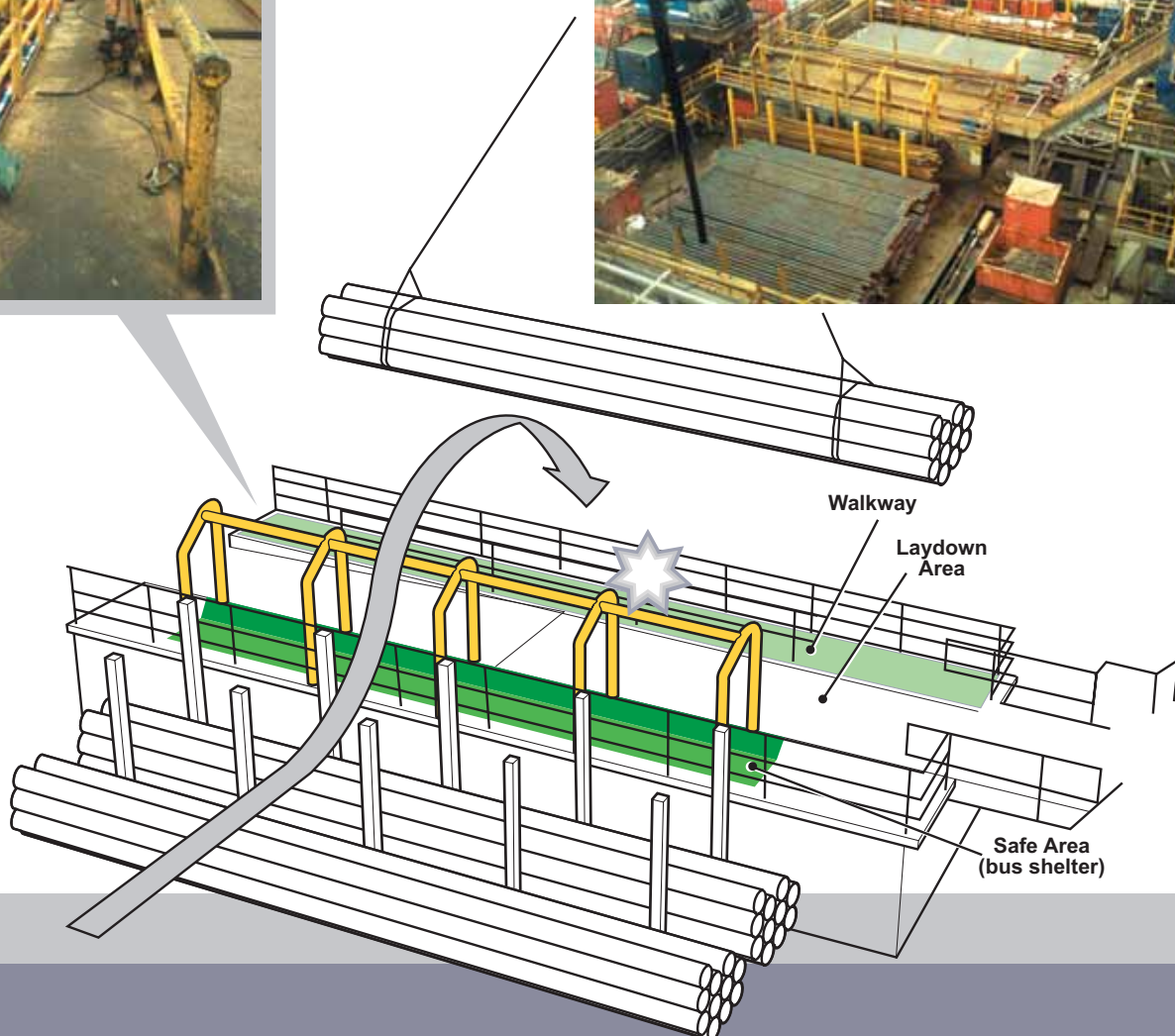
Operation:

Picking up bundles of 3½" drill-pipe from the starboard pipe deck to the elevated catwalk.

1. At 17:00hrs the Crane Operator was relieved for a meal break by the qualified Relief Crane Operator who had been acting as banksman. The operation was in daylight and the weather conditions were good.
2. A qualified roustabout on the crew took the role of banksman (all roustabouts on the crew had banksman training).
3. A toolbox talk was carried out at 12:00hrs at the beginning of the shift, but not when the Relief Crane Operator assumed operation of the crane.
4. Two crewmembers preparing to use tag lines were on the starboard side of the catwalk, inside the protection cage while the banksman was positioned on the walkway to the port side of the catwalk (not banksman's normal location).

The event:

When the Relief Crane Operator entered the crane, a bundle of 3½" drill-pipe was attached to the crane waiting to be lifted. Prior to the lift, two roustabouts positioned themselves on the starboard side of the catwalk inside the protection cage to control movements using taglines. The banksman was on the walkway to the port side of the catwalk. When the load was lowered and at chest/waist height, the aft end of the bundle swung toward the banksman striking him in the torso. The bundle of pipe came to rest on the walkway to the port side of the catwalk, and the banksman was found lying on his side against the handrail on the walkway supporting himself on his right elbow. He was attended by the medic, and (still conscious) transferred to the sick bay by stretcher, where his condition deteriorated. He lost consciousness. After 40mins, efforts at artificial resuscitation were ceased. A post mortem revealed major internal injuries consistent with being struck by a high-energy low velocity object.



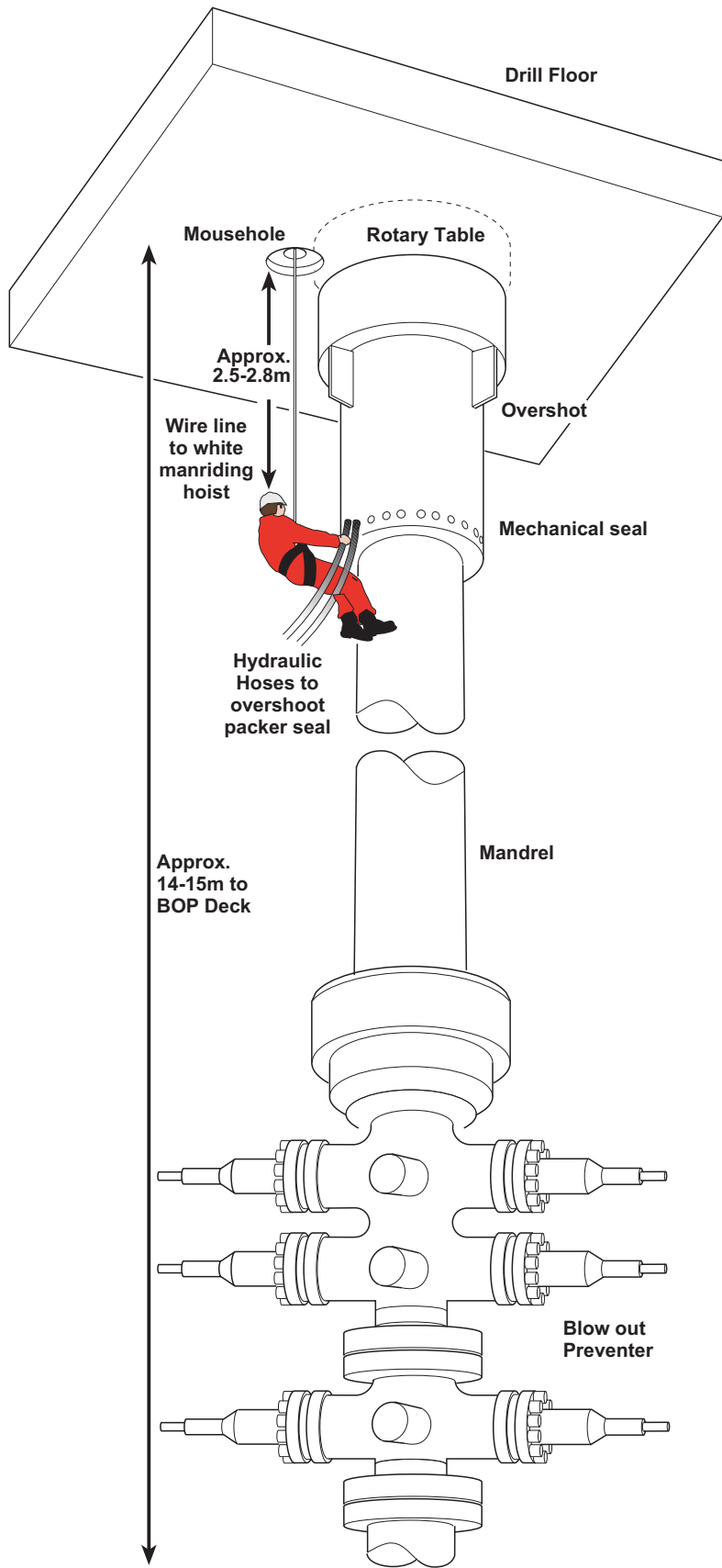
Operation:

The control hoses for the diverter (a large piece of well control equipment), which was located below the drill floor, were to be fitted and function tested.

1. Work on the control hoses was conducted as a manriding activity due to the location of the hoses.
2. The man operating the manriding winch was unable to see the man in the riding belt.
3. Radio communication was in use between the winch operator and a banksman with line of sight with the man in the riding belt.
4. There was no safeguard against the possibility of communication failure.
5. The manriding winch was capable of generating high pulling force.

The Event:

Access to the hose fittings was achieved by running a drill floor manriding winch through a hole in the drill floor and down to the BOP deck below, where a man was picked up and raised to the level of the hose connections. The control hoses had been fitted, but the connection was leaking and the fittings required re-tightening. Following re-tightening the man in the riding belt was raised clear of the fittings during function testing. He was raised too far and fatally injured.



NOTE:

Step Change in Safety has produced a guide called "Best Practice Guide to Manriding Safety". It is published on the Step Change website (www.stepchangeinsafety.net) in the Presentations/Publications (Policies & Guidance) section. Its implementation on appropriate installations is strongly advocated. The IADC have also put out an international alert, Alert 00-36. HSE Offshore Division (Safety Alert 2000/1) must also be considered and touches specifically on the matter of blind lifts.

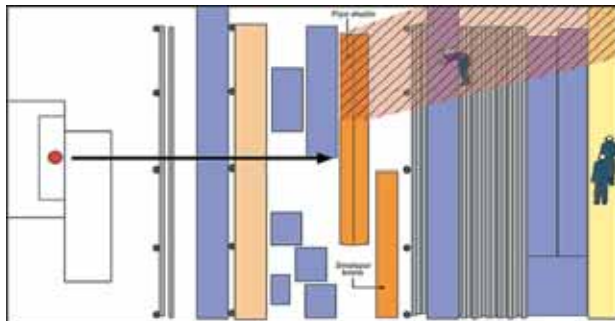
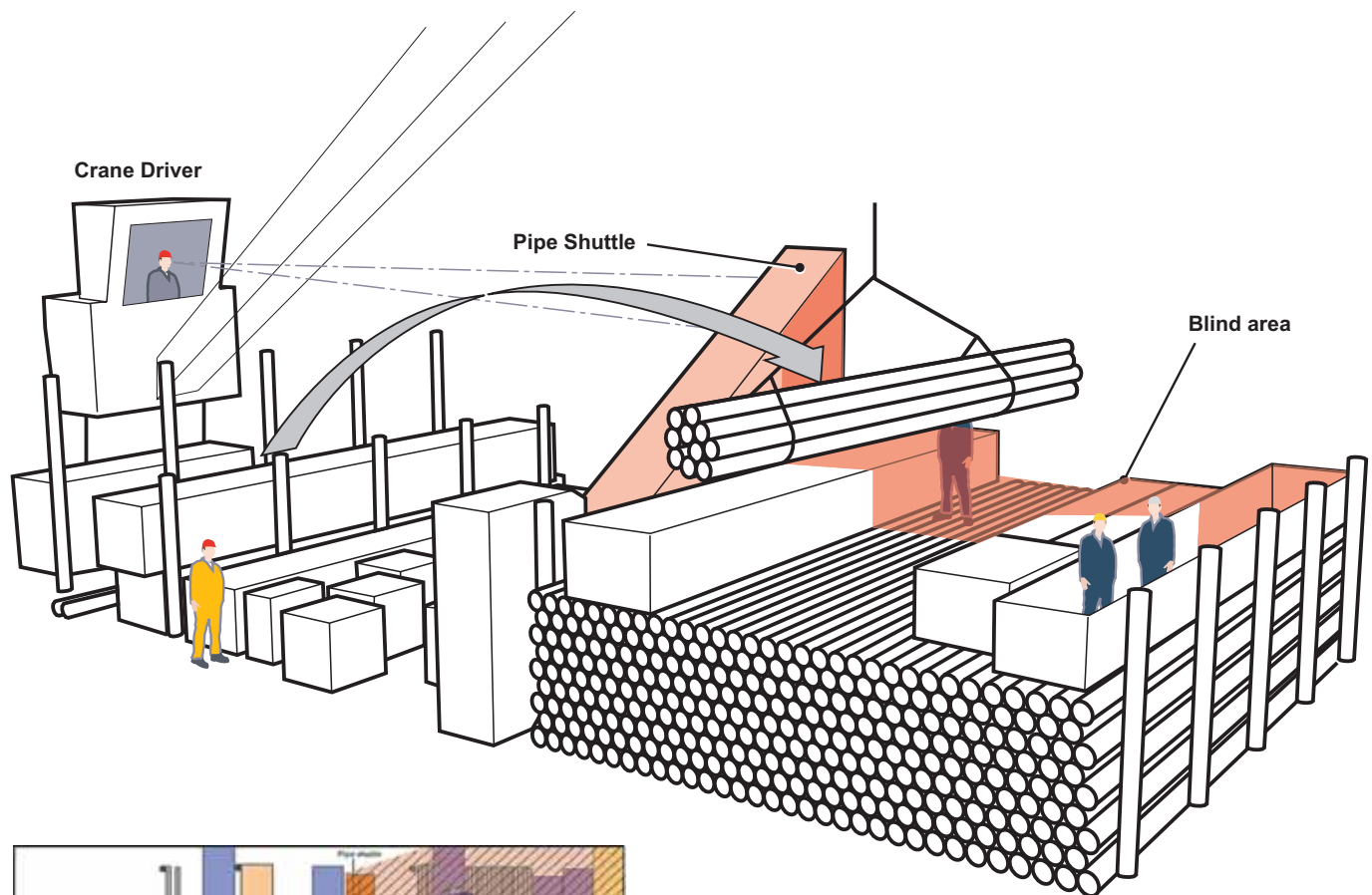
Operation:

Service company persons required a tool to be removed from a basket, laid on the pipe stack and the basket removed.

1. The crane crew discussed the job and withdrew. The two service persons remained. As they continued to work..
2. ..unknown to the crane crew, two persons *from another company* came into a nearby basket.
3. The crane driver had a 'blind area' (Arrow shows driver's line of sight: 'hatching' indicates 'blind' area).
4. A lift was conducted without a banksman or taglines.

The Event:

The crane team decide to move a bundle of pipe to make room for the basket near the crane. The crane driver assumes that the two people he can see are those requiring the tool to be moved, and that the blind area is thus clear of personnel. The crane driver moves the bundle of pipe (arrow in the illustration indicates the path of the pipe bundle). When the load begins to rotate, with no taglines to help and no banksman to advise of consequence, he sets it down promptly to stop rotation. One of the service persons in the blind area jumps aside and escapes; the other is killed instantly by impact of the load.

**NOTE:**

A presentation with very useful detail is available on the Web at www.spe.org under the Tech Interest section – HS&E.

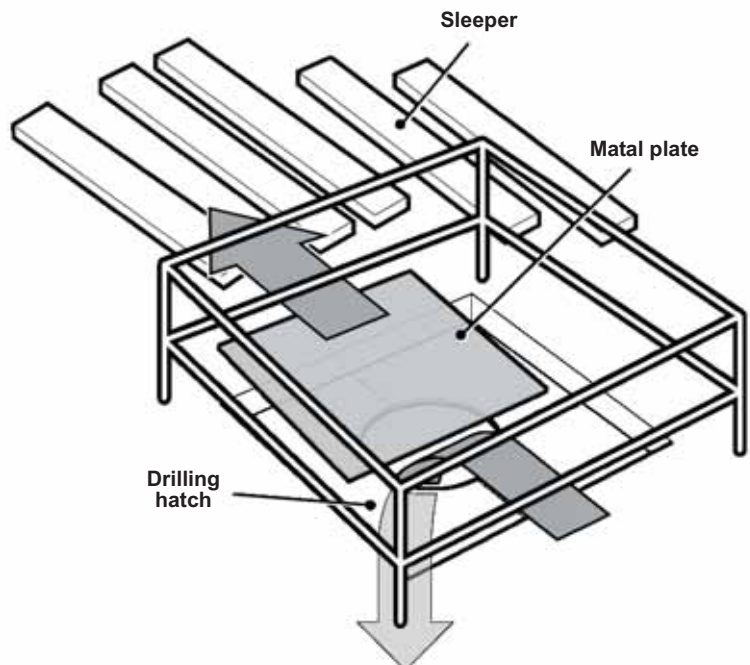
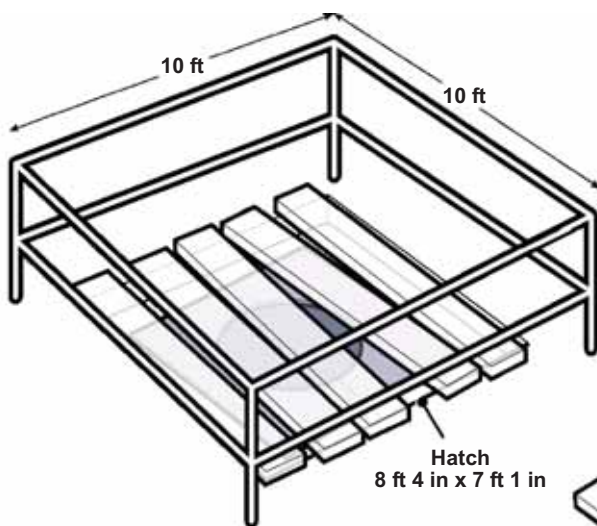
Operation:

Preparing to begin well operations following mobile drilling rig / platform interfacing activities.

1. A jack-up drilling rig was positioned over a production platform and was rigging up for operations.
2. During interfacing activities the normal weather deck hatch had been replaced with a drilling hatch. This occurred 10 days prior to the accident.
3. The drilling hatch had a 42" access hole. The hatch was surrounded by a "boxing ring" type scaffold barrier.
4. The hole was covered with a metal plate and five wooden sleepers.

The Event:

The drill crew identified a requirement to run equipment through the platform weather deck. Three members of the crew went to the weather deck to assess hatch access. The crew removed the wooden sleepers and as the metal plate was being lifted clear one of the men stepped into the hole and fell to a lower deck, suffering fatal injuries.



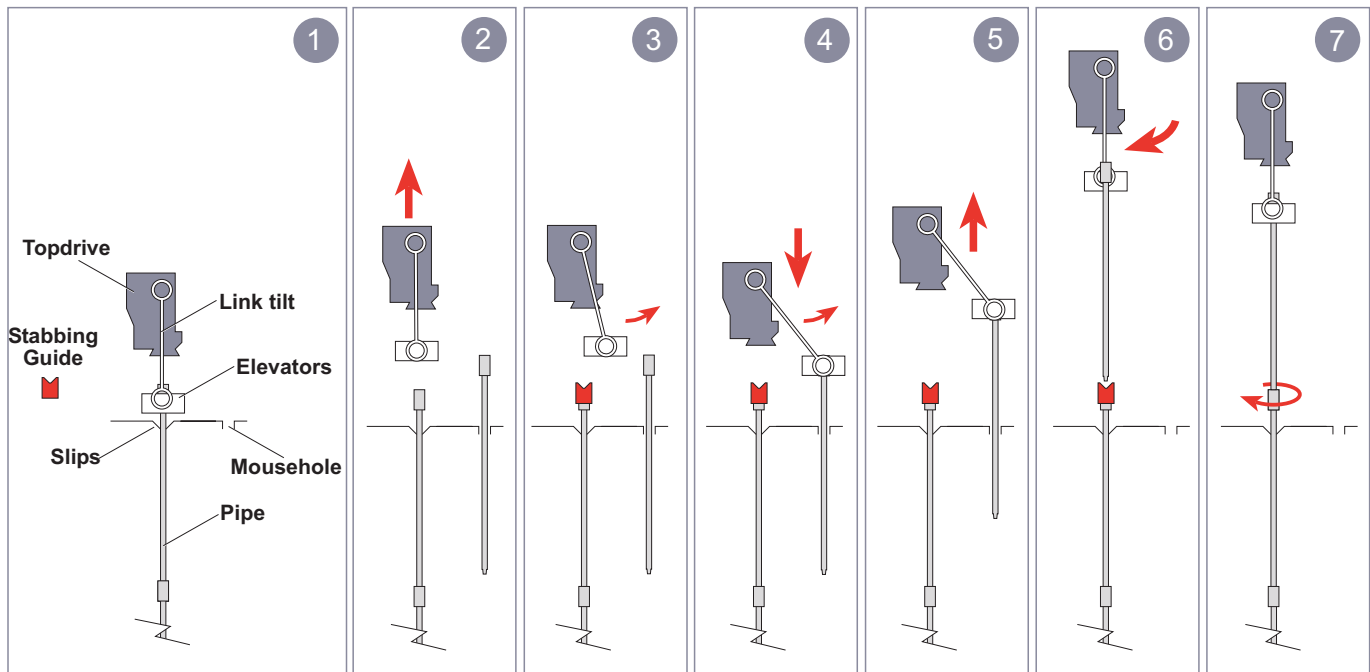
Operation:

Drill Floor Operation - Running 5-1/2" sand-screens as part of a well completion.

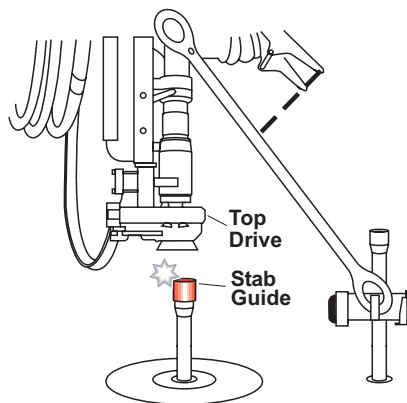
1. Having taken over this operation from the previous crew, the crew on shift had run 30 joints in the hole in 5 hours.
2. The Driller and the Assistant Driller were in the control cabin. The Assistant was on the brake.
3. A stabbing guide was used to protect each joint when stabbing into the string.
4. For Info: Sand screens are special pipe that are installed in a well to allow oil to flow in while keeping sand out. For the purposes of this description they can be considered as joints of pipe.

The Event:

The crew had established a routine for the general operation and were assisted by service personnel. The top drive was picked up to raise the elevators above the joint in the slips. The top drive link tilt was extended and the top drive needed to be lowered to allow the elevators to be latched onto the joint in the mousehole. The top drive descended further than required which occurred at the same time as the Assistant Derrickman was installing the stabbing guide. The Assistant Derrickman was caught between the bottom of the descending equipment and the stabbing guide on the pipe in the rotary table. Injuries were fatal.



Typical sequence for picking up a joint of pipe



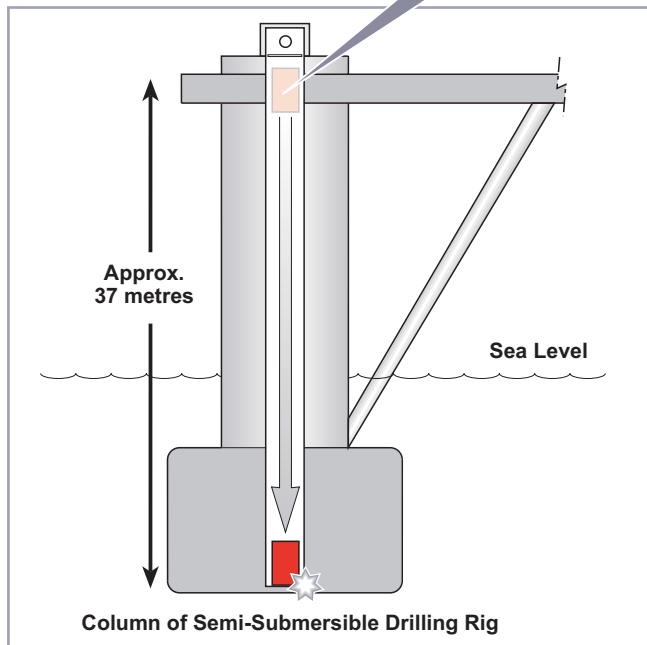
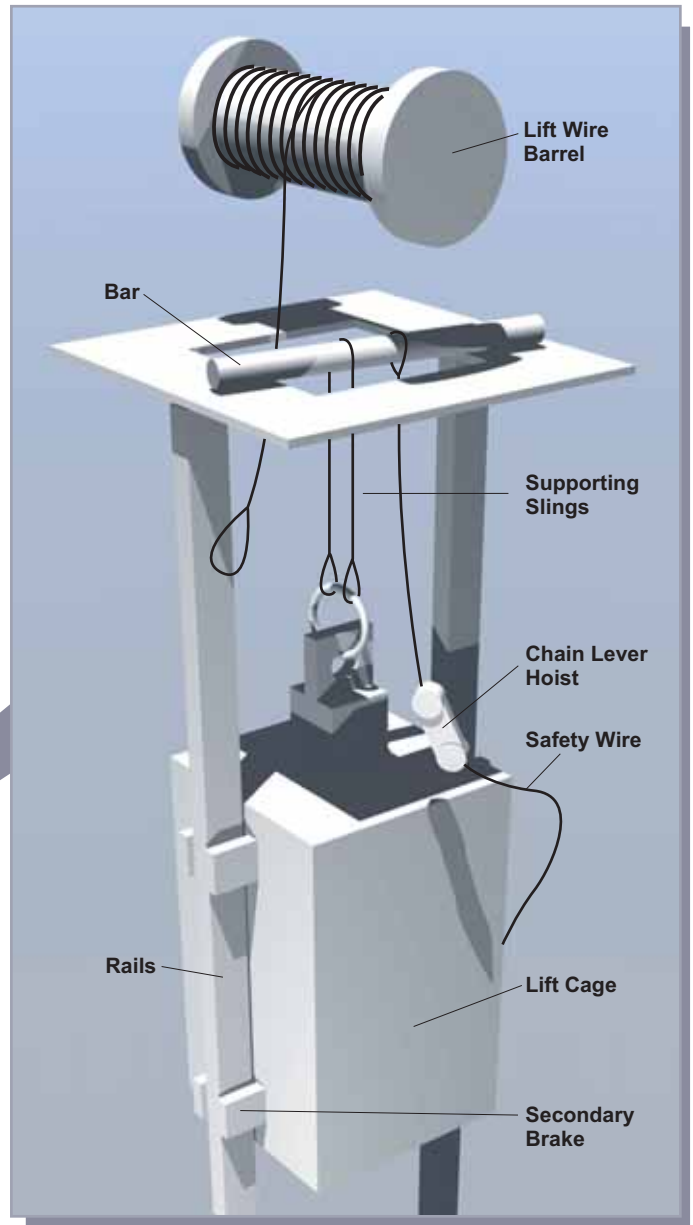
Operation:

Maintenance on a personnel lift (elevator) in one of the columns (legs) of a semi-submersible drilling rig.

1. The task was to change out the cable (wire rope) that raises and lowers the lift.
2. In order to change out the wire rope, the lift cage was supported on slings.
3. The slings were suspended from a piece of pipe supported across the aperture in the winch-housing floor.
4. The man performing the task was an experienced barge supervisor.

The event:

While carrying out the task, the barge supervisor was standing on top of the elevator. The pipe supporting the elevator slipped and the elevator fell approx 37m to the bottom of the shaft. The man died from his injuries.



Operation:

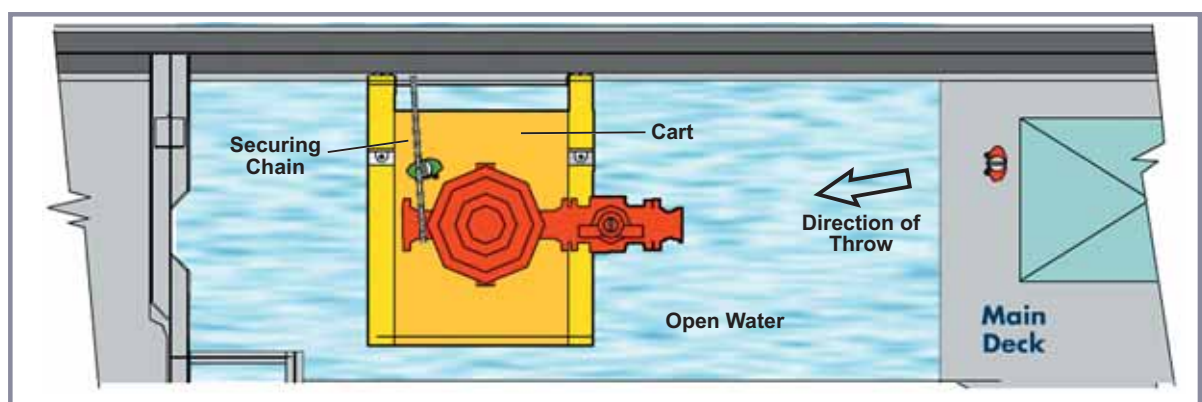
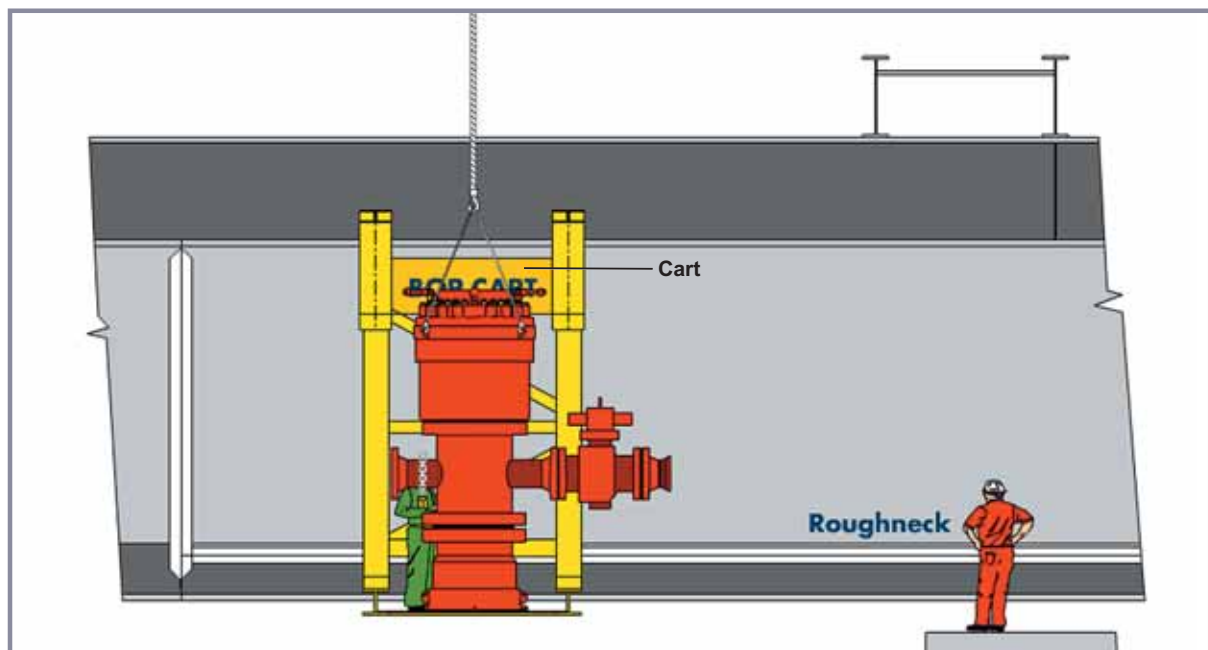
Stow the 30" diverter (a large piece of well control equipment) on a purpose built cart and reposition the cart/diverter assembly. The cart was placed between the rig's aft main deck and the Texas deck where the diverter was lowered into position. The diverter needed to be secured to the cart using chains and binders before repositioning the assembly.

1. The task involved working over water.
2. A Permit to Work was taken out by the deceased who was the Supervisor for the activity.
3. Two of the main precautions identified in the Permit (wear a life-vest, call the Stand By vessel in) were not implemented. A harness was worn as required by the PTW but was not secured.
4. A Time Out was called but not taken.

The Event:

The first of two securing chains was made fast without difficulty. The load binder on the second chain could not be closed manually and a "cheater" bar was requested. A one-metre length of 50mm diameter tubing was tossed from the aft main deck to the deceased who was standing on the cart. He did not catch it cleanly and was struck by the tube and he fell to the base of the cart. While attempting to stand up, he rolled over the edge of the cart and fell to the sea below. Search and rescue efforts were unsuccessful.

(On these drawings handrails etc have been removed in an attempt to simplify).





View looking aft



View looking aft



View looking for ard

Operation:

Offloading a supply vessel – stacking a long cargo basket on top of another long cargo basket.

1. The basket was hanging unevenly and the two baskets were dissimilar.
2. Though handling baskets was routine – stacking dissimilar baskets was not.
3. Because the baskets were dissimilar, difficulties were encountered in landing the load successfully.
4. Dunnage (timber) was used as a means of support between the two baskets.

The Event:

A supply vessel was being offloaded at a semi-submersible drilling rig. The task under way was to land a long (13.1m) basket on top of another (dissimilar) basket in the riser storage area. Difficulties were encountered in landing the load successfully and unknown to the Crane Operator, the Banksman moved into the riser bay with a view to repositioning the dunnage. The basket slipped and the banksman, being in a caught-between position was struck and fatally injured.

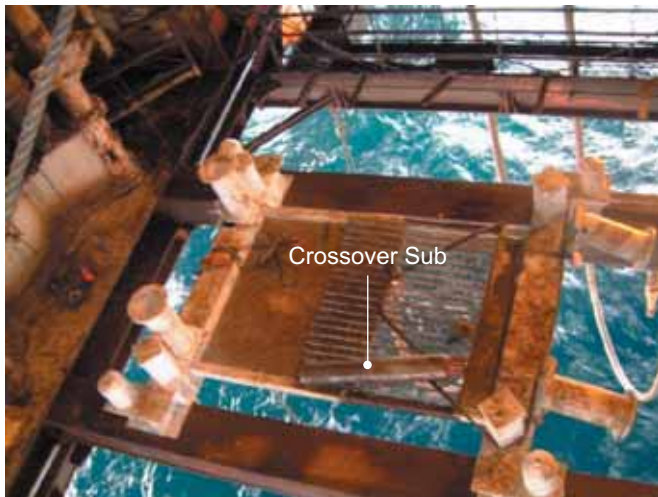
NOTE:

An information pack has been produced on this fatality called "Lessons Learned - Fatality". It is published on the Step Change website (www.stepchangeinsafety.net) in the Presentations/ Publications (Case Studies) section.

Operation:

Normal activities were proceeding on the drill floor utilising the catwalk trolley. At the same time, a design engineer was working on a landing frame in the moon-pool area (beneath the drill floor).

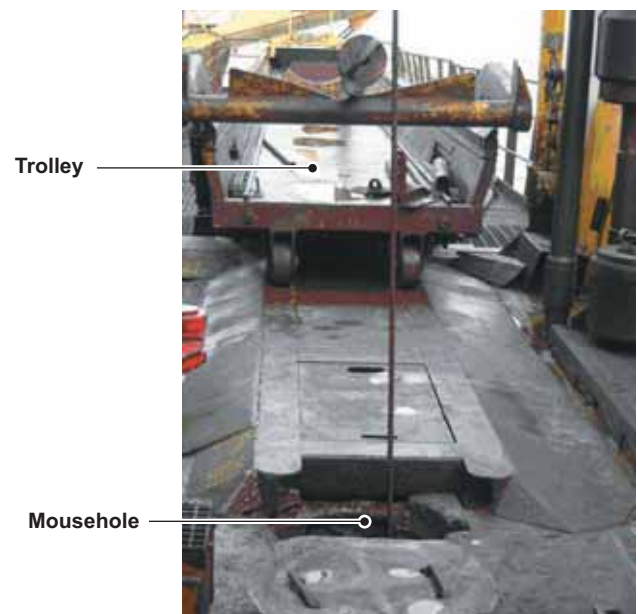
1. The mousehole opening (on the drill floor) did not have adequate dropped object protection.
2. The PTW system did not control the activity of the engineer in the moon-pool.
3. The radio communication between the drill floor and the moon-pool was inadequate.
4. The engineer was relatively senior and was treated as a 'free agent'.



Landing Frame: Showing the crossover sub lying on the grating that covers half of the landing frame.

The event:

The engineer was repairing and adjusting a landing frame in the moon-pool area. A crossover sub (large piece of pipe) weighing 191.5kg fell through an opening on the drill floor called the mousehole and hit the man standing on the landing frame 13.7m below. He suffered severe injuries and died shortly after.



Drill floor: Showing the mousehole and the catwalk trolley.



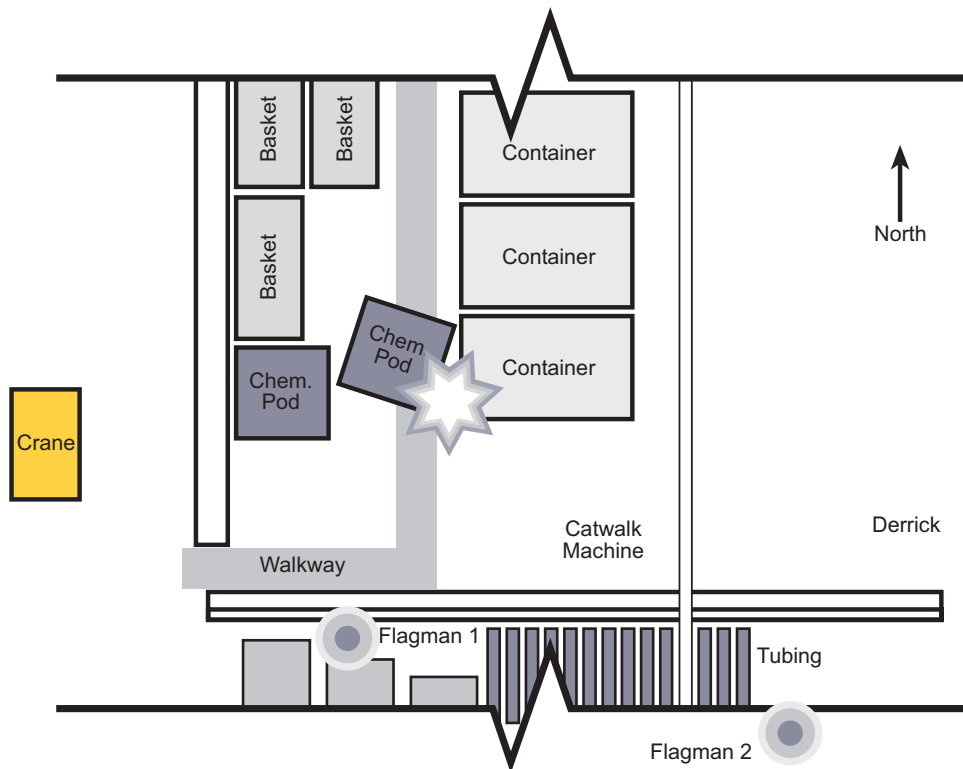
Operation:

Tidying up deck after handling boat-un-stacking two chemical pods.

1. The aluminium ferrule on the end of the wire (part of the lifting equipment) was hung up between the tank and the frame on one side.
2. The banksman was in radio contact with the crane while standing on the ladder of the upper tank.
3. The lifting arrangement was not within reach of the deck if a tank was stacked.
4. The open-top arrangement of this type of tank allows for lifting equipment to go down between tank and frame.
5. The tank was equipped with stacking lugs
6. If the tank was lifted clear of the lugs on one side the tank is free to move sideways.

The Event:

On request, the crane-driver lowered the crane pendant, which came down too far and fouled between the tank and its frame. The banksman requested the crane driver to pick up 20cm; on doing so (with the lifting gear fouled between the tank and its frame), the tank lifted on one side. It was then free to slide sideways and as it did, the banksman was trapped against a nearby container and killed.



In the latter part of 2002, the Step Change Leadership Team carried out a review of fatalities on offshore installations* in the UKCS from 2000-2002. A number of meetings occurred in the latter part of 2002 and into 2003 and were attended by operators, drilling contractors and the HSE.

Individual fatalities on the UKCS were discussed in detail. Fatalities that had occurred on installations in the Norwegian and Dutch sectors were brought into the discussion later. The IADC(NSC) engaged an external consultant to look at the circumstances of each UKCS fatality and determine common threads. This study used available data on each fatality but also involved detailed discussions with relevant HSE managers to get further data as required. The Tripod Beta model was used for the review and the report was completed and presented in November 2002.

The sources for the material were the HSE, operators and drilling contractors, media reports and general Step Change sources (individuals and associations - e.g. the IADC(NSC)). A draft of the product was presented to (and approved by) the Step Change Leadership team on March 26th 2003.

Several of the fatalities had been individually communicated across relevant industry sectors; however the intent of the Step Change Fatality Review is to review the fatalities as a group and ensure that findings and common threads are communicated to a wide audience.

It was found that while many in the industry were aware of individual fatalities, few had an overall picture. It was decided that a campaign was required to bring this matter into sharper focus. This campaign assembles the facts in an informative and thought-provoking way. It extracts common threads and points the way forward in terms of general and specific learnings with a view to achieving a substantial reversal in the fatality trend.

The target audience for this campaign are those exposed to risk at the 'front line', and those who manage that risk.

The elements are:

1. A summary of the fatalities and a few key learnings.
2. A description of each fatality in sufficient detail to allow meaningful discussion at safety meetings etc.
3. A summary of common threads and learnings from all the individual fatalities.
4. A section on what action individuals might take.

The HSE has been supportive throughout this review, has made strenuous efforts to share data, offered opinion as to the direction of learning, and given some indication of increased inspection regimes designed to address these areas. The HSE stressed throughout, that while partaking in this review represents a more participative direction in their approach (in terms of data sharing, working with stakeholders etc.), their role as a regulator and their policy on enforcement remains unchanged.

This fatality report concentrates on what is believed to be the key facts and learnings from these fatalities. It gives guidance on some specific and general areas for focus. It also provides some guidance for managers, supervisors and workers in relation to actions they should consider given their role in the management of safety. A mini-CD accompanies this report and includes supporting information, e.g. a PowerPoint presentation to assist those who wish to present the material and further resources to assist those who may wish to facilitate a workgroup discussion.

**The helicopter incident, while discussed in the initial stages, is not included in this campaign.*

Summary

All the fatalities occurred in the area of drilling and wells. While one fatality related to an activity that is largely restricted to drilling operations, the other fatalities could have happened anywhere - but they did not. The various disciplines and installations within the offshore industry have differing intrinsic vulnerabilities - but not to the extent that these fatalities suggest.

High-potential incidents are however occurring 'across the patch'. This suggests that while vulnerability at the present time might be greater in drilling operations, it is by no means restricted thereto. Various threads are identified in the fatalities and those seen as key are listed below - such as placing oneself in 'harm's way'.

Our actions are determined to a great extent by the culture in which we live and work. Safety outcomes can also be considered a product of that culture. Culturally determined safety behaviours are those that are exhibited because it feels right - i.e. it feels wrong to do anything different. Everyone, from front-line workers to managers, needs to create the environment of question, permission and support to combat the conditions that have led to these fatalities.

Threads

Such a list of fatalities and associated circumstances will impact different installations and trades in different ways. The threads presented here are relevant to most installations and trades.

People and how they act ...and what actions might be taken to mitigate...

1. Routine tasks are consistently underestimated in terms of the risk they pose. *Re-examination of routine tasks is necessary across the industry to assess exposure.*
2. Supervisors are not spending sufficient time at the worksite. *Supervisors need to spend more time supervising and setting expectations and need to have sufficient administrative support to ensure that they achieve this.*
3. Workers are vulnerable because they do not perceive the risk - or deem it acceptable (i.e. part of the job). *Peoples' risk perception needs to be constantly challenged - particularly in the area of routine tasks.*

4. The extent to which established procedures are ignored is significant. *The reason behind this needs to be an ongoing and active discussion on all installations.*
5. Procedural violations were often observed *but tolerated* thus..
 - a. *The obligation to intervene must be embedded, but..*
 - b. *People don't like to get involved and need to practice, and in practicing..*
 - c. *People need to learn to be sensitive in offering challenge (criticism) and generous in receiving it.*
6. The credibility and use of risk assessment is not at the required level. *The character of risk assessment must be changed - in particular the written form.* The starting point must be the question - What is useable, meaningful and useful to the workforce? Risk assessment should be live, should stimulate thinking, be an integral part of planning and be useful and useable i.e. well laid out - rather than driven by regulatory concern.

Specific Issues...and thus specific areas that need attention...

7. The number of fatalities involving lifts is substantial - *clearly lifting needs specific attention.* Conversely, if the industry can address this area, then based on the fatalities reviewed, the impact would be substantial.
8. Those who marshal lifts (generally referred to as banksmen) are routinely involving themselves directly with the loads - often despite clear procedure to the contrary. *The general responsibility/duty of the banksman is an area for specific attention; and the principle of non-involvement in the load needs particular emphasis.*
9. Some disciplines (such as drilling), need to move from a 'Can-Do' culture to a Stop/Think/Do culture. This involves a change in behaviour at all levels.
10. The industry needs to *act in unison on the matter of high-potential incidents* (the next level down from fatalities).
11. The industry needs to *address some complex hardware issues* - e.g. manriding, cargo baskets.

As a manager...

Managers are leaders, generally remote from the site; they establish (and shape) the culture of a company and ensure the suitability of people, equipment and process to offset risk.	
1.	Set the tone in matters of safety in a way that permeates the organisation (set standards, abide by them and see that others do so). Pronounce that 'life and limb' has prominence over production and back it up by action. Be wary of diluting your message with unintended signals.
2.	Manage risk at a strategic level: Ensure that risks are reduced to a reasonable level by engineering and systems controls. Ensure the workforce (at all levels) are trained, informed and equipped to deal with those risks.
3.	Talk to the workforce about company safety performance: Inform the organisation of industry and company-wide safety goals, and about company safety performance (both good and bad). Talk about your own safety accountability.
4.	Talk to the workforce about individual safety performance: Talk to the workforce at all levels about safety performance (both good and bad) and show that you will take action where required.
5.	Get Involved in the safety management system: Make regular interventions to assess the workings of the safety management system. For accidents and incidents, check in to assess the investigation and learning.

As a supervisor...

Supervisors are leaders on site who shape and act out the culture of a company; they balance the demands of safety and production by planning and allocating resource.	
1.	Manage resource in line with the pre-eminence of 'life and limb'. In the event of inadequate resource, defer tasks and ensure that others have the permission to do so.
2.	Set expectations: Demonstrate exemplary safety behaviour and demand it of others. Stress the obligation to intervene. Encourage the team to intervene with one another and the supervisor regularly – i.e. practice it.
3.	Spend time at the worksite: This takes precedence over admin work; supervisors must thus be adequately resourced. Site visits should be supportive, involve coaching and feedback (positive or corrective). Safety concerns expressed by front-line workers require immediate attention and action.
4.	Challenge risk perception: Risk perception for the entire team, including the supervisor must be challenged and improved – in particular for what are seen as routine tasks. Encourage the team to be constantly wary.
5.	Involve the team and seek feedback: Seek the teams view on risks - and mitigations in place. Seek feedback on the workability of the procedures and determine if accepted practice matches procedure.

As a worker...

Workers carry out the work; they act out the culture of the company and implement the work programme according to established safety procedures.	
1.	Implement the procedures: Safety procedures are for protection (particularly of front-line workers). Ignoring them (short cuts etc) is unacceptable. If unworkable (or impractical), they should be changed, not ignored.
2.	Maintain acute awareness to risk: Accidents often occur in what are perceived as routine tasks – where familiarity breeds 'content'. Routine tasks should be examined regularly and the consequences of errors discussed vividly. Errors with the potential to cause harm will sometimes occur – keep out of harm's way.
3.	Understand and exercise the obligation to intervene: The observation and tolerance of unsafe acts by others (regardless of status) is unacceptable. Intervention is not an option – it is an obligation. Be sensitive (but firm) in your challenges and generous in accepting criticism from others.
4.	Be aware of pressure and say STOP: Pressures can come from supervisors or from one's own single-minded determination to get the job done. Under such pressure that are only two possible responses, an increased attention to safety matters or a time-out. Tell people of your pressures (they may not be aware!).
5.	Inform your supervisor and safety rep of all safety concerns: Where at all possible, do so with suggestions of how to rectify the matter (you may be more knowledgeable than those to whom you are reporting).

For further information regarding this document please contact:

STEP CHANGE IN SAFETY



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Presentations, suggested exercises and further resources relating to some of the issues discussed within the brochure are available to download from our website www.stepchangeinsafety.net





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