## Contents

1 Foreword 4

2 Safety Performance 6
   2.1 Personal Injuries 6
   2.2 Oil & Gas UK Benchmarking 8
   2.3 Asset Integrity Key Performance Indicators 11

3 Significant Issues and Activities 16
   3.1 Helicopter Incidents 16
   3.2 Elgin G4 Well Incident 17
   3.3 Proposed European Union Safety Regulation 19
   3.4 Ageing and Life Extension 20
   3.5 Maitland Report 21
   3.6 Asset Integrity Key Performance Indicators – Houston Public Hearing 22
   3.7 Fibre Reinforced Plastic Gratings Integrity Issues 22
   3.8 Helideck Issues on Normally Unattended Installations 22
   3.9 Re-launch of the Pipeline and Riser Loss of Containment Database 22

4 Offshore Helicopter Transport Safety Record 23
   4.1 Background 23
   4.2 Current Helicopter Types 23
   4.3 Offshore Helicopter Reportable Accidents on the UK Continental Shelf 24
   4.4 Accident Analysis 24
   4.5 Safety Improvements and Initiatives 28
   4.6 Summary 29

5 Regulatory Consultations 30
   5.1 Exemption of Certain Self-Employed Persons from UK Health and Safety Law 30
   5.2 Proposals to Simplify and Clarify Reporting Requirements under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 30

6 Oil & Gas UK’s Work in Representative Bodies 31

7 Step Change in Safety 34

8 Publications 36

9 Oil & Gas UK Safety Events 37

10 Focus Areas for 2013 38
   10.1 European Union Safety Directive 38
   10.2 Ageing and Life Extension 39
   10.3 Major Hazard Management Forum Guidelines 39
   10.4 Size and Shape Project 40
   10.5 Maitland Report Follow-up Activities 41
   10.6 Assurance and Verification Network Activities 41
   10.7 Elected Safety Representatives’ Development Training 41
   10.8 Helideck Issues for Normally Unattended Installations 41
   10.9 Pipeline and Riser Loss of Containment Database 41

11 Glossary 42
1 Foreword

Welcome to the 2013 Oil & Gas UK Health & Safety Report. The report builds on the 2012 edition by providing commentary on the industry’s safety performance and on the range of health and safety issues and activities driving or affecting that performance in the reporting period.

The industry’s safety performance continues to show encouraging improvement across the range of relevant metrics. We are pleased to report no fatalities in the period and to be able to point to year-on-year improvement in the frequencies of injuries and dangerous occurrences. Of particular note is the 48 per cent reduction in the numbers of reportable hydrocarbon releases, just short of the target set by the industry in 2010 to halve releases over a three-year period.

Despite these welcome improvements, the industry is not complacent and remains vigilant and focused on sustaining good levels of health and safety provision and performance. This report is published in the 25th anniversary year of the Piper Alpha disaster, which serves as a reminder that offshore oil and gas exploration and production is a major hazard industry that continues to test to the limits our ability to manage inherent hazards and to prevent major accident events.

In terms of health and safety incidents in 2012, two occurrences dominate, namely the two separate helicopter ditching incidents and the Elgin G4 well control incident.

Although the helicopter incidents incurred no serious injuries to people, they did result in a decision to suspend flights involving EC225 aircraft types pending investigation to establish and deal with root cause failures. The operational impact of that suspension has been significant and continues to challenge the industry’s flexibility and resilience. As this report goes to press, work continues to ensure a safe return of the EC225s to service and to restore the full UK helicopter fleet capability.

The Elgin G4 well control incident presented challenges to the operator, Total E&P UK Ltd, in terms of their emergency response management, well kill operations and post-incident restoration programme. The event resulted in a lengthy field shutdown and a costly recovery exercise. It also caused the industry to reflect again on how it manages its high pressure, high temperature well inventory and work is still ongoing to review and improve such operations as necessary.

Total reacted with commendable speed to ensure the safety of the people on the installation with a swift and successful evacuation. The safe and efficient rescue of personnel in this, as well as the two helicopter incidents, is testament to the extensive training our offshore workers regularly undergo to prepare for and respond to these emergency situations.

The proposed EU Regulation of offshore oil and gas safety continued to exercise Oil & Gas UK and its member companies. Oil & Gas UK adopted a leading advocacy position in contesting the draft Regulation as part of a well-marshalled challenge that saw the industry, regulators and trade unions unite behind the common cause of ensuring appropriate, fit-for-purpose EU legislation that does not impair our existing world-class regulatory framework.
The focus on ageing and life extension (ALE) was maintained through 2012 and the Health and Safety Executive’s (HSE) related Key Programme 4 inspection programme is due to be completed by the end of 2013. Oil & Gas UK has worked effectively with the HSE to develop common, industry-wide strategies and practices for managing ALE to ensure the remaining hydrocarbon resources in the basin are recovered safely.

We hope you find the report interesting and informative. Any queries on content or feedback should be directed initially to Robert Paterson, health, safety and employment issues director, on rpaterson@oilandgasuk.co.uk.

Robert Paterson

Health, Safety and Employment Issues Director, Oil & Gas UK
2 Safety Performance

This section outlines key aspects of the UK offshore oil and gas industry’s safety performance using a number of metrics and a range of reference sources. Please note that the data sets cover different periods and the individual charts below stipulate the relevant reporting period.

2.1 Personal Injuries

The UK offshore oil and gas industry is a major hazard industry. However, in comparison with other comparatively lower hazard UK industry sectors, it has a low personal injury rate and performs better than average, as illustrated in Figure 1 below.

**Figure 1: The Three-Year Average (2009 to 2012) Non-Fatal Injury Rate by UK industry Sector per 100,000 Workers**

<table>
<thead>
<tr>
<th>Industry</th>
<th>Number of Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport/Storage</td>
<td>1,320</td>
</tr>
<tr>
<td>Construction</td>
<td>1,060</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>1,000</td>
</tr>
<tr>
<td>Health/Social Work</td>
<td>910</td>
</tr>
<tr>
<td>Public Admin</td>
<td>750</td>
</tr>
<tr>
<td>Wholesale/Retail</td>
<td>710</td>
</tr>
<tr>
<td>Offshore Oil &amp; Gas</td>
<td>530</td>
</tr>
<tr>
<td>Education</td>
<td>450</td>
</tr>
<tr>
<td>Finance/Business</td>
<td>280</td>
</tr>
<tr>
<td>All Industries</td>
<td>710</td>
</tr>
</tbody>
</table>

Source: Health and Safety Executive

Focusing specifically on the offshore oil and gas sector, the following figures 2 and 3 illustrate a steady decline in non-fatal, over-three-day, and combined fatal and major injury rates, in some cases dating back to 1997.

These data sets are provided by the Health and Safety Executive (HSE) and drawn from reports made to the regulator under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR). As such, the data are reliable and verifiable. The improvement trends in injury rates are encouraging but the industry is never complacent and strives for continual improvement towards an injury-free working environment.
Figure 2: The Three-Year Rolling Average of Non-Fatal Injury Rate per 100,000 Workers for the UK Offshore Oil and Gas Sector, 2003 to 2012

Source: Health and Safety Executive

Figure 3: Over-Three-Day Injury and Combined Major and Fatal Injury Rates for the UK Offshore Oil and Gas Industry

Source: Health and Safety Executive
2.2 Oil & Gas UK Benchmarking

Each year, Oil & Gas UK carries out benchmarking for installation duty holders to gain an overview of the UK industry’s safety performance. This is conducted on an anonymous basis with companies allocated a letter as per the charts below. The individual company results are issued to the duty holders through their Oil & Gas UK Health & Safety Forum representatives, informing them of their reportable incident frequencies compared to their peer companies.

The benchmarking uses incident data from the HSE and man-hour data from the Vantage Personnel On Board (POB) tracking system, which ensures consistency and accuracy of the results. The injury rates are calculated per million man-hours, based on 12-hour daily exposure over the calendar year.

The benchmarking process covers:

- Reportable injuries (fatal, major, over-three-day and over-seven-day injuries) according to the RIDDOR. Please note that as of 6 April 2012 the classification of over-three-day injuries was replaced with that of over-seven-day injuries. For the purpose of the benchmarking exercise, the results for both were combined (see figure 4 opposite, top chart)

- RIDDOR reportable dangerous occurrences (see figure 4 opposite, bottom chart)

- RIDDOR reportable hydrocarbon releases (HCR). The industry HCR performance is covered as a key performance indicator (KPI-1) in section 2.3.1 of this report

The performance figures in figure 4 opposite show encouraging year-on-year improvement across the range of metrics. Reportable injury figures in 2012 show a 14 per cent improvement compared to 2011, while the frequency of dangerous occurrences has also decreased by 34 per cent in the same period.

As the data are expressed as frequencies per million man-hours, these figures are influenced by both the actual numbers of injuries and dangerous occurrences as well as the increase in man-hours of exposure in 2012. The charts above also illustrate significant improvement since 2010, with a 26 per cent and 43 per cent decrease in the frequencies of reportable injuries and dangerous occurrences by 2012, respectively.
Figure 4: Installation Duty Holders’ Safety Performance Benchmarking Results

Reportable Injury Frequencies

Industry Average 2010 = 2.55
Industry Average 2011 = 2.19
Industry Average 2012 = 1.89

Dangerous Occurrence Frequencies

Industry Average 2010 = 8.96
Industry Average 2011 = 7.7
Industry Average 2012 = 5.1
**Figure 5: Breakdown by Type of the Dangerous Occurrences Reported in 2012**

<table>
<thead>
<tr>
<th>Dangerous Occurrence Category</th>
<th>Dangerous Occurrence Code</th>
<th>Number of Dangerous Occurrences 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifting Machinery Failure</td>
<td>01</td>
<td>8</td>
</tr>
<tr>
<td>Pressure Systems</td>
<td>02</td>
<td>2</td>
</tr>
<tr>
<td>Electrical Short Circuit/Fire</td>
<td>05</td>
<td>1</td>
</tr>
<tr>
<td>Radiation Incident</td>
<td>08</td>
<td>2</td>
</tr>
<tr>
<td>Breathing Apparatus Malfunction</td>
<td>09</td>
<td>3</td>
</tr>
<tr>
<td>Collapse Scaffold</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Well Incident</td>
<td>13</td>
<td>26</td>
</tr>
<tr>
<td>Pipelines</td>
<td>14</td>
<td>21</td>
</tr>
<tr>
<td>Petroleum Hydrocarbon</td>
<td>73</td>
<td>98</td>
</tr>
<tr>
<td>Fire or Explosion</td>
<td>74</td>
<td>16</td>
</tr>
<tr>
<td>Release or Escape of Dangerous Substance</td>
<td>75</td>
<td>4</td>
</tr>
<tr>
<td>Dropped Objects/Station-Keeping</td>
<td>77</td>
<td>71</td>
</tr>
<tr>
<td>Collision</td>
<td>78</td>
<td>4</td>
</tr>
<tr>
<td>Potential Collision</td>
<td>79</td>
<td>1</td>
</tr>
<tr>
<td>Evacuation</td>
<td>82</td>
<td>2</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td></td>
<td><strong>260</strong></td>
</tr>
</tbody>
</table>
2.3 Asset Integrity Key Performance Indicators

Since 2000, the HSE has had a specific focus to reduce HCRs through key programme 1 (KP1). This was followed by a wider focus on asset integrity management (KP3).

The KP3 inspection programme ran from 2004 through to 2007, with asset integrity defined as “the ability of an asset to perform its required function effectively and efficiently while protecting health, safety and the environment”. Asset integrity management was defined as “the means for ensuring that people, systems, processes and resources that deliver integrity are in place, in use, and will perform on demand over the whole life cycle of the asset”.

One of the many responses of the UK offshore industry to the KP3 was to develop additional asset integrity related key performance indicators (KPIs). These would consistently demonstrate industry progress in asset integrity management over time and complement hydrocarbon release statistics. In 2005, UKOOA (now Oil & Gas UK) set up a work group to identify and develop a number of meaningful indicators resulting in the following KPIs being introduced in early 2008:

- KPI-1 – Hydrocarbon Release
- KPI-2 – Verification Non-Compliance
- KPI-3 – Safety-Critical Maintenance Backlog

Figure 6: Asset Integrity Key Performance Indicators used in the UK Oil and Gas Industry
2.3.1 KPI-1 Hydrocarbon Release

Hydrocarbon releases (HCRs) are, in simple terms, oil and gas leaks. The HSE established the HCR supplementary reporting scheme in 1992 in response to one of Lord Cullen’s recommendations in his report on the Piper Alpha disaster in 1988. Duty holders of offshore installations supply the data contained on the HCR system voluntarily to the HSE. These relate to incidents involving HCRs that are reportable under RIDDOR. They are classified as major, significant or minor based on their potential to cause a major accident if ignited.

In 2010, the offshore industry’s safety partnership, Step Change in Safety, agreed with all its member companies to redouble efforts to reduce the total numbers of HCRs and set an objective of achieving a 50 per cent reduction in the numbers of reportable HCRs by end of March 2013, measured against the total number of HCRs in 2010 of 187.

Figure 7 below provides provisional data from the HSE (there is still some verification work ongoing by the HSE to finalise the data). The HSE’s expectation however is that any change to these provisional figures will be minimal so it is appropriate to offer qualified comment on the performance at this time. The industry has fallen just short of its stated 50 per cent reduction target; over the three-year period, a 48 per cent reduction has been achieved. Given that many commentators regarded a 50 per cent target as over-ambitious, this level of achievement is commendable and reflects significant effort on the part of industry to implement effective HCR reduction strategies and plans. In addition to the overall improvement, the 46 per cent reduction in major and significant HCRs in the three-year period is also very encouraging.

The Step Change Leadership Team is intent on retaining the focus on HCR prevention and is now considering a new release reduction target and reference period.

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1 The definitions of HCR severities can be found on the HSE website at: https://www.hse.gov.uk/hcr3/help/help_public.asp#Severity

Source: Health and Safety Executive
2.3.2 KPI-2 Verification Non-Compliances

The safety-critical parts of offshore installations are subject to a verification process to ensure that they are suitable for their intended purpose and remain in good condition and repair. Safety-critical parts of an installation include, for example, fire and gas detection, emergency shutdown and the temporary refuge. Verification is undertaken by independent competent people and the findings are ranked as levels 1, 2 or 3. These levels are commonly applied by the verifiers. KPI-2 monitors and measures non-compliances under levels 2 and 3, as they are the more significant findings.

Level 2 findings often result from the failure of a safety-critical element (SCE)\(^2\) to meet its performance standard but which has no significant threat to installation integrity. Average level 2 findings have decreased by 46 per cent from 2008 to 2012, dropping from 13 to 7 open findings per installation. Sustained effort is being applied to further improve this performance and to make progress from the plateau shown in the graph below.

Figure 8: Average Number of Open Level 2 Findings per Installation at the End of a Quarter

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2 Safety-critical elements are parts of an installation and of its plant (including computer programs), or any part thereof—
- the failure of which could cause or contribute substantially to a major accident
- the purpose of which is to prevent, or limit the effect of, a major accident
The Level 3 findings represent the more serious matters of concern identified by the Independent Competent Person (ICP). They often result from a fundamental weakness of the SCE assurance process or multiple failures of performance standard(s) and have the potential to present a significant threat to installation integrity. As might be expected, the number of level 3 findings per installation is very small so the total number across all installations is monitored. There is an expectation that mitigation measures (agreed with a relevant technical authority) are in place while the finding remains open.

Since the introduction of the KPI scheme in 2008, the industry has reduced the number of level 3 findings from 35 to five in 2012, the lowest it has ever been and representing an 85 per cent improvement. The industry continues to focus effort and attention on this critical area of performance, and knowledge and experience from companies who have or had level 3 findings are shared and discussed at the KPI work group meetings managed by Oil & Gas UK.

Figure 9: Total Number of Open Level 3 Findings at the End of a Quarter
2.3.3 KPI-3 Safety-Critical Maintenance Backlog

The KPI-3 produces a report of the total number of backlog hours for safety-critical maintenance that is beyond its planned completion date. This excludes backlog maintenance that has been subject to a formal and robust deferral process involving relevant technical or engineering authorities.

As can be seen in figure 10 below, the data show a seasonal (cyclic) nature probably reflecting campaign maintenance patterns (for example, planned major maintenance shutdowns). Maintenance specialists attend the Oil & Gas UK KPI work group meetings and agree that, although we should always strive to reduce and minimise backlog, the levels of backlog experienced are tolerable.

*Figure 10: Average Number of Planned Maintenance Man-Hours in Backlog per Installation*

However, it has now been recognised that reporting the backlog in terms of man-hours alone is not entirely helpful to our understanding of its significance. Changes are being made to the scheme to show backlog as a percentage of total planned safety-critical maintenance. This is likely to be more relevant and meaningful in reviewing and assessing maintenance backlog, and will be reflected in future reports.
3 Significant Issues and Activities

This section summarises some of the most significant health and safety related issues and activities affecting the industry and, in turn, Oil & Gas UK during 2012. It does not intend to represent the entire scope of issues and activities, only those of higher significance or of wider interest to member companies and other stakeholders.

3.1 Helicopter Incidents

On 10 May 2012, the crew of the EC225 LP Super Puma G-REDW helicopter carried out a controlled ditching in the UK North Sea approximately 20 nautical miles east of Aberdeen. This was in response to indications of failure of the main gearbox (MGB) lubrication system and, subsequently, a warning indicating failure of the emergency lubrication system. All passengers and crew were evacuated into a life raft and were subsequently rescued. Two passengers suffered minor injuries.

The Air Accidents Investigation Branch (AAIB) investigation identified a 360° circumferential crack in the bevel gear vertical shaft in the MGB. The crack was in the vicinity of a manufacturing weld, causing disengagement of the drive to both mechanical oil pumps.3

In July 2012, helicopter manufacturer Eurocopter published a Service Bulletin that included the introduction of a red threshold for two Health and Usage Monitoring System (HUMS) trend indicators (MOD45 and MOD70) and lowered the fleet-wide maximum threshold values for both indicators. These developments were subsequently mandated in a European Aviation Safety Agency Airworthiness Directive, which stipulates that the MOD45 and MOD70 indicators should be monitored at set intervals in EC225 helicopters fitted with bevel gear shafts of a certain part number and serial number.

On 22 October 2012, the crew of the EC225 LP Super Puma G-CHCN helicopter carried out a successful controlled ditching approximately 32 nautical miles south west of Sumburgh, Shetland Islands, following indications of the MGB lubrication system's failure and, subsequently, a warning indicating failure of the emergency lubrication system. All passengers and crew evacuated the helicopter and were rescued without injury. Visual examination identified a 360° circumferential crack on the bevel gear vertical shaft, in the vicinity of the weld that joins two sections of the shaft. The type of vertical shaft fitted to the G-CHCN was not identified for monitoring within the Airworthiness Directive mentioned above.

Following the second controlled ditching, the offshore industry, together with the helicopter operators, decided to suspend EC225 Super Puma flights until the underlying cause for the failures had been identified and understood. Subsequently, the Civil Aviation Authority (CAA) prohibited these helicopters from being flown over the sea. The Norwegian CAA took a similar position.

While the two failures appear superficially similar, there were also some significant differences. Eurocopter has been testing a number of hypotheses to identify the underlying causes for both. In April 2013, the company announced that it had managed to identify and reproduce the failure mechanism. It must now convince the regulatory authorities (AAIB, CAA and the European Aviation Safety Agency) of the veracity of its conclusions before flights can be resumed. The Step Change in Safety Helicopter Safety Steering Group is closely monitoring developments and informing the workforce accordingly (see section 7 of this report for more details).

3 The AAIB Special Bulletins can be found at: http://www.aaib.gov.uk/publications/special_bulletins.cfm
3.2 Elgin G4 Well Incident

A major well control incident occurred on 25 March 2012 and Oil & Gas UK is grateful to David Hainsworth, safety, health, environment and integrity manager at Total E&P UK Limited (TEP UK), for the following contribution.

The Elgin and Franklin field was developed in the years 1997 to 2001 and its development was at the leading edge of technology. The production reservoir, the Fulmar, at a depth of around 5,500 metres, is a high pressure/high temperature (HP/HT) reservoir with an initial temperature of 200°C and a pressure of 1,100 bar(g). Elgin is operated for seven Joint Venture Partners and the Elgin production utilities quarters (PUQ) and wellhead platform are linked by a 90-metre bridge. At the time of the well control incident, Elgin was producing 135,000 barrels of oil equivalent per day.

At 12.15 in the afternoon on Sunday 25 March 2012, a gas leak from well G4 on Elgin was detected by the wellhead platform’s passive gas detection system and visually identified by the nearby emergency response and rescue vessel. Within minutes a controlled blow-down of the topsides facilities was instigated, and everyone on board both the PUQ and nearby drilling rig, Rowan Viking, were called to emergency muster. Onshore emergency response teams from Total and Rowan were mobilised.

The offshore installation manager (OIM) started to evacuate the 238 persons from Elgin and the Rowan Viking drilling rig. In accordance with standard operating procedures for a major offshore oil and gas industry incident, the Maritime Rescue Co-ordination Centre (MRCC) established communications with Grampian Police. Total mobilised a maritime incident communications officer to the MRCC.

By 4.40 pm, 219 personnel had been safely evacuated using a combination of search and rescue and public transport helicopters. At 1.45 am on 26 March, the OIM decided to evacuate the last 19 personnel and abandon the platform. By 2.30 am all personnel were evacuated and preparation began for assessing the situation, re-boarding the installation and recovery.

The onshore response began to grow in size and structure as plans were made to stop the leak. TEP UK’s onshore emergency response organisation was joined by Wild Well Control, Oil Spill Response Limited (OSRL) and staff from the Total group. The emergency response room (ERR) was manned 24 hours a day, seven days a week for the next 56 days. Communication, command and control had to be managed for the Central Graben field from the ERR, as well as coordination of surveillance flights, the maintenance and authorisation of a marine and air exclusion zone, and detailed risk assessments for all operations within those zones.

Interfaces with regulatory authorities such as the Department of Energy and Climate Change (DECC) and the HSE were maintained throughout the operation, with Total always factoring in potential escalation scenarios for each operation. Processes and procedures had to be adapted to implement critical path events in compressed timescales, both by Total and the regulatory authorities.

TEP UK’s Crisis Management Team started to develop strategies and make available resources to regain well control. The preferred option was a well kill operation, a so-called ‘top kill’, whereby a mobile pumping unit injects heavy mud directly into the G4 from the wellhead. The use of such a mobile unit provided an emergency option which could be pulled away from the danger area when not engaged in activity.

TEP UK mobilised immediately the semi-submersible drilling rig West Phoenix from west of Shetland to carry out this operation. Although technically feasible, this meant re-boarding of the Elgin wellhead platform was necessary.
Wild Well Control was already mobilised and suitably experienced for this operation, the timescale of which was measured in weeks.

A back-up option of relief well drilling was also started in the event the ‘top kill’ was ineffective. Two drilling rigs (Rowan Gorilla V & Transocean Sedco 714) were immediately made available. The timescale for drilling a relief well was measured in months.

Risk assessments were conducted and required for all options and strategies, and back-up options were resourced. These assessments included the first reconnaissance flight, surveillance flights, initial boarding of the PUQ, and a review of the North Atlantic Drilling West Phoenix rig’s capability for the pumping operation.

Regulatory approval for the ‘top kill’ came from DECC on 3 May 2012 following detailed environmental assessments and approval from the HSE. On 15 May, after a 12-hour operation to pump heavy, water-based drilling mud into Elgin’s G4 well, the leak stopped. On 16 May, TEP UK confirmed that the well had been brought back under control, and on 21 May the company announced that the gas leak had been sealed and that the well was stable.

Since the Elgin incident, TEP UK’s investigation has led to operating procedures being revised to reflect the G4 lessons and, in turn, make operations safer. Wells have to comply with stringent integrity criteria before being put back into production, taking into account the knowledge gained during and following the incident. This information was included in the Elgin/Franklin Safety Case, which was re-submitted to the HSE to remake the case for safe production from the wells. The Safety Case has since been accepted.

Production resumed on 9 March 2013. Throughout the incident and in the period since, TEP UK has made great efforts to share the lessons learnt by presenting at a number of industry seminars and forums. Work is also ongoing within the Oil & Gas UK Well Life Cycle Practices Forum (WLCPF) to review and improve as necessary the industry’s management of HP/HT well stock.

*Aerial Photo of the Elgin B Jacket and Rowan Viking Alongside*
3.3 Proposed European Union Safety Regulation

In October 2011, the European Commission (EC) published a draft Regulation on the Safety of Offshore Oil and Gas Prospection, Exploration and Production. This was an output from the EC’s review of offshore oil and gas safety in European Union (EU) waters carried out in the wake of the Deepwater Horizon disaster in the Gulf of Mexico in April 2010. The review concluded that safety improvements were necessary and deemed a European Regulation as the most appropriate legal instrument to drive consistent application of those improvements throughout the EU.

Oil & Gas UK supports the general objective of seeking to raise safety standards across European offshore oil and gas operations. However, the organisation was staunch in its opposition to a Regulation as a legislative means of achieving that objective. An EU Regulation would have dismantled the post-Piper legal framework in the UK and would have been hugely administratively burdensome to apply (both for the regulator and industry) without significant safety improvement.

From the outset, Oil & Gas UK marshalled a robust case in opposition to the Regulation and promoted a Directive as a more appropriate legal instrument. We joined with other established oil and gas producing nations (Norway, Denmark and the Netherlands), as well as the International Association of Oil and Gas Producers (OGP), to develop robust arguments in defence of existing sound regulatory regimes and to contest the proposed EU Regulation.

In 2012, Oil & Gas UK worked with its member companies to provide input into UK responses to various aspects of the ongoing debate, engaging actively with key stakeholders, including the HSE, DECC and the trade unions.

Oil & Gas UK also commissioned GL Noble Denton to carry out a technical review of the EC impact assessment that formed a key element in support of the proposed EU regulation. This independent review concluded that the impact assessment was fundamentally flawed and did not provide the necessary justification for introducing a Regulation. Meanwhile, the Norwegian Oil and Gas Association also commissioned DNV to conduct a similar review and its findings were closely aligned with those of GL Noble Denton.

In February 2013, the European Energy Commissioner announced that safety improvement would be pursued in the form of a Directive rather than a Regulation. This represents a successful outcome on the part of Oil & Gas UK, partner national trade associations, the UK regulators and trade unions. Oil & Gas UK will continue to lend its weight in the effort to transpose the Directive into UK legislation (see section 10.1 of this report).

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[^: Additional information can be found at: http://www.oilandgasuk.co.uk/ ProposedEURegulation.cfm]
3.4 Ageing and Life Extension

The HSE’s KP4 focuses on the industry’s management of ageing and life extension (ALE). It was launched in July 2010 with inspection activity commencing in November that year. By the end of December 2012, the HSE inspectors had carried out 24 inspections on duty holders. The programme will run until the end of 2013 with a continued focus on ALE management; routine inspections will follow thereafter.

The Oil & Gas UK response to KP4 led to the ALE Network being established in 2010. That network continued to function throughout 2012 and has attracted around 120 members with an active interest in ALE matters. A work group within the network was also formed to produce industry guidance on ALE management on the UK Continental Shelf (UKCS), which was published in April 2012.5

A further three work groups were established from 2012 to 2013 to deliver more detailed technical guidance in specific subject areas:

- Marine aspects of floating production installations
- Electrical, controls and instrumentation (EC&I)
- Offshore structures

Additionally, the ALE Steering Group was created in June 2012 to oversee and steer the industry’s efforts on ALE management, providing a single interface with the HSE. The steering group comprises representatives from eight duty holders and two HSE managers with KP4 remits. It is chaired by Oil and Gas UK’s health and safety policy manager and met three times by the end of 2012.

The HSE published a KP4 interim report in November 2012.6 This document was presented to industry at an event hosted by Oil & Gas UK and attended by 70 member company representatives. The report summary comments favourably on the industry’s response to KP4 and the efforts made to maintain or improve ALE management across the asset base. It sets out key findings across the inspection topic areas and provides a clear indication of those areas where duty holders need to maintain ALE focus. The report has helped to prioritise the focus of the technical work groups, and they will ensure that the guidance produced takes proper account of the inspection findings and areas for improvement.

5 The guidance on ALE management can be found on Oil & Gas UK’s website at: http://www.oilandgasuk.co.uk/cmsfiles/modules/publications/pdfs/HS073.pdf
6 The KP4 interim report can be found on the HSE’s website at: http://www.hse.gov.uk/offshore/ageing/kp4-interim-report.pdf
3.5 Maitland Report

As reported in the Health and Safety Report 2012, the UK Government appointed Professor Geoffrey Maitland to chair a review of recommendations made in official reports on the Deepwater Horizon disaster. The review panel had to consider the relevance of those recommendations to the UK offshore oil and gas industry and form a view as to the extent to which they might inform modification or improvement of the UK regulatory regime.

The resulting Maitland Report was published in December 2011. It was largely favourable towards the current UK regulatory regime, but the industry was required to respond to a number of recommendations for improvement within its sphere of control or influence. These recommendations fall into the following broad categories:

- Well planning and control
- Environmental protection
- Emergency response
- Learning from incidents and best practice
- Competency and training of the workforce
- Workforce engagement
- Liability and insurance issues
- Technology development

The industry response was further consolidated into a UK Government response document which was published in December 2012. Ongoing actions to respond to the recommendations and referred to in the Government report are being managed by various parties, including Oil & Gas UK.

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3.6 Asset Integrity Key Performance Indicators – Houston Public Hearing

Two representatives from the United States Chemical Safety & Hazard Investigation Board visited Oil & Gas UK in May 2012 as part of its ongoing Deepwater Horizon investigation. The investigators were researching the application of safety performance indicators as part of major accident hazard management in the offshore oil and gas industry, and were visiting the UK and Norway in line with that research. They showed particular interest in the Oil & Gas UK Asset Integrity KPIs and invited us to present the scheme at a public hearing in Houston on the theme of process safety indicators. In July 2012, former Oil & Gas UK health and safety policy manager, Bob Lauder, appeared as a panellist at the public hearing, presenting and answering questions on the UK’s KPI arrangements.9

3.7 Fibre Reinforced Plastic Gratings Integrity Issues

Fibre reinforced plastic (FRP) gratings are in use on offshore installations and offer weight and corrosion resistance advantages over traditional steel gratings. In October 2012, the HSE published a safety notice advising that certain FRP gratings had been found to fail after periods of exposure to hydrocarbon fire conditions.10 Furthermore, the currently accepted fire testing standards for FRP gratings provided by the US Coastguard do not test the materials against hydrocarbon fire temperatures.

The HSE therefore now requires duty holders to identify FRP gratings in areas that could be exposed to hydrocarbon fires and to take steps to establish that they would retain sufficient integrity if exposed. The Oil & Gas UK Major Hazards Management Forum formed a sub-group to develop a technical note that would assist duty holders in carrying out the assessment and meeting the HSE’s expectations. A member company, MMI Engineering, had previously taken part in a related research project and provided invaluable specialist support to the sub-group, resulting in the Oil & Gas UK technical note being published in February 2013.11

3.8 Helideck Issues on Normally Unattended Installations

Work continued through 2012 on a number of helideck issues for normally unattended installations (NUIs), with the prime focus being fire-fighting provisions. These areas are described in more detail in section 10.8 as work will continue forward in 2013.

3.9 Re-Launch of the Pipeline and Riser Loss of Containment Database

Work was undertaken in 2012 to refresh and reactivate the Pipeline and Riser Loss of Containment (PARLOC) database. The re-launch has not been as effective as anticipated so this work will continue into 2013 and is summarised in section 10.9 of this report.

9 The technical paper submitted as part of Oil & Gas UK’s participation in the United States Chemical Safety & Hazard Investigation Board public hearing in Houston is available at: http://www.oilandgasuk.co.uk/cmsfiles/modules/publications/pdfs/HS076.pdf
10 The FRP gratings safety notice can be found on the HSE website at: http://www.hse.gov.uk/safetybulletins/deck-gratings.htm
11 Oil & Gas UK’s technical note on FRP gratings can be found at: http://www.oilandgasuk.co.uk/Health_Safety_Report_2013.cfm
4 Offshore Helicopter Transport Safety Record

4.1 Background
Since 1976, the CAA has collected commercial air transport helicopter flight statistics and reportable accident data for UKCS offshore operations under its Mandatory Occurrence Reporting (MOR) scheme. During this 37-year period up to year-end 2012, more than 62 million passengers have been transported to and from offshore installations on the UKCS, with over 7.25 million flights made (sectors flown), consuming nearly 3.5 million flying hours. Regrettably, during this period, 12 fatal accidents have claimed the lives of 115 offshore workers and flight crew. There have been 60 non-fatal accidents.\(^{12}\)

To provide a report that is representative of today’s offshore flight operations using a fleet of modern helicopters, data from 1992 to 2012 have been used for comparative purposes. With this in mind and as a measure of current UKCS activity, in 2012, just over 141,000 sectors were flown, consuming 86,000 flight hours and transporting over a million passengers offshore. Since 1992, six fatal accidents have claimed the lives of 47 offshore workers and flight crew and there have been 18 non-fatal accidents.

4.2 Current Helicopter Types
At the end of 2012, the UKCS helicopter fleet numbered 90 aircraft and comprised a mix of airframe types.

Figure 11: Current Helicopter Types used for UKCS Offshore Oil and Gas Support

<table>
<thead>
<tr>
<th>Type</th>
<th>Weight Class</th>
<th>Introduced</th>
<th>In Fleet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sikorsky S61</td>
<td>Heavy</td>
<td>Pre 1975</td>
<td>2</td>
</tr>
<tr>
<td>Eurocopter AS365 (Dauphin)</td>
<td>Medium</td>
<td>1979</td>
<td>6</td>
</tr>
<tr>
<td>Sikorsky S76</td>
<td>Medium</td>
<td>1980</td>
<td>8</td>
</tr>
<tr>
<td>Eurocopter AS332 (Super Puma)</td>
<td>Heavy</td>
<td>1982</td>
<td>17</td>
</tr>
<tr>
<td>Eurocopter EC225</td>
<td>Heavy</td>
<td>2005</td>
<td>21</td>
</tr>
<tr>
<td>Sikorsky S92</td>
<td>Heavy</td>
<td>2005</td>
<td>20</td>
</tr>
<tr>
<td>AgustaWestland AW139</td>
<td>Medium</td>
<td>2005</td>
<td>13</td>
</tr>
<tr>
<td>Eurocopter EC155</td>
<td>Medium</td>
<td>2007</td>
<td>3</td>
</tr>
</tbody>
</table>

\(^{12}\) A complete listing of the 72 reportable accidents involving helicopters serving the UK offshore oil and gas sector from 1976 to 2012 is provided in an appendix on the Oil & Gas UK website at: http://www.oilandgasuk.co.uk/Health_Safety_Report_2013.cfm
Since 2001, only heavy and medium twin engine helicopters have been used on the UKCS. This is because two-pilot light helicopter operations do not have sufficient range and payload to meet contemporary offshore commercial expectations, while extra heavy helicopters such as the Chinook would require three crew members. Furthermore, they are also too large for normal day-to-day crew change payloads.

It is also important here to make the distinction between heavy and medium twin helicopter operations. As a rule, heavy twins (such as the AS332, EC225, S61 and S92) operate mainly out of Aberdeen or Scatsta and generally fly sectors (flight stages) with long flight times. Medium twins (such as the AS365, EC155, S76 and AW139) fly mainly out of the regional heliports (such as Blackpool, Humberside, and Norwich) and these aircraft record a high number of sectors with relatively short flight times.

4.3 Offshore Helicopter Reportable Accidents on the UK Continental Shelf
All significant flight safety occurrences are reported to the CAA using the MOR scheme. A number of MORs are submitted every month, providing constant oversight of safety-related occurrences. It is the MORs classed as ‘reportable accidents’ that are highlighted in this report.

From 1992 to 2012, six fatal accidents claimed the lives of 47 offshore workers and flight crew. Two of the accidents involved helicopter landing officer fatalities on offshore helidecks, two were caused by catastrophic component failure and the other two were attributed to human factors.

Eighteen reportable non-fatal accidents have also occurred since 1992. These include major component failures, pilot error, lightning strikes, major airframe damage, and main and tail rotor damage. In most cases, only the helicopter was damaged but, infrequently, these accidents have resulted in injury to personnel.

4.4 Accident Analysis
The following graphs show the distribution of fatal and non-fatal reportable accidents on the UKCS from 1992 to 2012, as well as the offshore helicopter fatal and non-fatal accident rates per 100,000 flying hours.

*Figure 12: UKCS Accident Distribution*
Figure 13: UKCS Fatal and Non-Fatal Accident Rates per 100,000 Flying Hours

A breakdown of total reportable accidents is provided in the following charts.\textsuperscript{13}

Figure 14: Breakdown of Reportable Accident Causes

Accident Categories 1992 to 2012

\textsuperscript{13}In order for accident events to be identified using a recognised international code, categorisation and causation follows the International Civil Aviation Organisation/Commercial Aviation Safety Team Common Taxonomy Team Taxonomy.
Technical Accidents 1992 to 2012

- Structure - 1
- Main Rotor - 2
- Main Rotor Gear Box - 3
- Tail Rotor - 1

Operational Accidents 1992 to 2012

- Controlled Flight into Terrain (CFIT) - 2
- Ground Handling (RAMP) - 3
- Loss of Control - Ground (LOC-G) - 1
- Collision with Obstacle(s) During Take-off and Landing (CTOL) - 1
- Abnormal Runway Contact (ARC) - 2
- Loss of Control - in Flight (LOC-I) - 1

External Accidents 1992 to 2012

- Windshear or Thunderstorm (WSTRW) - 6
- Aerodrome (ADRM) - 1
Sixty per cent of the operational accidents occurred during flight, all of which are attributed to pilot error. The remaining 40 per cent occurred on the ground. Eighty-six per cent of the technical failures are due to dynamic component failures (main rotor gear box, main rotor blade and tail rotor). A structural issue accounts for the remaining 14 per cent.

For accidents caused by external factors, 86 per cent of them were because of weather related events, including five lightning strikes and an encounter with a water spout. The final accident accounts for the remaining 14 per cent and was due to a very heavy helideck landing caused by adverse helideck environmental effects (caused by hot turbine exhaust plume).

Offshore helicopter accident rates on the UKCS have been compared with the OGP’s worldwide fatal and non-fatal reportable accident rates for the period 1995 to 2010. This indicates that averaged over this time, offshore helicopter operations on the UKCS carry significantly less risk than operations elsewhere in the world.

Whilst saying that, however, it is important to understand that helicopter operations in many parts of the world lack the regulatory, management and equipment sophistication when compared with the UK. Also, on the UKCS, helicopter operations are exclusively two-engine, two-pilot operations, whereas, for example, in the US Gulf Coast region and elsewhere there are a large number of small, single-engine helicopter and single-pilot operations. It is these types of operations that carry the largest percentage of accidents.

Figure 15: Comparison of Fatal and Non-Fatal Reportable Accident Rates, 1995 to 2010

<table>
<thead>
<tr>
<th>Region</th>
<th>Fatal Accident Rates (per 100,000 flying hours)</th>
<th>Non-Fatal Accident Rates (per 100,000 flying hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worldwide</td>
<td>0.57</td>
<td>1.48</td>
</tr>
<tr>
<td>UKCS</td>
<td>0.26</td>
<td>0.91</td>
</tr>
</tbody>
</table>

Source: OGP
4.5 Safety Improvements and Initiatives
Since the early 1980s, the industry and its regulators (the CAA and the HSE) have funded and supported many safety initiatives and improvements to UKCS helicopter operations. Some of the major achievements in recent years are listed below but they have not been given any order of priority or importance.14

TCAS 2 Collision Avoidance System
A programme is under way on the UKCS to introduce an airborne collision avoidance system on all offshore helicopters. This system has the potential to eliminate conflicts between similarly equipped offshore helicopters and to reduce ‘air miss’ opportunities with other aircraft.

Extension of VHF Communications Coverage and Introduction of Multilateration Flight Surveillance for the UK Continental Shelf
In 2004, the UKOOA (now Oil & Gas UK) Aviation Safety Technical Group initiated a joint project with the National Air Traffic Service to assess the efficiency and coverage of offshore helicopter VHF aeronautical communications and flight surveillance on the UKCS. The outcome of this review led to modernisation of offshore VHF aeronautical communications and installation of a new multilateration flight surveillance system which has greatly enhanced air traffic control on the UKCS.

The new systems became operational in 2010 and the wide area multilateration (a world first over such a large area of sea) has been welcomed by air traffic controllers as a surveillance tool that is the equivalent of radar.

Meteorological Project
In 2009, in response to a new CAA Guidance CAP 437 requirement, Oil & Gas UK led a project to provide a UKCS-wide automatic meteorological recording and reporting network. The aim was to improve the accuracy of weather information used by offshore helicopter flight crews. This project entailed installing specialist meteorological equipment and software on designated hub installations and providing training for around 600 offshore personnel. The Helimet system became fully operational in 2012.

Helideck Lighting
Green perimeter lighting was adopted as an international standard on offshore helidecks following CAA field trials of new helideck lighting systems designed to enhance visual cues for landing at night. Green perimeter lighting has been in use on the UKCS for the last four years in conjunction with revised flood lighting.

The project also identified the significant benefits of lighting the aiming circle and ‘H’ marking. Following successful trials during winter 2012 to 2013, these ‘new’ lighting systems will begin to be installed on UKCS offshore helidecks next year.

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14 For a full and detailed list of industry-led safety initiatives and CAA research projects, see the appendix provided on the Oil & Gas UK website at: http://www.oilandgasuk.co.uk/Health_Safety_Report_2013.cfm
Forecasting/Predicting Triggered Lightning Strikes
Responding to requests from industry, the CAA has collaborated with the UK Met Office to investigate and demonstrate the feasibility of forecasting/predicting triggered lightning strikes on helicopters. Oil & Gas UK, CAA Norway, CHC Helicopter and seven individual oil and gas companies have funded the project, initial work for which was completed in June 2011. The system has since been evaluated and improved via in-service trials during the winter of 2011 to 2012 and the 2012 to 2013 ‘lightning seasons’. The technology is now considered mature and helicopter operators have requested that it be left running on the Met Office OHWeb weather information system.

Advanced Anomaly Detection for the Health and Usage Monitoring System
A programme began in 2009 to implement advanced anomaly detection (AAD) to the Health and Usage Monitoring System (HUMS) data from the UKCS offshore helicopter fleet. The outcome of a successful CAA research project, AAD improves on existing HUMS data analysis techniques. This enhances HUMS’ sensitivity to potentially catastrophic failure defects without increasing or even reducing the false alert rate. When implemented, HUMS defect detection rates may increase from about 65 per cent to 85 per cent. The implementation in 2013 of HUMS AAD for the most used helicopter types will be monitored through a ‘Controlled Service Introduction’.

4.6 Summary
The offshore oil and gas industry could not operate efficiently without helicopters. These non-scheduled public transport operations on the UKCS take place in a hostile environment. Since the beginning of oil and gas operations on the UKCS, the longest fatal accident free period for offshore helicopter operations has been nine years, from 1993 to 2001. Despite having a fleet of some of the most up-to-date and technologically advanced helicopters, the most recent fatal accidents occurred in July 2002 (S76 in the Leman Field), December 2006 (AS365 Dauphin at Morecambe Bay) and in April 2009 (AS332L2 Super Puma off Peterhead). These tragic accidents serve as a constant reminder of the need for continuous improvement to minimise the risks.

Although the non-fatal reportable accident rate on the UKCS since 1992 represents a significant improvement over earlier years, non-fatal accidents continue to occur.

From 1992 to 2012, operational causes have accounted for 42 per cent of all accidents (fatal and non-fatal), while 29 per cent have been due to technical failures and another 29 per cent caused by external factors.

In 2012, when two EC225 Super Pumas experienced main rotor gearbox failures, both flight crews were forced to execute a controlled ditching. Fortunately, all personnel on board were safely recovered. These incidents reinforce the need for the UK oil and gas industry to continue to vigorously pursue current and future offshore helicopter safety initiatives and research projects.
5 Regulatory Consultations

Much of the focus in 2012 was on the proposal to introduce an EU Regulation on offshore oil and gas safety (see section 3.3). Although the engagement with Europe was not strictly in the form of a consultation, Oil & Gas UK worked closely with the HSE, DECC and a range of other stakeholders to challenge the plans for a Regulation and argue that the interests of safety would be best served by a Directive.

Further UK regulatory consultation was confined to a proposal to exempt certain self-employed personnel from health and safety law and other revisions to the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR).

5.1 Exemption of Certain Self-Employed Persons from Health and Safety Law
As part of the UK Government’s response to the Löfstedt review of health and safety legislation, it proposed to exempt certain categories of self-employed personnel from health and safety law, with the exception of self-employed workers in ‘high-risk’ industries such as the oil and gas sector.

Oil & Gas UK supported this proposal (even though it would be more correct to describe the sector as ‘major hazard’ rather than ‘high-risk’). Early in 2013, the HSE published the summary of responses to this consultation, confirming that the option preferred by Oil & Gas UK had gained wide favour and advising that this would be recommended to the relevant Government minister.

5.2 Proposals to Simplify and Clarify Reporting Requirements under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
The consultation proposed revisions to certain terms within the classifications of injuries, including changes to the list of prescribed major injuries. The amends improved the clarity of the classifications and so did not cause any concern. However, Oil & Gas UK used the consultation response to suggest that RIDDOR guidance might be revised to clarify how the terms “arising out of or in connection with a work activity” or “engaged in work” applies specifically to the offshore workplace.

This is because other relevant legislation stipulates that offshore personnel are deemed to be “at work” at all times they are on board an offshore installation. The effect of this interpretation is that off-shift injuries, which have no connection to a work activity, are considered to be RIDDOR reportable but this is not currently applied consistently.

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15 Oil & Gas UK’s response to the self-employed persons proposal can be found at: http://www.oilandgasuk.co.uk/Health_Safety_Report_2013.cfm
16 The result of this and the HSE summary response can be found at: http://www.hse.gov.uk/consult/condocs/cd242-responses.pdf
17 Oil & Gas UK’s response to the RIDDOR consultation can be found at: http://www.oilandgasuk.co.uk/Health_Safety_Report_2013.cfm
6 Oil & Gas UK’s Work in Representative Bodies

The Oil & Gas UK Health, Safety and Employment Issues Directorate manages a broad range of issues and coordinates the development of cooperative solutions on behalf of the industry. This is achieved through a number of forums, networks and work groups. The directorate also actively participates in various other industry groups.

Figure 16: Oil & Gas UK’s Work in Forums, Work Groups and Representative Bodies

Note that many of the bodies are identified by acronyms in the graphics and these are then spelt out in the glossary provided in section 11 of the report.
There are two forums managed by Oil & Gas UK’s Health, Safety and Employment Issues Directorate – the Major Hazards Management Forum and the Health & Safety Forum. Detailed below is a summary of the issues addressed by the Major Hazards Management Forum and selection of the topics covered by the Health & Safety Forum since the previous report.

Figure 17: Issues Addressed by Oil & Gas UK Forums from 2012 to 2013

Major Hazards Management Forum
Chairman
David Piper, Maersk Oil

- Published FRP Grating Technical Note
- Revised Industry Guidelines on a Framework for Risk Related Decision
- Revised Supplementary Guidelines for Reporting Hydrocarbon Releases
- Supporting the Safety and Reliability Society’s Professional Competence Programme
- Reviewed the HSE’s Process Safety Agenda

Health & Safety Forum
Chairman
Bob Lauder, Oil & Gas UK

- EU Regulation/Directive
- Major Hazard Management Forum Work Group Activities
- Aviation Issues
- Size and Shape Study
- Ageing and Life Extension
- Occupational Health Issues
The Oil & Gas UK Health, Safety and Employment Issues Directorate actively engages with a wide variety of other industry and external stakeholder groups (see Figure 16). Figure 18 below provides examples of issues addressed in 2012 by a selection of these groups.

Figure 18: Issues Addressed by External Stakeholder Groups

- **Evacuation, Escape & Rescue Technical Advisory Group**
  Tripartite of regulator (HSE), industry and unions
  - Deepwater Horizon evacuation, escape and rescue matters
  - Use of Dacon Scoop
  - Emergency response and rescue vessels trials data
  - OPITO emergency response training standards
  - Maritime and Coastguard Agency organisational restructuring
  - Emergency response aspects of helicopter ditchings and the Elgin G4 incident

- **Offshore Industry Advisory Committee Workforce Involvement Group**
  Sub-group of the HSE’s Offshore Industry Advisory Committee comprising HSE inspectors and industry representatives
  - Influential in conceiving and delivering elected safety representatives’ development training (see section 10.7)
  - Host a number of regular events/forums for the offshore workforce to meet and share experiences and lessons

- **OPITO UK Industry Forum**
  Chaired by Oil & Gas UK, includes representatives from OPITO, the HSE, ERRVA, IADC, OCA, COTA, IMCA, training providers and unions
  - Emergency response team fitness standards
  - Potential abuses of computer based training
  - Safety representatives’ development training
  - Mutual acceptance of safety and emergency training
  - Escape chute training
  - Confined space entry training

- **North Sea Offshore Industries Association Training Work Group**
  Work group of representatives from Oil & Gas UK and trade associations from Norway, Denmark and the Netherlands
  - Updated the agreement and associated matrix on the mutual acceptance of basic safety and emergency training. More details can be found on the Oil & Gas UK website at: [http://www.oilandgasuk.co.uk/safetytraining.cfm](http://www.oilandgasuk.co.uk/safetytraining.cfm)
  - Initiated work on a mutual agreement relating to specialist emergency response training

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19 Note that many of the bodies are identified by acronyms in the graphics and these are then spelt out in the glossary provided in section 11 of the report.
7 Step Change in Safety

In the last year, Step Change in Safety celebrated 15 years of leading the UK oil and gas industry’s collaborative effort to continuously improve offshore safety.

Its method is simple. It focuses on doing a small number of things but doing them really well, engaging with the workforce at all levels, driving implementation of Step Change principles across the industry and ensuring strong leadership.

Step Change in Safety is unique – no other industry has such a body. It brings together oil and gas companies and contractors, trade unions, regulators and the workforce. Its leadership team also features direct involvement from elected safety representatives.

Five steering groups focus on asset integrity, human factors, workforce engagement, competence and helicopter safety. Initiatives include setting HCR reduction targets, delivering continuous improvement and launching innovative means of measuring safety culture, such as using the Workforce Engagement Toolkit.

Hydrocarbon Release Reduction
Step Change in Safety’s Asset Integrity Steering Group co-ordinated the industry-wide effort to reduce the numbers of HCRs (see section 2.3.1). The last year has seen:

- Guidance published on what a good hydrocarbon release reduction plan looks like, using best practice
- Mechanical joint integrity guidance published with an accompanying e-learning course

Safety Culture
The launch in 2012 of the Workforce Engagement Toolkit is one of the highlights of Step Change’s 15-year history. It was developed out of the recognition that good workforce engagement leads to a better worksite safety culture and therefore fewer accidents. The toolkit helps companies:

- Measure and compare engagement levels at worksites
- Understand strengths and weaknesses and develop improvement plans

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20 The HCR Reduction guidance can be found on the Step Change in Safety website at: http://www.stepchangeinsafety.net/knowledgecentre/publications/publication.cfm/publicationid/95
21 The Mechanical Joint Integrity guidance can be found on the Step Change in Safety website at: http://www.stepchangeinsafety.net/knowledgecentre/publications/publication.cfm/publicationid/86
22 Workforce Engagement: A Practical Guide can be found on the Step Change in Safety website at: http://www.stepchangeinsafety.net/knowledgecentre/publications/publication.cfm/publicationid/96
Helicopter Safety
Two controlled landings on water last year and the suspension of the EC225 fleet brought aviation safety to the forefront, led by the Helicopter Safety Steering Group (HSSG)\textsuperscript{23}. The group has been acting as a focal point for industry communication and will take a final decision on any return to flying of the EC225s on the UKCS once regulatory approval is in place. The HSSG has:

- Communicated helicopter safety issues using dedicated webpages, Q&As, factsheets, e-newsletters, videos and events
- Visited Eurocopter’s manufacturing and test facility in France to witness the various strands of the investigation into gearbox failures

Identifying Hazards and Controlling Risk
Step Change has succeeded in improving recognition of potential hazards and has helped to raise awareness of them. Highlights include:

- Three tiers of assurance and verification guidance published for all levels of the workforce\textsuperscript{24}
- Formation of a new work group focusing on safe transfer of personnel offshore by means other than helicopter

Joined-up Thinking
2013 saw the launch of Joined-up Thinking – a series of engagement packs\textsuperscript{25} which link together good practice from across the steering groups. These packs are designed to increase the workforce’s awareness of different safety issues and get them to think differently about their safety. The focus for 2013’s Joined-up Thinking packs is hydrocarbon releases.

\textsuperscript{23} http://www.stepchangeinsafety.net/about/HelicopterSafetySteeringGroup.cfm
\textsuperscript{24} The Assurance and Verification Guidance is available on the Step Change in Safety website at: http://www.stepchangeinsafety.net/knowledgecentre/publications/publication.cfm/publicationid/92
\textsuperscript{25} The Joined-Up Thinking packs are available at: http://www.joinedup-thinking.co.uk/
8 Publications

Oil & Gas UK leads or supports the development of guidelines and promotes the sharing of best practice and information. This section summarises the health and safety guidance produced by Oil & Gas UK over the past year.

*Guidance on the Management of Ageing and Life Extension for UKCS Oil and Gas Installations (Issue 1 – April 2012)* – This document provides high level guidance on the approach to ALE management and sets out a framework for ALE arrangements within duty holder organisations.26

*Guidance on the Conduct and Management of Operational Risk Assessment for UKCS Offshore Oil and Gas Operations (Issue 1 – May 2012)* – This publication provides guidance to duty holders in their management of degraded safety-critical elements and other abnormal operational conditions.27

*Emergency Response and Rescue Vessel Survey Guidelines (Issue 6 – April 2013)* – This publication is produced jointly with the Emergency Response & Rescue Vessel Association (ERRVA) and describes technical and hardware aspects of ERRV provision. A sub-group of Oil & Gas UK and ERRVA members updated the guidelines with input from the Maritime & Coastguard Agency and the HSE.28

*Emergency Response and Rescue Vessel Management Guidelines (Issue 5 – April 2013)* – This document is also produced as a joint effort by Oil & Gas UK and ERRVA and sets out operational arrangements for deploying and managing ERRV at offshore installations. The revision was carried out as part of the same exercise referred to above.29

All documents may be downloaded from the Oil & Gas UK website (see footnotes for details).

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26 The document is available as a free download at: http://www.oilandgasuk.co.uk/cmsfiles/modules/publications/pdfs/HS073.pdf
27 The document is available as a free download at: http://www.oilandgasuk.co.uk/cmsfiles/modules/publications/pdfs/HS071.pdf
28 The document is available at: http://www.oilandgasuk.co.uk/publications/viewpub.cfm?frmPubID=82
29 The document is available at: http://www.oilandgasuk.co.uk/publications/viewpub.cfm?frmPubID=81
Oil & Gas UK Safety Events

A range of events are organised throughout the year to encourage sharing of information and learning of important issues. Health and safety events from the last 12 months include:

<table>
<thead>
<tr>
<th>Event Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offshore Oil &amp; Gas and the EU Seminar</td>
<td>Following proposals from the EU to introduce a new offshore safety and environmental Regulation, a seminar was held in June 2012 to identify key elements of the proposal and explore the implications for the industry. Former energy minister Charles Hendry MP gave the keynote address with several speakers from the industry, regulators and both the Norwegian and UK workforces.</td>
</tr>
<tr>
<td>Occupational Health Seminar</td>
<td>The annual health and safety seminar focused on occupational health in practice in November 2012. The event provided an opportunity to hear presentations on good practice, excellent approaches to management of health hazards and the promotion of workforce wellbeing within the offshore industry.</td>
</tr>
<tr>
<td>Doctors’ Training Workshops</td>
<td>This is a preparatory training course to ensure that examining doctors have sufficient knowledge of the UK offshore oil and gas industry and to enable them to undertake Oil &amp; Gas UK medical examinations. The workshops, held throughout the year, attract attendees from global oil and gas regions where the Oil &amp; Gas UK medical standards are adopted. Eight workshops were held in 2012, with 111 examining doctors attending from 28 different countries. Almost 45 per cent of delegates came from outside the UK.</td>
</tr>
<tr>
<td>HSE Member Networking Event</td>
<td>The first health, safety and employment member networking event was held in February 2013 with great success. This provided the opportunity for members to meet with the Oil &amp; Gas UK team, hear updates on key areas of its work and network with peers.</td>
</tr>
<tr>
<td>UK Oil and Gas Industry Safety Awards</td>
<td>The annual UK Oil and Gas Industry Safety Awards ceremony celebrates the achievements of people and organisations that have made outstanding contributions to the safety of the UK offshore oil and gas industry. The winners of the 2013 Awards are:</td>
</tr>
<tr>
<td>Security Seminar</td>
<td>A seminar focusing on security issues was held in May 2013. Security specialists from within the industry, the UK Government and police gave presentations on topics from personal security to cyber security, including lessons learnt from the London Olympics in 2012.</td>
</tr>
<tr>
<td>Aviation Seminar</td>
<td>The annual Aviation Seminar was held in June 2013 and focused on the work being done by the aviation industry to provide safe, efficient and reliable helicopters to support offshore operations.</td>
</tr>
<tr>
<td>Examining Doctors’ Conference</td>
<td>The Examining Doctors’ Conference is an annual event which was held in June 2013. Topics included a review of the use of anticoagulants offshore; body morphology review update; and news from the renewables sector. An evening reception was held before the conference, providing delegates with the opportunity to network with other examining doctors from both the UK and overseas.</td>
</tr>
<tr>
<td>Piper 25</td>
<td>Oil &amp; Gas UK held a major offshore safety conference in June 2013 to mark the 25th anniversary of the Piper Alpha disaster. Piper 25 was a three-day event aimed at bringing together people from across the industry to reflect on the lessons learnt from the tragedy, review how far offshore safety has evolved since and to reinforce industry commitment to continuous improvement. Lord Cullen, who led the inquiry into the tragedy, gave the keynote address.</td>
</tr>
</tbody>
</table>
10 Focus Areas for 2013

This section summarises some of the key focus areas for Oil & Gas UK in 2013. These are subject areas that we identify as being significant at this time but the dynamic nature of our business is such that any activity scope needs to be flexible to accommodate unforeseen events that may dictate new or revised priorities.

10.1 European Union Safety Directive

As described in section 3.3 of this report, the offshore oil and gas industry successfully countered EC proposals to introduce an EU Regulation on the Safety of Offshore Oil and Gas Prospection, Exploration and Production.

The effective challenge on the part of Oil & Gas UK, partner trade associations in other North Sea states, international regulators and unions, has resulted in the introduction of a Directive rather than a Regulation. The Directive is seen as being the best instrument to secure the desired improvement to safety across the EU. It is likely to be published in the summer and will then have to be implemented nationally within two years (by summer 2015).

Existing installations will have 60 months in which to comply with the new requirements. This aligns well with the requirements laid out in the current Safety Case Regulations 2005, whereby a periodic “thorough review” for each safety case must be conducted at least every five years.

UK regulators (HSE and DECC) will undertake a thorough gap analysis to identify which of the Directive articles match current UK regulatory provisions, whether some fine tuning is required, or whether new regulations are needed. That process will lead to a period of consultation with stakeholders, including Oil & Gas UK, enabling options to be firmed up and allowing any necessary changes to UK regulations to be in place by summer 2015.

Given that much of the Directive clearly draws upon existing UK major hazard legislation, it is reasonable to anticipate that there should be few requirements for new regulations or for revision to existing regulations. That said, effort will be required over the course of the next two years to carry out the review, to consult on any identified changes to regulation and to implement any new or revised regulations. Oil & Gas UK will collaborate with HSE and DECC to that effect.
10.2 Ageing and Life Extension
The HSE’s KP4 inspection programme focuses on ALE management and will conclude at the end of 2013. A final report will be published around April 2014.

Oil & Gas UK’s response to KP4 has been primarily to steward a collective effort to develop industry guidelines. Work groups were created in 2012 to develop technical guidance on a range of subjects described in section 3.4 of this report. These guidelines supplement Oil & Gas UK’s management system level guidance published in April 2012, and the activity will continue through 2013 with at least three topic-specific technical guidelines to be published by the year-end. Further technical work groups will also be established during 2013.

The ALE Steering Group, which is a collaborative effort between the industry and the HSE, will continue to meet throughout the year and to provide oversight and guidance as necessary to the work groups, helping to further prioritise work group activity.

The Steering Group will also identify any requirements for new or revised ALE approaches arising from KP4 inspection activity and will help direct industry efforts accordingly. The group will be involved in the consultation and review of the HSE’s final KP4 report and will be influential in describing the industry position on ALE and its response to the report.

It has already been agreed with the HSE that the KP4 final report will be launched at an Oil & Gas UK seminar in 2014. The seminar will also provide an opportunity for industry to describe how it manages ALE challenges and how it has responded to KP4 findings. The ALE Steering Group will play an important role in developing and delivering this key event.

10.3 Major Hazard Management Forum Guidelines
Oil & Gas UK’s Major Hazards (MH) Management Forum formed two work groups in 2012 and both will deliver guidelines on their subject matters during 2013. The guidelines are summarised as follows:

Supplementary Guidance on RIDDOR Reporting of Hydrocarbon Releases
This document results from a significant review of an existing publication and is designed to aid duty holders in assessing their requirements to report HCRs under RIDDOR. Previously, there has been a widely held view that there are inconsistencies in reporting due to a lack of clarity in the guidance, leading to misunderstanding and misinterpretation of RIDDOR reporting requirements. The nature and scale of the revisions calls for agreement with the HSE that the new guidance will be RIDDOR compliant, and that effort will be applied to ensure that the guidelines are well understood and implemented consistently.

Risk Related Decision Framework
The new guidance will replace a UKOOA (now Oil & Gas UK) publication dating back to 1999 entitled Industry Guidelines on a Framework for Risk Related Decision Support. The intent, nonetheless, is still the same, namely to provide a robust basis for risk related decision making in a format that will be understood by all parties involved. The publication provides a structured framework for considering business, technical and societal factors and, in turn, to establish a transparent and justifiable basis for decision making in a major hazard risk context. The revision also extends the scope of the previous guidelines by incorporating environmental aspects of major accident hazard management.

The guidelines should be published in the third quarter of 2013 and uptake will be monitored via the MH Management Forum to gain assurance it has been implemented and to seek feedback that may lead to future improvements.
10.4 Size and Shape Project

Oil & Gas UK is working with researchers from Robert Gordon University’s (RGU) Institute of Health & Welfare Research on a ground-breaking project to measure offshore workers’ body sizes with 3D scanners. The data will then be used to inform all aspects of offshore ergonomics and health and safety, from space availability in corridors and work environments to emergency helicopter evacuation and survival suit and safety equipment design.

The project will involve a systematic assessment of 3D measurements from a sample of around 600 offshore workers. The last body size survey of offshore workers was undertaken in the mid-1980s and since then the average weight of the workforce has risen by 19 per cent. As a consequence, the size and shape of the offshore workforce has increased to an unknown level.

Understanding this is important as the current workplace is designed for personnel as they were a quarter of a century ago. Knowing the actual size of the workforce, together with size increments imposed by different types of clothing, will enable space-related risk to be managed and future design for space provision optimised.

Funding for the project came from Apache North Sea, Centrica, CNR International, Maersk Oil UK, Nexen, Taqa, Total and Tullow Oil. Top-up funding has also been received from the Technology Strategy Board via the Knowledge Transfer Partnership. Data collection is already underway and the RGU project associate will update industry groups on progress over the course of this two-year project.

3D Scanned Images of Offshore Workers
10.5 Maitland Report Follow-up Activities
As referred to in section 3.5 of this report, the industry will continue to focus attention and effort on a number of key areas for improvement identified by the Maitland review. Many of those actions relate to well planning and control and will be pursued by Oil & Gas UK’s Well Life Cycle Practices Forum. That group will also continue to work closely with Step Change in Safety on improvements in workforce competence and training, with the emphasis being on the human factors of well integrity management. Other Maitland Report focus areas requiring ongoing effort include learning from incidents and best practice and workforce engagement.

10.6 Assurance and Verification Network Activities
A new Oil & Gas UK network was established in 2012 to provide a forum for duty holder assurance and verification (A&V) practitioners where they can identify common issues of concern, develop workable solutions where possible and pursue improvements in A&V processes and outputs across industry.

The network will also help drive consistent implementation of Step Change in Safety’s A&V related guidance. The group has developed an issues management list that will focus its collective effort through 2013 and among the topics to be addressed are: definition of verification findings; organisational A&V competence; SCE sample size; value optimisation of ICP activity; management of change; reliability and availability definition; assurance of major accident hazard barriers; combined operations; and temporary equipment.

10.7 Elected Safety Representatives’ Development Training
Oil & Gas UK and Step Change in Safety supported a new OPITO standard for elected safety representative (ESR) training through active participation in the HSE’s Workforce Involvement Group. Courses will be available through 2013 and duty holders are encouraged to make this training available to their safety representatives. Oil & Gas UK and Step Change in Safety will monitor uptake.

10.8 Helideck Issues for Normally Unattended Installations
Following discussions between industry, the CAA and the Helideck Certification Agency in 2012, the Oil & Gas UK NUI steering group will continue its work to improve NUI helideck safety by taking a holistic approach to risk reduction. A project plan will be developed for all UKCS NUIs, outlining where improvements could be made in areas such as surface conditions, undersized decks and obstacle-free environments. This approach will focus efforts to reduce the likelihood of a helideck crash, which could lead to fire, and therefore reduce the need for additional fire fighting equipment.

10.9 Pipeline and Riser Loss of Containment Database
Work to re-launch the online PARLOC database has been continuing since 2012 with varying success. There is a strong desire within the industry to see PARLOC thrive, however, debate continues over whether this should be in a publicly accessible online database and how this could be achieved.

Given the importance of having up-to-date pipeline, riser and incident data, Oil & Gas UK and the Energy Institute will work with a contractor to produce a new hard copy of PARLOC in 2014 as an update to the document last published in 2001. A steering group will manage this over the coming months with an expected publication date of autumn 2014.

http://www.oilandgasuk.co.uk/knowledgecentre/Well_Life_Cycle_Practices.cfm?frmAlias=/WLCPF/

The standard is available in the standards library on the OPITO website at:
http://uk.opito.com/library/standards-library

http://www.hse.gov.uk/aboutus/meetings/iacs/oiac/wig.htm
## Glossary

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>AAD</td>
<td>Advanced Anomaly Detection</td>
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<td>AAIB</td>
<td>Air Accidents Investigation Branch</td>
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<tr>
<td>ADRM</td>
<td>Aerodrome</td>
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<tr>
<td>ALE</td>
<td>Ageing and Life Extension</td>
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<tr>
<td>ARC</td>
<td>Abnormal Runway Contact</td>
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<tr>
<td>A&amp;V</td>
<td>Assurance &amp; Verification</td>
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<tr>
<td>CAA</td>
<td>Civil Aviation Authority</td>
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<tr>
<td>CFIT</td>
<td>Controlled Flight into Terrain</td>
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<tr>
<td>CSI</td>
<td>Controlled Service Introduction</td>
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<tr>
<td>COTA</td>
<td>Caterers Offshore Trade Association</td>
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<tr>
<td>CTOL</td>
<td>Collision with Obstacle(s) during Take-Off &amp; Landing</td>
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<tr>
<td>DECC</td>
<td>Department of Energy and Climate Change</td>
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<tr>
<td>EC</td>
<td>European Commission</td>
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<tr>
<td>EC&amp;I</td>
<td>Electrical, Controls &amp; Instrumentation</td>
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<tr>
<td>EERTAG</td>
<td>Evacuation, Escape &amp; Rescue Technical Advisory Group</td>
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<tr>
<td>EPOL</td>
<td>Emergency Preparedness Offshore Liaison Group</td>
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<tr>
<td>ERR</td>
<td>Emergency Response Room</td>
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<tr>
<td>ERRV</td>
<td>Emergency Response and Rescue Vessels</td>
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<td>ESR</td>
<td>Elected Safety Representative</td>
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<td>EU</td>
<td>European Union</td>
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<tr>
<td>FRP</td>
<td>Fibre Reinforced Plastic</td>
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<td>HCR</td>
<td>Hydrocarbon Release</td>
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<tr>
<td>HP/HT</td>
<td>High Pressure/High Temperature</td>
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<tr>
<td>HSE</td>
<td>Health &amp; Safety Executive</td>
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<tr>
<td>HSSG</td>
<td>Helicopter Safety Steering Group</td>
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<tr>
<td>HUMS</td>
<td>Health &amp; Usage Monitoring System</td>
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<tr>
<td>IADC</td>
<td>International Association of Drilling Contractors</td>
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<td>ICP</td>
<td>Independent Competent Person</td>
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<tr>
<td>IMCA</td>
<td>International Marine Contractors Association</td>
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<tr>
<td>KP</td>
<td>Key Programme</td>
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<tr>
<td>KPI</td>
<td>Knowledge Performance Indicator</td>
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<td>KTP</td>
<td>Knowledge Transfer Partnership</td>
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<tr>
<td>LOC-G</td>
<td>Loss of Control – Ground</td>
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<tr>
<td>LOC-I</td>
<td>Loss of Control – In Flight</td>
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<tr>
<td>MCA</td>
<td>Maritime and Coastguard Agency</td>
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<td>MH</td>
<td>Major Hazards</td>
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<td>MOR</td>
<td>Mandatory Occurrence Reporting</td>
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<tr>
<td>MRCC</td>
<td>Maritime Rescue Co-ordination Centre</td>
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<tr>
<td>NOIA</td>
<td>North Sea Offshore Industries Association</td>
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<tr>
<td>NUI</td>
<td>Normally Unattended Installation</td>
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<tr>
<td>OCA</td>
<td>Offshore Contractors Association</td>
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<tr>
<td>OGP</td>
<td>International Association of Oil and Gas Producers</td>
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<tr>
<td>OIM</td>
<td>Offshore Installation Manager</td>
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<tr>
<td>OIAC</td>
<td>Offshore Industry Advisory Committee</td>
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<tr>
<td>OPITO</td>
<td>Offshore Petroleum Industry Training Organisation</td>
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<tr>
<td>PARLOC</td>
<td>Pipeline and Riser Loss of Containment Database</td>
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<tr>
<td>POB</td>
<td>Personnel On Board</td>
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<td>PUQ</td>
<td>Production Utilities Quarters</td>
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<tr>
<td>RAMP</td>
<td>Ground Handling</td>
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<tr>
<td>RGU</td>
<td>Robert Gordon University</td>
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<tr>
<td>RIDDOR</td>
<td>Reporting of Injuries, Diseases and Dangerous Occurrences Regulations</td>
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<td>SCE</td>
<td>Safety-Critical Element</td>
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<td>SCIS</td>
<td>Step Change in Safety</td>
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<td>TEP UK</td>
<td>Total E&amp;P UK Limited</td>
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<tr>
<td>UKCS</td>
<td>United Kingdom Continental Shelf</td>
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<tr>
<td>UKOOA</td>
<td>United Kingdom Offshore Operators Association</td>
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<tr>
<td>WLCPF</td>
<td>Well Life Cycle Practices Forum</td>
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<tr>
<td>WSTRW</td>
<td>Windshear or Thunderstorm</td>
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