

# Safety improvement: A case study

Ian Lane and Richard Watkiss, KCA Drilling

**KCA DRILLING IS** the biggest platform drilling contractor in the North Sea, providing drilling, facilities engineering and well engineering services. Its status was recently confirmed when it won the contract to manage all of **Shell UK Exploration and Production's (Shell Expro)** drilling operations on the new Northern Business Unit platforms. This effectively expands KCA's previous contract, covering the Cormorant A, Cormorant North, Dunlin, Tern and Eider platforms, to include operations on the 4 platforms in the Brent Field.

A factor in the win may well have been the turnaround in KCA's safety record on the 5 Shell platform-drilling facilities it originally managed.

During 1996, KCA's record was exemplary, but it deteriorated markedly during 1997.

1996 in many ways represented a zenith in performance when all 5 platform-drilling facilities were operated without a single lost time incident (LTI). (An LTI is defined as an incident that causes an injury which prevents an individual from being fit to work his/her next shift.) KCA was awarded the Best North Sea Platform Drilling Contractor award from the IADC North Sea Chapter for its performance during 1996.

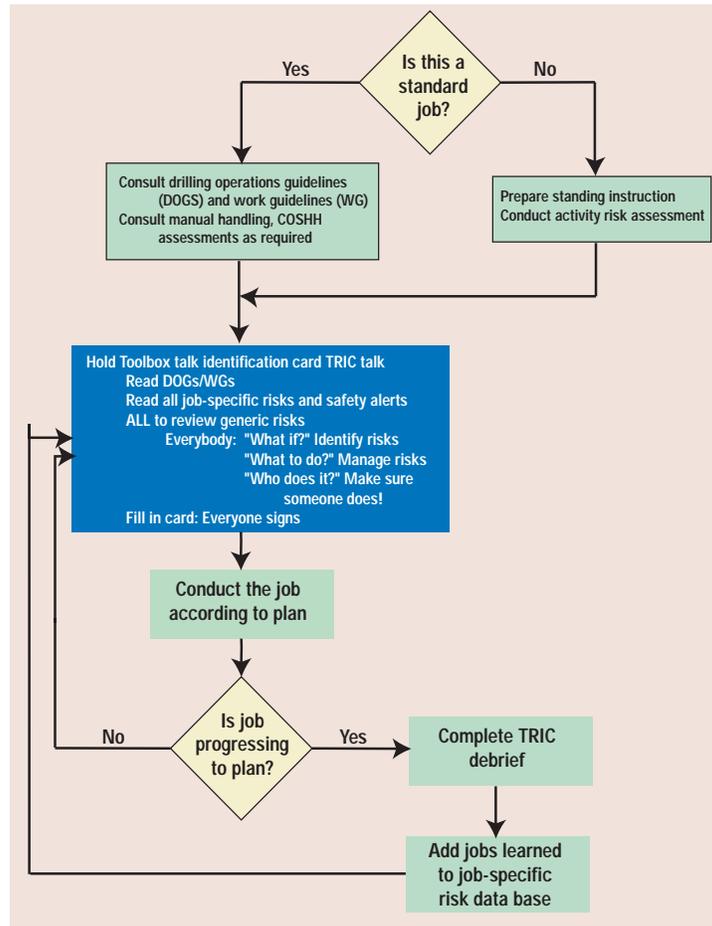
After achieving almost 1 million LTI-free manhours by February 1997, a number of incidents, both injurious and non-injurious, occurred. Whilst an abnormally high incident frequency was attributable to the introduction of non-standard, concurrent (hydraulic workover) operations on a single platform, incidents began to occur on all 5 installations.

## IMPROVEMENT PLAN # 1

*Hazard and risk* were seen as the biggest contributing factors, either lack of awareness or, more disturbingly, the

acceptance of risk and well intentioned attempts to "work round" the problem.

A number of incidents occurred during an activity where the plan had to be changed midway through the job and in an effort to progress the activity quickly



**Managing risk:** As part of a safety-improvement plan, KCA Drilling established a systematic review for operations. KCA says the review created a practical, simple tool rather than an overly complicated risk assessment technique.

the necessary time ("Time out" or "take five") was not taken to reassess requirements with everyone involved in the job. This area, and the initial preparatory Tool Box Talk, was considered key to improving the identification and management of hazard and risk.

*Design of equipment and improvements to the same* was a significant factor. A campaign was therefore instigated to encourage crew members to suggest minor (and even major) changes to plant and equipment, and efforts were also made to secure offshore input into onshore-engineered equipment upgrades.

*Planning* or procedures were considered at the micro (TBT) and macro (Drilling Operations Guidelines Manual) level.

*Communication*, as ever, is key to any successful operation. Many (if not all) incidents were ones that various experienced crew members had seen happen before. The key then was to communicate this experience, at TBTs or safety meetings, to other, less experienced crew members.

Finally, it was recognised that *supervision* was another critical area for improvement. Senior supervisors sometimes found it hard to "escape" the administrative requirements of the job and get out and about on the rig floor or pipe deck, thus depriving the operation of a significant source of experience. The need to reinforce each employee's responsibility to work safely was also recognised.

## THE RESULTS

Safety performance initially showed an encouraging improvement, with LTI frequency declining May through September. During the 4th quarter however, incidents again began to recur. In retrospect, much of the improvement observed after initial implementation in the second quarter of 1997 may have been the result of increased profile and awareness rather than specific actions, and it was clear by year end that sustainable results were not being delivered.

Near the end of 1997, both management and the workforce reviewed the existing safety plan and formulated a new plan under 3 equally important key headers.

## IMPROVEMENT PLAN # 2

*Leadership:* Both the Shell offshore well engineer and the KCA rig superintendent were instructed to spend at least 4 hours per shift at the worksite, whatever the administrative requirements awaiting attention. The daily morning call, chaired by the rig manager, opened with a review of safety issues before moving on to the operation itself.

Clear targets were set for senior offshore management to visit their rigs, irrespective of the demands of the "office", upcoming well planning, etc, with the same intent of improving mutual understanding. Front-line supervisors were invited into the office for informal discussions with the onshore management team.

Onshore management from both Shell and KCA committed to attend weekly meetings to discuss safety performance and improvement initiatives, and importantly to feedback to the rigs directly. Offshore, a significant effort was made by platform production management to improve ownership of the drilling process and provide guidance and assistance.

*Risk management:* A new card was prepared in an attempt to increase focus on the routine, repetitive tasks which were often the cause of injurious incidents. The review created a practical, simple tool—the "TRIC" (Toolbox Risk Identification Card).

The TRIC was taken up enthusiastically by the workforce, no doubt in part due to their involvement in its development, and has been such a success that it is now being used throughout NBU in all areas of platform operations. The UK Health and

Safety Executive have commented favourably on the TRIC, which latterly other KCA clients have adopted as a standard risk management tool.

*Workforce involvement:* Workforce involvement is implicit in much of the above. Although introduced as a performance-enhancing initiative, Technical Limit techniques ensure that crews are intimately involved in detailed job planning.

To determine more fundamental behavioural and cultural issues in respect of safety performance, KCA has purchased and undertaken a proprietary survey package 'CLIMATE' designed by the UK's HSE department.

Specialist subcontractors represent a significant percentage of the workforce, and can often be overlooked due to their 'transitory' nature. Their involvement was secured by requesting them to hold TRIC's, chair safety meetings, take part in physical condition monitoring audits etc.

*Man vs machine:* Shell has funded the KCA installation of a number of significant improvements to the drilling facilities in the NBU and even relatively minor modifications (e.g., monkey board

CCTV) can reduce risk, as well as providing an important demonstration to the crews of management commitment.

---

## RESULTS

---

The results of the 1998-safety plan are extremely encouraging, especially given a somewhat poor start to the year. Of even greater importance is the comparison between 1997 and 1998 incident potentials, where a marked improvement is seen in this key indicator.

---

## ABOUT THE AUTHORS

---

*Ian Lane is Operations Manager for KCA Drilling and manages drilling operations on Shell Expro's new Northern Business Unit (NBU) platforms in the North Sea. Mr Lane earned a degree in chemical engineering and an MBA from Strathclyde University.*

*Richard Watkiss is Health Safety and Environment Manager for KCA Drilling. Prior to joining KCA in February 1997, Mr Watkiss served with Agip UK Ltd for 5 years as a safety and environmental advisor. He holds an MSc in process safety and loss prevention from Sheffield University. ■*