OGP

Safety performance indicators – 2009 data

Report No. 439
May 2010

International Association of Oil & Gas Producers

Publications

Global experience

The International Association of Oil & Gas Producers has access to a wealth of technical knowledge and experience with its members operating around the world in many different terrains. We collate and distil this valuable knowledge for the industry to use as guidelines for good practice by individual members.

Consistent high quality database and guidelines

Our overall aim is to ensure a consistent approach to training, management and best practice throughout the world.

The oil and gas exploration and production industry recognises the need to develop consistent databases and records in certain fields. The OGP's members are encouraged to use the guidelines as a starting point for their operations or to supplement their own policies and regulations which may apply locally.

Internationally recognised source of industry information

Many of our guidelines have been recognised and used by international authorities and safety and environmental bodies. Requests come from governments and non-government organisations around the world as well as from non-member companies.

OGP safety performance indicators
2009

Report No: 439
May 2010

The safety statistics for 2009 were derived from data provided by the following companies:

Contributing OGP Members

ADNOC
BG
BHP
BP
Cairn Energy
Chevron
CNOOC
ConocoPhillips
Dolphin Energy
DONG Energy
Eni
ExxonMobil
GDF Suez
Hess Corporation
Hocol
INPEX
Kuwait Oil Company
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Perenco
Petrobras
Petronas Carigali Sdn Bhd
PetroPars
Premier Oil
PTTEP
Qatar Petroleum
Rasgas
Repsol
Saudi Aramco
Shell
Statoil
Suncor
Talisman
TNK-BP
Total
Tullow Oil
Wintershall
Woodside
Yemen LNG

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Preface

The International Association of Oil & Gas Producers (OGP) has been collecting safety incident data from member companies globally since 1985. The data collected are entered into the OGP safety database, which is the largest database of safety performance in the E&P industry.

The principal purpose of the data collection and analysis is to record the global safety performance of the contributing OGP member companies, each year. The annual reports provide trend analysis, benchmarking and the identification of areas and activities on which efforts should be focused to bring about the greatest improvements in performance.

The OGP incident reporting system covers worldwide exploration and production (E&P) operations, both onshore and offshore, and includes incidents involving both member companies and their contractor employees.

The key indicators presented are: number of fatalities, fatal accident rate, lost time injury frequency, restricted work day case + lost time injury frequency and total recordable injury rate. The report presents contributing OGP members' global results for these indicators, which are then analysed by region, function and company. A code is used to preserve the anonymity of the reporting company, which will typically report its own data as well as that of its associated contractors (see Appendix F).

Wherever practicable, results are presented graphically. The data underlying the charts are presented in Appendix B. The tables are organised according to the section in the report where the chart appears.

The main changeto the 2009 report is the addition of 'cause' and 'activity' categories for lost work day cases, fatal incidents and significant incidents. These replace the 'type of incident' categories used in previous years (air transport, caught between, drowning, electrical, explosion/burn, fall, lifting/hoisting, struck by, vehicle incident, other). The new categories are as follows:

Cause of incident:

- Assault or violent act
- Caught in, under or between
- Confined space
- Cut, puncture, scrape
- Explosion/burn
- Exposure electrical
- Exposure noise, chemical, biological, vibration[1]
- Falls from height
- Overexertion/strain
- Pressure release[2]
- Slips and trips (at same height)
- Struck by
- Water related, drowning[2]
- Other

Activity:

- Construction, commissioning, decommissioning
- Diving, subsea, ROV
- Drilling/workover/well services
- Lifting, crane, rigging, deck operations
- Maintenance, inspection, testing
- Office, warehouse
- Accomodation, catering
- Seismic/survey operations
- Transport – air
- Transport – land
- Transport – sea, including marine activity
- Unspecified – other

These changes reflect the Safety Data Sub-Committee's aim to improve the reliability of the data and its interpretation.

1 includes pressure, for LWDCs this year only
2 not applicable to LWDCs for this year only

Executive Summary

The *OGP safety performance indicators* report for 2009 summarises the safety performance of 43 OGP member companies, covering 102 countries. This is based on the analysis of 3,586 million work hours of data, 9% more than last year. This is the largest dataset used in the analysis of the industry's safety performance.

The overall results show a significant reduction in all injury key performance indicators (KPIs). All functions are showing an improvement, with construction showing the lowest rates. Europe has the highest KPI rates of all regions, although the high fatal accident rate (FAR) is mainly due to one multiple-fatality incident. The KPI rates in FSU and the Middle East have improved significantly compared to the average performance over the last 5 years. It should be noted that one large company in the Middle East started reporting this year.

The Fatal Accident Rate (2.8) is 12% lower than last year's figure and the lowest FAR in the last 10 years. This is mainly due to a reduction in the number of fatalities reported by several companies.

Twenty seven percent of the 2009 fatalities were a result of 3 incidents related to aviation. These include a single helicopter crash in which involved 16 fatalities. A reduction is seen in the number of deaths resulting from land transport incidents from 25% of total fatalities in 2008 to only 10% of total fatalities in 2009. This reduction is reported by a number of different companies worldwide.

The total recordable injury rate (TRIR) of 1.75 per million hours is 16% lower compared to 2008. This is the lowest value on record to date. The biggest reduction is in the Middle East region where the TRIR is 51% lower than the average for the previous 5-year period; this is mainly due to the large number of incidents reported in 2005. Furthermore Africa, the FSU and North America show strong reductions.

The overall Lost Time Injury Frequency (LTIF) improved by 18% (0.45) compared to 2008. It continues a long-term downward trend in the indicator. The decrease is mainly due to a reduction of LTIF in the regions Africa, FSU and South America. Similar to the reduction in LTIF, the overall frequency of restricted work day cases plus lost time injuries (RWDC + LTI) has decreased by 19% compared to the 2008 result.

Despite the clear reductions in FAR, TRIR, LTIF and RWDC+LTI results, the average severity of lost work day cases and of restricted work day cases increased by 8% (37.53) and 2% (13.94) respectively compared to 2008.

The majority of the larger companies (>50 million hours) appear in the first and second quartile on LTIF and TRIR.

1 Summary

The *OGP safety performance indicators* report summarises the safety performance of contributing OGP member companies for 2009.

The key performance indicators (KPI) used to benchmark the safety performance of the industry are: number of fatalities, fatal accident and incident rates, lost time injury frequency, restricted work day case + lost time injury frequency and total recordable injury rate.

Third party fatalities are not included in this report.

1.1 General

The safety performance of contributing OGP member companies in 2009 is based on the analysis of 3,586 million work hours of data, 9% more than were reported in 2008. Submissions were made by 43 of the 54 operating company OGP members. This represents a continually increasing number of reporting companies and hours worked. All but one reported statistics for its contractors. The data reported cover operations in 102 countries. This represents the largest dataset used in the analysis of the industry's safety performance.

The overall results show a reduction in all injury KPIs. All functions are showing an improvement, with construction showing the lowest rates. Europe has the highest KPI rates of all regions, although the high FAR is mainly due to one multiple-fatality incident.

The KPI rates in FSU and the Middle East have improved significantly compared to the average performance over the last 5 years. It should be noted that one large company in the Middle East started reporting this year, contributing 5% of the total hours.

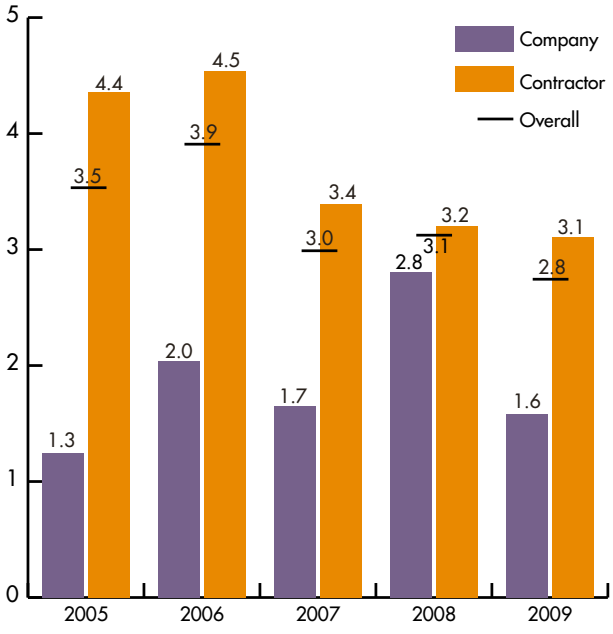
The majority of the larger companies (>50 million hours) appear in the first and second quartile on LTIF and TRIR.

1.2 Fatalities

Against the background of a 9% increase in work hours reported, the number of fatalities has fallen from 103 in 2008 to 99 (13 company and 86 contractor) in 2009. The resulting Fatal Accident Rate (2.8) is 12% lower than last year's figure and the lowest FAR on record to date. This is due to a reduction in the number of fatalities reported by several companies. The company and contractor FAR are 1.6 and 3.1 respectively. Onshore and offshore FAR are both 2.8. One third (33) of the 2009 fatalities were the result of 5 incidents related to 'Air transport' and 'Confined space'.

This year the reporting categories are divided into 'activity' and 'cause'. The activity with the most significant number of fatalities reported by the OGP member companies is 'Air transport' with 27 fatalities in 3 separate incidents, 27% of the total. These include a single helicopter crash which involved 16 fatalities. The majority of the remaining fatalities occurred during the activities 'Maintenance, inspection, testing' (20).

Fatal accident rate
per 100 million hours worked



A reduction is seen in the number of deaths resulting from land transport incidents. In 2008, 25% (26) of reported fatalities were categorised as 'vehicle incidents'; this has reduced to just 10% (10) in 2009. Over the last 5 years vehicle incidents have accounted for between 21% and 37% of the total. This reduction is reported by a number of different companies worldwide.

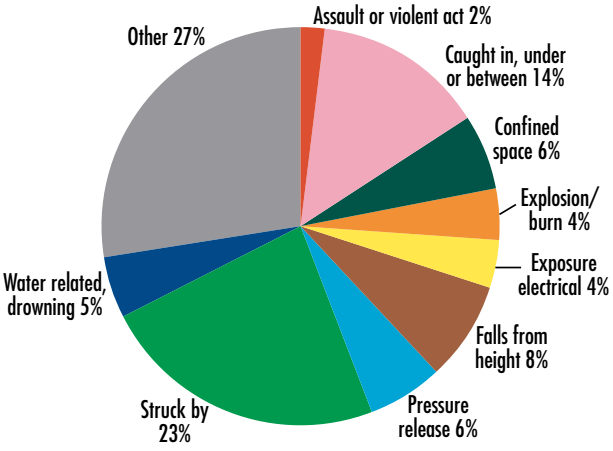
With regard to the Cause category, 37% (37) of the reported fatalities fall within the 'Struck by' (23%) and 'Caught in, under or between' (14%) cause categories. Both causes exclude the air transport incidents as these are reported under the cause 'Other'. For the first time in 2009, both causes include Land Transport Incidents, due to the new category structure.

Similar to last year, 8% of the fatalities were the result of 'Falls from height'. Two incidents related to 'Confined space' resulted in 6 fatalities. The new category 'Pressure release' shows that 6% (6 fatalities) were caused by pressure related incidents. In earlier years these have mostly been reported as 'Struck by'.

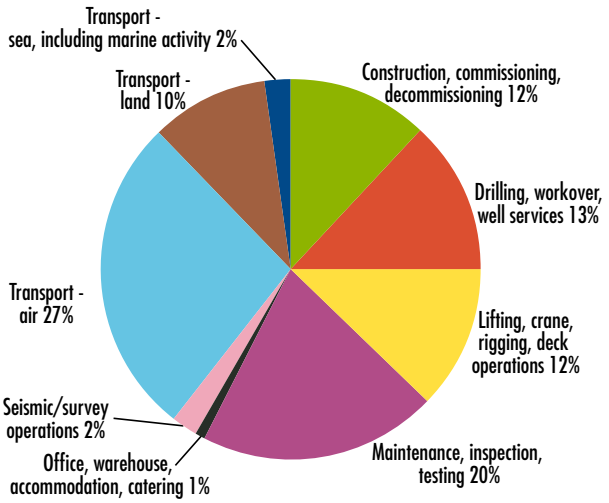
The Fatal Accident Rates for Europe (6.6) and North America (4.4) are high compared to a global average of 2.8. This is mainly due to single helicopter accidents with multiple fatalities in both regions.

Even though the Middle East has a low Fatal Accident Rate (2.2), it is the region with the highest number of fatalities (22).

Fatality causes, 2009
% fatalities associated with each reporting category



Fatality by activity, 2009
% fatalities associated with each reporting category



I.3 Total recordable injuries

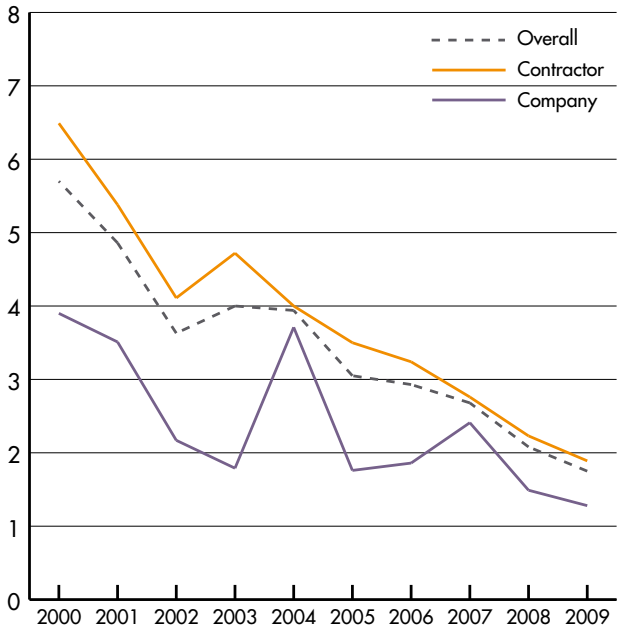
The rate for all recordable injuries (fatalities, lost workday cases, restricted workday cases and medical treatment cases) was 1.75 injuries per million hours worked. This is a 16% improvement compared to 2008, with 213 fewer injuries reported than last year.

The 2009 TRIR is less than a third of the 2000 result and the lowest value on record to date.

The main reduction in 2009 is in the Middle East region where the TRIR is 51% lower than the average for the previous 5-year period; this is mainly due the large number of incidents reported in 2005.

When compared to 2008 only, the Middle East TRIR has increased by 11%. This is offset by a strong reduction since 2008 in North America (28%), Africa (24%) and Europe (11%).

Total recordable injury rate – company & contractors
per million hours worked



I.4 Lost time injuries

The overall Lost Time Injury Frequency (LTIF) decreased from 0.55 in 2008 to 0.45 in 2009. This represents an improvement of 18% compared to 2008, a reduction of 186 lost time injuries. It continues a long-term downward trend in the indicator. The decrease is mainly due to reduction of LTIF in the regions Africa, South America. and the FSU.

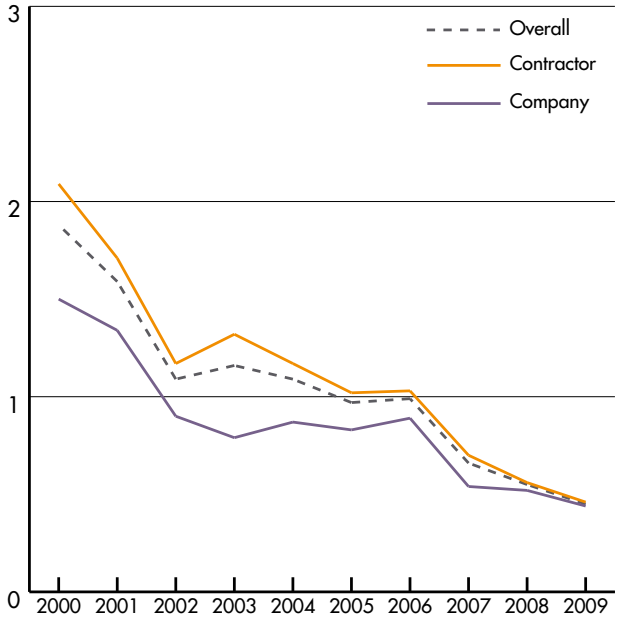
This reduction is similar in both company and contractor performance. The company and contractor LTIF are now almost the same.

There were approximately 1527 reported injuries resulting in at least one day off work. This equates to an average of 28 such injuries every week of the year. Approximately 260 person-years are estimated to have been lost by reporting companies and their contractors as a result of injuries.

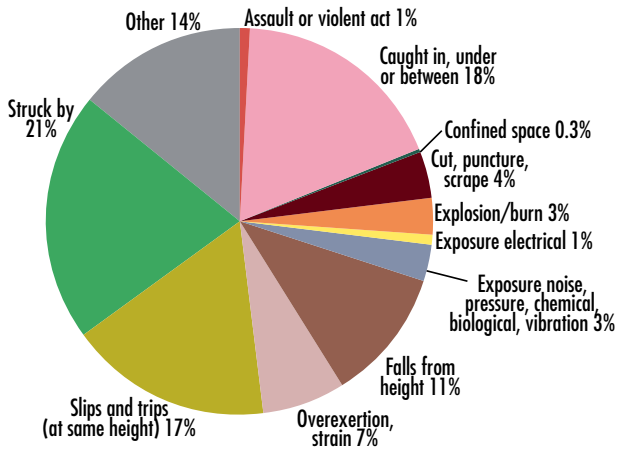
Similar to fatalities, the majority of cases fell into the 'Struck by' (21%), and 'Caught in, under or between' (18%) cause categories. An additional 17% of the cases were due to 'Slips, trips and falls'.

The work activity with the highest number of cases reported is 'Drilling, workover, well services' (21%), followed by 'Maintenance, inspection and testing' (17%) and Construction, commissioning and decommissioning (13%).

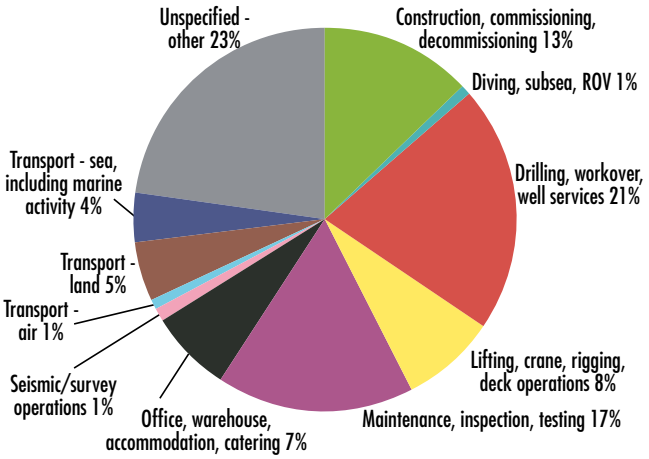
Lost time injury frequency – company & contractors
per million hours worked



Lost Work Day Cases – by cause

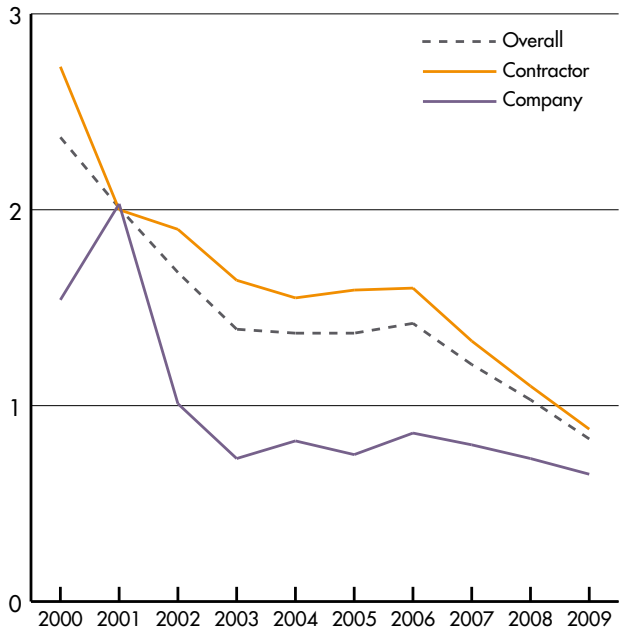


Lost Work Day Cases – by activity



I.5 Restricted work day case + lost time injury (RWDC + LTI) frequency

RWDC + LTI frequency – company & contractor
per million hours worked



Similar to the reduction in LTIF, the overall frequency of RWDC and LTI has decreased to 0.83 in 2009, a 19% reduction compared to the 2008 result.

The Contractor figure fell to 0.88, a 20% reduction compared to 2008 and the lowest on record to date. The company only RWDC and LTI frequency fell to 0.65, an 11% reduction compared to 2008.

2 Overall results

In this section the primary indicators used to measure contributing OGP member companies' safety performance are: the number and nature of fatalities, total recordable injury rate (TRIR), fatal accident rate (FAR), fatal incident rate (FIR), lost time injury frequency (LTIF) and restricted work day case + lost time injury frequency (RWDC+LTI).

Third party incidents are not included in this report.

2.1 Fatalities

	fatalities	% of total fatalities reported in 2009	% of total workhours reported in 2009
Company	13	13%	23%
Contractor	86	87%	77%
Onshore	77	78%	78%
Offshore	22	22%	22%

Company/Contractor Fatalities

- 99 company and contractor fatalities were reported in 2009. This is 4 fewer than were reported in 2008 and 12 more than in 2007.
- The 99 fatalities occurred in 63 separate incidents.
- In the incident where the highest number of fatalities occurred, 14 contractor employees and 2 air crew lost their lives. This was a UK air transport incident involving a helicopter that was inbound from an oil field.
- 22 of the fatalities occurred in the Middle East and 21 occurred in Europe.

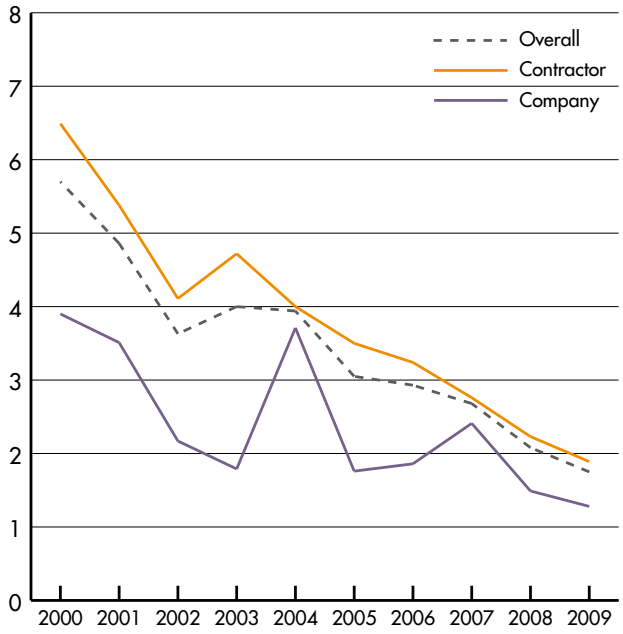
2.2 Total recordable injury rate (TRIR)

Total recordable injury rate (TRIR)

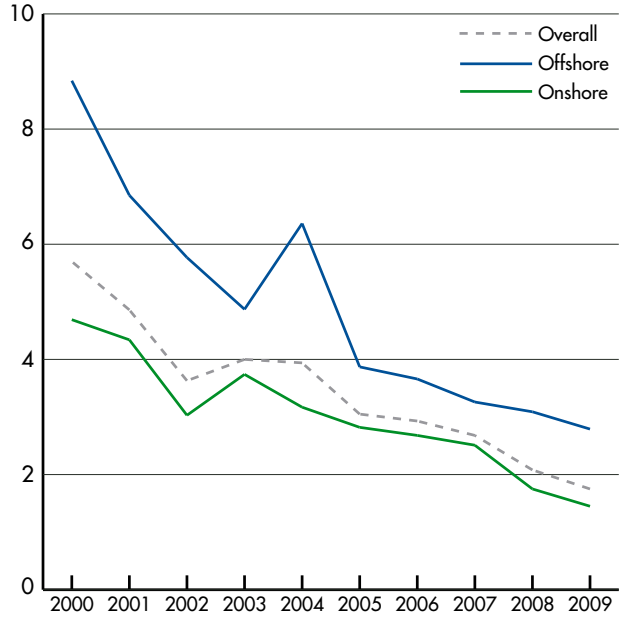
The number of recordable injuries (fatalities + lost workday cases + restricted workday cases + medical treatment cases) per 1,000,000 hours worked.

	2009 TRIR	Relative to 2008 TRIR
Company	1.28	14% lower
Contractor	1.89	15% lower
Overall	1.75	16% lower
Onshore	1.45	17% lower
Offshore	2.79	10% lower

Total recordable injury rate – company & contractors
per million hours worked



Total recordable injury rate – onshore & offshore
per million hours worked



TRIR calculations are only made on returns that include information on medical treatment cases. In 2009, almost 100% of the reported hours qualified for inclusion in this analysis.

- A reduction can be seen in 2009 in all TRIR results, and they are the lowest on record to date.
- The overall TRIR is 16% lower than the 2008 value.

2.3 Fatal accident rate (FAR)

	2009 FAR	Relative to 2008 FAR
Company	1.58	44% lower
Contractor	3.11	3% lower
Overall	2.76	12% lower
Onshore	2.75	19% lower
Offshore	2.78	24% higher

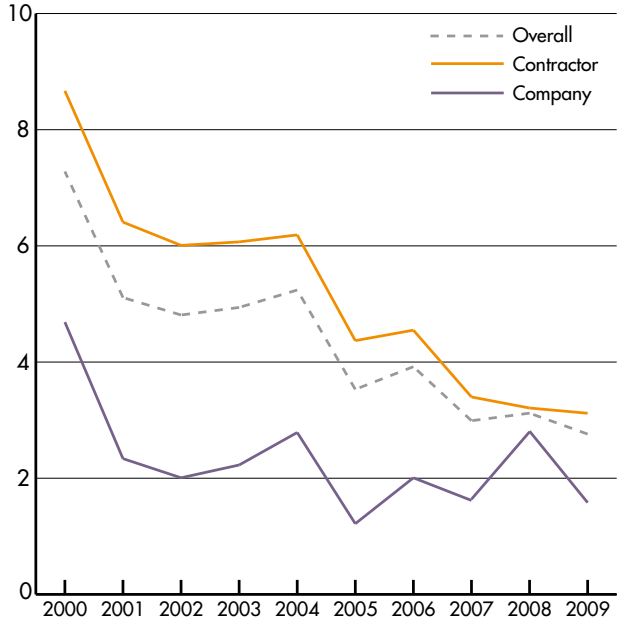
Fatal accident rate (FAR)

The number of company/contractor fatalities per 100,000,000 (100 million) hours worked.

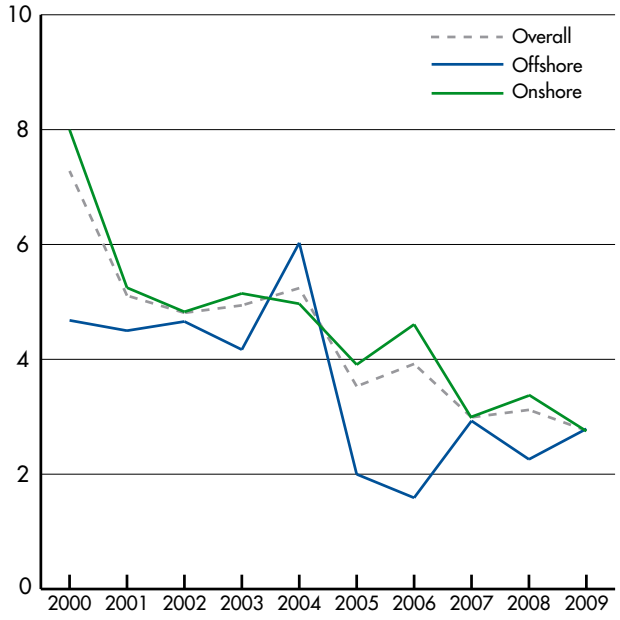
- The overall fatal accident rate is 2.76 company/contractor fatalities per 100 million work hours. This represents a 12% reduction compared to the 2008 FAR of 3.12.
- The offshore FAR of 2.78 is 24% higher than the 2008 value of 2.25.
- The onshore FAR fell by 19% compared to the 2008 value of 3.38.
- The company FAR value of 1.58 is 44% lower than the 2008 result of 2.81. This is an actual reduction of 7 fatalities from 2008.
- The difference between the onshore and offshore FAR displays a large variation over the 10 year period shown. Neither is consistently lower.

There has been an overall reduction in FAR in 2009 compared to the 2008 values, continuing the long-term trend.

Fatal accident rate – company & contractors
per 100 million hours worked



Fatal accident rate – onshore & offshore
per 100 million hours worked



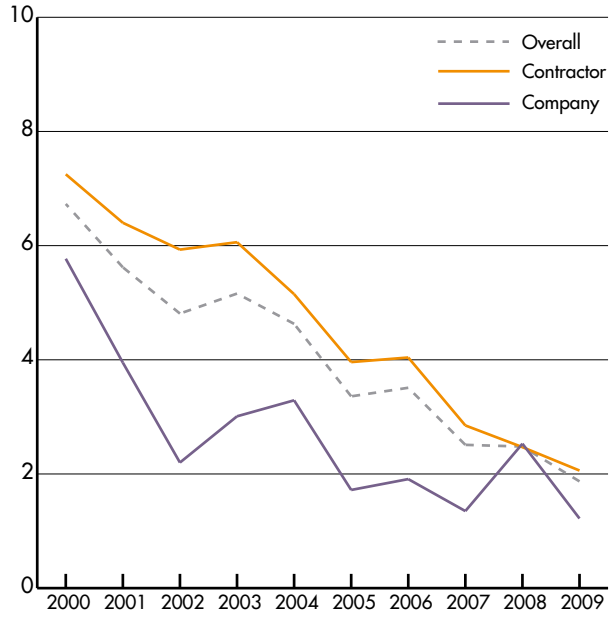
2.4 Fatal incident rate (FIR)

	2009 FIR	Relative to 2008 FIR
Company	1.22	52% lower
Contractor	2.06	17% lower
Overall	1.87	25% lower
Onshore	1.86	31% lower
Offshore	1.90	10% higher

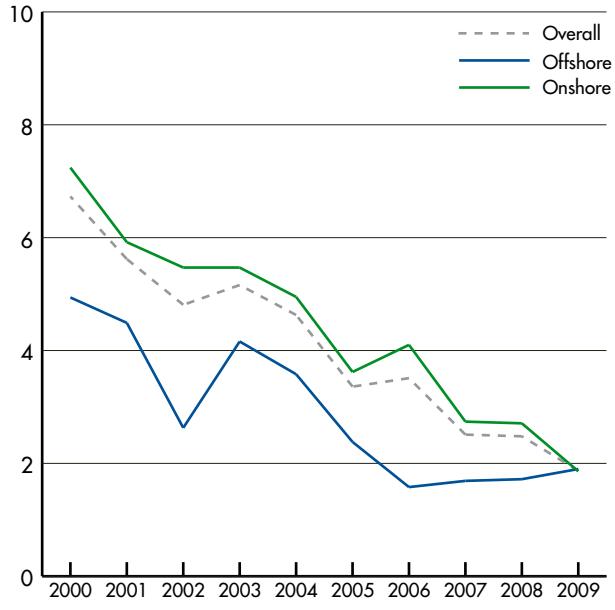
Fatal incident rate (FIR)

The number of fatal incidents per 100,000,000 (100 million) hours.

Fatal incident rate – company & contractors
per 100 million hours worked



Fatal incident rate – onshore & offshore
per 100 million hours worked



Fatal incidents are incidents resulting in at least one fatality. The FIR is a measure of the frequency with which fatal incidents occur, in contrast to the FAR which measures the frequency of fatalities. Accordingly, for company and contractor fatalities only, the FIR will be less than or equal to the FAR. Comparison of FAR and FIR gives an indication of the magnitude of the incidents in terms of lives lost.

- The overall fatal incident rate reduced to 1.87, representing a 25% reduction compared to 2008 (2.48).
- The company only fatal incident rate reduced by 52% compared to 2008 results. This is an actual reduction of 7 fatal incidents from 2008.
- For the majority of the 10-year period, offshore FIR has remained lower than onshore FIR, but in 2009 the offshore FIR is higher than the onshore.
- Onshore the fatal incident rate has decreased by a further 31% compared to last year and is the lowest on record. Offshore, it has increased by 10%.

2.5 Fatalities by cause and activity

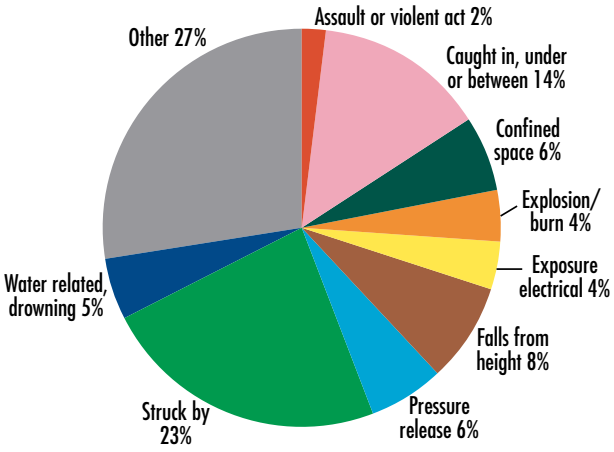
Fatalities by cause

Category	Incidents	Fatalities
Assault or violent act	2	2
Caught in, under or between	13	14
Confined space	2	6
Cut, puncture, scrape	0	0
Explosion/burn	4	4
Exposure electrical	4	4
Exposure noise, chemical, biological, vibration	0	0
Falls from height	8	8
Overexertion, strain	0	0
Pressure release	6	6
Slips and trips (at same height)	0	0
Struck by	20	23
Water related, drowning	5	5
Other	3	27
Total	**67**	**99**

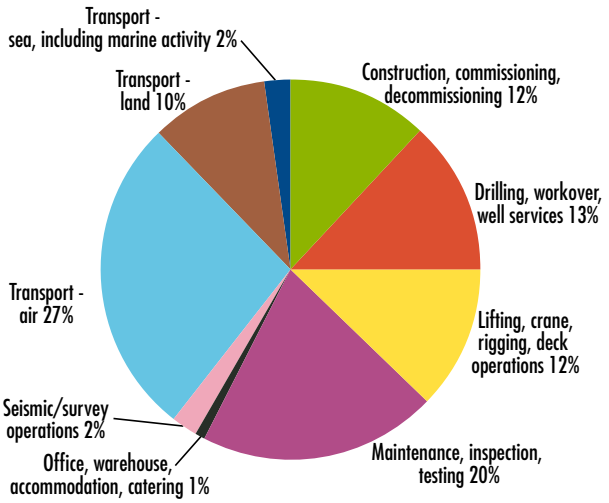
Fatalities by activity

Category	Incidents	Fatalities
Construction, commissioning, decommissioning	12	12
Drilling, workover, well services	12	13
Lifting, crane, rigging, deck operations	11	12
Maintenance, inspection, testing	16	20
Office, warehouse, accommodation, catering	1	1
Seismic/survey operations	2	2
Transport – air	3	27
Transport – land	8	10
Transport – sea, including marine activity	2	2
Unspecified – other	0	0
Total	**67**	**99**

Fatalities by cause, 2009
% fatalities associated with each reporting category



Fatalities by activity, 2009
% fatalities associated with each reporting category



The pie chart shows the percentage of fatalities within each of the reporting cause categories for 2009.

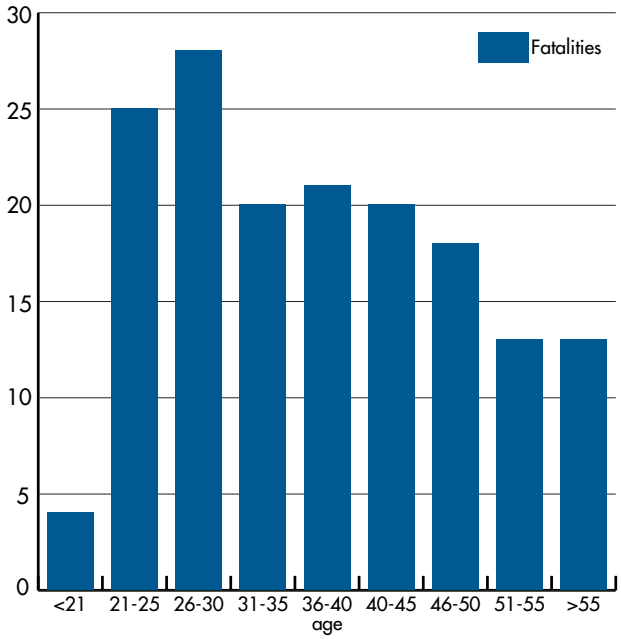
- Excluding those categorised as 'other', the largest proportion of the fatalities reported in 2009 were the result of individuals being struck by falling or moving objects.
- Incidents in which individuals were 'caught in, under or between' were the second greatest contributors to the fatality statistics.

The pie chart shows the percentage of fatalities within each of the activity reporting categories for 2009.

- The largest proportion of the fatalities reported in 2009 was the result of air transport incidents.
- Incidents in which individuals were involved in 'maintenance, inspection or testing' were the second greatest contributors to the fatality statistics.
- A reduction is seen in the number of deaths resulting from land transport incidents (10%) compared to 2008 (25% of reported fatalities were categorised as 'vehicle incidents' in 2008).

2.6 Fatality demography

Number of fatalities by age group for 2007-2009
Company and contractor



The ages of victims were specified in 60 instances of fatalities in 2009. The chart shows the age distribution of victims when these cases are added to the 52 instances in 2008 and 48 instances in 2007.

It should be noted that these results are not normalised against the ages of the entire workforce and care should therefore be taken in drawing conclusions from this graph.

2.7 Lost time injury frequency (LTIF)

	2009 LTIF	Relative to 2008 LTIF
Company	0.44	15% lower
Contractor	0.46	18% lower
Overall	0.45	18% lower
Onshore	0.38	19% lower
Offshore	0.70	14% lower

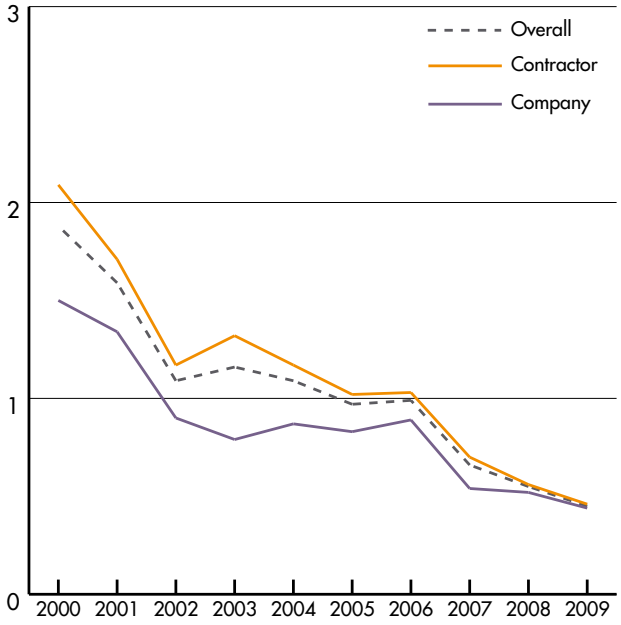
Lost time injury frequency (LTIF)

The number of lost time injuries (fatalities + lost workday cases) per 1,000,000 hours worked.

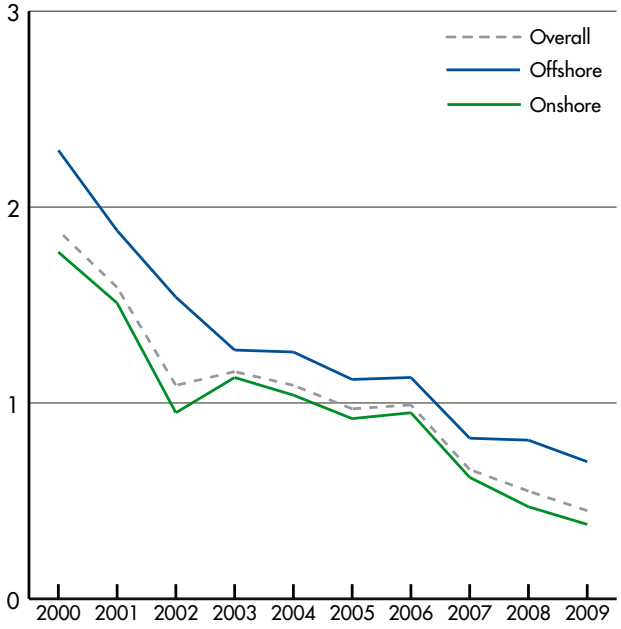
The overall LTIF fell by 18% from 0.55 in 2008 to 0.45 in 2009 and is the lowest LTIF recorded to date.

The above equates to an average of 29 incidents every week of the year. Approximately 260 person-years are estimated to have been lost by reporting companies and their contractors (assuming 220 working days per year).

Lost time injury frequency – company & contractors
per million hours worked



Lost time injury frequency – onshore & offshore
per million hours worked



2.8 Lost work day cases by cause and activity

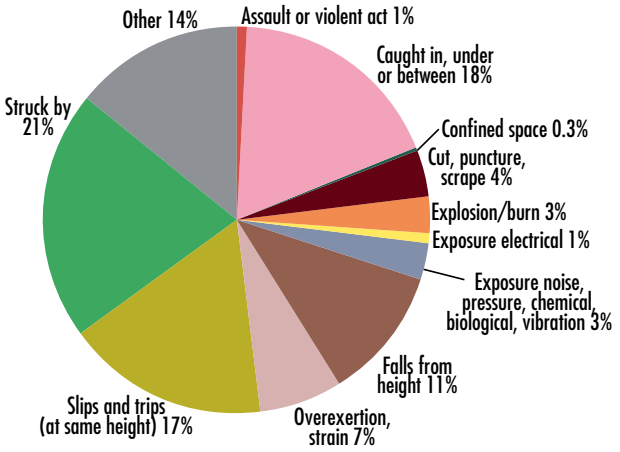
Lost Work Day Cases by cause

Category	Number	%
Assault or violent act	8	0.5
Caught in, under or between	268	17.6
Confined space	4	0.3
Cut, puncture, scrape	67	4.4
Explosion/burn	46	3.0
Exposure electrical	10	0.7
Exposure noise, pressure, chemical, biological, vibration	51	3.3
Falls from height	170	11.1
Overexertion, strain	109	7.1
Slips and trips (at same height)	261	17.1
Struck by	317	20.8
Water related, drowning	0	0
Other	216	14.1

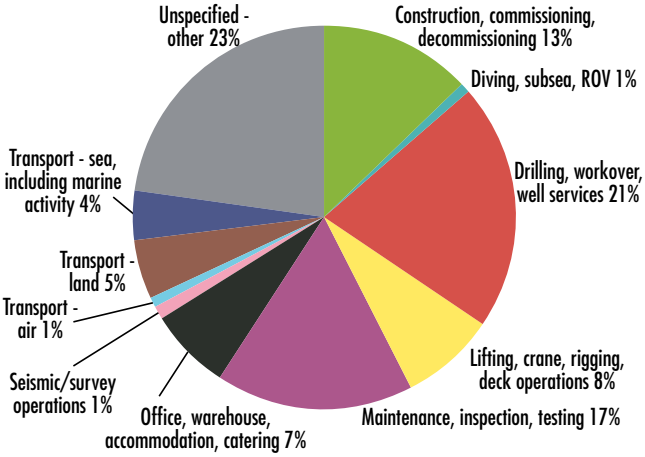
Lost Work Day Cases by activity

Category	Number	%
Construction, commissioning, decommissioning	193	12.6
Diving, subsea, ROV	13	0.9
Drilling, workover, well services	315	20.6
Lifting, crane, rigging, deck operations	114	7.5
Maintenance, inspection, testing	265	17.4
Office, warehouse, accommodation, catering	103	6.7
Seismic/survey operations	20	1.3
Transport – air	7	0.5
Transport – land	82	5.4
Transport – sea, including marine activity	66	4.3
Unspecified – other	349	22.9

Lost Work Day Cases – by cause



Lost Work Day Cases – by activity



There were 1,527 reported lost work day cases resulting in at least one day off work. 1,176 incidents were contractor related and 351 were company related.

Lost work day case cause was reported for all 1,527 Lost Work Day Cases reported, although 14% of the cases were categorised as 'other'.

The pie chart shows the percentage of LWDCs within each of the cause reporting categories for 2009.

- The greatest number of incidents was reported as "struck by" (317)
- "Caught in, under or between" accounted for 18% and "Slips and trips (at the same height)" accounted for 17% of the total reported cases.

Lost work day case activities were reported for all of the 1,527 reported Lost Work Day cases reported, although 23% of the cases were reported as "unspecified – other".

The pie chart shows the percentage of LWDCs within each of the activity reporting categories for 2009.

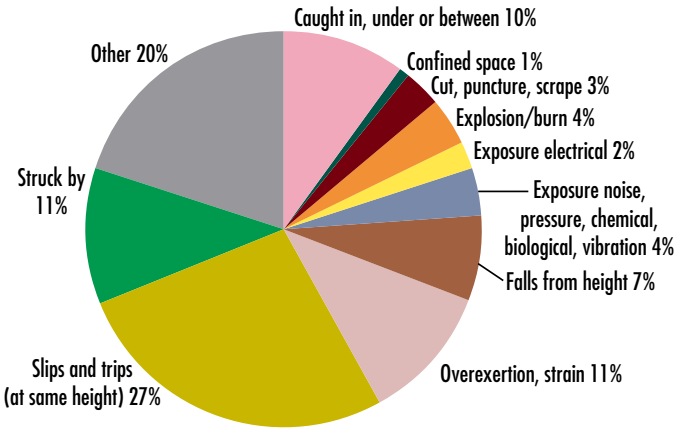
- With the exception of the 'unspecified/other' category, the greatest number of incidents was reported as "Drilling/workover/well services" (315)
- "Maintenance, inspection or testing" accounted for 17% of the total reported cases.

Lost Work Day Cases by cause – company & contractor

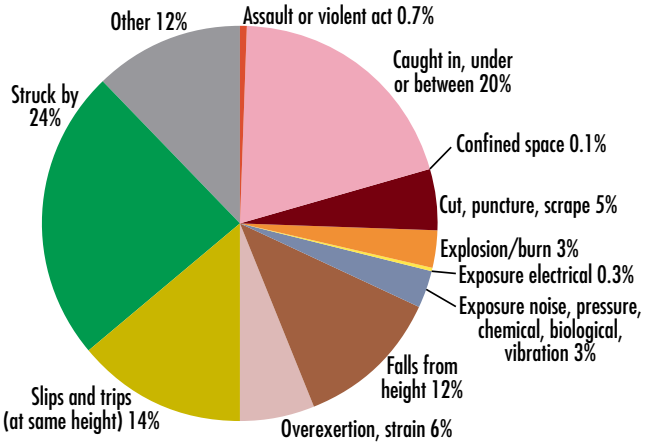
Category	Company	Contractor
Assault or violent act	0	8
Caught in, under or between	35	233
Confined space	3	1
Cut, puncture, scrape	11	56
Explosion/burn	13	33
Exposure electrical	7	3
Exposure noise, pressure, chemical, biological, vibration	14	37
Falls from height	25	145
Overexertion, strain	38	71
Slips and trips (at same height)	94	167
Struck by	41	276
Other	70	146

- "Slips and trips (at same height)" account for 27% of the company cases and 14% of the contractor cases.
- 24% of the LWDCs that affected contractor personnel and 11% of the LWDCs that affected company personnel were "Struck by" incidents.

Lost Work Day Cases – by cause
Company



Lost Work Day Cases – by cause
Contractor



Lost Work Day Case (LWDC)

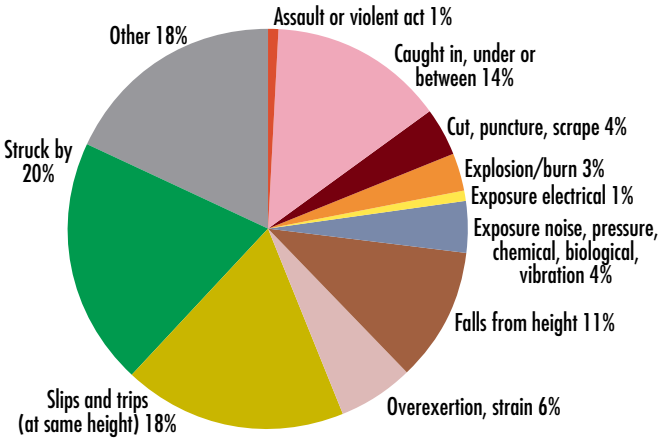
A Lost Work Day Case is an incident resulting in at least one day off work. Fatal incidents are not included.

Lost Work Day Cases by cause– onshore & offshore

Category	Onshore	Offshore
Assault or violent act	7	1
Caught in, under or between	142	126
Confined space	0	4
Cut, puncture, scrape	43	24
Explosion/burn	32	14
Exposure electrical	4	6
Exposure noise, pressure, chemical, biological, vibration	36	15
Falls from height	109	61
Overexertion, strain	61	48
Slips and trips (at same height)	181	80
Struck by	199	118
Other	183	33

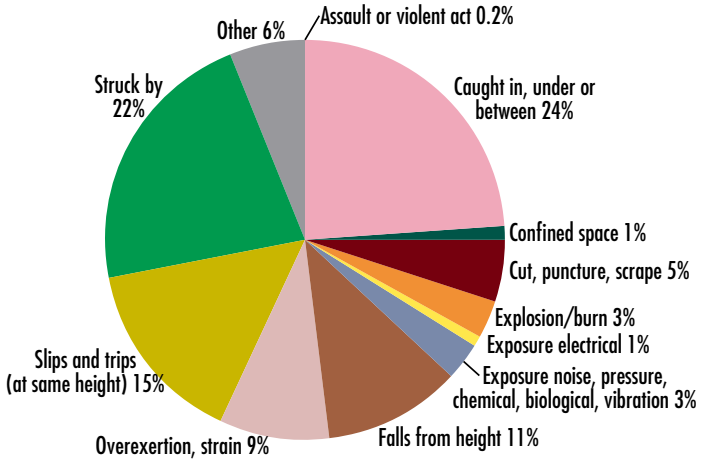
Lost Work Day Cases – by cause

Onshore



Lost Work Day Cases – by cause

Offshore



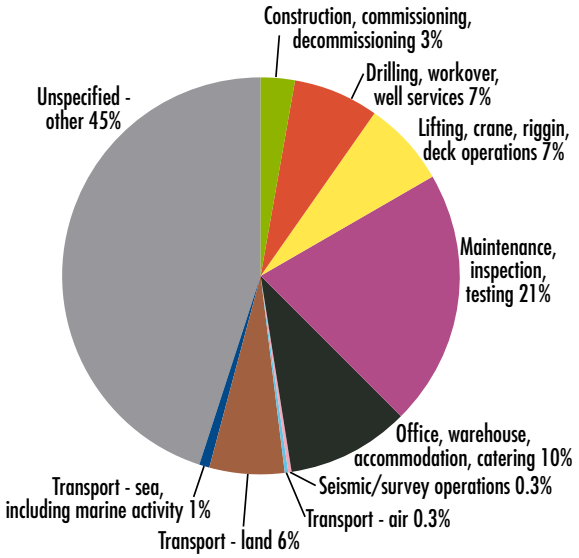
- Onshore 20% of the LWDCs were "Struck by" incidents and 18% were "Slips or trips (at the same height)".
- Offshore 24% of the LWDCs were categorised as "Caught in, under or between" and 22% were categorised as "Struck by".

Lost Work Day Cases by activity – company & contractor

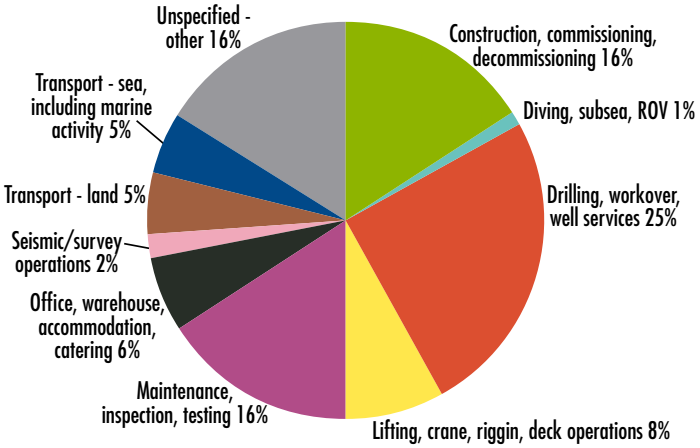
Category	Company	Contractor
Construction, commissioning, decommissioning	10	183
Diving, subsea, ROV	0	13
Drilling, workover, well services	23	292
Lifting, crane, rigging, deck operations	24	90
Maintenance, inspection, testing	75	190
Office, warehouse, accommodation, catering	33	70
Seismic/survey operations	1	19
Transport – air	1	6
Transport – land	22	60
Transport – sea, including marine activity	3	63
Unspecified – other	159	190

- "Maintenance, inspection & testing" accounts for 21% of the company and 16% of the contractor cases (excluding "other").
- 25% of the LWDCs that affected contractor personnel and 7% of the LWDCs that affected company personnel were "Drilling, workover, well services" incidents.
- Land transport incidents accounted for 6% of the company LWDCs and 5% of the contractor. In 2008, 14% of the reported company and 4% of the contractor LWDCs were categorised as "vehicle incidents".†

Lost Work Day Cases – by activity
Company



Lost Work Day Cases – by activity
Contractor

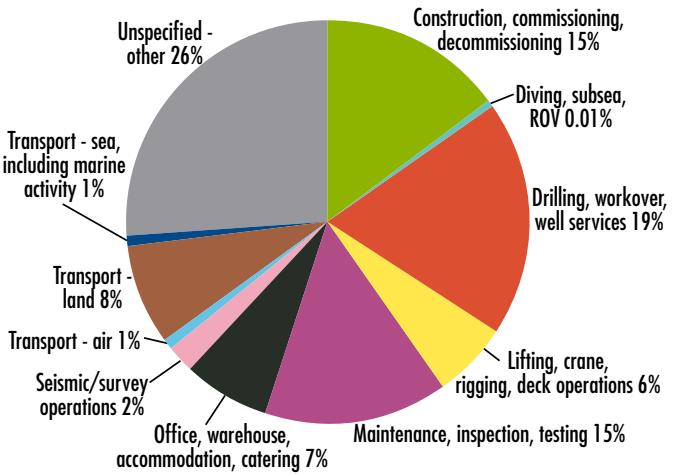


† *LWDC reporting categories have changed in this report, see 'Preface for details*

Lost Work Day Cases by activity – onshore & offshore

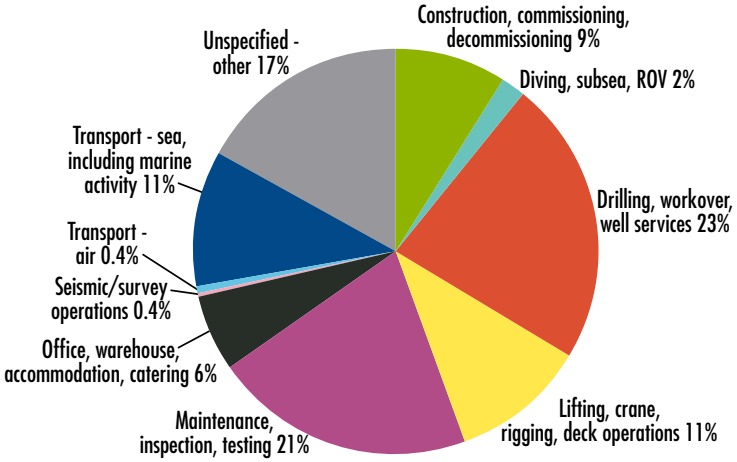
Category	Onshore	Offshore
Construction, commissioning, decommissioning	147	46
Diving, subsea, ROV	5	8
Drilling, workover, well services	192	123
Lifting, crane, rigging, deck operations	56	58
Maintenance, inspection, testing	151	114
Office, warehouse, accommodation, catering	70	33
Seismic/survey operations	18	2
Transport – air	5	2
Transport – land	82	0
Transport – sea, including marine activity	10	56
Unspecified – other	261	88

Lost Work Day Cases – by activity
Onshore



- Onshore 19% of the LWDCs (excluding those categorised as "other") were associated with "Drilling/workover/well services" activities; 15% were associated with "Maintenance, inspection, testing" activities and a further 15% with "Construction, commissioning, decommissioning".
- 23% of the offshore LWDCs were associated with "Drilling/workover/well services" activities and 21% with "Maintenance, inspection, testing" activities.

Lost Work Day Cases – by activity
Offshore



2.9 Severity of lost workday cases

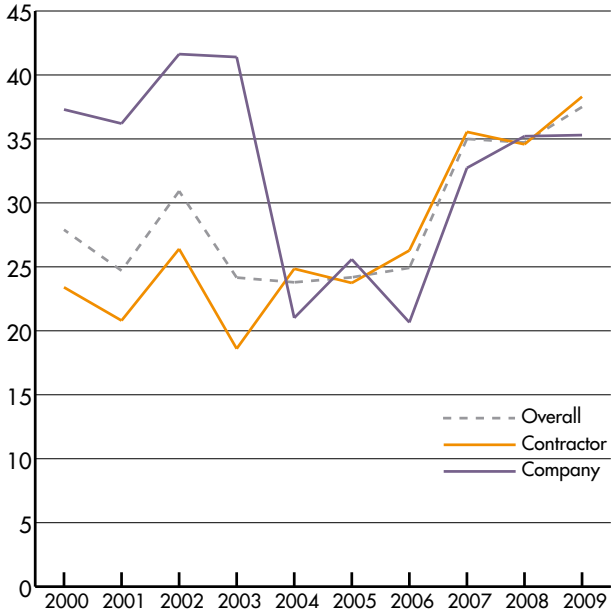
	2009 severity	Relative to 2008 severity	Relative to 2004-2008 severity
Company	35.30	no change	38% higher
Contractor	38.25	11% higher	35% higher
Overall	37.53	8% higher	35% higher
Onshore	34.77	8% higher	29% higher
Offshore	44.40	8% higher	45% higher

Severity

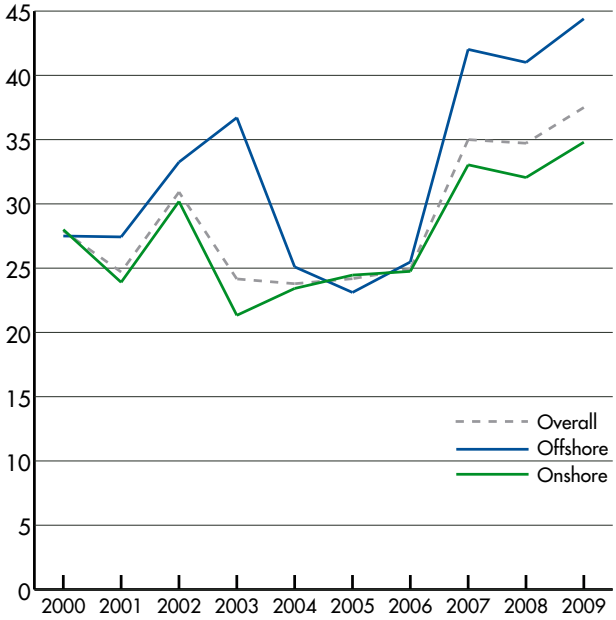
Severity is defined as the average number of days lost (where reported) for each lost workday case.

- OGP member companies reported 42,970 days of work lost through injuries. This equates to around 260 person-years of activity.
- The number of days lost was reported for 80% of the lost workday cases.
- Overall an 8% increase can be seen in the 2009 result compared to 2008.
- The difference between company and contractor severity levels has increased to 8%.
- The offshore LWDC severity is 28% higher than onshore.

Severity – company & contractors
average days lost per LWDC

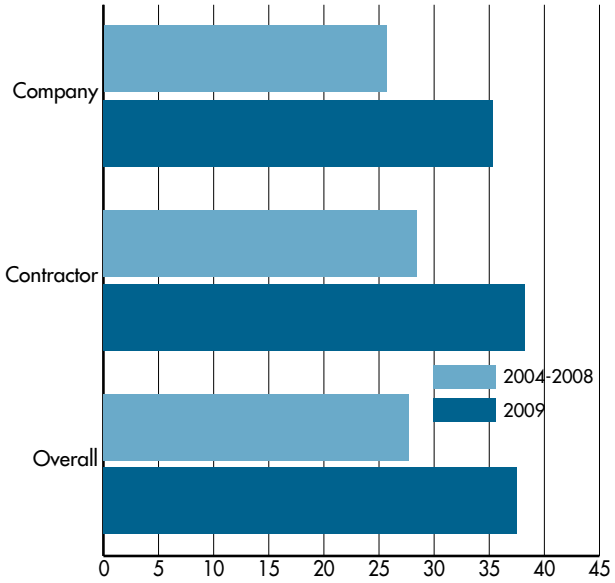


Severity – onshore & offshore
average days lost per LWDC

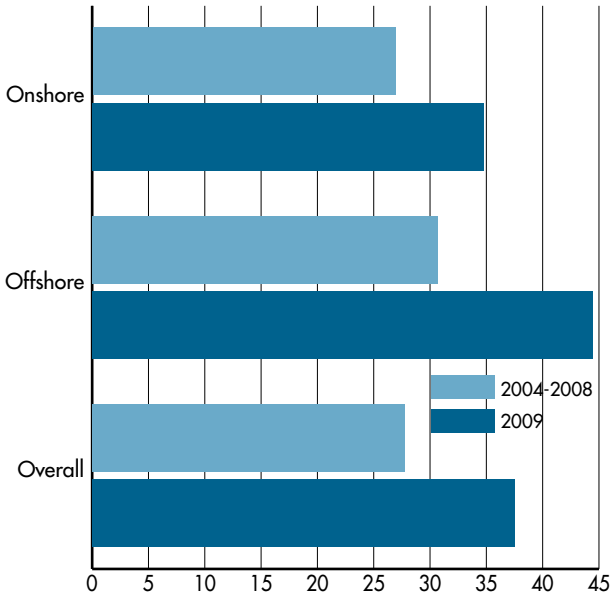


The figures below show the average number of days lost per LWDC in 2009 compared to the average for the previous 5-year period. An increase is shown in LWDC severity in all areas of activity compared to the previous 5-year period; an increase of one third overall.

Severity of LWDC – company & contractors
average days lost per LWDC



Severity of LWDC – onshore & offshore
average days lost per LWDC



2.10 Restricted work day case + lost time injury (RWDC + LTI) frequency

	2009 RWDC+LTIF	Relative to 2008 RWDC+LTIF
Company	0.65	11% lower
Contractor	0.88	20% lower
Overall	0.83	19% lower
Onshore	0.66	22% lower
Offshore	1.43	10% lower

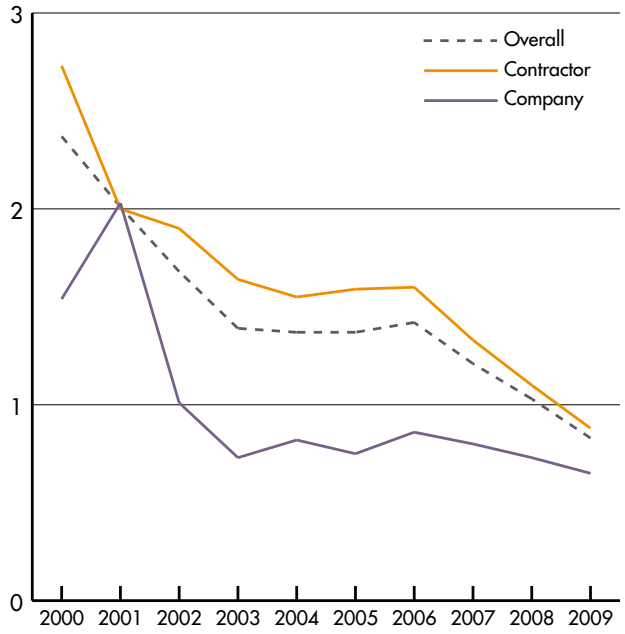
Restricted workday cases (RWDC)

RWDCs are injuries and occupational incidents which are severe enough to prevent a person from performing normal duties, but not so severe that lighter duties cannot be performed.

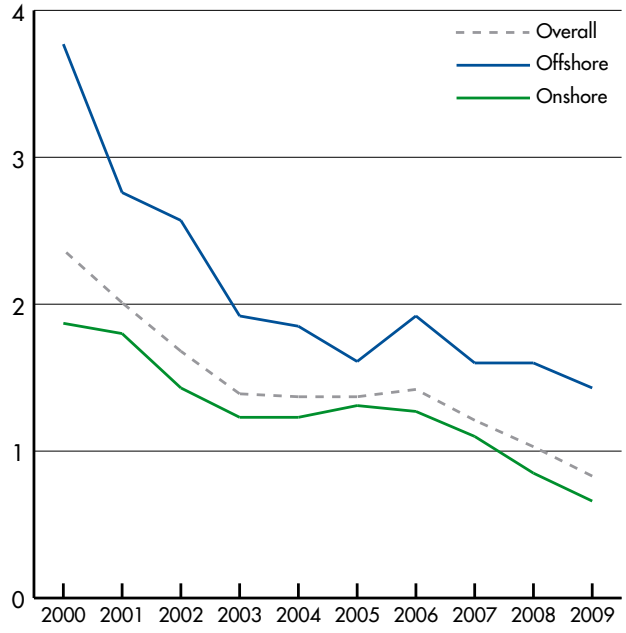
The figures show the frequency of RWDC + LTI for companies and contractors, and onshore and offshore activities.

- The onshore RWDC+LTI frequency is 22% lower than the 2008 result (1.03).
- The contractor frequency is 20% lower than last year (1.10).
- The frequency of RWDCs and more serious injuries remains higher in the offshore environment.

RWDC + LTI frequency – company & contractor
per million hours worked



RWDC + LTI frequency – onshore & offshore
per million hours worked



RWDC+LTI frequency

The number of restricted work day cases plus the number of lost time injuries (fatalities + lost workday cases) per 1,000,000 hours worked.

2.11 Severity of restricted work day cases

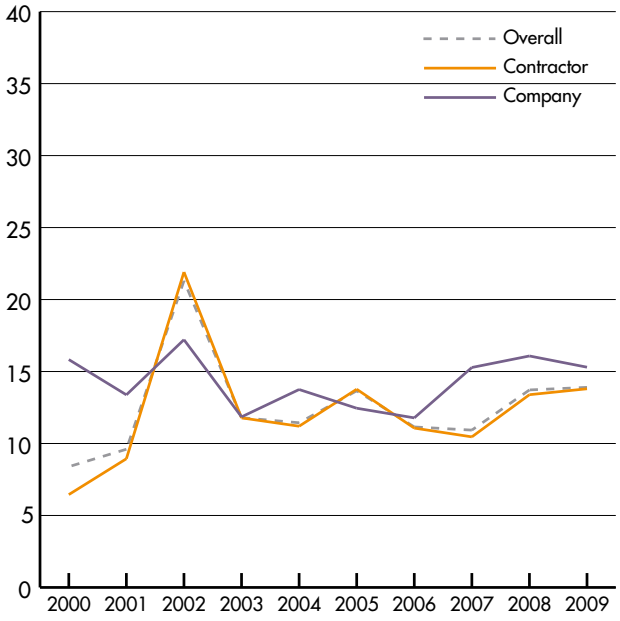
Severity of restricted workday cases

The average number of days of restricted work per restricted work day case.

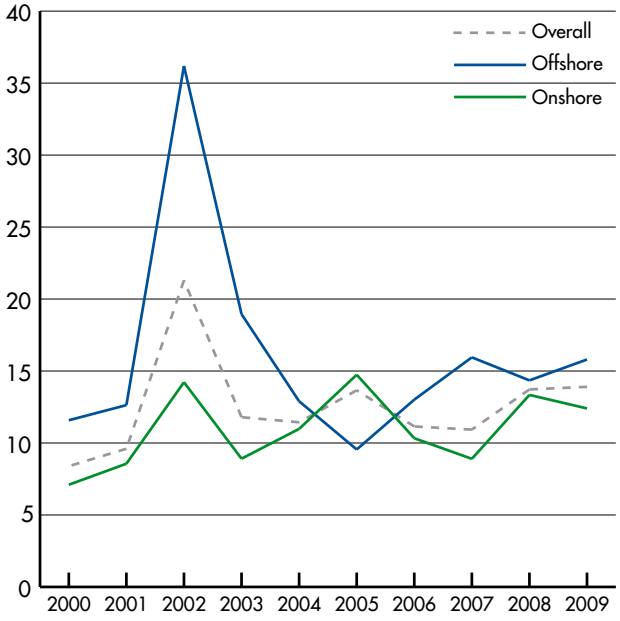
Restricted work day case days are not reported by all companies. The database for this analysis is therefore reduced to 1,735 million work hours, 48% of all reported hours.

	2009 severity	Relative to 2008 severity	Relative to 2004-2008 severity
Company	15.26	5% lower	9% higher
Contractor	13.80	3% higher	16% higher
Overall	13.94	2% higher	15% higher
Onshore	12.42	7% lower	8% higher
Offshore	15.75	10% higher	16% higher

Severity of restricted workday cases – company & contractor
average days lost per RWDC



Severity of restricted workday cases– onshore & offshore
average days lost per RWDC

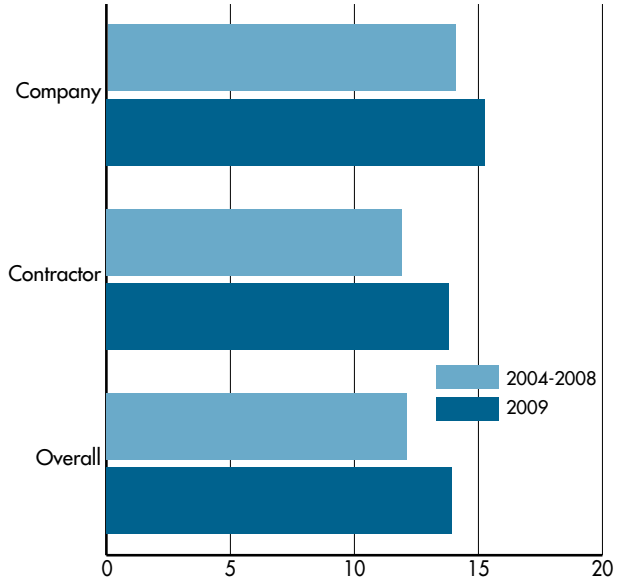


A total of 6,733 days were restricted (RWDC days) as a result of restricted workday cases, in the sense that normal duties could not be performed. This compares with 42,970 days lost (LWDC days) on a database nearly twice as large.

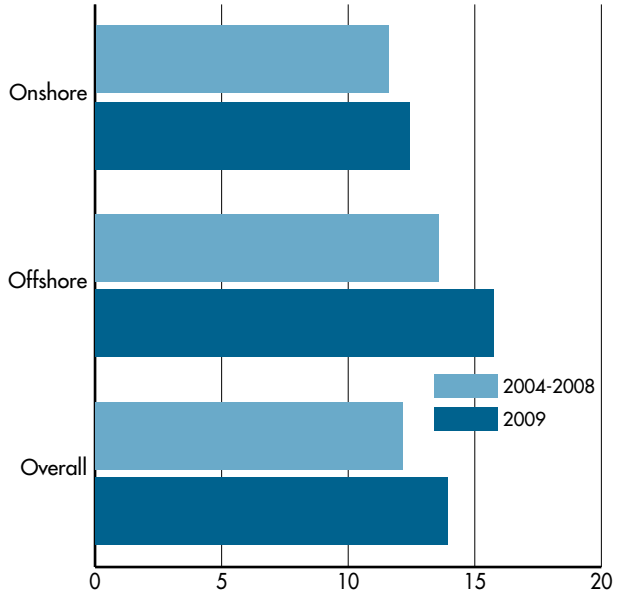
- The average number of days lost to restricted work per case increased compared to the previous 5-year period, most noticeably among contractor staff (16%).
- Offshore the number of days lost has risen by 16% compared to the previous 5-year period and by 10% compared to 2008 results.

The figures below show the average number of days lost per RWDC in 2009 compared to the average for the previous 5-year period. An increase is shown in RWDC severity in all areas of activity compared to the previous 5-year period; an increase of 15% overall.

Severity of restriced workday cases – company & contractor
average days of restricted work per RWDC



Severity of restriced workday cases – onshore & offshore
average days of restricted work per RWDC



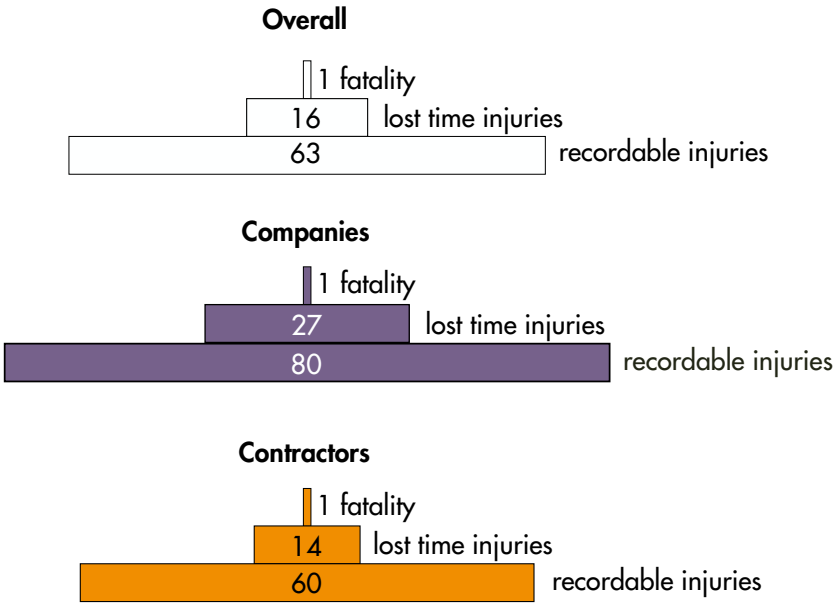
2.12 Accident triangles

In this section the relative numbers of types of occupational injury are shown in the form of 'accident triangles'. The ratios have been corrected to account for the absence, in some returns, of medical treatment cases.

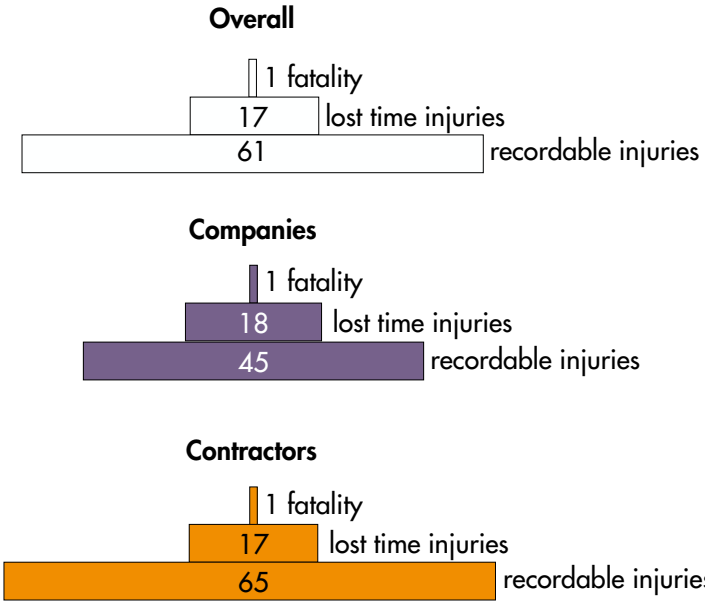
- Overall the ratio of lost time injuries to fatalities is 16:1 and for total recordable incidents to lost time injuries about 4:1. In 2008 these ratios were 17:1 and 4:1 respectively.

Note: fatalities are included in 'lost time injuries' and 'recordable injuries'.

2009 accident triangles



2008 accident triangles



3 Results by region

In this section the safety performance of regions and individual countries within the regions are presented.

A list of countries from which companies have reported information is provided in Appendix G, which also shows the division of countries into regions. The term Australasia refers to Australia, New Zealand and the islands in the SW Pacific.

3.1 Fatalities

	Fatal incidents	Fatalities
Africa	10	12
Asia/Australasia	11	11
Europe	6	21
FSU	9	11
Middle East	18	22
North America	7	14
South America	6	8

The table shows the number of fatal incidents and fatalities in each of the 7 regions into which the data are partitioned. It can be seen that the highest number of fatalities occurred in the Middle East region where 22 fatalities were reported. In 2008, 20 fatalities were reported for the Middle East region.

Further analysis of the fatality statistics is presented in Section 3.4, where 5-year rolling averages of FAR are presented for each of the regions.

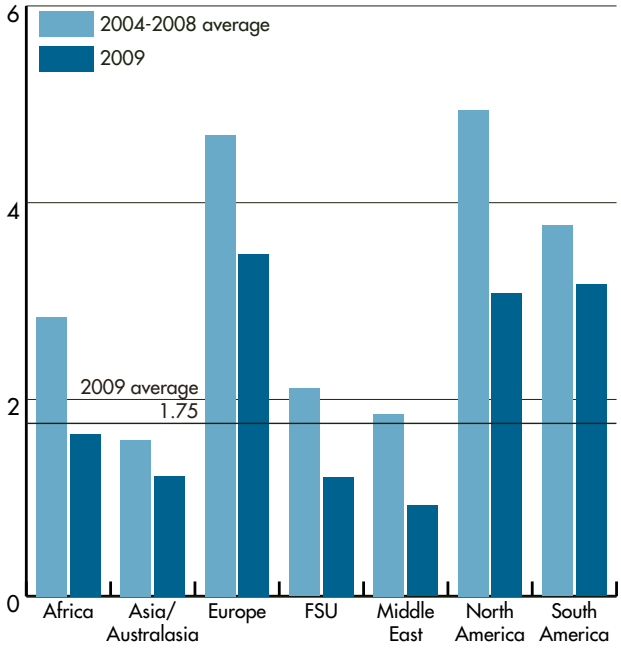
3.2 Total recordable injury rate (TRIR)

	TRIR	Relative to 2004-2008 average TRIR
Africa	1.65	42% lower
Asia/Australasia	1.22	23% lower
Europe	3.48	26% lower
FSU	1.21	43% lower
Middle East	0.92	51% lower
North America	3.08	38% lower
South America	3.17	16% lower
Overall	1.75	38% lower

The figure shows the TRIR for each of the 7 regions compared to the regional average for the preceding 5-year period.

A reduction in TRIR can be seen in all regions in 2009 compared to the 2004-2008 regional average.

Total recordable injury rate
per million hours worked

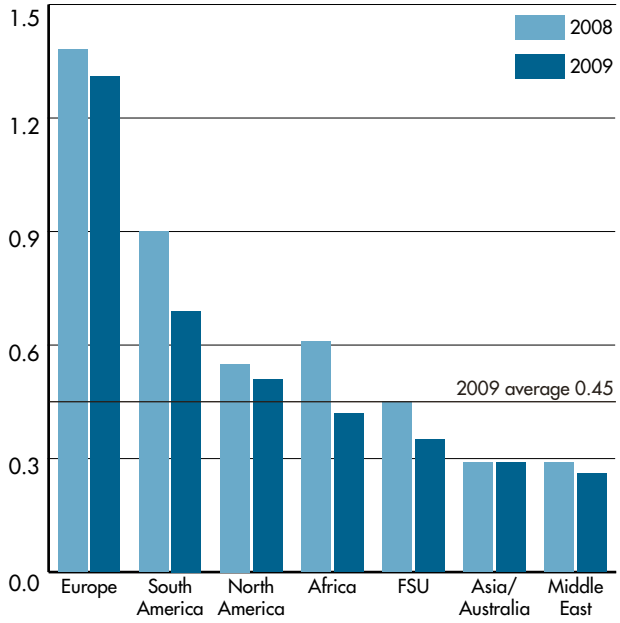


Total recordable injury rate (TRIR)

The number of recordable injuries (fatalities + lost workday cases + restricted workday cases + medical treatment cases) per 1,000,000 hours worked.

3.3 Lost time injury frequency (LTIF)

Lost time injury frequency
per million hours worked



	LTIF	Relative to 2008 LTIF
Africa	0.42	31% lower
Asia/Australasia	0.29	no change
Europe	1.31	5% lower
FSU	0.35	22% lower
Middle East	0.26	10% lower
North America	0.51	7% lower
South America	0.69	23% lower
Overall	0.45	18% lower

The figure presents the LTIF for the seven regions for both 2009 and 2008. It can be seen that the LTIF has reduced in all regions except Asia/Australasia where the frequency remains unchanged compared to 2008 values.

Further analysis of the lost time incidents is presented in Section 3.4, where 5-year rolling averages of LTIF are presented for each of the regions.

3.4 FAR, TRIR and LTIF – 5-year rolling averages

In order to smooth out variability in the annual values of the regional TRIR, FAR and LTIF, 5-year rolling averages are computed which should provide a more reliable indicator of performance trends.

The figures show TRIR, FAR and LTIF 5-year rolling averages for each of the seven regions, and includes the 'all regions' curve.

Lost time injury frequency (LTIF)

The number of lost time injuries (fatalities + lost workday cases) per 1,000,000 hours worked.

FAR 5-year rolling average

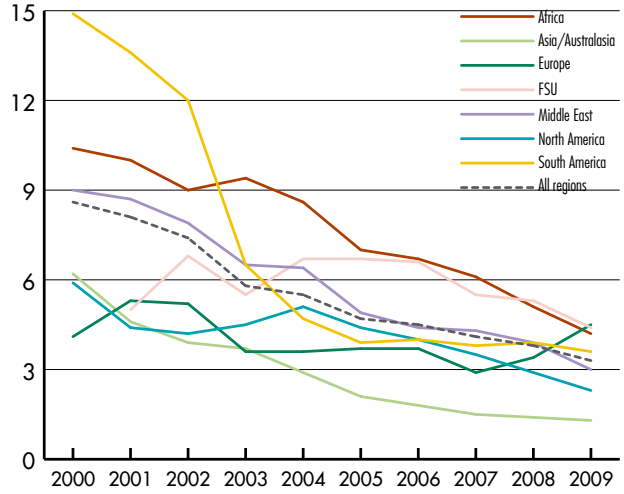
Asia/Australasia has the lowest 5-year rolling average value of FAR in 2009 (1.35), which is 39% of the average for all regions (3.3).

For the first time in the 10 year period shown, the region with the highest average is Europe with a 5-year rolling average value FAR of 4.5.

The FAR 5-year rolling average continues to reduce for all regions with the exception of Europe, where it is shown to have increased by 32% compared to the 2008 rolling average (3.4) and by 55% compared to the 2007 rolling average (2.9)

The largest reduction in FAR 5-year rolling average during the 10-year period shown has occurred in the Asia/Australasia region, where the 2009 value (1.35) is just 22% of the 2000 value (6.2).

FAR 5-year rolling average
per 100 million hours worked



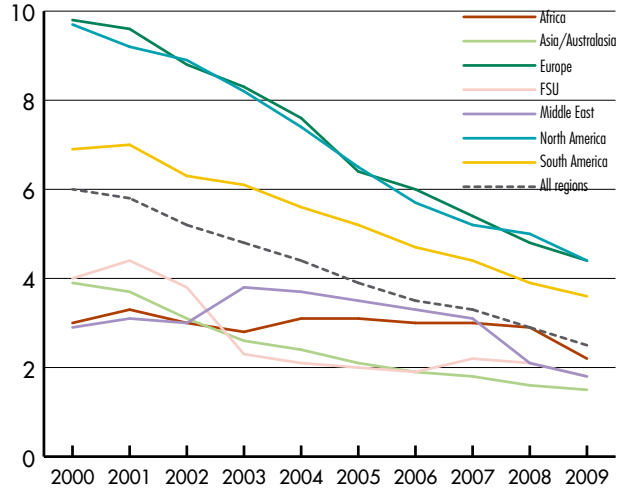
TRIR 5-year rolling average

Asia/Australasia has the lowest 5-year rolling average value for TRIR in 2009 with an average of 1.5 which is 60% of the average for all regions (2.5).

The regions with the highest TRIR results in 2009 are North America and Europe, each with a TRIR 5-year rolling average of 4.4.

The largest reduction in 5-year rolling average TRIR during the 10-year period shown has occurred in the Asia/Australasia region, where the 2009 value (1.5) is just 38% of the 2000 value (3.9).

TRIR 5-year rolling average
per million hours worked



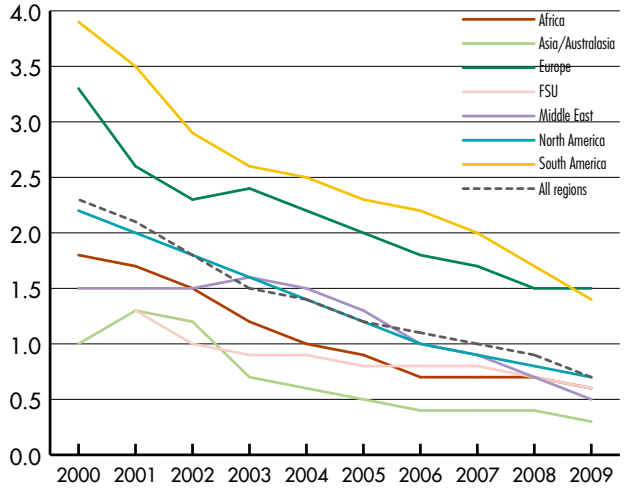
LTIF 5-year rolling average

Steady improvement in the LTIF 5-year rolling average in all regions is evident, with the 2009 values representing the lowest values on record to date. Asia/Australasia reported the lowest result, achieving a 5-year rolling average LTIF of 0.3, just 30% of the 2000 value for the region (1.0).

For the first time in the 10 year period shown, the highest 5-year rolling average was reported by Europe. Europe's 5-year rolling average of 1.5 was 7% higher than the average for South America (1.4).

North America and Asia/Australasia both show the largest reduction in LTIF 5-year rolling average during the 10-year period shown, with 2009 values (1.7 and 0.3 respectively) that are just 31% of their 2000 regional values (2.2 and 1.0 respectively).

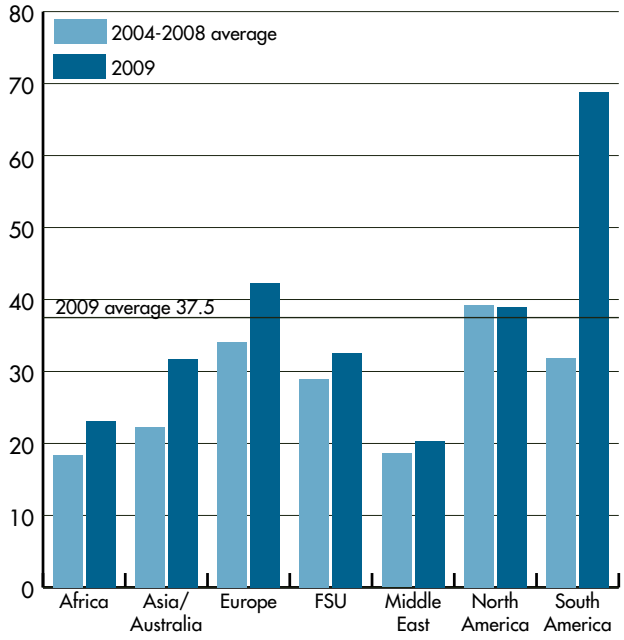
LTIF 5-year rolling average
per million hours worked



3.5 Severity of lost workday cases

Severity

Average days lost per LWDC



	LWDC severity	Relative to 2004-2008 average LWDC severity
Africa	23.08	26% higher
Asia/Australasia	31.77	42% higher
Europe	42.26	24% higher
FSU	32.55	13% higher
Middle East	20.37	10% higher
North America	38.92	1% lower
South America	68.87	116% higher
Overall	37.73	36% higher

The figure shows the average number of days lost per LWDC for each of the 7 regions. Also shown is the average number of days lost for the preceding 5-year period for each region.

The number of days lost was reported for 80% of lost work day cases.

The severity of lost workday cases is the highest in the South American region compared with the other regions, with 68.9 days lost per LWDC in 2009. The South American average has more than doubled compared to an average of 31.8 days lost per LWDC for the previous 5-year period.

Lost Work Day Case (LWDC)

A Lost Work Day Case is an incident resulting in at least one day off work. Fatal incidents are not included.

Severity

Severity is defined as the average number of days lost (where reported) for each lost workday case.

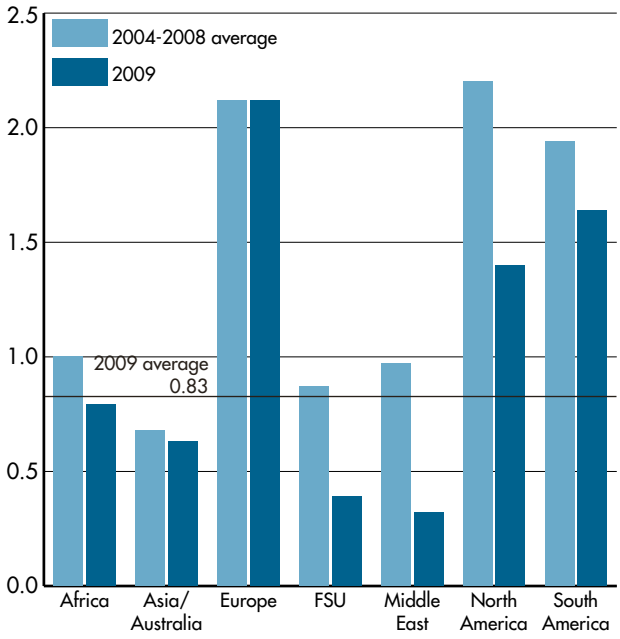
3.6 Restricted work day case + lost time injury (RWDC + LTI) frequency

	RWDC+LTI frequency	Relative to 2004-2008 average RWDC+LTI frequency
Africa	0.79	21% lower
Asia/Australasia	0.63	7% lower
Europe	2.12	no change
FSU	0.39	55% lower
Middle East	0.32	67% lower
North America	1.40	36% lower
South America	1.64	15% lower
Overall	0.83	34% lower

The figure shows the frequency of RWDC+LTI for the different regions in comparison to the regional average for the preceding 5-year period.

- A reduction in RWDC+LTI frequency is seen in all regions except Europe where the average is unchanged compared to the previous 5-year period.
- The greatest reduction is associated with operations in the Middle East region, where the 2009 value (0.32) reduced to one third of the average for that region for the preceding 5-year period (0.97).
- The 2009 average for all regions was 0.83, a 34% reduction compared to 2008 (1.03).

Lost time injury frequency
per million hours worked



3.7 Individual country performance

The safety performance of individual countries is presented in terms of the lost time injury frequency of companies jointly with contractors. To preserve the anonymity of companies, performance is only published for those countries for which at least 2 companies have reported statistics. Countries with less than 50,000 reported hours worked are excluded, since results for such small populations of hours would be unrepresentative. Overall averages and regional averages include data from all countries regardless of work hours or number of contributing companies.

Of the 102 countries from which data have been reported, 34 are excluded by these constraints.

The chart of relative performance for the remaining 68 countries compares the 2009 performance with that in 2008 and 2007.

RWDC+LTI frequency

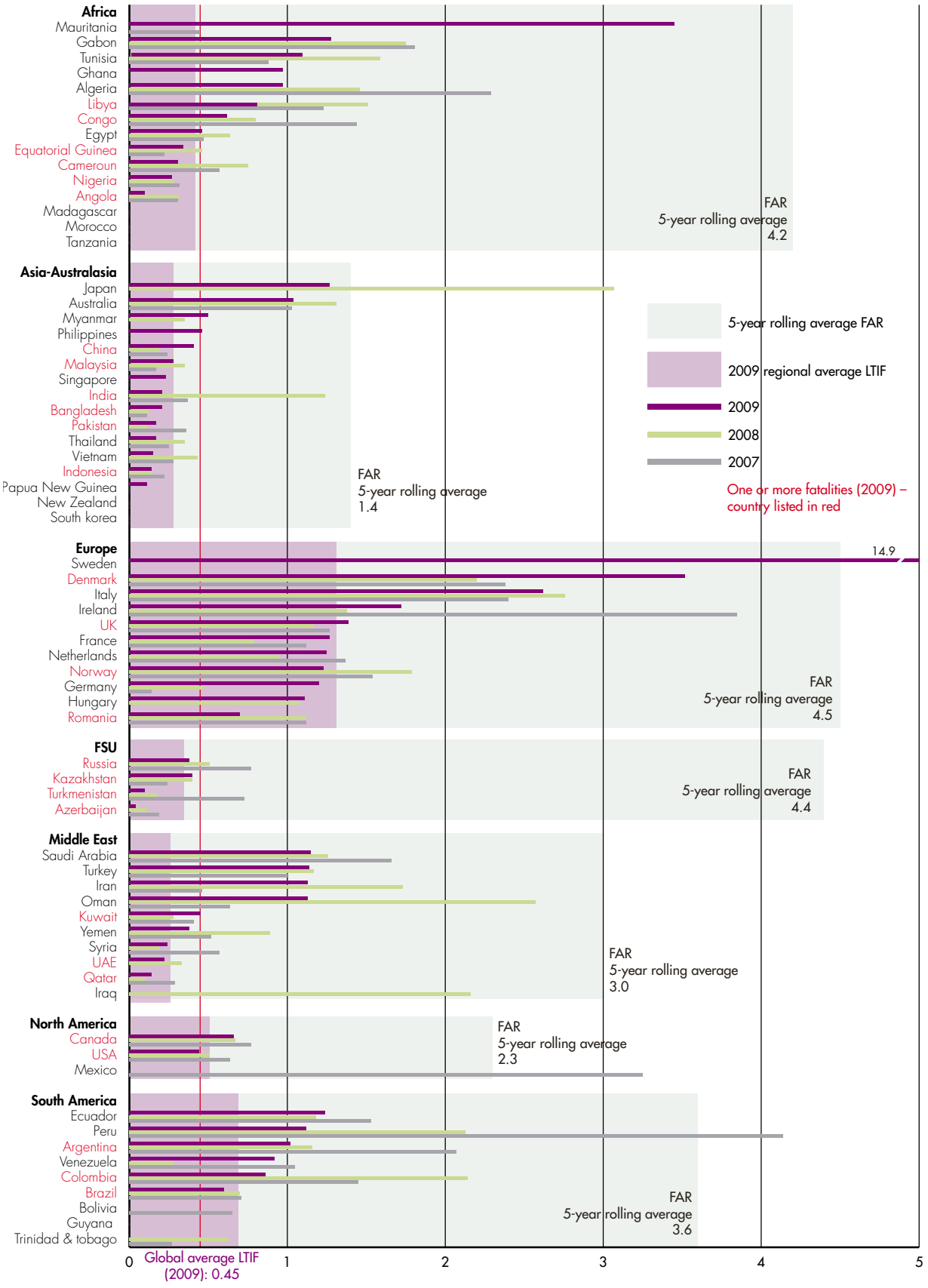
The number of restricted work day cases plus the number of lost time injuries (fatalities + lost workday cases) per 1,000,000 hours worked.

Bolivia, Guyana, Iraq, Madagascar, Mexico, Morocco, Tanzania, New Zealand, South Korea and Trinidad & Tobago reported zero lost time incidents in 2009.

The majority of countries in Africa, Asia/Australasia, FSU and the Middle East achieved an LTIF equal to or lower than the overall average LTIF (0.45). The majority of countries in Europe, North America and South America show an LTIF higher than the global average.

For comparison, the 5-year average FAR is shown for each of the regions. There appears to be little if any correlation between these values and the regional average LTIF values.

Lost time injury frequency – companies with contractors
per million hours worked



4 Results by function

In this section the safety performance within different functions performed in the E&P industry is presented. Functions are defined as 'exploration', 'drilling', 'production' and 'construction'. The category 'other' is no longer in use. See the Glossary of Terms in Appendix E for definitions.

The overall results quoted take account also of data provided by contributing companies which were not allocated to one of these four, i.e. the 'unspecified' category.

4.1 Fatalities

	2009			2008	
	Fatal incidents†	Fatalities		Fatal incidents†	Fatalities
Exploration	2	2	Exploration	2	3
Drilling	15	16	Drilling	14	15
Production	21	30	Production	27	35
Construction	16	18	Construction	13	15
Unspecified	14	33	Unspecified	26	35

† *In this table the number of fatal incidents in each category is derived from the E&P function of each individual that died (not from the function allocated to the incident itself as presented below). Hence multiple fatality incidents where more than one job function is represented will be listed more than once.*

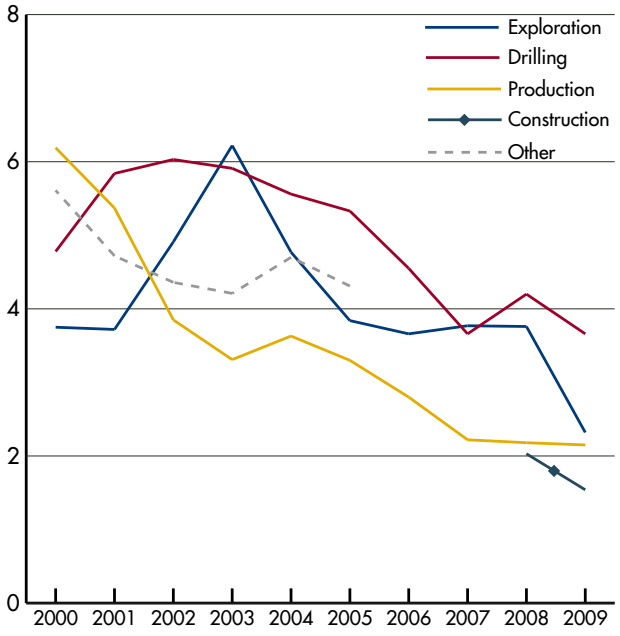
The distribution of company and contractor fatal incidents and fatalities between the functions are shown in the table for both 2009 and 2008. A reduction is noted in the number of fatalities reported as 'unspecified' for 2009 compared with 2008.

4.2 Fatal accident rate (FAR) – 3-year rolling average

In order to smooth out variability in the annual fatal accident rate values, 3-year rolling averages are computed which should provide a more reliable indicator of performance trends.

- 'Drilling' is shown to be the function with the highest 3-year rolling average FAR for 2009 of 3.73. The lowest 3-year rolling average of 1.56 was reported for 'Construction'.
- The 'Exploration' function is showing a significant drop in FAR.

Fatal Accident Rate 3-year rolling average
per 100 million hours worked

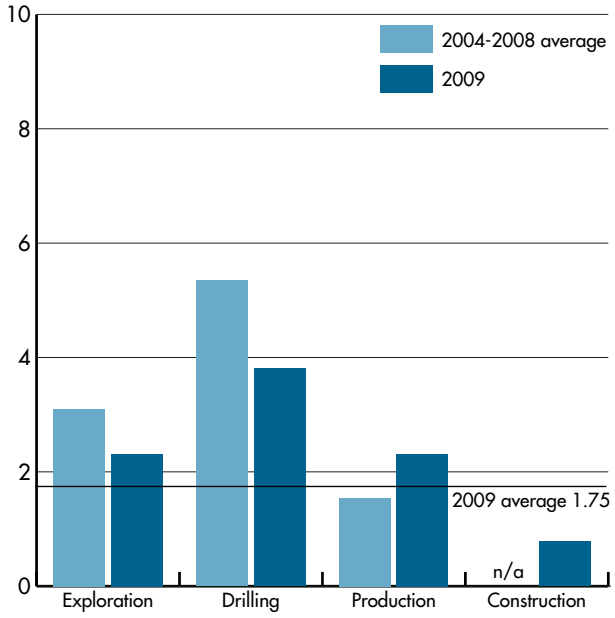


Note: The function 'other' was replaced by 'construction' for the first time in 2006, thus 2006 and 2007 3-year average figures for those functions are not available.

4.3 Total recordable injury rate (TRIR)

	2009 TRIR	Relative to 2004-2008 TRIR
Overall	1.75	38% lower
Exploration	2.31	25% lower
Drilling	3.81	29% lower
Production	2.31	50% higher
Construction	0.78	

Total recordable injury rate
per million hours worked



The figure shows the TRIR associated with each of the functions. The highest reported TRIR was associated with drilling related activities.

A reduction can be seen in drilling and exploration activities compared to 2004-2008 results.

Overall the TRIR has fallen by 38% compared to the average for the preceding 5-year period (2.84).

The 2009 average for all functions was 1.75, a 38% reduction compared to 2008 (2.09).

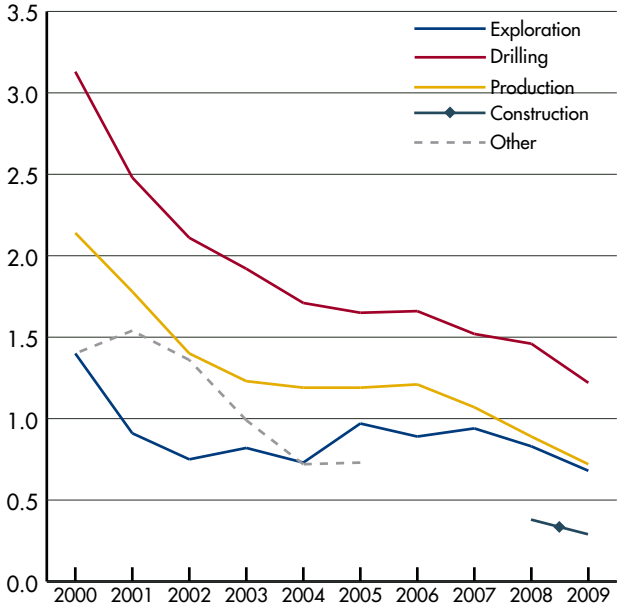
4.4 Lost time injury frequency (LTIF) – 3-year rolling average

The figure shows the LTIF associated with each of the different functions as a 3-year rolling average. The LTIF 3-year rolling averages for all functions show improvement over the previous 10-year period and have improved again compared to the 2008 averages.

While the 'drilling' category has reported the highest LTIF 3-year rolling average throughout the period shown, the 2009 average of 1.22 is a reduction of 66% compared to the 1999 average of 3.59).

Note: The function 'other' was replaced by 'construction' for the first time in 2006, thus 2006-2007 3-year average figures for those functions are not available.

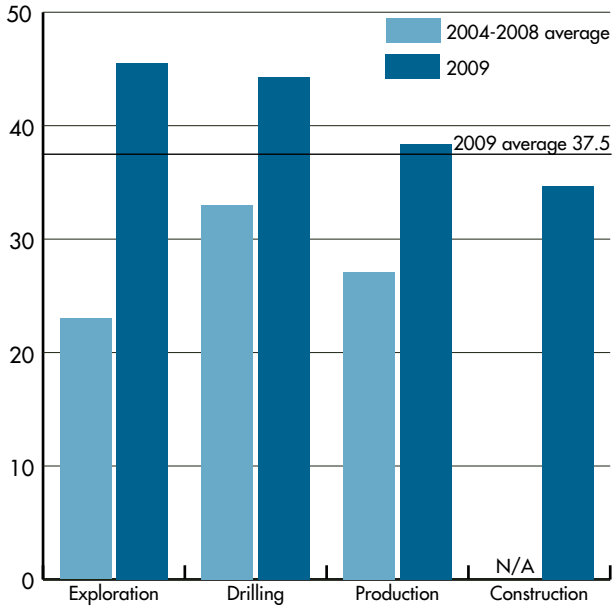
Lost Time Injury Frequency 3-year rolling average
per million hours worked



4.5 Severity of lost workday cases

The figure shows the average number of days lost per LWDC. The severity has increased in all functions, particularly in exploration related injuries where the average number of days lost (45) is almost double the 2004-2008 average (23).

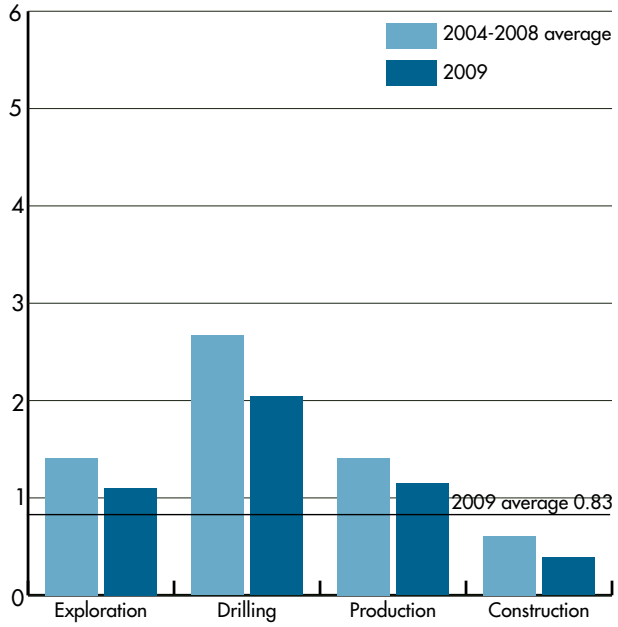
Severity
average lost days per LWDC



4.6 RWDC + LTI frequency by function

	2009 RWDC+LTIF	Relative to 2004-2008 RWDC+LTIF
Overall	0.83	34% lower
Exploration	1.10	22% lower
Drilling	2.04	24% lower
Production	1.15	18% lower
Construction	0.39	36% lower

RWDC + LTI frequency – functions
per million hours worked



The figure shows the frequency of RWDC and LTI associated with the different functions.

- A reduction of 34% can be seen in the overall RWDC+LTI frequency relative to the average for the previous 5-year period (1.26).
- The RWDC+LTI frequency for the 'Construction' function in 2009 is 36% lower than the 2004-2008 result (0.61).
- The 2008 average for all functions is 1.03.

4.7 Exploration performance

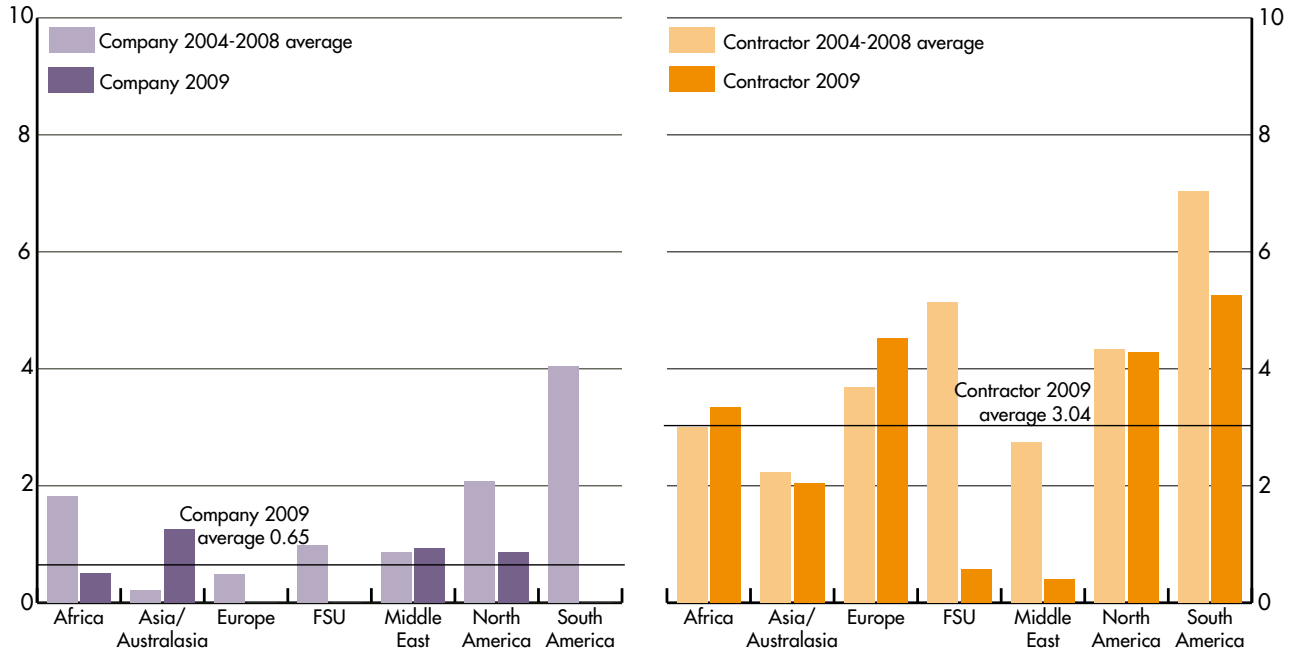
4.7.1 Total recordable injury rate

The figures show the TRIR for companies and contractors for exploration related activities in different regions of the world.

The TRIR for companies operating in Asia/Australasia is five times that reported in the previous five year period. Company TRIR has reduced for all other regions. The reduction is particularly significant in South America with a drop from 4.0 to 0.

An increase can be seen in the TRIR for contractors in exploration activities in Africa and Europe, where the TRIR has increased by 11% and 23% respectively, compared to the regional averages for the previous 5-year period.

Total recordable injury rate – exploration
per million hours worked



Exploration

Geophysical, seismographic and geological operations, including their administrative and engineering aspects, construction, maintenance, materials supply and transportation of personnel and equipment; excludes drilling.

4.7.2 Lost time injury frequency

The figures show the LTIF for companies and contractors for exploration related activities, in different regions of the world. The 2009 result is compared to LTIF results in the previous 5-year period.

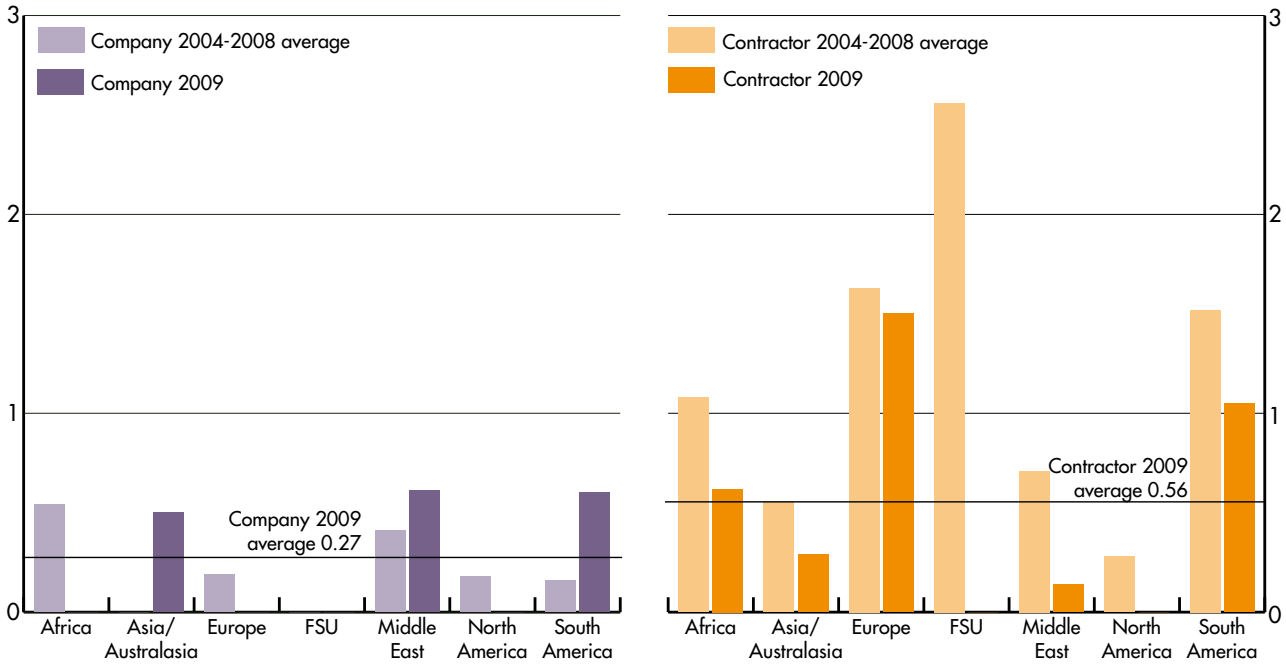
In 2009 the average LTIF values for companies and contractors engaged in exploration activities are 0.27 and 0.56 respectively; the overall average LTIF is 0.47. The company result is up by 13% compared to the 2004-2008 average and the contractor result is down by 44%.

Company LTIF values associated with exploration in Asia/ Australasia, the Middle East and South America show an increase compared to the previous 5-year period.

LTIF results associated with exploration activities for contractors has reduced in all regions when compared with the 2004-2008 regional averages.

NOTE: In many instances where the LTIF or TRIR is reported as 0.00, the number of work hours reported for the specific function and region are relatively low. A detailed breakdown of the hours by region and function is presented in Appendix B.

Lost time injury frequency – exploration
per million hours worked

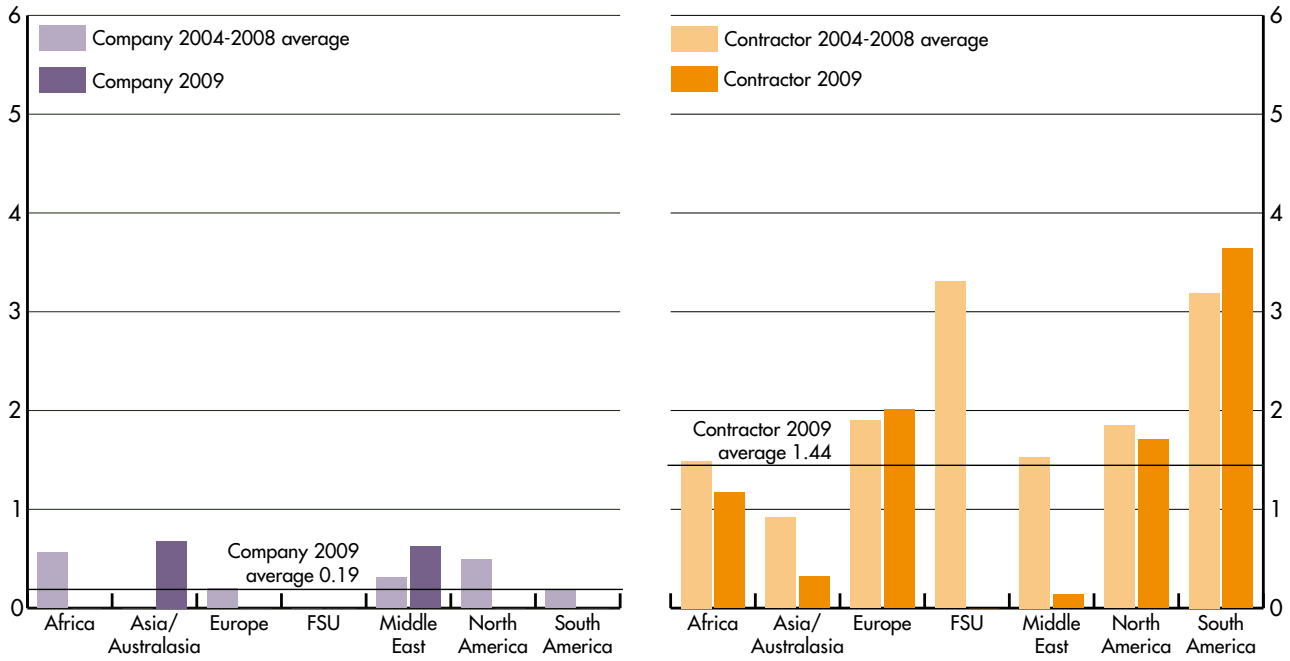


4.7.3 Restricted work day case + lost time injury frequency

The figures show the RWDC+LTI frequency for companies and contractors for exploration related activities, in different regions of the world.

A reduction is seen in the RWDC+LTI frequency for contractors in all regions except Europe and South America. The fall in RWDC+LTI frequency is particularly notable in the Middle East, where the 2009 result is just 9% of the average for the previous 5-year period.

Restricted work day case + lost time injury frequency – exploration
per million hours worked



4.8 Drilling performance

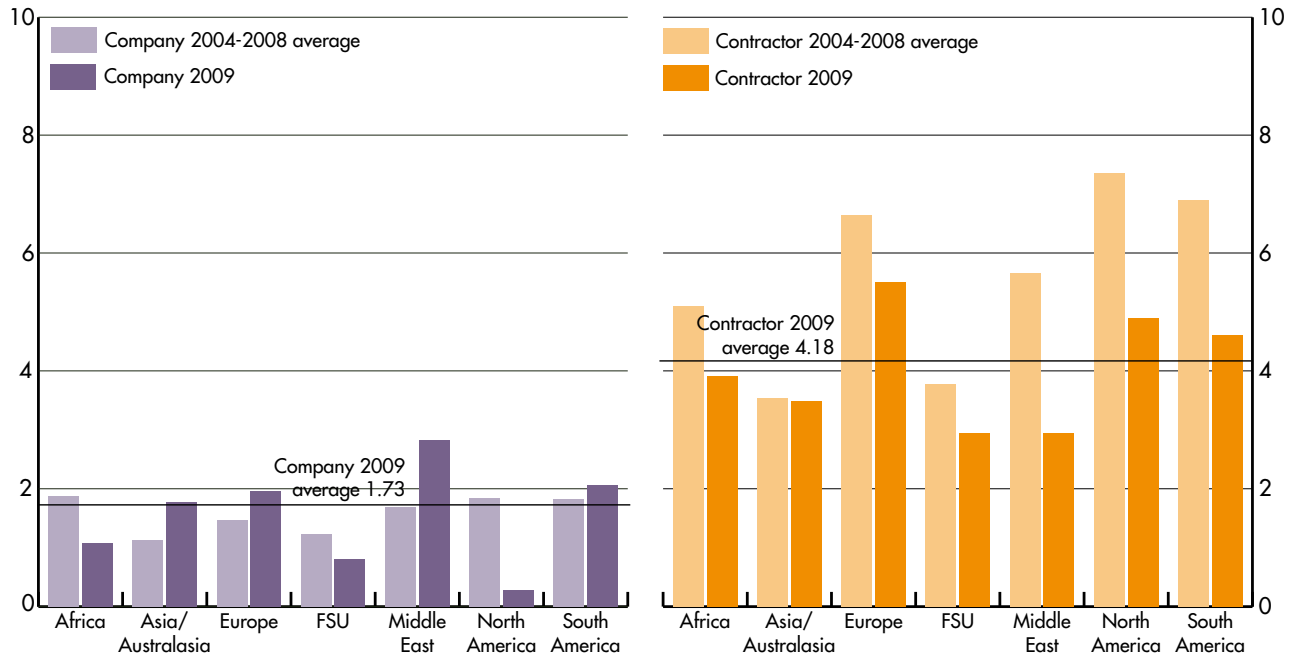
4.8.1 Total recordable injury rate

The figures show the TRIR for companies and contractors for drilling related activities in different regions of the world.

Company TRIR has increased in all regions apart Africa, the FSU and North America. A fall in RWDC+LTI frequency is particularly notable in North America where the 2009 result is just 15% of the average for the previous 5-year period.

A reduction can be seen in TRIR results for contractors in drilling operations in all regions when compared with the 2004-2008 regional averages.

Total recordable injury rate – drilling
per million hours worked



Drilling

All exploration, appraisal and production drilling and workover as well as their administrative, engineering, construction, materials supply and transportation aspects. It includes site preparation, rigging up and down and restoration of the drilling site upon work completion. Drilling includes ALL exploration, appraisal and production drilling.

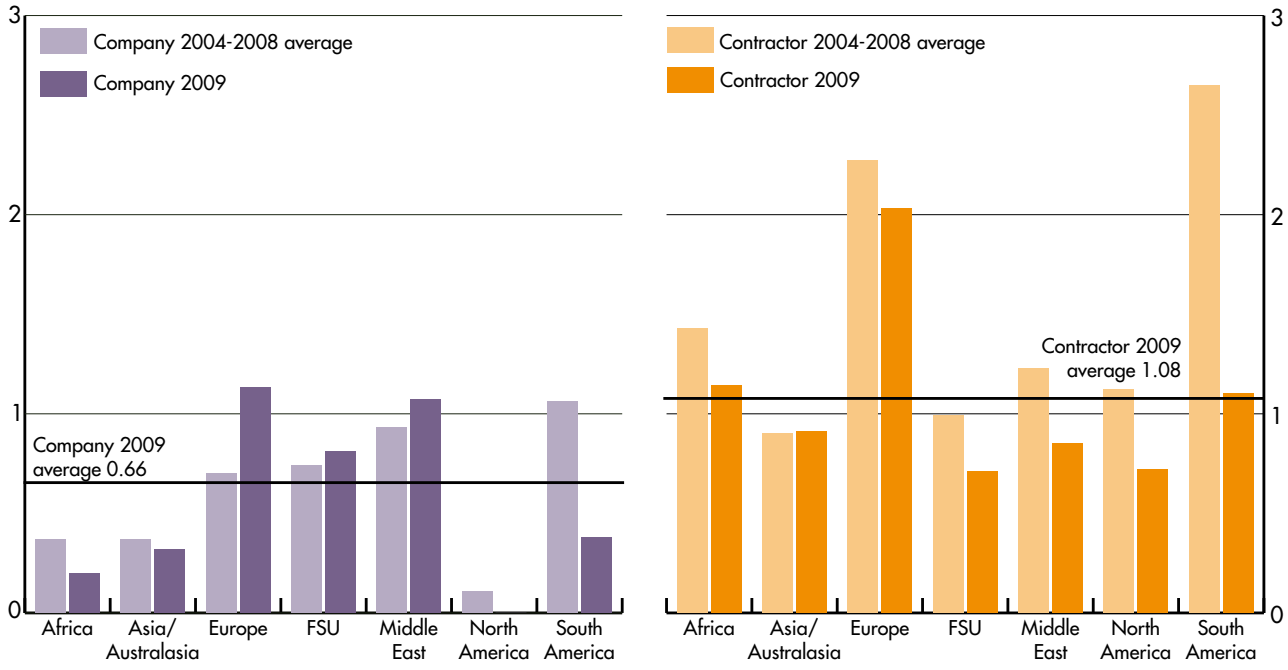
4.8.2 Lost time injury frequency

The figures show the LTIF for companies and contractors for drilling related activities in different regions of the world.

In 2009 the average LTIF values for companies and contractors engaged in drilling activities are 0.66 and 1.08 respectively; the overall average LTIF for drilling activities is 1.02. The company result is down by 3% compared to the 2004-2008 average and the contractor result is down by 34%.

The biggest reduction in LTIF for both companies and contractors engaged in drilling activities is shown to be in South America where LTIF is down by 64% for companies and by 58% for contractors relative to the previous 5-year period.

Lost time injury frequency – drilling
per million hours worked



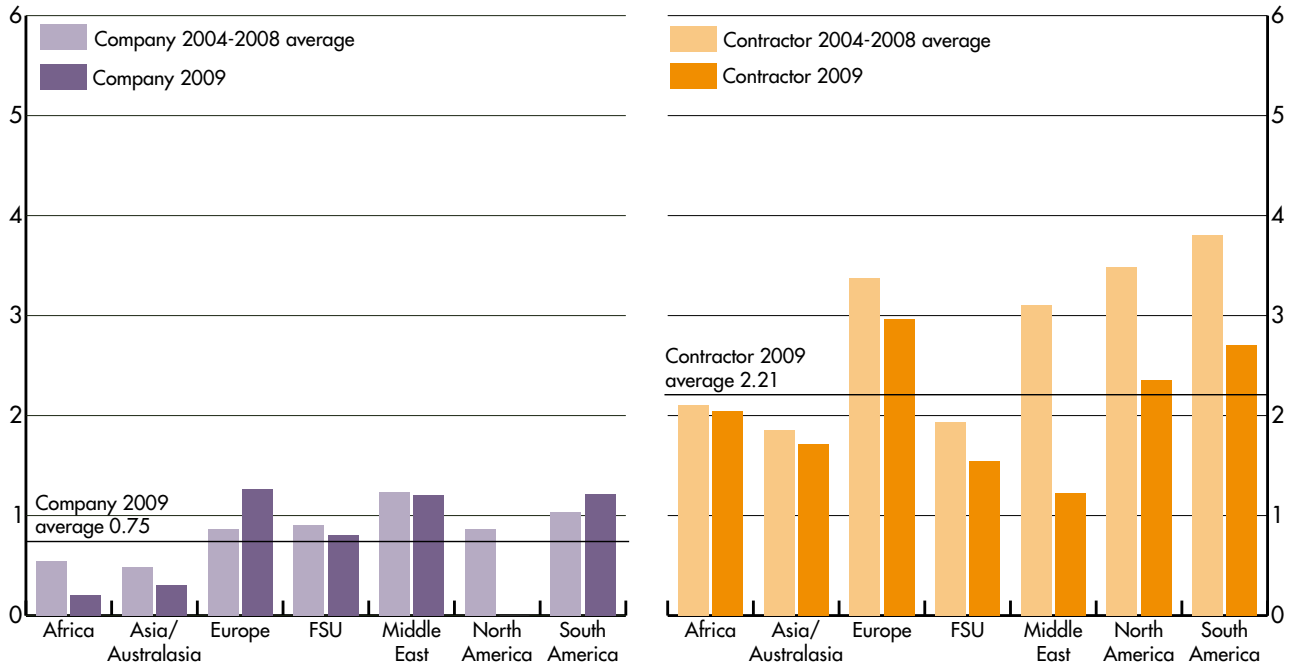
4.8.3 Restricted work day case + lost time injury frequency

The figures show the RWDC+LTI frequency for companies and contractors for drilling related activities, in different regions of the world.

A reduction can be seen in RWDC+LTI frequency in all regions except Europe and South America compared to the average for the previous 5-year period (46% and 17% respectively).

A reduction can also be seen in RWDC+LTI frequency for contractors in drilling activities in all regions, most noticeably in the Middle East where the 2009 average is less than half of the average for the previous 5-year period.

Restricted work day case + lost time injury frequency – drilling
per million hours worked



4.9 Production performance

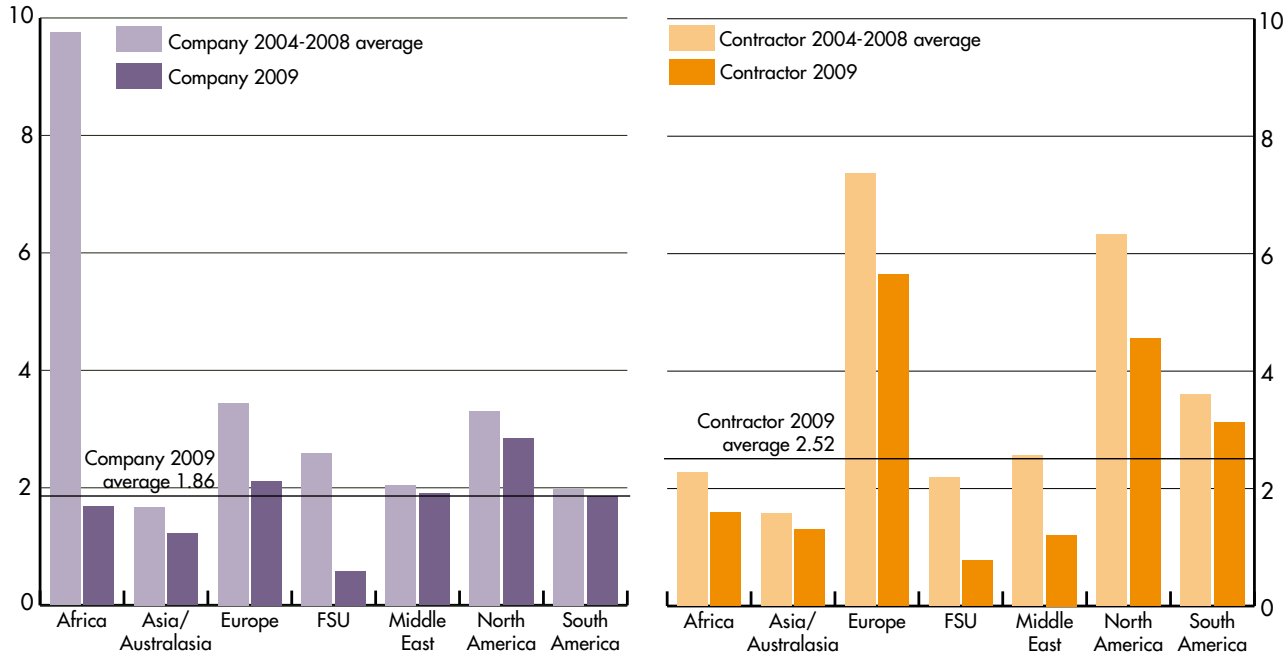
4.9.1 Total recordable injury rate

The figures show the TRIR for companies and contractors for production related activities in different regions of the world.

A notable reduction in TRIR was reported for companies in Africa where the 2009 average has reduced to just 17% of the average for the previous 5-year period.

When compared to the average for the previous 5-year period, a reduction is shown in all regions for both company and contractor operations.

Total recordable injury rate – production
per million hours worked



Production

Petroleum and natural gas producing operations, including their administrative and engineering aspects, minor construction, repairs, maintenance and servicing, materials supply and transportation of personnel and equipment. It covers all mainstream production operations including wireline. It does not cover production drilling and workover. See Appendix E, *Glossary of Terms*, for details.

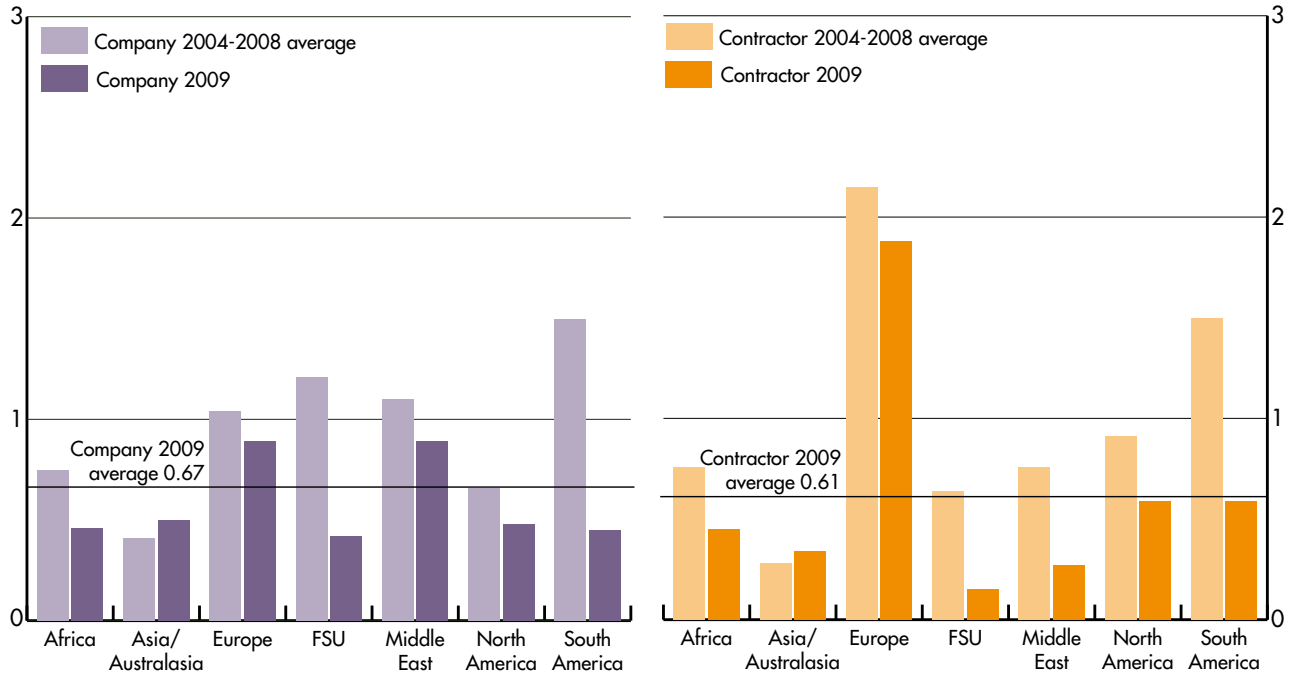
4.9.2 Lost time injury frequency

The figures show the LTIF for companies and contractors for production related activities in different regions of the world.

The LTIF for companies working in production activities has reduced in all regions but Asia/Australasia where it has increased by 22% compared to the 2004-2008 average. In South America, the 2009 company average is just 30% of the average for the previous 5-year period.

The 2009 LTIF associated with contractors working in production activities has reduced in all regions apart from Asia/Australasia where the LTIF shows an increase of 21% compared to the 2004-2008 average. In the FSU, Midle East and South America regions, the 2009 contractor LTIF is less than half of the average for the preceding 5-year period.

Lost time injury frequency – production
per million hours worked

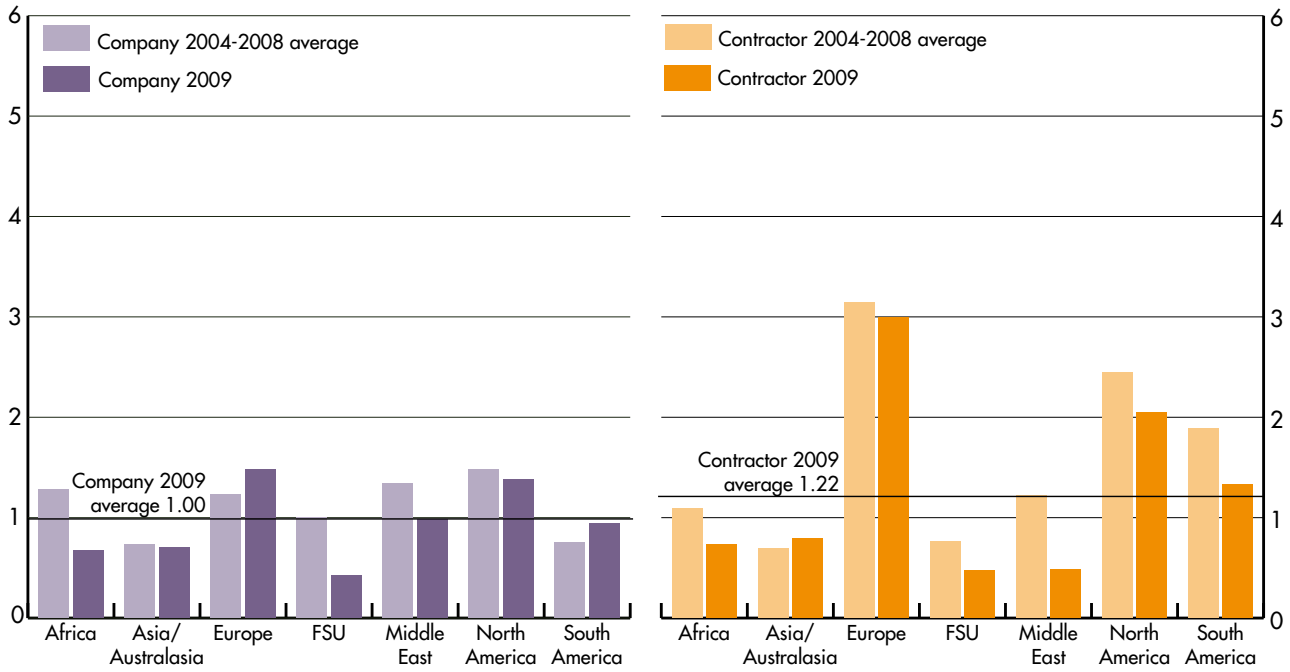


4.9.3 Restricted work day case + lost time injury frequency

The figures show the RWDC + LTI frequency for companies and contractors for production related activities in different regions of the world.

When compared to the average for the previous 5-year period, a reduction can be seen in all regions with the exception of Asia/Austrasia for both companies and contractors in production activities, and in all regions except Europe and South America for companies.

Restricted work day case + lost time injury frequency – production
per million hours worked



4.10 Construction performance

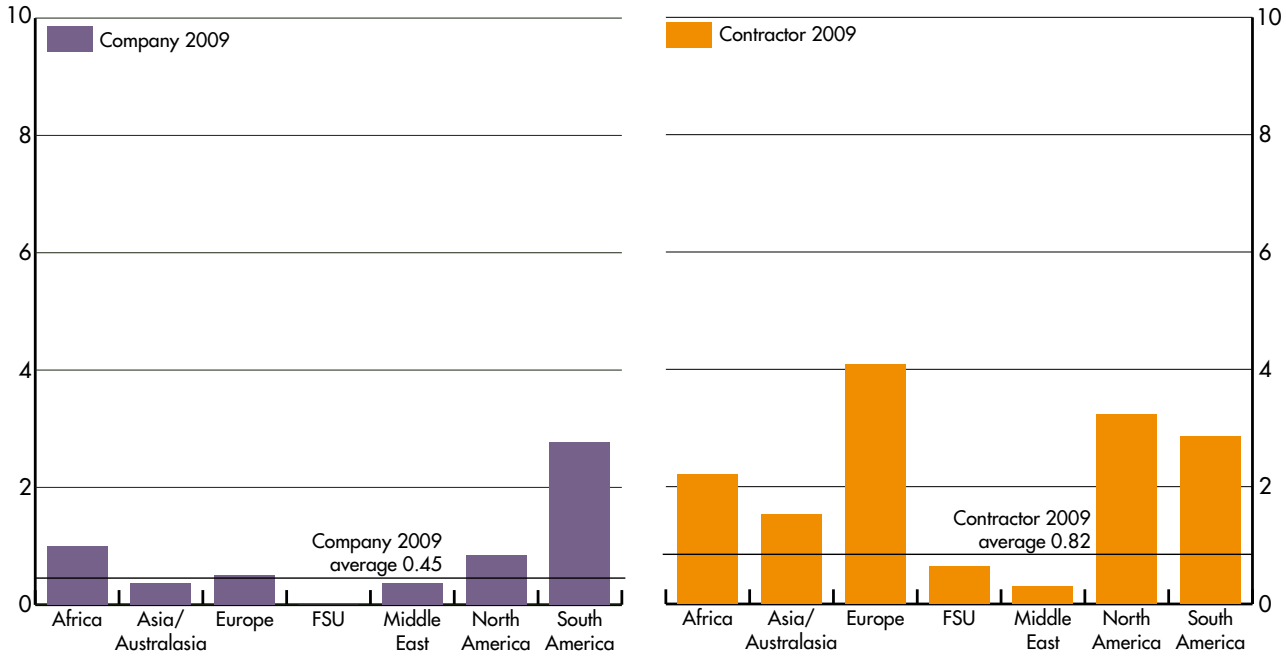
2008 is the fourth year in which the category 'construction' has been in use, therefore previous years' data are not available for comparison purposes. The company and contractor results for 2009 construction performance are presented below.

Construction activities are predominantly conducted by contractors therefore the work hours reported for contractors are much greater than those reported for company employees. Refer to Appendix B for detailed information.

4.10.1 Total recordable injury rate

The TRIR in Europe, North America and South America is significantly higher than the FSU and the Middle East for contractors.

Total recordable injury rate – construction
per million hours worked



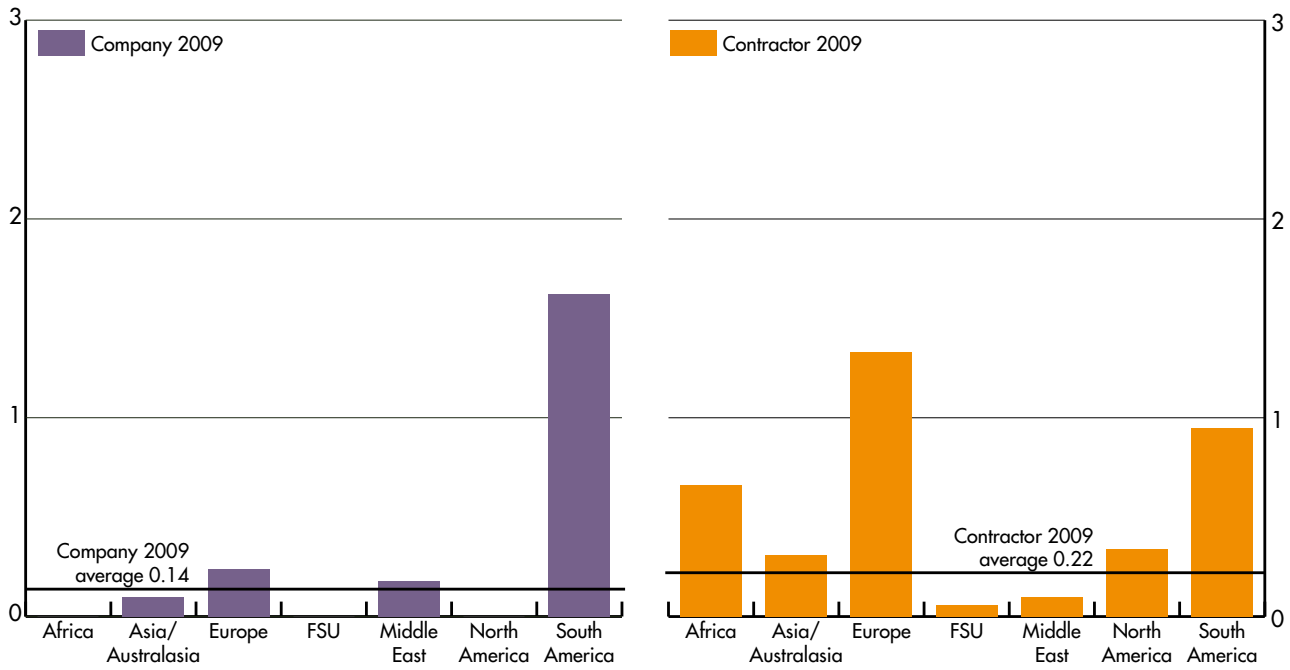
Construction

All major construction, fabrication activities and also disassembly, removal and disposal (decommissioning) at the end of the facility life. Includes construction of process plant, yard construction of structures, offshore installation, hook-up and commissioning and removal of redundant process facilities.

4.10.2 Lost time injury frequency

Both FSU and the Middle East have a very low contractor LTIF compared to other regions.

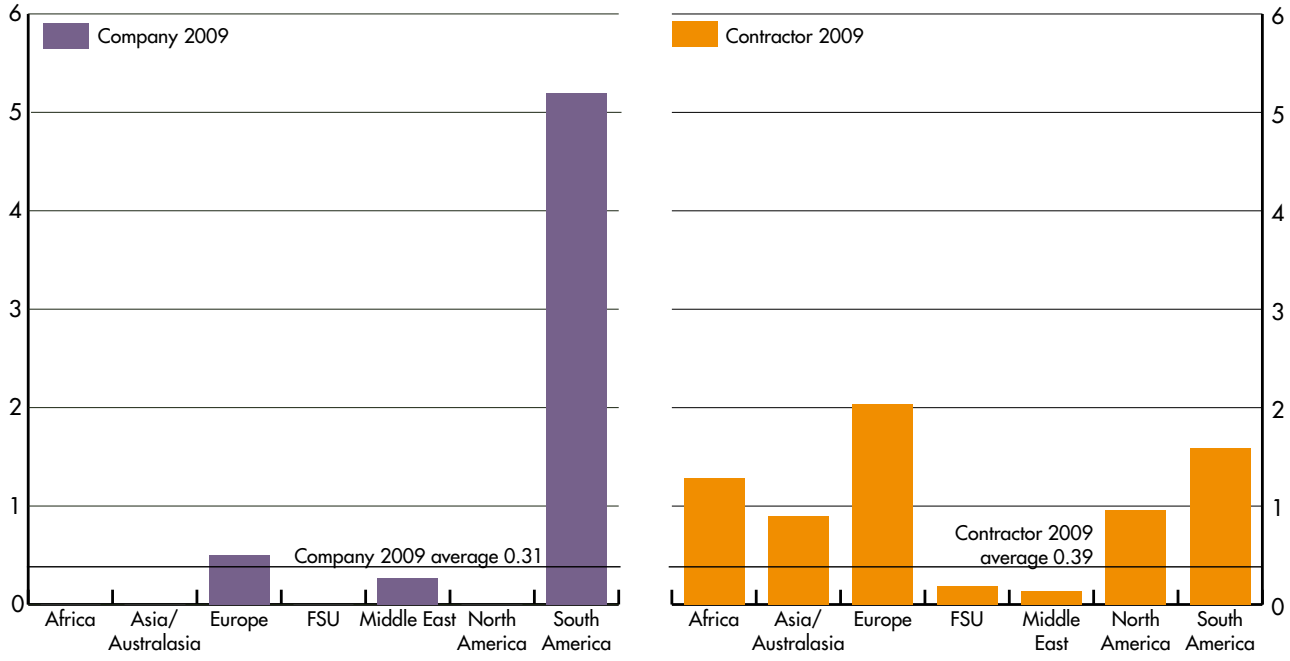
Lost time injury frequency – construction
per million hours worked



4.10.3 Restricted work day case + lost time injury frequency

The 2009 RWDC+LTI frequency for companies in construction activities in South America is particularly high.

Restricted work day case + lost time injury frequency – construction
per million hours worked



5 Results by company

This section compares the safety performance of individual companies with each other and with their performance in previous years.

5.1 Overall company results

For reasons of anonymity, each of the 43 companies that has contributed relevant data and is to be included in this analysis has been allocated a unique code letter (A to QQ). These codes change every year in line with LTIF performance.

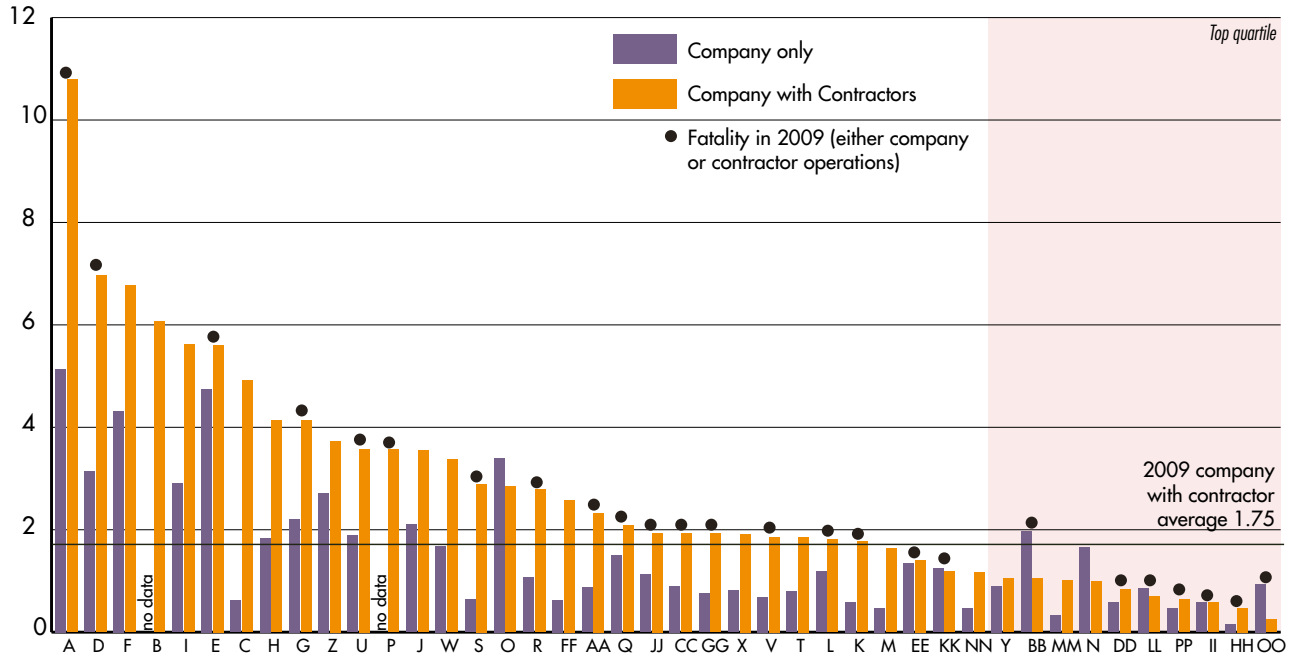
5.1.1 Total recordable injury rate

The TRIR for companies together with their contractors is presented below. Data are only included where MTCs are reported. Data from 42 companies qualified for inclusion.

The TRIR for company alone is plotted alongside the TRIR for company and contractors jointly. The incidence of a fatality in either company or contractor operations is also indicated. Details of results are tabulated in Appendix B.

- 24 of the 42 companies presented below suffered one or more fatality.
- In 6 instances, contractors achieved a lower TRIR than the companies they were employed by.

Performance ranking of companies jointly with contractors – total recordable injury rate
per million hours worked



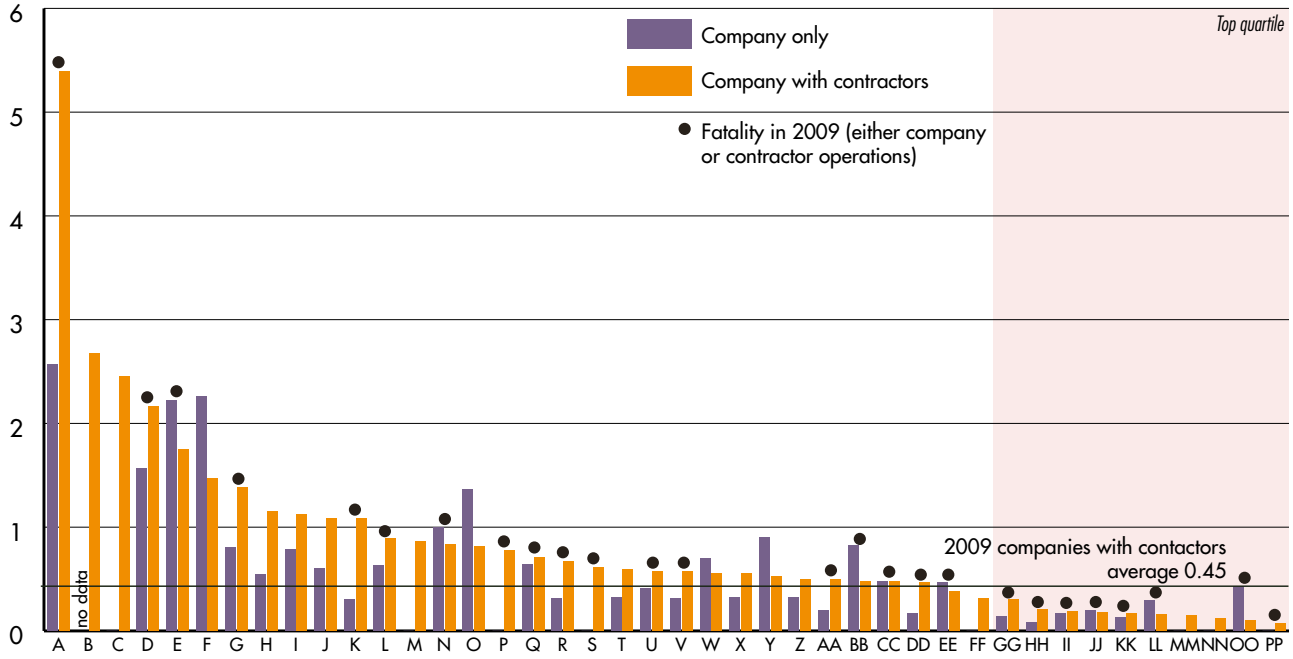
5.I.2 Lost time injury frequency

The figure shows, in rank order, the LTIF for companies together with their contractors. 42 companies (A to PP) contributed company and contractor data, although not always for every country in which operations were conducted.

The LTIF for the company alone is plotted alongside the LTIF for company and contractors jointly. The incidence of a fatality in either company or contractor operations is also indicated. Details of results are tabulated in Appendix B.

- 31 companies with their contractors delivered a LTIF of less than 1.
- 12 companies' LTIF was below than the average (0.45) and 30 companies' LTIF was above.
- Company A, with its contractors, has a LTIF of 5.39, 12 times the 2009 industry average.
- 25 of the 42 companies presented below suffered one or more fatality.
- In 11 instances, contractors achieved a lower LTIF than the companies they were employed by.

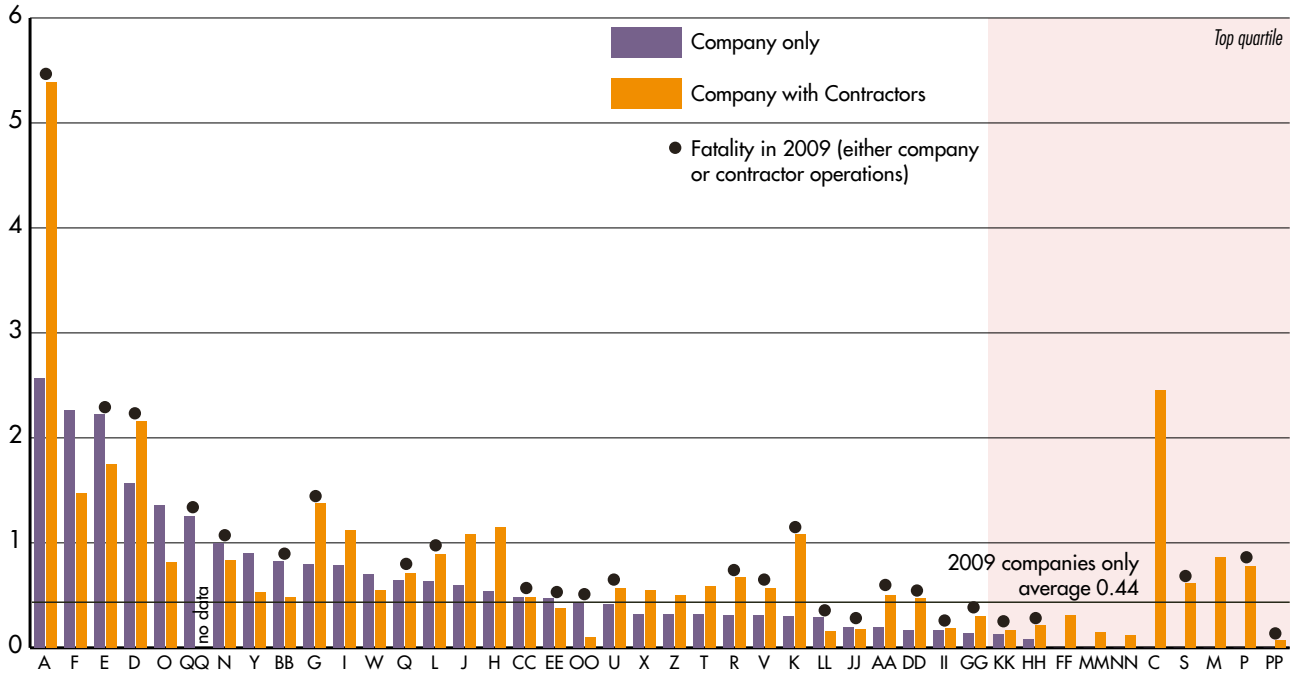
Performance ranking of companies jointly with contractors – lost time injury frequency
per million hours worked



In the figure below, the data are reorganised to show companies ranked according to LTIF performance for company personnel alone, omitting contractor input.

- 8 companies – LL, MM, EE, C, S, M, P and OO – reported no lost time incidents among company employees (LTIF zero). However, most of these companies reported relatively few workhours, hence the results are unlikely to be a reliable indicator of their longer term performance.
- 24 companies reported an LTIF lower than the 2009 company only average (0.44) and 16 companies reported an LTIF higher than the company only average.

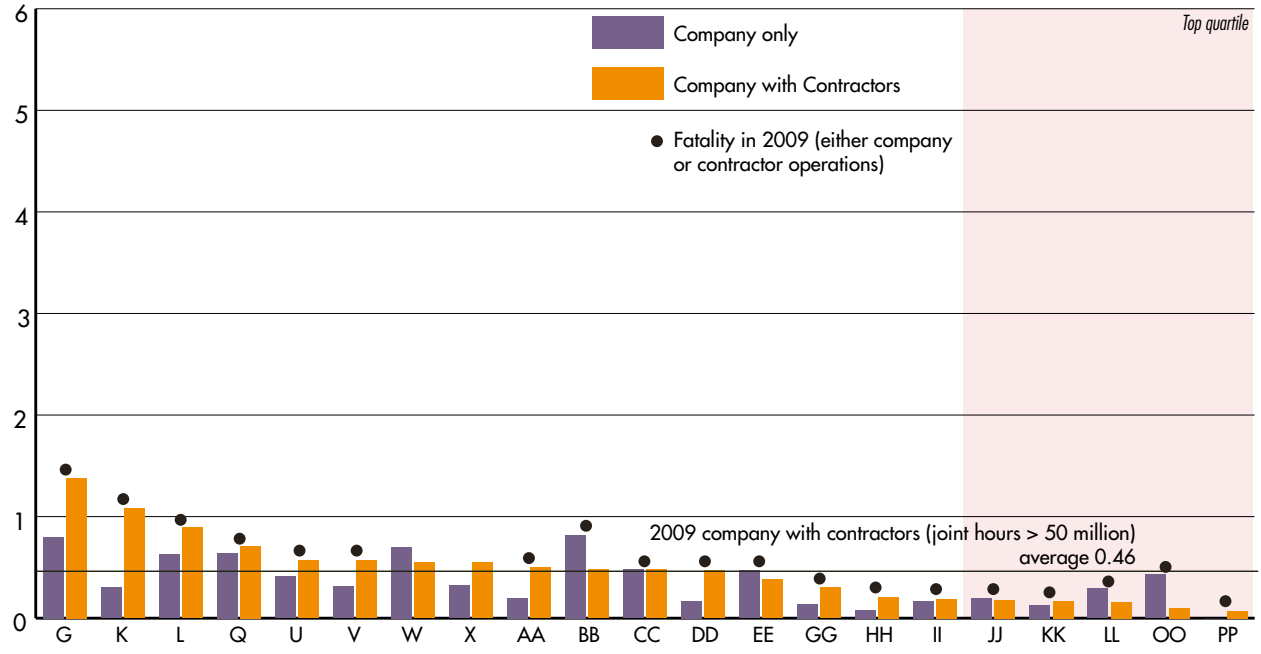
Performance ranking of companies alone – lost time injury frequency
per million hours worked



In the figure below the LTIF is presented for those companies which, with their contractors, reported more than 50 million hours worked. 21 companies met this criteria. Companies are shown in rank order of the company-with-contractor LTIF.

- 9 of the 21 companies with their contractors performed better than the global average for companies with contractors (0.46).
- The range in 2009 was between 0.07 and 1.38 lost time injuries per million hours worked.
- 19 of the 21 companies suffered one or more fatalities.

Performance ranking of companies jointly with contractors, joint hours>50 million – lost time injury frequency
per million hours worked



The remaining 21 companies which, with their contractors, reported less than 50 million hours worked are presented below in rank order of the company-with-contractor LTIF.

- 3 of the 21 companies with their contractors performed below than the overall average for companies with contractors (0.43).
- The range in 2009 was between 0.12 and 5.39 lost time injuries per million hours worked.
- 7 of the 21 smaller companies suffered one or more fatalities.

Performance ranking of companies jointly with contractors, joint hours ≤ 50 million – lost time injury frequency
per million hours worked

The table below shows the trends in company-with-contractor performance. The 42 companies reporting joint performance are listed together with the LTIF for 2009. For each company where data are available the chart shows whether performance in the reference year had improved or worsened relative to the previous year. Empty cells indicate where the company made no data submission for one or both of the comparison years.

- No company achieved improvement year by year over the previous 5-year period.
- No company's performance deteriorated year by year over the period 2004-2009.

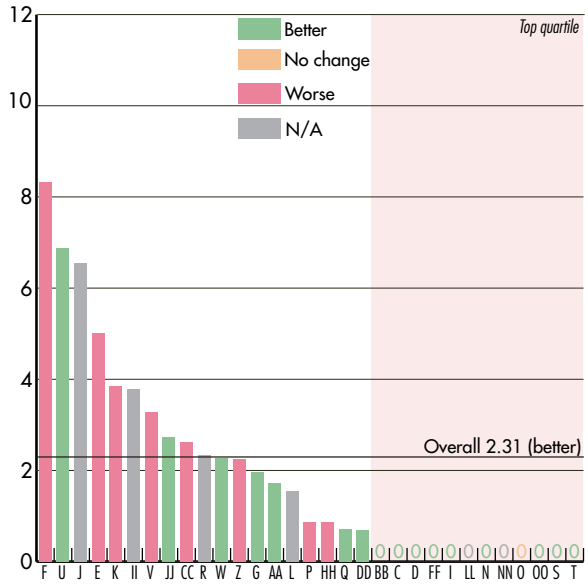
Company code	2009 Company & contractor LTIF	LTIF Performance relative to previous year				
		2009	2008	2007	2006	2005
A	5.39	worse	better	worse	better	worse
B	2.67					
C	2.45	worse				
D	2.16	worse	worse	better	better	worse
E	1.75	better	worse			
F	1.47	worse	worse	better		
G	1.38	better	worse	better	worse	better
H	1.15	better	worse	better		
I	1.12	better	worse	better		
J	1.08					
K	1.08	better	better	worse	better	better
L	0.89	better	worse	worse	better	worse
M	0.86	worse	worse	better	better	
N	0.83	worse				
O	0.81	better	worse	same	better	better
P	0.78	better	worse	worse	worse	worse
Q	0.71	better	worse	better	better	better
R	0.67	better	worse	better	worse	
S	0.61	worse	better	worse	better	
T	0.59	better	worse	worse	better	better
U	0.57	better	better	worse		
V	0.57	better	better	better	worse	better
W	0.55	better	worse			
X	0.55	worse	better	better	worse	better
Y	0.53	worse	better	better	worse	better
Z	0.50	worse	better	worse	better	worse
AA	0.50	better	better	better	better	worse
BB	0.48	worse	better	better	better	better
CC	0.48	worse	worse	better	better	better
DD	0.47	worse	better	better	better	better
EE	0.38	better	better	better	worse	
FF	0.31	worse	better	better	better	worse
GG	0.30	worse	worse	better	worse	better
HH	0.21	better	better	better	worse	better
II	0.19	better	worse	better	worse	better
JJ	0.18	better	worse	better	same	better
KK	0.17	better	better	better	worse	better
LL	0.16				better	better
MM	0.15	better	worse	better		
NN	0.12				worse	
OO	0.10	worse	better	better	better	worse
PP	0.07	worse	better			better

Note: in this table, results are compared with the previous year, thus an empty box will occur when a company has not reported data for the current or previous year.

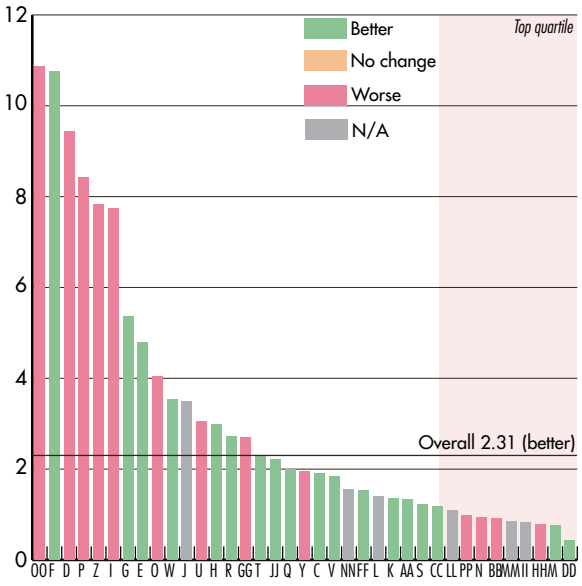
5.2 Company results by function

Results of companies together with their contractors have been analysed by function to allow more in-depth benchmarking between companies. The TRIR indicator has been selected, and the ranked results are shown in the following charts. Only companies that provided data by function are included, and then only those companies that reported more than 100,000 hours worked. Results against smaller numbers of hours would not have any statistical significance. The company code letters are the same as used elsewhere in this section. For those companies that submitted data in both 2009 and 2008, an indication of whether the performance in 2009 was better or worse than in 2008 is shown on the graph.

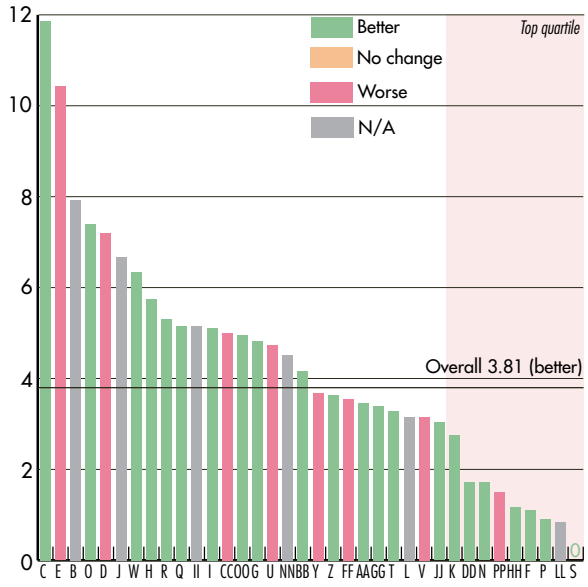
Total recordable injury rate – Exploration
per million hours worked by company with contractors



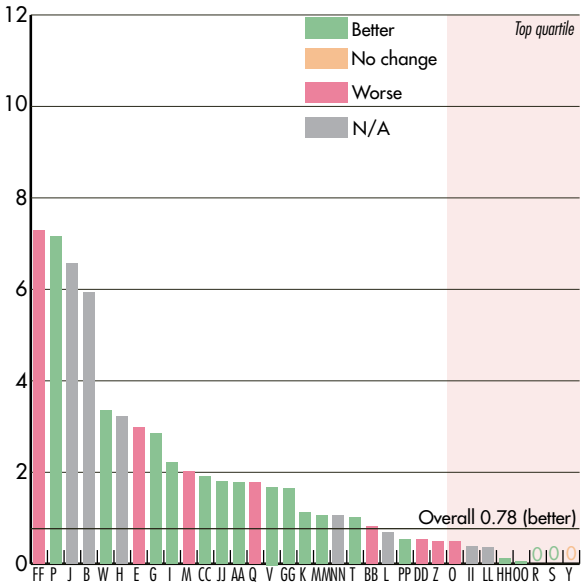
Total recordable injury rate – Production
per million hours worked by company with contractors

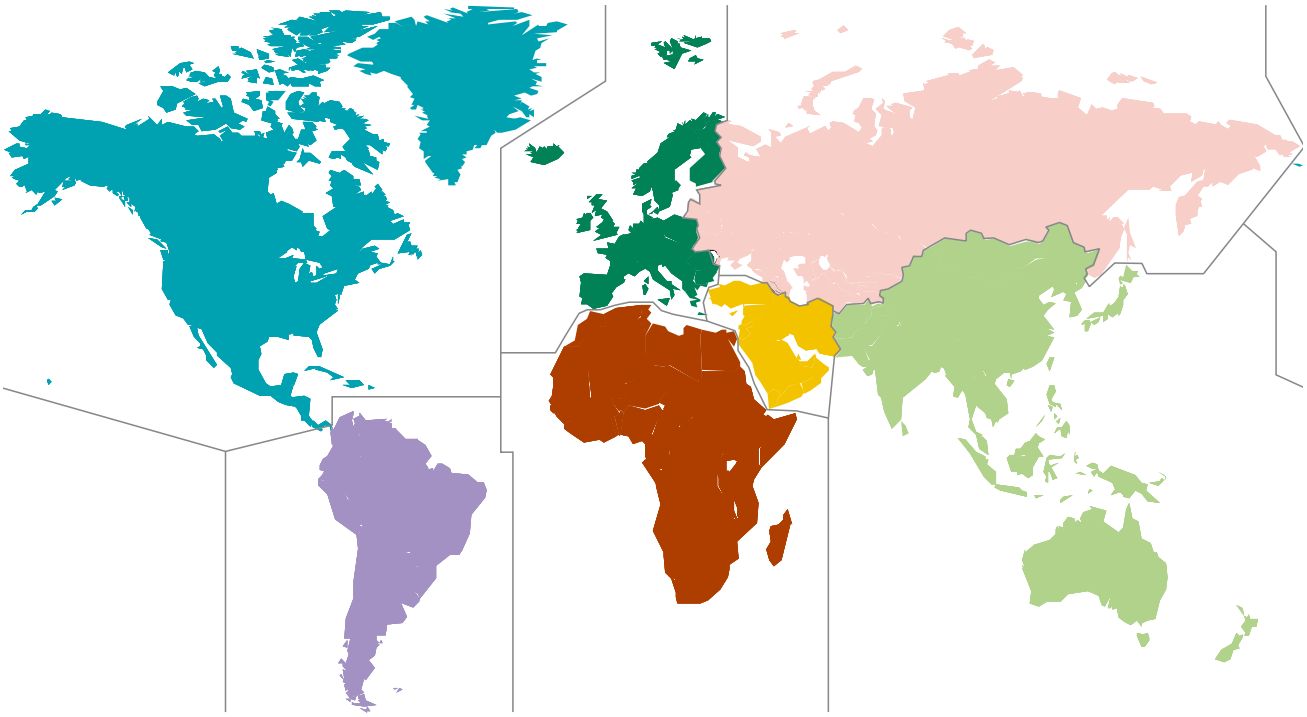


Total recordable injury rate – Drilling
per million hours worked by company with contractors



Total recordable injury rate – Construction
per million hours worked by company with contractors

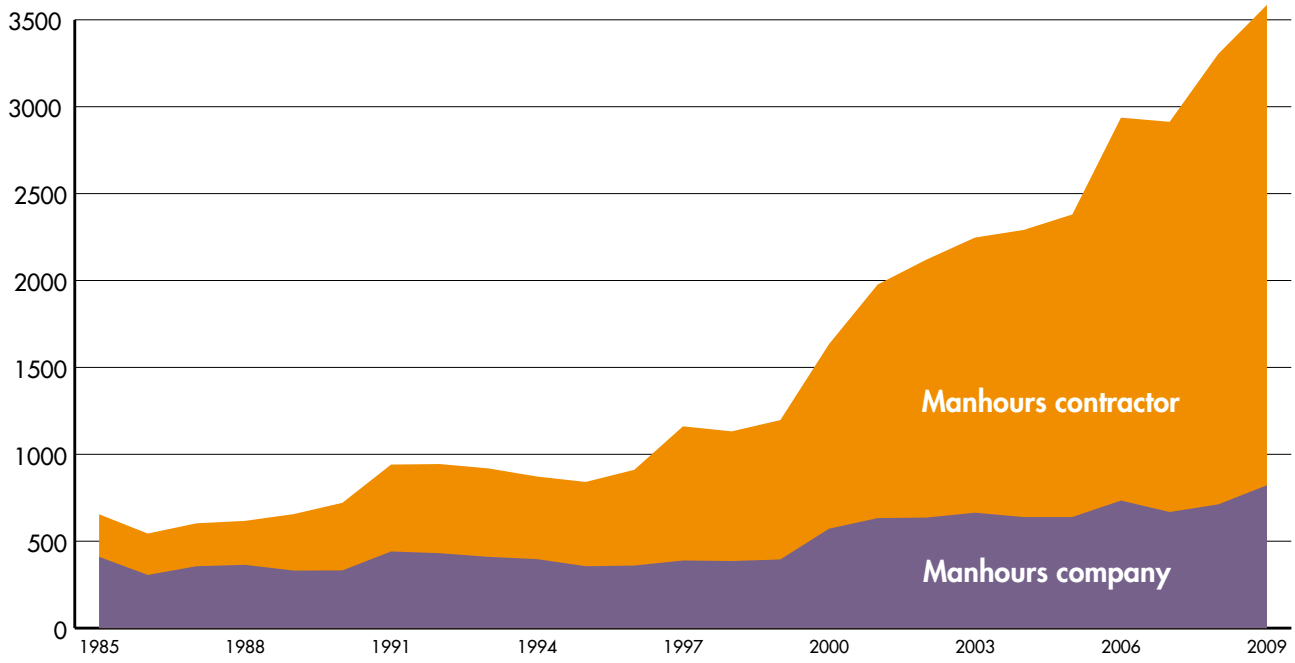




Regions and countries throughout the *Safety performance indicators* are grouped in the same geographic regions as have been historically used in this report so as to ensure consistency;

Appendix A
Database dimensions

Hours worked
millions



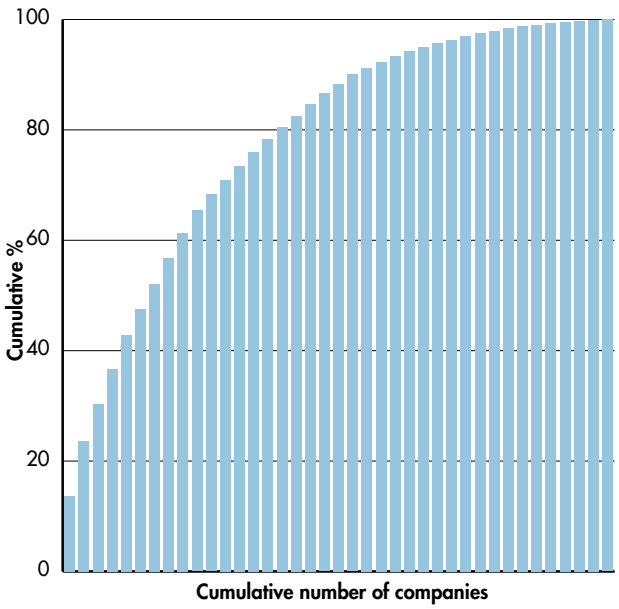
The database for the year 2009 covers 3,585,842,000 hours worked in the exploration & production sector of the oil & gas industry. The database is 9% larger than it was in 2008.

- 78% of the hours reported were associated with onshore activities, 22% with offshore activities.
- 102 countries are represented in the database, 4 more than in 2008. Countries are listed in Appendix G.
- 43 companies contributed data. All but 1 contributed contractor statistics, though not in every case for each country of operation.
- Of the 43 companies, 40 had contributed data in 2008. Since these 40 accounted for 95% of the database in 2009, comparison of the year 2009 results with those of 2008 is legitimate and statistically meaningful. 37 of the companies submitting 2009 data had also provided data in 2007.
- 21 of the companies contributed 90% of the hours. 7 companies between them covered 52% of the hours, and the largest contributor accounted for 14%.

Hours reported ('000s)

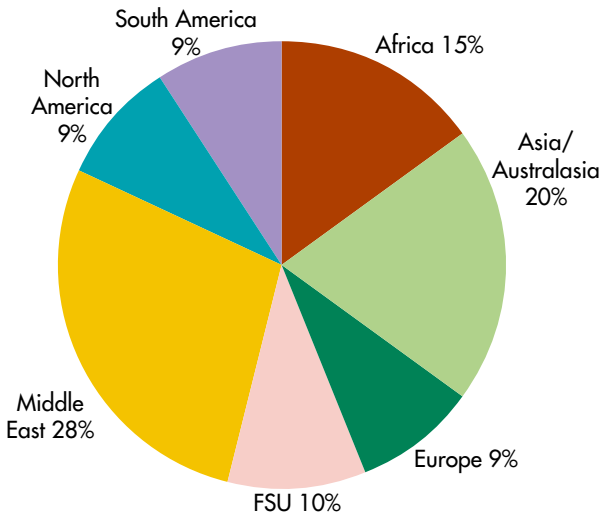
	Onshore	Offshore
Company	693,613 (19.3%)	128,627 (3.6%)
Contractor	2,101,913 (58.6%)	661,689 (18.5%)

Hours worked – by company
percent. of database



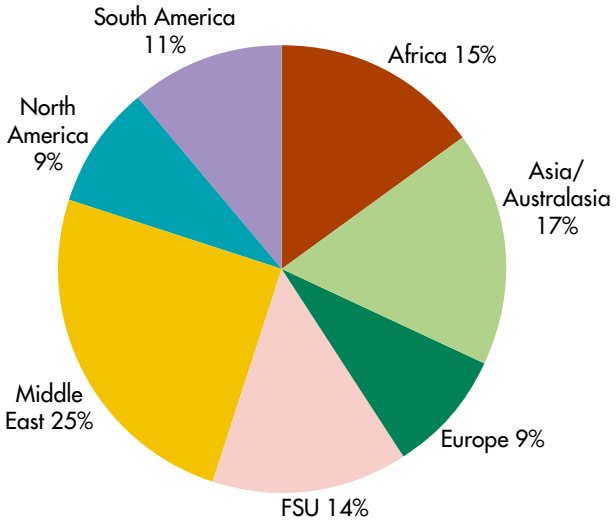
Exposure hours – by region

2009



- In 2009 the Middle East contributed a larger share of the data than any other region (28%).

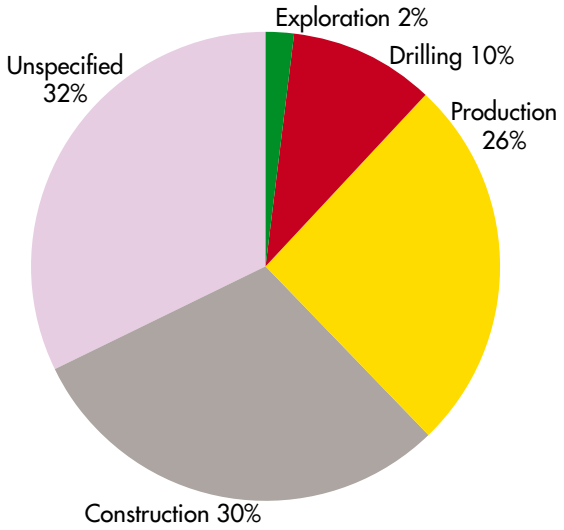
2008



- Europe, North America and South America contributed the smallest percentage of the 2009 database (each 9%).

Exposure hours – by function

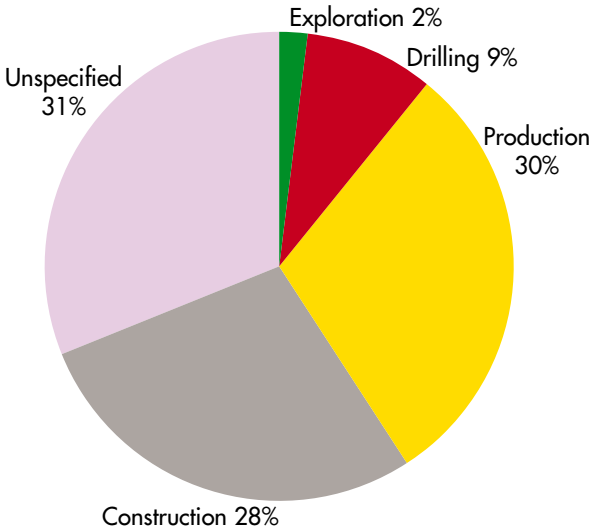
2009



There has been an increase in the use of the 'Unspecified' category compared to 2008.

More work hours fell into the 'Construction' category than any other.

2008



A summary of the key elements of the database is shown in the table at the end of this section.

Proportion of database used in analysis

For calculations of FAR, FIR and LTIF:

- All hours in the database were used.

For calculations of TRIR:

- Submissions without information on medical treatment cases were filtered out, leaving a database of 3,756 million hours, nearly 100% of the database.
- In 2008, the TRIR database was 3,046 million hours, 92% of the total database.
- The region where the smallest proportion of the database could be used is Europe (99%). In all other regions, 100% of the database was used.

For calculations of lost workday severity:

- Submissions without information on days off work were filtered out, leaving a database of 2,858 million hours, 80% of the total database.
- In 2008, this database was 2,721 million hours, 82% of the total database.
- North America and Europe have only 40% and 55% severity information respectively, whereas more than 94% of the Middle East and South American databases was useable.

For calculations of RWDC + LTI frequency:

- Submissions without information on restricted workdays were filtered out, leaving a database of 3,333 million hours, 93% of the total database.
- In 2008, this database was 2,980 million hours, 90% of the total database.
- Just 73% of the Asia/Australasia database could be used for calculations of RWDC+LTI Frequency and 84% of the Europe database. For all other regions, more than 98% of the database was included in these analyses.

For calculations of restricted workday severity:

- Submissions without information on days assigned to restricted activities were filtered out, leaving a database of 1,735 million hours, 52% of the total database.
- In 2008 this database was 1,509 million hours, 46% of the total database.

More detailed information is shown in the tables below.

Percent. of useable data – regions

	TRIR analyses	Lost workday case severity analyses	RWDC+LTI frequency analyses
Africa	100%	87%	100%
Asia/Australasia	100%	70%	73%
Europe	99%	55%	84%
FSU	100%	89%	99%
Middle East	100%	95%	100%
North America	100%	40%	100%
South America	100%	94%	98%

Percent. of useable data – functions

	TRIR analyses	Lost workday case severity analyses	RWDC+LTI frequency analyses
Exploration	99%	81%	92%
Drilling	99%	91%	91%
Production	99%	78%	91%
Construction	99%	80%	88%

Appendix B
Data tables

Summary of data

Region	Type	Hours worked ('000s)	No. fatalities	No. LWDCs	No. RWDCs	No. MTCs	FAR	LTIF	TRIR	RWDC+LTI frequency
Africa	Company Onshore	67,415	0	14	11	38	0.00	0.21	0.94	0.38
	Company Offshore	24,947	1	8	5	22	4.01	0.36	1.44	0.56
	Contractor Onshore	294,917	8	135	93	249	2.71	0.48	1.64	0.80
	Contractor Offshore	154,831	3	57	94	159	1.94	0.39	2.03	1.00
	Sub Total	**542,110**	**12**	**214**	**203**	**468**	**2.21**	**0.42**	**1.65**	**0.79**
Asia/ Australasia	Company Onshore	147,946	3	17	5	59	2.03	0.14	0.57	0.18
	Company Offshore	25,256	0	15	7	16	0.00	0.59	1.50	0.82
	Contractor Onshore	361,192	4	70	84	242	1.11	0.20	1.11	0.50
	Contractor Offshore	163,130	4	86	81	155	2.45	0.55	2.00	1.20
	Sub Total	**697,524**	**11**	**188**	**177**	**472**	**1.58**	**0.29**	**1.22**	**0.63**
Europe	Company Onshore	112,854	1	76	6	48	0.89	0.68	1.16	0.81
	Company Offshore	27,292	0	33	11	50	0.00	1.21	3.54	1.66
	Contractor Onshore	65,694	18	80	50	89	27.40	1.49	3.61	2.26
	Contractor Offshore	113,338	2	207	118	316	1.76	1.84	5.68	2.92
	Sub Total	**319,178**	**21**	**396**	**185**	**503**	**6.58**	**1.31**	**3.48**	**2.12**
FSU	Company Onshore	118,320	4	50	3	87	3.38	0.46	1.20	0.46
	Company Offshore	3,086	0	0	0	1	0.00	0.00	0.32	0.00
	Contractor Onshore	217,779	6	63	15	190	2.76	0.32	1.22	0.33
	Contractor Offshore	11,607	1	0	8	7	8.62	0.09	1.38	0.78
	Sub Total	**350,792**	**11**	**113**	**26**	**285**	**3.14**	**0.35**	**1.21**	**0.39**
Middle East	Company Onshore	120,147	1	78	8	92	0.83	0.66	1.49	0.73
	Company Offshore	9,098	0	4	2	7	0.00	0.44	1.43	0.66
	Contractor Onshore	825,904	21	140	55	418	2.54	0.19	0.77	0.24
	Contractor Offshore	63,533	0	21	17	70	0.00	0.33	1.70	0.60
	Sub Total	**1,018,682**	**22**	**243**	**82**	**587**	**2.16**	**0.26**	**0.92**	**0.32**
North America	Company Onshore	91,211	0	27	30	77	0.00	0.30	1.47	0.63
	Company Offshore	13,015	0	5	13	10	0.00	0.38	2.15	1.38
	Contractor Onshore	169,128	4	99	190	367	2.37	0.61	3.90	1.73
	Contractor Offshore	47,187	10	17	55	83	21.19	0.57	3.48	1.72
	Sub Total	**320,541**	**14**	**148**	**288**	**537**	**4.37**	**0.51**	**3.08**	**1.40**
South America	Company Onshore	35,720	3	17	11	29	8.40	0.56	1.69	0.94
	Company Offshore	25,933	0	7	16	21	0.00	0.27	1.70	0.89
	Contractor Onshore	167,299	4	131	173	283	2.39	0.81	3.53	1.84
	Contractor Offshore	108,063	1	70	114	188	0.93	0.66	3.45	1.71
	Sub Total	**337,015**	**8**	**225**	**314**	**521**	**2.37**	**0.69**	**3.17**	**1.64**
Total	Company Onshore	693,613	12	279	74	430	1.73	0.42	1.15	0.57
	Company Offshore	128,627	1	72	54	127	0.78	0.57	1.99	0.99
	Contractor Onshore	2,101,913	65	718	660	1,838	3.09	0.37	1.56	0.69
	Contractor Offshore	661,689	21	458	487	978	3.17	0.72	2.94	1.52
	Grand Total	**3,585,842**	**99**	**1,527**	**1,275**	**3,373**	**2.76**	**0.45**	**1.75**	**0.83**

I Summary

Fatal accident rate – company & contractor 5-year trend

Year	Company	Contractor	Overall
2005	1.25	4.36	3.53
2006	2.04	4.54	3.92
2007	1.65	3.39	2.99
2008	2.81	3.20	3.12
2009	1.58	3.11	2.76

Lost time injury frequency – company & contractor 5-year trend

Year	Company	Contractor
2005	0.83	1.02
2006	0.89	1.03
2007	0.54	0.70
2008	0.52	0.56
2009	0.44	0.46

Total Recordable Injury Rate – company & contractor 5-year trend

Year	Company	Contractor
2005	1.76	3.50
2006	1.85	3.24
2007	2.41	2.76
2008	1.49	2.23
2009	1.28	1.89

Restricted Workday Case + Lost Time Injury Frequency – company & contractor 5-year trend

Year	Company	Contractor
2005	0.75	1.59
2006	0.85	1.59
2007	0.80	1.33
2008	0.73	1.10
2009	0.65	0.88

Fatalities by cause

Category	Number	%
Assault or violent act	2	2.0
Caught in, under or between	14	14.1
Confined space	6	6.1
Cut, puncture, scrape	0	0
Explosion/burn	4	4.0
Exposure electrical	4	4.0
Exposure noise, chemical, biological, vibration	0	0
Falls from height	8	8.1
Overexertion, strain	0	0
Pressure release	6	6.1
Slips and trips (at same height)	0	0
Struck by	23	23.2
Water related, drowning	5	5.1
Other	27	27.3

Lost Work Day Cases by cause

Category	Number	%
Assault or violent act	8	0.5
Caught in, under or between	268	17.6
Confined space	4	0.3
Cut, puncture, scrape	67	4.4
Explosion/burn	46	3.0
Exposure electrical	10	0.7
Exposure noise, pressure, chemical, biological, vibration	51	3.3
Falls from height	170	11.1
Overexertion, strain	109	7.1
Slips and trips (at same height)	261	17.1
Struck by	317	20.8
Other	216	14.1

Fatalities by activity

Category	Number	%
Construction, commissioning, decommissioning	12	12.1
Diving, subsea, ROV	0	0
Drilling, workover, well services	13	13.1
Lifting, crane, rigging, deck operations	12	12.1
Maintenance, inspection, testing	20	20.2
Office, warehouse, accommodation, catering	1	1.0
Seismic/survey operations	2	2.0
Transport – air	27	27.3
Transport – land	10	10.1
Transport – sea, including marine activity	2	2.0
Unspecified – other	0	0

Lost Work Day Cases by activity

Category	Number	%
Construction, commissioning, decommissioning	193	13
Diving, subsea, ROV	13	1
Drilling, workover, well services	315	21
Lifting, crane, rigging, deck operations	114	8
Maintenance, inspection, testing	265	17
Office, warehouse, accommodation, catering	103	7
Seismic/survey operations	20	1
Transport – air	7	1
Transport – land	82	5
Transport – sea, including marine activity	66	4
Unspecified – other	349	23

2 Overall results

Total recordable injury rate

Year	Company	Contractor	Overall	Onshore	Offshore
2000	3.87	6.49	5.70	4.69	8.83
2001	3.51	5.38	4.86	4.34	6.85
2002	2.17	4.11	3.63	3.03	5.77
2003	1.79	4.72	4.00	3.74	4.87
2004	3.71	4.00	3.94	3.17	6.36
2005	1.76	3.50	3.05	2.82	3.87
2006	1.85	3.24	2.92	2.68	3.66
2007	2.41	2.76	2.68	2.51	3.26
2008	1.49	2.23	2.08	1.75	3.09
2009	1.28	1.89	1.75	1.45	2.79
Hours 2009 ('000s)	817,343	2,758,212	3,575,555	2,786,796	788,759

Fatal accident rate

Year	Company	Contractor	Overall	Onshore	Offshore
2000	4.72	8.66	7.28	8.03	4.67
2001	2.37	6.40	5.11	5.28	4.49
2002	2.04	6.00	4.81	4.86	4.65
2003	2.26	6.06	4.94	5.18	4.16
2004	2.82	6.18	5.24	5.00	6.02
2005	1.25	4.36	3.53	3.94	1.99
2006	2.04	4.54	3.92	4.64	1.58
2007	1.65	3.39	2.99	3.01	2.92
2008	2.81	3.20	3.12	3.38	2.25
2009	1.58	3.11	2.76	2.75	2.78
Hours 2009 ('000s)	822,240	2,763,602	3,585,842	2,795,526	790,316

Fatal incident rate

Year	Company	Contractor	Overall	Onshore	Offshore
2000	5.77	7.25	6.73	7.25	4.94
2001	3.95	6.40	5.62	5.92	4.49
2002	2.20	5.93	4.81	5.47	2.63
2003	3.01	6.06	5.16	5.47	4.16
2004	3.29	5.15	4.63	4.95	3.58
2005	1.72	3.96	3.36	3.62	2.38
2006	1.91	4.04	3.51	4.10	1.58
2007	1.35	2.85	2.51	2.74	1.69
2008	2.53	2.47	2.48	2.71	1.72
2009	1.22	2.06	1.87	1.86	1.90
Hours 2009 ('000s)	822,240	2,763,602	3,585,842	2,795,526	790,316

Fatalities by age group

Age group	Number 2007-2009
< 21	4
21 – 25	25
26 – 30	28
31 – 35	20
36 – 40	21
41 – 45	20
46 – 50	18
51 – 55	13
> 55	13

It should be noted that these results are not normalised against the ages of the entire workforce and care should therefore be taken in drawing conclusions from them.

Lost time injury frequency

Year	Company	Contractor	Overall	Onshore	Offshore
2000	1.50	2.09	1.88	1.77	2.29
2001	1.34	1.71	1.59	1.51	1.88
2002	0.90	1.17	1.09	0.95	1.54
2003	0.79	1.32	1.16	1.13	1.27
2004	0.87	1.17	1.09	1.04	1.26
2005	0.83	1.02	0.97	0.92	1.12
2006	0.89	1.03	0.99	0.95	1.13
2007	0.54	0.70	0.66	0.62	0.82
2008	0.52	0.56	0.55	0.47	0.81
2009	0.44	0.46	0.45	0.38	0.70
Hours 2009 ('000s)	822,240	2,763,602	3,585,842	2,795,526	790,316

Lost Work Day Cases by cause

Category	Company	Contractor	Overall	Onshore	Offshore
Assault or violent act	0	8	8	7	1
Caught in, under or between	35	233	268	142	126
Confined space	3	1	4	0	4
Cut, puncture, scrape	11	56	67	43	24
Explosion/burn	13	33	46	32	14
Exposure electrical	7	3	10	4	6
Exposure noise, pressure, chemical, biological, vibration	14	37	51	36	15
Falls from height	25	145	170	109	61
Overexertion, strain	38	71	109	61	48
Slips and trips (at same height)	94	167	261	181	80
Struck by	41	276	317	199	118
Other	70	146	216	183	33

Lost Work Day Cases by activity

Category	Company	Contractor	Overall	Onshore	Offshore
Construction, commissioning, decommissioning	10	183	193	147	46
Diving, subsea, ROV	0	13	13	5	8
Drilling, workover, well services	23	292	315	192	123
Lifting, crane, rigging, deck operations	24	90	114	56	58
Maintenance, inspection, testing	75	190	265	151	114
Office, warehouse, accommodation, catering	33	70	103	70	33
Seismic/survey operations	1	19	20	18	2
Transport – air	1	6	7	5	2
Transport – land	22	60	82	82	0
Transport – sea, including marine activity	3	63	66	10	56
Unspecified – other	159	190	349	261	88

Lost workday case severity

Year	Company	Contractor	Overall	Onshore	Offshore
2000	37.3	23.4	27.9	28.0	27.5
2001	36.2	20.8	24.7	23.9	27.4
2002	41.6	26.4	30.9	30.2	33.3
2003	41.4	18.6	24.2	21.3	36.7
2004	21.0	24.9	23.8	23.4	25.1
2005	25.6	23.7	24.2	24.5	23.1
2006	20.6	26.2	24.9	24.7	25.5
2007	32.7	35.6	35.0	33.0	42.0
2008	35.2	34.6	34.7	32.1	41.0
2009	35.3	38.3	37.5	34.8	44.4
Hours 2009 ('000s)	578,392	2,279,619	2,858,011	2,267,147	590,864

Restricted work day case + lost time injury frequency

Year	Company	Contractor	Overall	Onshore	Offshore
2000	1.54	2.73	2.37	1.87	3.77
2001	2.03	2.00	2.01	1.80	2.76
2002	1.01	1.90	1.68	1.43	2.57
2003	0.73	1.64	1.39	1.23	1.92
2004	0.82	1.55	1.37	1.23	1.85
2005	0.75	1.59	1.37	1.31	1.61
2006	0.85	1.59	1.41	1.26	1.91
2007	0.80	1.33	1.21	1.10	1.60
2008	0.73	1.10	1.03	0.85	1.60
2009	0.65	0.88	0.83	0.66	1.43
Hours 2009 ('000s)	679,059	2,653,746	3,332,805	2,600,540	732,265

Restricted work day case severity

Year	Company	Contractor	Overall	Onshore	Offshore
2000	15.8	6.5	8.4	7.1	11.6
2001	13.4	8.9	9.6	8.6	12.6
2002	17.2	21.9	21.3	14.2	36.2
2003	11.9	11.8	11.8	8.9	19.0
2004	13.8	11.2	11.4	11.0	12.9
2005	12.5	13.8	13.7	14.7	9.6
2006	11.8	11.1	11.2	10.3	13.0
2007	15.3	10.5	10.9	8.9	15.6
2008	16.1	13.4	13.7	13.3	14.4
2009	15.3	13.8	13.9	12.4	15.8
Hours 2009 ('000s)	266,008	1,468,747	1,734,755	1,392,272	342,483

3 Results by region

Total recordable injury rate

Year	Africa	Asia/ Australasia	Europe	FSU	Middle East	North America	South America	All regions
2004	5.08	2.15	5.64	2.39	2.31	5.82	4.87	3.94
2005	2.49	1.74	4.81	1.71	2.99	5.03	4.68	3.05
2006	2.89	1.57	5.67	1.75	2.26	5.28	3.47	2.92
2007	1.96	1.42	4.10	3.22	2.06	4.53	3.31	2.68
2008	2.17	1.34	3.89	1.22	0.83	4.25	3.15	2.08
Ave '04-'08	*2.84*	*1.59*	*4.69*	*2.11*	*1.85*	*4.94*	*3.77*	*2.84*
2009	1.65	1.22	3.48	1.21	0.92	3.08	3.17	1.75
Hours 2009 ('000s)	499,022	560,247	309,646	349,118	834,603	304,076	347,838	3,575,555

Lost time injury frequency

Region	2009	2008	Hours 2009 ('000s)
Africa	0.42	0.61	542,110
Asia/Australasia	0.29	0.29	697,524
Europe	1.31	1.38	319,178
FSU	0.35	0.45	350,792
Middle East	0.26	0.29	1,018,682
North America	0.51	0.55	320,541
South America	0.69	0.90	337,015
All regions	0.45	0.55	3,585,842

Total recordable injury rate – 5-year rolling average

Year	Africa	Asia/ Australasia	Europe	FSU	Middle East	North America	South America	All regions
2000	3.0	3.9	9.8	4.0	2.9	9.7	6.9	6.0
2001	3.3	3.7	9.6	4.4	3.1	9.2	7.0	5.8
2002	3.0	3.1	8.8	3.8	3.0	8.9	6.3	5.2
2003	2.8	2.6	8.3	2.3	3.8	8.2	6.1	4.8
2004	3.1	2.4	7.6	2.1	3.7	7.4	5.6	4.4
2005	3.1	2.1	6.4	2.0	3.5	6.5	5.2	3.9
2006	3.0	1.9	6.0	1.9	3.3	5.7	4.7	3.5
2007	3.0	1.8	5.4	2.2	3.1	5.2	4.4	3.3
2008	2.9	1.6	4.8	2.1	2.1	5.0	3.9	2.9
2009	2.2	1.5	4.4	1.8	1.8	4.4	3.6	2.5

Fatal accident rate – 5-year rolling average

Year	Africa	Asia/ Australasia	Europe	FSU	Middle East	North America	South America	All regions
2000	10.4	6.2	4.1		9.0	5.9	14.9	8.6
2001	10.0	4.6	5.3	5.0	8.7	4.4	13.6	8.1
2002	9.0	3.9	5.2	6.8	7.9	4.2	12.0	7.4
2003	9.4	3.7	3.6	5.5	6.5	4.5	6.5	5.8
2004	8.6	2.9	3.6	6.7	6.4	5.1	4.7	5.5
2005	7.0	2.1	3.7	6.7	4.9	4.4	3.9	4.7
2006	6.7	1.8	3.7	6.6	4.4	4.0	4.0	4.5
2007	6.1	1.5	2.9	5.5	4.3	3.5	3.8	4.1
2008	5.1	1.4	3.4	5.3	3.9	2.9	3.9	3.8
2009	4.2	1.3	4.5	4.4	3.0	2.3	3.6	3.3

Lost time injury frequency – 5-year rolling average

Year	Africa	Asia/ Australasia	Europe	FSU	Middle East	North America	South America	All regions
2000	1.8	1.0	3.3		1.5	2.2	3.9	2.3
2001	1.7	1.3	2.6	1.3	1.5	2.0	3.5	2.1
2002	1.5	1.2	2.3	1.0	1.5	1.8	2.9	1.8
2003	1.2	0.7	2.4	0.9	1.6	1.6	2.6	1.5
2004	1.0	0.6	2.2	0.9	1.5	1.4	2.5	1.4
2005	0.9	0.5	2.0	0.8	1.3	1.2	2.3	1.2
2006	0.7	0.4	1.8	0.8	1.0	1.0	2.2	1.1
2007	0.7	0.4	1.7	0.8	0.9	0.9	2.0	1.0
2008	0.7	0.4	1.5	0.7	0.7	0.8	1.7	0.9
2009	0.6	0.3	1.5	0.6	0.5	0.7	1.4	0.7

Severity of lost workday cases

Year	Africa	Asia/ Australasia	Europe	FSU	Middle East	North America	South America	All regions
2004	14.4	22.6	32.2	22.2	18.8	41.5	25.0	23.8
2005	12.4	14.3	27.8	33.0	17.5	35.3	27.0	24.2
2006	20.6	22.3	27.5	28.8	19.7	43.1	23.5	24.9
2007	22.2	22.0	37.7	32.1	20.6	37.3	58.8	35.0
2008	21.6	27.3	43.5	29.9	16.0	37.2	56.7	34.7
Ave '04-'08	*18.39*	*22.31*	*34.14*	*28.92*	*18.60*	*39.18*	*31.82*	*27.75*
2009	23.08	31.77	42.26	32.55	20.37	38.92	68.87	37.53
Hours 2009 ('000s)	471,926	485,218	174,381	312,927	968,869	127,051	317,639	2,858,011

Restricted work day case + lost time injury frequency by region

Year	Africa	Asia/ Australasia	Europe	FSU	Middle East	North America	South America	All regions
2004	0.94	0.88	2.25	1.12	1.42	2.26	1.63	1.37
2005	0.99	0.70	2.15	0.94	1.48	2.42	2.35	1.37
2006	1.05	0.65	2.24	0.91	1.27	2.42	2.14	1.41
2007	0.99	0.64	2.05	0.77	1.02	2.04	1.94	1.21
2008	1.01	0.64	2.00	0.59	0.42	1.93	1.65	1.03
Ave '04-'08	*1.00*	*0.68*	*2.12*	*0.87*	*0.97*	*2.20*	*1.94*	*1.26*
2009	0.79	0.63	2.12	0.39	0.32	1.40	1.64	0.83
Hours 2009 ('000s)	540,701	506,296	269,264	384,943	1,016,200	320,309	331,092	3,332,805

Lost time injury frequency by country

Region	Country	LTIF 2009	LTIF 2008	LTIF 2007	One or more fatalities
Africa	Mauritania	3.45	0.00	0.44	no
	Gabon	1.28	1.75	1.81	no
	Tunisia	1.08	1.59	0.88	no
	Ghana	0.97	0.00	0.00	no
	Algeria	0.97	1.46	2.29	no
	Libya	0.81	1.51	1.23	yes
	Congo	0.62	0.80	1.44	yes
	Egypt	0.46	0.64	0.47	no
	Africa average	0.42			
	Equatorial Guinea	0.34	0.46	0.22	yes
	Cameroun	0.31	0.75	0.57	yes
	Nigeria	0.27	0.28	0.32	yes
	Angola	0.10	0.32	0.31	yes
	Madagascar	0.00	0.00	0.00	no
	Morocco	0.00	0.00	0.00	no
	Tanzania	0.00	0.00	no data	no
Asia-Australasia	Japan	1.27	3.07	0.00	no
	Australia	1.04	1.31	1.03	no
	Myanmar	0.50	0.35	0.00	no
	Philippines	0.46	0.00	0.00	no
	China	0.41	0.19	0.24	yes
	Asia-Australasia ave.	0.29			
	Malaysia	0.28	0.35	0.17	yes
	Singapore	0.23	0.00	0.00	no
	India	0.21	1.24	0.37	yes
	Bangladesh	0.21	0.12	0.11	yes
	Pakistan	0.17	0.11	0.36	yes
	Thailand	0.17	0.35	0.25	no
	Vietnam	0.15	0.43	0.28	no
	Indonesia	0.14	0.14	0.22	yes
	Papua New Guinea	0.11	0.00	0.00	no
	New Zealand	0.00	0.00	0.00	no
	South Korea	0.00	0.00	0.00	no
Europe	Sweden	14.93	0.00	0.00	no
	Denmark	3.52	2.20	2.38	yes
	Italy	2.62	2.76	2.40	no
	Ireland	1.72	1.38	3.85	no
	UK	1.39	1.17	1.27	yes
	Europe average	1.31			
	France	1.27	0.79	1.12	no
	Netherlands	1.25	0.95	1.37	no
	Norway	1.23	1.79	1.54	yes
	Germany	1.20	0.47	0.14	no
	Hungary	1.11	1.08	no data	no
	Romania	0.70	1.12	1.12	yes
FSU	Kazakhstan	0.40	0.40	0.24	yes
	Russia	0.38	0.51	0.77	yes
	FSU average	0.35			
	Turkmenistan	0.10	0.18	0.73	yes
	Azerbaijan	0.04	0.11	0.19	yes
Middle East	Saudi Arabia	1.15	1.26	1.66	no
	Turkey	1.14	1.17	1.00	no
	Iran	1.13	1.73	0.46	no
	Oman	1.13	2.57	0.64	no
	Kuwait	0.45	0.28	0.41	yes
	Yemen	0.38	0.89	0.52	no
	Middle East average	0.26			
	Syria	0.24	0.19	0.57	no
	UAE	0.22	0.33	0.00	yes
	Qatar	0.14	0.10	0.29	yes
	Iraq	0.00	2.16	no data	no
North America	Canada	0.66	0.67	0.77	yes
	North America average	0.51			
	USA	0.44	0.51	0.64	yes
	Mexico	0.00	0.00	3.25	no
South America	Ecuador	1.24	1.18	1.53	no
	Peru	1.12	2.13	4.14	no
	Argentina	1.02	1.16	2.07	yes
	Venezuela	0.92	0.28	1.05	no
	Colombia	0.86	2.14	1.45	yes
	South America average	0.69			
	Brazil	0.60	0.70	0.71	yes
	Bolivia	0.00	0.00	0.65	no
	Guyana	0.00	0.00	no data	no
	Trinidad & tobago	0.00	0.63	0.27	no

4 Results by function

Exposure hours by function ('000s)

	2009	2008
Exploration	61,435	67,962
Drilling	348,515	298,855
Production	948,771	1,001,303
Construction	1,076,322	906,142
Unspecified	1,150,799	1,029,906
All functions	3,585,842	3,304,168

Fatal accident rate – 3-year rolling average

Year	Exploration	Drilling	Production	Construction	Other
2000	3.75	4.78	6.19		5.61
2001	3.72	5.84	5.37		4.72
2002	4.91	6.03	3.85		4.36
2003	6.22	5.91	3.31		4.21
2004	4.77	5.56	3.63		4.70
2005	3.84	5.33	3.30		4.31
2006	3.66	4.55	2.80		
2007	3.78	3.69	2.24		
2008	3.76	4.20	2.18	2.03	
2009	2.32	3.66	2.15	1.54	

Fatal accident rate

Year	Exploration	Drilling	Production	Construction	Other
2000	3.15	7.44	5.36		5.35
2001	5.69	8.05	2.64		3.00
2002	5.90	2.60	3.54		4.74
2003	7.06	7.09	3.75		4.89
2004	1.36	6.98	3.59		4.46
2005	3.10	1.93	2.57		3.57
2006	6.53	4.73	2.24	2.63	
2007	1.71	4.42	1.90	2.33	
2008	3.04	3.45	2.41	1.14	
2009	2.21	3.12	2.15	1.14	

Total recordable injury rate

Year	Exploration	Drilling	Production	Construction	Other	All functions
2004	3.55	6.05	4.94		2.50	3.94
2005	2.91	5.80	3.64		2.24	3.05
2006	2.67	5.17	3.26	2.63		2.92
2007	2.66	5.34	3.03	1.62		2.68
2008	3.81	4.63	2.64	1.00		2.09
Ave '04-'08	*3.10*	*5.35*	*1.54*			*2.84*
2009	2.31	3.81	2.31	0.78		1.75
Hours 2009 ('000s)	61,032	347,445	946,289	1,075,765		3,575,555

Lost time injury frequency – 3-year rolling average

Year	Exploration	Drilling	Production	Construction	Othe
2000	1.40	3.13	2.14		1.40
2001	0.91	2.48	1.78		1.54
2002	0.75	2.11	1.40		1.36
2003	0.82	1.92	1.23		0.99
2004	0.73	1.71	1.19		0.72
2005	0.97	1.65	1.19		0.73
2006	0.89	1.66	1.21		
2007	0.94	1.52	1.07		
2008	0.83	1.46	0.89	0.38	
2009	0.68	1.22	0.72	0.29	

Lost time injury frequency

Year	Exploration	Drilling	Production	Construction	Other	All functions
2000	0.97	2.29	1.62		1.75	1.88
2001	0.88	2.35	1.37		1.57	1.59
2002	0.40	1.69	1.22		0.75	1.09
2003	1.19	1.73	1.11		0.64	1.16
2004	0.61	1.71	1.23		0.77	1.09
2005	1.12	1.53	1.22		0.76	0.97
2006	0.91	1.73	1.16	0.50		0.99
2007	0.79	1.31	0.82	0.38		0.66
2008	0.78	1.33	0.70	0.27		0.55
2009	0.47	1.02	0.63	0.21		0.45
Hours 2009 ('000s)	61,435	348,515	948,771	1,076,322		3,585,842

Severity of lost workday cases

Year	Exploration	Drilling	Production	Construction	Other	All functions
2004	16.7	27.2	21.1		22.5	23.8
2005	8.4	26.5	26.7		21.8	24.2
2006	23.7	29.5	22.7	25.8		24.9
2007	25.6	40.6	37.9	25.8		35.0
2008	37.6	42.2	30.2	26.9		34.7
Ave '04-'08	*23.0*	*33.0*	*27.1*	*N/A*		*2.27*
2009	45.5	44.3	38.4	34.7		37.5
Hours 2009 ('000s)	49,850	279,348	741,466	870,624		2,858,011

RWDC + LTI frequency by function

Year	Exploration	Drilling	Production	Construction	Other	All functions
2004	0.78	2.50	1.29		0.95	1.37
2005	1.66	2.68	1.55		0.93	1.37
2006	1.23	2.91	1.58	0.84		1.41
2007	1.36	2.75	1.35	0.74		1.21
2008	2.06	2.52	1.28	0.45		1.03
Ave '04-'08	1.41	2.67	1.41	0.61		1.26
2009	1.10	2.04	1.15	0.39		0.83
Hours 2009 ('000s)	57,130	318,576	870,424	951,833		3,332,805

Exploration – TRIR for company & contractor by region

Region	Company 2009	Company 2004–2008	Contractor 2009	Contractor 2004–2008	Company manhours 2009 ('000s)	Contractor manhours 2009 ('000s)
Africa	0.51	1.82	3.34	3.00	1,969	12,871
Asia/Australasia	1.25	0.21	2.04	2.23	4,000	6,853
Europe	0.00	0.49	4.52	3.68	4,167	1,990
FSU	0.00	0.98	0.58	5.14	204	1,730
Middle East	0.93	0.86	0.41	2.75	3,237	7,319
North America	0.87	2.07	4.28	4.34	3,463	2,335
South America	0.00	4.04	5.25	7.04	1,555	9,339
All regions	0.65	1.36	3.04	3.58	18,595	42,437

Exploration – LTIF for company & contractor by region

Region	Company 2009	Company 2004–2008	Contractor 2009	Contractor 2004–2008	Company manhours 2009 ('000s)	Contractor manhours 2009 ('000s)
Africa	0.00	0.54	0.62	1.08	1,971	12,871
Asia/Australasia	0.50	0.00	0.29	0.55	4,031	6,854
Europe	0.00	0.19	1.50	1.63	4,196	1,995
FSU	0.00	0.00	0.00	2.56	204	1,730
Middle East	0.61	0.41	0.14	0.71	3,303	7,326
North America	0.00	0.18	0.00	0.28	3,463	2,335
South America	0.60	0.16	1.05	1.52	1,676	9,480
All regions	0.27	0.24	0.56	1.00	18,844	42,591

Exploration – RWDC+LTI frequency for company & contractor by region

Region	Company 2009	Company 2004–2008	Contractor 2009	Contractor 2004–2008	Company manhours 2009 ('000s)	Contractor manhours 2009 ('000s)
Africa	0.00	0.56	1.17	1.49	1,890	12,871
Asia/Australasia	0.68	0.00	0.32	0.92	1,460	6,315
Europe	0.00	0.20	2.01	1.90	3,951	1,990
FSU	0.00	0.00	0.00	3.31	204	1,730
Middle East	0.62	0.31	0.14	1.53	3,237	7,011
North America	0.00	0.49	1.71	1.85	3,463	2,335
South America	0.00	0.19	3.64	3.19	1,334	9,339
All regions	0.19	0.30	1.44	1.00	15,539	41,591

Drilling – TRIR for company & contractor by region

Region	Company 2009	Company 2004–2008	Contractor 2009	Contractor 2004–2008	Company manhours 2009 ('000s)	Contractor manhours 2009 ('000s)
Africa	1.07	1.88	3.91	5.10	4,680	50,653
Asia/Australasia	1.77	1.13	3.49	3.54	6,221	50,442
Europe	1.96	1.47	5.50	6.65	16,853	33,080
FSU	0.81	1.23	2.95	3.78	1,241	9,824
Middle East	2.83	1.68	2.95	5.66	7,415	37,251
North America	0.28	1.84	4.90	7.36	7,248	40,203
South America	2.06	1.82	4.61	6.90	7,782	74,552
All regions	1.73	1.63	4.18	5.74	51,440	296,005

Drilling – LTIF for company & contractor by region

	Company		Contractor		Company manhours	Contractor manhours
Region	2009	2004–2008	2009	2004–2008	2009 ('000s)	2009 ('000s)
Africa	0.20	0.37	1.14	1.43	4,919	50,876
Asia/Australasia	0.32	0.37	0.91	0.90	6,243	50,442
Europe	1.13	0.70	2.03	2.27	16,859	33,080
FSU	0.81	0.74	0.71	0.99	1,241	9,824
Middle East	1.07	0.93	0.85	1.23	7,459	37,671
North America	0.00	0.11	0.72	1.12	7,256	40,229
South America	0.38	1.06	1.10	2.65	7,864	74,552
All regions	0.66	0.68	1.08	1.61	51,841	296,674

Drilling – RWDC+LTI frequency for company & contractor by region

	Company		Contractor		Company manhours	Contractor manhours
Region	2009	2004–2008	2009	2004–2008	2009 ('000s)	2009 ('000s)
Africa	0.21	0.55	2.05	2.11	4,680	50,653
Asia/Australasia	0.31	0.49	1.72	1.86	3,187	37,721
Europe	1.27	0.87	2.97	3.38	4,708	32,711
FSU	0.81	0.91	1.55	1.94	1,241	9,649
Middle East	1.21	1.24	1.23	3.11	7,415	37,251
North America	0.00	0.87	2.36	3.49	7,248	40,207
South America	1.22	1.04	2.71	3.81	7,353	74,552
All regions	0.75	0.90	2.21	2.00	35,832	282,744

Production – TRIR for company & contractor by region

	Company		Contractor		Company manhours	Contractor manhours
Region	2009	2004–2008	2009	2004–2008	2009 ('000s)	2009 ('000s)
Africa	1.68	9.75	1.59	2.27	34,508	133,548
Asia/Australasia	1.22	1.67	1.31	1.57	39,398	113,062
Europe	2.12	3.44	5.65	7.37	71,175	78,574
FSU	0.58	2.59	0.78	2.19	12,001	19,339
Middle East	1.90	2.05	1.21	2.56	76,217	99,075
North America	2.84	3.31	4.55	6.32	26,737	40,470
South America	1.85	1.98	3.13	3.60	43,704	158,481
All regions	1.86	3.45	2.52	3.34	303,740	642,549

Production – LTIF for company & contractor by region

	Company		Contractor		Company manhours	Contractor manhours
Region	2009	2004–2008	2009	2004–2008	2009 ('000s)	2009 ('000s)
Africa	0.46	0.75	0.45	0.76	34,508	133,548
Asia/Australasia	0.50	0.41	0.34	0.28	40,002	113,110
Europe	0.89	1.04	1.88	2.15	71,937	78,574
FSU	0.42	1.21	0.15	0.64	12,001	19,439
Middle East	0.89	1.10	0.27	0.76	76,251	99,605
North America	0.48	0.66	0.59	0.91	26,811	40,527
South America	0.45	1.50	0.59	1.50	43,977	158,481
All regions	0.67	1.02	0.61	0.99	305,487	643,284

Production – RWDC+LTI frequency for company & contractor by region

Region	Company 2009	Company 2004–2008	Contractor 2009	Contractor 2004–2008	Company manhours 2009 ('000s)	Contractor manhours 2009 ('000s)
Africa	0.67	1.28	0.73	1.09	34,403	133,548
Asia/Australasia	0.70	0.73	0.79	0.69	27,242	83,219
Europe	1.48	1.23	2.99	3.14	41,278	77,942
FSU	0.42	1.00	0.47	0.76	12,001	19,339
Middle East	0.98	1.34	0.48	1.22	76,217	99,075
North America	1.38	1.48	2.05	2.45	26,737	40,470
South America	0.94	0.75	1.33	1.89	40,472	158,481
All regions	1.00	1.14	1.22	1.00	258,350	612,074

Construction – TRIR for company & contractor by region

Region	Company 2009	Contractor 2009	Company manhours 2009 ('000s)	Contractor manhours 2009 ('000s)
Africa	1.00	2.20	2,989	44,051
Asia/Australasia	0.37	1.53	69,784	158,645
Europe	0.50	4.08	4,036	28,410
FSU	0.00	0.64	2,263	31,042
Middle East	0.37	0.30	10,921	678,645
North America	0.84	3.23	3,565	23,841
South America	2.77	2.85	1,803	15,770
All regions	0.45	0.82	95,361	980,404

Construction – LTIF for company & contractor by region

Region	Company 2009	Contractor 2009	Company manhours 2009 ('000s)	Contractor manhours 2009 ('000s)
Africa	0.00	0.66	2,991	44,051
Asia/Australasia	0.10	0.31	69,973	158,783
Europe	0.24	1.33	4,108	28,510
FSU	0.00	0.06	2,263	31,042
Middle East	0.18	0.10	10,933	678,645
North America	0.00	0.34	3,565	23,841
South America	1.62	0.95	1,847	15,770
All regions	0.14	0.22	95,680	980,642

Construction – RWDC+LTI frequency for company & contractor by region

Region	Company 2009	Contractor 2009	Company manhours 2009 ('000s)	Contractor manhours 2009 ('000s)
Africa	0.00	1.29	2,991	44,051
Asia/Australasia	0.00	0.90	4,283	101,292
Europe	0.50	2.04	3,990	28,410
FSU	0.00	0.19	2,263	31,042
Middle East	0.27	0.14	10,921	678,645
North America	0.00	0.96	3,565	23,841
South America	5.20	1.59	769	15,770
All regions	0.31	0.39	28,782	923,051

5 Results by company

Total recordable injury rate

Company code	Company & Contractors	Company only
A	10.79	5.14
D	6.97	3.14
F	6.77	4.32
B	6.07	
I	5.62	2.90
E	5.61	4.75
C	4.91	0.62
H	4.13	1.84
G	4.13	2.21
Z	3.73	2.72
U	3.58	1.89
P	3.57	
J	3.55	2.10
W	3.37	1.68
S	2.89	0.64
O	2.84	3.40
R	2.79	1.07
FF	2.58	0.63
AA	2.33	0.87
Q	2.08	1.51
JJ	1.94	1.13
CC	1.93	0.90
GG	1.93	0.75
X	1.92	0.81
V	1.86	0.69
T	1.86	0.80
L	1.81	1.19
K	1.77	0.59
Overall	**1.75**	**1.28**
M	1.64	0.47
EE	1.41	1.35
KK	1.18	1.24
NN	1.17	0.46
Y	1.05	0.90
BB	1.05	1.97
MM	1.02	0.32
N	1.00	1.66
DD	0.84	0.58
LL	0.70	0.86
PP	0.64	0.47
II	0.58	0.58
HH	0.47	0.16
OO	0.25	0.94

Lost time injury frequency

Company code	Company & Contractors	Company only
A	5.39	2.57
B	2.67	
C	2.45	0.00
D	2.16	1.57
E	1.75	2.22
F	1.47	2.26
G	1.38	0.80
H	1.15	0.54
I	1.12	0.79
J	1.08	0.60
K	1.08	0.30
L	0.89	0.63
M	0.86	0.00
N	0.83	1.00
O	0.81	1.36
P	0.78	0.00
Q	0.71	0.64
R	0.67	0.31
S	0.61	0.00
T	0.59	0.32
U	0.57	0.41
V	0.57	0.31
W	0.55	0.70
X	0.55	0.32
Y	0.53	0.90
Z	0.50	0.32
AA	0.50	0.20
BB	0.48	0.82
CC	0.48	0.48
DD	0.47	0.17
Overall	**0.45**	**0.44**
EE	0.38	0.47
FF	0.31	0.00
GG	0.30	0.14
HH	0.21	0.08
II	0.19	0.17
JJ	0.18	0.20
KK	0.17	0.13
LL	0.16	0.29
MM	0.15	0.00
NN	0.12	0.00
OO	0.10	0.43
PP	0.07	0.00

Total recordable injury rate by function

Exploration

Company code	Company & Contractor
F	8.33
U	6.88
J	6.55
E	5.01
K	3.85
II	3.78
V	3.27
JJ	2.74
CC	2.63
R	2.33
Overall	**2.31**
W	2.27
Z	2.24
G	1.97
AA	1.73
L	1.54
P	0.87
HH	0.86
Q	0.72
DD	0.69
BB	0.00
C	0.00
D	0.00
FF	0.00
I	0.00
LL	0.00
N	0.00
NN	0.00
O	0.00
OO	0.00
S	0.00
T	

Drilling

Company code	Company & Contractor
C	11.87
E	10.42
B	7.92
O	7.39
D	7.19
J	6.67
W	6.35
H	5.74
R	5.31
Q	5.16
II	5.15
I	5.11
CC	5.00
OO	4.95
G	4.82
U	4.74
NN	4.52
BB	4.17
Overall	**3.81**
Y	3.68
Z	3.64
FF	3.55
AA	3.46
GG	3.39
T	3.29
L	3.16
V	3.15
JJ	3.03
K	2.75
DD	1.73
N	1.71
PP	1.51
HH	1.18
F	1.11
P	0.91
LL	0.84
S	0.00

Production

Company code	Company & Contractor
OO	10.87
F	10.76
D	9.43
P	8.42
Z	7.83
I	7.74
G	5.37
E	4.78
O	4.04
W	3.54
J	3.48
U	3.05
H	2.99
R	2.73
GG	2.69
Overall	**2.31**
T	2.28
JJ	2.22
Q	2.00
Y	1.95
C	1.90
V	1.84
NN	1.56
FF	1.52
L	1.39
K	1.35
AA	1.33
S	1.22
CC	1.17
LL	1.09
PP	0.97
N	0.94
BB	0.91
MM	0.85
II	0.83
HH	0.79
M	0.77
DD	0.44

Construction

Company code	Company & Contractor
FF	7.30
P	7.16
J	6.58
B	5.93
W	3.35
H	3.23
E	2.98
G	2.85
I	2.23
M	2.02
CC	1.92
JJ	1.80
AA	1.79
Q	1.79
V	1.71
GG	1.64
K	1.12
MM	1.06
NN	1.06
T	1.02
BB	0.82
Overall	**0.78**
L	0.69
PP	0.54
DD	0.53
Z	0.50
O	0.49
II	0.38
LL	0.37
HH	0.12
OO	0.06
R	0.00
S	0.00
Y	0.00

Appendix A Database dimensions

Total exposure hours

Year	Hours Worked (millions) Overall	Company	Contractor
1985	656	410	245
1986	544	306	238
1987	602	356	247
1988	616	364	253
1989	656	331	325
1990	721	332	389
1991	941	441	499
1992	944	431	513
1993	919	410	509
1994	872	397	475
1995	841	356	485
1996	912	360	551
1997	1,161	389	772
1998	1,131	386	746
1999	1,197	395	802
2000	1,634	572	1062
2001	1,977	633	1,344
2002	2,121	636	1,484
2003	2,247	664	1,583
2004	2,290	639	1,652
2005	2,381	639	1,741
2006	2,937	734	2,203
2007	2,913	668	2,245
2008	3,304	712	2,592
2009	3,586	822	2,764

Exposure hours by region ('000s)

	2009	2008
Africa	542,110	499,818
Asia/Australasia	697,524	562,677
Europe	319,178	310,237
FSU	350,792	444,106
Middle East	1,018,682	835,031
North America	320,541	304,076
South America	337,015	348,223
All regions	3,585,842	3,304,168

Exposure hours by function ('000s)

	2009	2008
Exploration	61,435	67,962
Drilling	348,515	298,855
Production	948,771	1,001,303
Construction	1,076,322	906,142
Unspecified	1,150,799	1,029,906
All functions	3,585,842	3,304,168

Appendix C
Fatal incident reports by region

Africa

Onshore

Cameroun, Drilling, 18/04/2009 **Number of deaths: 1** **Cause: Water related, Drowning** **Activity: Drilling, Workover, Well Services**

Age: 29 Employer: Contractor Occupation: Maintenance, Craftsman

Narrative:

Contracted personnel (civil work company) attempted to walk back to dredge barge walking the 20" floating discharge hose. The victim slipped and fell into the river where he was swept away with tidal current and drowned.

What went wrong:

- *No life jacket, No swimming ability.*
- *Poor decision making.*
- *Poor HSE standards from Contractor.*
- *Lack of Control (HSE audits).*

Corrective actions:

Revise contracting strategy

Libya, Exploration, 12/05/2009 **Number of deaths: 1** **Cause: Assault or Violent act** **Activity: Seismic/Survey operations**

Age: 35 Employer: Contractor Occupation: Foreman, Supervisor

Narrative:

At around 6:20 am the front crew line boss working for a contracting company in seismic operations was stabbed in the leg by a crew labourer. The line boss died in minutes on location as a result of the stabbing. After attempted CPR, his body was driven by ambulance to the hospital.

What went wrong:

Not available at this time.

Corrective actions:

Develop a leadership alert based on the learnings from this incident, which should include video clip describing the incident and the learnings. The learnings should highlight in particular those aspects of the incident which have lead to unintended consequences.

Nigeria, Drilling, 17/01/2009 **Number of deaths: 1** **Cause: Assault or Violent act** **Activity: Transport - Sea, incl. Marine activity**

Age: 35 Employer: Contractor Occupation: Transportation Operator

Narrative:

Armed militants disrupted offshore export operations by hijacking a line-boat that was supporting crude loading activities. During the attack the line-boat Master was shot and killed.

What went wrong:

A better assessment could have been made re indentifying offshore piracy or militant attack including the role of security and security plans.

Corrective actions:

- *Update the HSE cases and security plans for crude loading platforms, mooring bouys & marine logistics.*
- *Prioritize and complete the facility security risk assessment.*
- *Identify alternative means for provision of appropriate vessels to ensure continuous security presence within the established exclusion zones.*
- *Select an appropriate detection system capable of providing an early warning of unknown vessels approaching the established exclusion zones.*
- *Develop and implement a set of standard operating procedures to be followed by terminal, tanker, support vessels and security vessels in event that an incursion threat is detected. Procedures should be based upon the concept of deter, detect, delay, respond.*
- *Where appropriate, replicate action items to similar facilities.*

Nigeria, Production, 07/01/2009 **Number of deaths: 1** **Cause: Explosion/Burn** **Activity: Maintenance, Inspection, Testing**

Age: 35 Employer: Contractor Occupation: Other

Narrative:

The explosion occurred when the victim was welding an empty diesel tank that was not properly purged and still contained some diesel. A diesel supply tanker that was parked near the vessel, with its contents waiting to be transferred, also caught fire as a result of the explosion. The deceased (Welder) sustained severe burns due to the explosion and died later in hospital.

What went wrong:

- *Non-compliance with safety procedures*
- *Improper application of Permit to Work to carry out the activity which was needed Hot Work Permit*
- *Inadequate supervision/control*

Corrective actions:

Plan to reinforce supervision

FATAL INCIDENT REPORTS BY REGION

Nigeria, Production, 16/01/2009 **Number of deaths: 1 Cause: Water related, Drowning** **Activity: Maintenance, Inspection, Testing**

Age: unknown Employer: Contractor Occupation: Maintenance, Craftsman

Narrative:

The deceased fell overboard from the landing deck of the platform and drowned while he was passing the walkway. The investigation team discovered a missing grating on the walkway close to the power pack where the victim (Electrician) was working some minutes before going missing.

What went wrong:

- *The cause is attributed to the improper and loose equipment (Walkway).*
- *Failure to use proper PPE (Life jacket) by the victim.*

Corrective actions:

Plan to reinforce supervision

Nigeria, Production, 03/10/2009 **Number of deaths: 3 Cause: Confined Space** **Activity: Maintenance, Inspection, Testing**

Age: unknown Employer: Contractor Occupation: Unknown
Age: unknown Employer: Contractor Occupation: Unknown
Age: unknown Employer: Contractor Occupation: Unknown

Narrative:

Three contractor personnel performing tank cleaning inside a confined space, a vessel tank, collapsed. They were rushed to the hospital where all three subsequently died.

What went wrong:

Tank cleaning and confined entry procedure found to be inadequate. Gas test equipment not field verified prior to use. Tank entry made without immediate gas test nor use of breathing apparatus. Inadequate recording of personnel tank entry and exits. No confirmation tank was ventilated. Two sets of Work Management Permits introduced interface confusion between the various work teams.

Corrective actions:

Review current tank cleaning contract and upgrade to ensure work management process is utilized for tank cleaning activities.

Offshore

Angola, Drilling, 04/02/2009 **Number of deaths: 1 Cause: Exposure Electrical** **Activity: Maintenance, Inspection, Testing**

Age: unknown Employer: Contractor Occupation: Maintenance, Craftsman

Narrative:

A rig subcontractor suffered fatal injuries from an electric shock while performing a welding operation. A light used to illuminate the worksite was found to be a potential source of the electric shock as the light's electrical cord was found to have been damaged. The damage may have been caused by a pinching action of the cord between the loose mounting bracket of the light and the light housing which was observed to be in contact with the victim's body.

What went wrong:

- *A ground fault circuit interrupter (GFCI) was not utilized and the breaker did not trip when the incident occurred*
- *A light designed for permanent exterior mounting was modified for use as an interior portable illumination source*
- *Subcontractor personnel were not effectively supervised by the drilling contractor*
- *An effective pre-job (pre-start) safety discussion was not held*
- *The approved Job Safety Analysis (JSA) overlooked the potential for electric shock hazards and for cord damage and did not address the actual work that was performed*
- *Confined Space Entry was not considered or included in permits*
- *The Hot Work Permit review process was not effective*

Corrective actions:

When using portable electric tools in potentially damp areas, a GFCI (fixed or portable) should be utilized to protect personnel from potential electric shock.

- *All tools and equipment should only be used for their intended and manufacturer's recommended purpose; any change to a tool or equipment's intended purpose should be thoroughly reviewed and approved through an effective Management of Change (MOC) process.*
- *An effective pre-start meeting should be held with the personnel performing the work to ensure that all hazards have been identified, proper tools are being utilized, and the job scope is well defined and understood. The supervisor in charge of the worksite should be responsible for having this meeting. A field review of the work site should be part of these meeting.*
- *JSAs should be specific to the job being performed. JSAs should focus on the steps taken to accomplish the task rather than generalized statements that cover a wide range of activities. JSAs should focus on hazard identification and mitigations for each hazard.*
- *Established procedures for issuing and approving General Work Permits, Hot Work Permits, and Confined Space Entry Permits, should be rigorously followed to ensure necessary steps have been taken to minimize risk of injury, including a survey of the work site by the Person In Charge.*

FATAL INCIDENT REPORTS BY REGION

Congo, Production, 17/05/2009 **Number of deaths: 1** **Cause: Explosion/Burn** **Activity: Maintenance, Inspection, Testing**

Age: 49 Employer: Company Occupation: Maintenance, Craftsman

Narrative:

An Operator was burned by a steam projection over a large body surface whilst performing maintenance work on a heat-exchanger. After his evacuation, the injured party received intensive medical care in hospital for about two months until he passed away due to complications.

What went wrong:

- *Deficient process equipment insulation, trapped fluids.*
- *No lock out/tag out.*
- *Unsuitable immediate First Aid*

Corrective actions:

Review Permit To Work Procedure and Lock Out Tag out requirements.

Eq. Guinea, Production, 25/08/2009 **Number of deaths: 1** **Cause: Explosion/Burn** **Activity: Maintenance, Inspection, Testing**

Age: unknown Employer: Contractor Occupation: Maintenance, Craftsman

Narrative:

On August 25, 2009, at approximately 1:45 pm, a contract fitter was using an electric grinder to cut through a section of out-of-service, 10 inch gas process piping which was to be removed from the platform. The section of piping had been physically disconnected from the process and had been flooded with water. Over the previous week, three prior cuts had been made on this section of piping. On the fourth cut, as the grinder penetrated the piping, a liquid mixture sprayed out and was ignited resulting in a fire. The individual sustained serious burn injuries which sadly resulted in his death.

What went wrong:

- *The method used to remove hydrocarbons from the piping section were not adequate*
- *The practice of flooding the piping section with water did not ensure that process equipment/piping systems were free of hydrocarbons and safe for hot work.*
- *Personnel failed to recognize the potential hazards associated with this activity*
- *The pre-job toolbox form, the safe hot work permit, and the JSA considered a variety of potential hazards but did not consider the potential of hydrocarbons remaining within the piping system.*
- *Use of a hot work technique (electric grinder) for cutting into this piping was incorrect*
- *Without the system being hydrocarbon free, the use of hot work for the cutting the piping was considered inappropriate and, since the potential for hydrocarbons was not considered a hazard, its use was not questioned.*

Corrective actions:

- *Avoid hot-work (such as with a grinder or torch) to cut into hydrocarbon process piping;*
- *Water flooding may not be sufficient to eliminate hydrocarbons in complex piping systems. If effectiveness of piping preparation to eliminate hydrocarbons cannot be verified, cold cutting techniques should be used.*
- *Anticipate the presence of liquid hydrocarbons in out of service piping even if the previous service was gas.*

NOTE: Be aware that a zero LEL reading taken by gas detector at an open pipe flange may not guarantee that the piping is hydrocarbon-free.

Nigeria, Drilling, 15/09/2009 **Number of deaths: 1** **Cause: Falls from Height** **Activity: Drilling, Workover, Well Services**

Age: 41 Employer: Contractor Occupation: Unknown

Narrative:

When entering the elevator cabin, located in the aft column elevator giving access to the puntoon pump room of the semisub drilling platform, the victim fell 40 metres down through an open hatch in the cabin floor. The hatch cover was missing when the victim entered the lift; the witness, busy closing the water tight door, just heard a shout.

- *The hatch has been previously modified out of changes procedure;*
- *The hinges of the hatch were broken and not reported as such;*
- *The lighting was defective and not reported;*
- *The victim was busy teaching/inducing the witness about column, pump room and elevator induction tour.*

What went wrong:

- *Non compliance with anomalies reporting system, (lighting and hatch failure);*
- *Non compliance with changes procedures;*
- *Unapproved modification - hinge undersized;*
- *Behaviour problems: acceptance of poor maintenance standards, low anomalies reporting commitment;*
- *A new anomalies reporting policy was under implementation but with a poor communication procedure; at the same time, 3 persons were recognized responsible of lack of compliance with safety rules and punished, which impacted negatively the new anomolies reporting system implementation.*

Corrective actions:

When implementing a new system management system or a change in it, it is a must to communicate and ensure acceptance; tolerance of lack of respect for safety rules or poor standards is not acceptable.

FATAL INCIDENT REPORTS BY REGION

Asia/Australasia

Onshore

Bangladesh, Production, 14/05/2009 **Number of deaths: 1** **Cause: Exposure Electrical** **Activity: Maintenance, Inspection, Testing**

Age: unknown Employer: Contractor Occupation: Unknown

Narrative:

The injured person was digging a foundation at night for HCDP equipment. The IP attempted to move a tripod mounted light which was positioned to illuminate the work site. On touching the tripod, the IP received an electric shock.

What went wrong:

- *Inadequate work place and equipment inspection & monitoring;*
- *Inadequate system or process to ensure integrity of temporary electrical equipment brought on site - other equipment available but not used*
- *Inadequate work planning: risk assessment not effectively applied;*
- *Inadequate leadership: several levels of supervision did not carry out safety roles to an effective degree;*
- *Conflicting roles & responsibilities of supervisory and other personnel;*
- *Inadequate induction of contractor staff;*
- *Inadequate contract definition and Contractor management.*

Corrective actions:

- *Safety in the work place is everyone's responsibility - people should not be injured or killed trying to earn a living. We all have a responsibility to keep ourselves and the people we work with free from harm*
- *The Company is committed to providing safe places of work but we all have a part to play in achieving and maintaining a safe environment*
- *If something doesn't look safe, the chances are it isn't safe. Stop the job immediately – do not use any equipment that looks unsafe – report it immediately to a Supervisor*
- *We should all know how to react if something goes wrong in the work place and how to respond in emergency situations*
- *Consider your own and your family's safety at all times*

Recommendations:

- *Management of electrical hazards improved;*
- *Procedure for control of temporary electrical equipment developed and implemented;*
- *All portable appliances checked and confirmed safe;*
- *Electrical audit completed;*
- *Electrical service providers checked and upgraded;*
- *Safety procedures reviewed, improved and reinforced – Permit to Work, PAT testing, safety inductions, training etc.;*
- *Supervisory responsibilities clarified;*
- *Resources of Operations Team strengthened;*
- *Contract management tightened up;*
- *Company has provided immediate and ongoing after-care to IP's family.*

India, Construction, 29/06/2009 **Number of deaths: 1** **Cause: Struck by** **Activity: Lifting, Crane, Rigging, Deck operations**

Age: unknown Employer: Contractor Occupation: Unknown

Narrative:

At approx 1120hrs on Monday 29th June 2009 a mechanic suffered a heavy impact to the side of his face from a Hydra hook block. The incident occurred adjacent to the mechanic's workshop in the pipe yard.

What went wrong:

- *Indequate work Standards or procedures*
- *Lack of knowledge and experience*
- *Ineffective Communication*
- *Lack of training*
- *Inadequate leadership or supervision*

India, Production, 12/11/2009 **Number of deaths: 1** **Cause: Struck by** **Activity: Transport - Land**

Age: unknown Employer: Contractor Occupation: Unknown

Narrative:

A contractor tanker toppled over to the side road at. The driver sustained grievous injuries and was taken to hospital, but he had passed away. The tanker had toppled over to the side of the road resulting in the detachment of the trailer and engine section. The tanker speed was @53 KMPH as tracked by VTS (Vehicle Tracking System).

What went wrong:

The driver did not wear his seat belt, so he was thrown out through the front windscreen glass on collision impact, resulting in a fatal injury.

FATAL INCIDENT REPORTS BY REGION

India, Production, 26/11/2009 **Number of deaths: 1** **Cause: Pressure release** **Activity: Maintenance, Inspection, Testing**

Age: unknown Employer: Contractor Occupation: Unknown

Narrative:

The deceased suffered impact to his chest while carrying out the welding of a piping shoe support for the export line from the Offspec tank to the metering skid inside MPT terminal. He suffered internal injuries and was in a semi-conscious state; he was attended by L& T doctor immediately and rushed to hospital in barmer. He was declared dead in the hospital.

What went wrong:

- *Inadequate HSE ownership and supervision*
- *Personnel safety jeopardized to meet completion target by the contractor*
- *Lack of work planning and inadequate procedures*
- *Inadequate compliance with HSE Plan commitments*

Indonesia, Construction, 08/04/2009 **Number of deaths: 1** **Cause: Caught In, Under or Between** **Activity: Transport - Land**

Age: unknown Employer: Contractor Occupation: Heavy Equipment Operator

Narrative:

A contractor's crane was moving from one well pad location to another to support a work over rig move. While approaching a bridge, the operator of the crane waved to colleagues on the side of the road. The crane went off the road on the near side of the bridge, hit a bridge safety barrier, and rolled into the canal. The crane cabin was submerged with the cab door on the bottom. The crane operator was killed. The crane signal man, also riding in the cab, escaped with minor injuries.

What went wrong:

- *The crane operator apparently became distracted by waving to colleagues on the side of the road.*
- *The crane operator was violating procedure by not wearing a seat belt.*
- *The journey management planning (JMP) for the trip was not shared with the crane operator. The JMP also did not identify the canal bridge crossing as a potential hazard.*
- *The signal man was violating procedure by riding in the crane cabin without a seat belt.*
- *Contractor Supervision and co-workers failed to use Stop Work Authority to prevent signal man from riding in cab and to ensure operator wore a seat belt.*

Corrective actions:

Heavy equipment (cranes) transportation at low-speed in a convoy was incorrectly perceived as a "low-risk" activity.

- *Taking eyes off path, seat-belt use, and less than effective Journey Management planning were not recognized as at-risk behaviours.*
- *Driver attention should be maintained by direct engagement prior to a trip and regular reinforcement during trip.*
- *Use of Stop Work Authority should be reinforced to include adherence to work procedures.*

Indonesia, Construction, 29/07/2009 **Number of deaths: 1** **Cause: Struck by** **Activity: Construction, (de)commissioning**

Age: unknown Employer: Contractor Occupation: Maintenance, Craftsman

Narrative:

A contract welding crew was working along side a public paved road installing a pipeline when a third party motor vehicle breached the work site traffic control systems at highway speed. The vehicle narrowly missed the flagman and struck two welding machines on the shoulder of the road before colliding with one of the welders, resulting in fatal injuries to the welder. A second welder was also seriously injured after being struck by one of the welding machines that was hit by the motor vehicle.

What went wrong:

- *The third party vehicle driver fell asleep at the wheel, as admitted to the police.*
- *The approved Traffic Management Plan for the project was not fully implemented.*
- *Workers reduced the worksite traffic protection zone due to intimidation and threats from local drivers but did not follow a change approval process to properly evaluate the risk of changing the traffic controls.*
- *The Job Safety Analysis (JSA) did not adequately address traffic safety hazards thus failing to emphasize the importance of the project's highest risk to the workers on site.*

Corrective actions:

Approved procedures need to be followed at all times.

- *Any changes to approved procedures must be reviewed through proper change approval process.*
- *Hazards addressed by the JSA must be aligned with the HES Hazard Analysis developed for the Project Execution Plan.*

Pakistan, Construction, 19/03/2009 **Number of deaths: 1** **Cause: Caught In, Under or Between** **Activity: Transport - Land**

Age: 32 Employer: Contractor Occupation: Heavy Equipment Operator

Narrative:

After completing work the crane was moving towards an old pig launcher for gathering pipeline related work. While a trailer was overtaking the crane which was moving towards the old pig launcher area, the crane went off the road and out of control. The IP, who was sitting outside the cabin of the crane against all the norms and standards, fell and came down under the wheels of the crane.

What went wrong:

- *Wrong behaviour*
- *Poor/insufficient training*

Corrective actions:

Contractor workforce and equipment not fulfilling company requirements shall be removed from site with immediate effect.

FATAL INCIDENT REPORTS BY REGION

Offshore

China, Drilling, 29/11/2009 **Number of deaths: 1** **Cause: Falls from Height** **Activity: Lifting, Crane, Rigging, Deck operations**

Age: 28 Employer: Contractor Occupation: Manual Labourer

Narrative:

During a lifting operation on a platform, the hanging Cat Walk collapsed, in which some Perforating Guns (weighing 9.6 tons) were temporarily stacked. Three people fell from the Cat Walk at 6.7m. It resulted in the death of one person. The others escaped, one of them sustained minor injuries.

What went wrong:

Comprehensive List of Causes (CLC):

- *Improper loading*
- *Improper decision making or lack of judgment*
- *Defective equipment (steel structure)*

Corrective actions:

- *Identification of worksite/job hazards*
- *Correct design standards, specifications and design criteria*

India, Drilling, 23/04/2009 **Number of deaths: 1** **Cause: Exposure Electrical** **Activity: Maintenance, Inspection, Testing**

Age: 33 Employer: Contractor Occupation: Maintenance, Craftsman

Narrative:

At around 23:55 hrs, the injured person was found near the open junction box of the Motor for the Blow Out Preventer (BOP) Accumulator of the drilling rig. The IP was evacuated to the sick bay area on a stretcher and then was immediately administered medical procedures by the rig doctor. However the IP did not respond to any of the medical procedures attempted by the rig doctor. Emergency response process was immediately initiated at the base at 00:25 hrs. At around 01:20 hrs on 24th April-2009, the IP was pronounced dead by the rig doctor. The body of the deceased has been returned to shore where the post mortem was conducted and the cause of death was deemed as "opinion reserved" pending the results of further testing

What went wrong:

- *Inappropriate Behaviour*
- *Release of Stored Energy*
- *Inadequate Engineering/Design - Inadequate Evaluation of Changes*
- *Inadequate Monitoring of Construction*
- *Policies and Practices - Failed/not effective*

Corrective actions:

- *Safe electrical practice of cross-checking any power supply with a multi-meter even after isolations have been made to be promoted.*
- *Approach other Rig companies to ensure Lessons are learnt on Rig design and electrical plans.*

Malaysia, Drilling, 09/10/2009 **Number of deaths: 1** **Cause: Struck by** **Activity: Lifting, Crane, Rigging, Deck operations**

Age: 47 Employer: Contractor Occupation: Foreman, Supervisor

Narrative:

The Injured Person (IP) was supervising the wet storage of 6 barge anchors and marker buoys from the barge deck while in standby mode. During the 2nd wet storage of an anchor at 2115hrs, while uncoiling of pennant wire, suddenly a wooden choke (weighing 10kg) projected in a flipping motion and struck the IP's safety helmet. The IP fell and sustained a severe head injury.

What went wrong:

- *Uncontrolled de-coiling of pennant wire during anchor wet storage, creating sudden tension jolt which catapulted the wooden choke to the IP's head*
- *Specific procedure for the wet storage was not mentioned in the Main Anchor Handling work*

Corrective actions:

- *To find an alternative method for de-coiling activity*
- *Training for the Specific Work Hazard Assessment (e.g. involving tensioned wires during wet storage) to be comprehensive despite it being only a small part of a larger process i.e. Anchor Handling*

Malaysia, Production, 05/10/2009 **Number of deaths: 1** **Cause: Water related, Drowning** **Activity: Transport - Sea, incl. Marine activity**

Age: 31 Employer: Contractor Occupation: Engineer, Scientist, Technician

Narrative:

Around 2000 hrs on the 4th October, a crew saw the missing person went down to the cabin to sleep. During the crew change at 0130 hrs on 5th October, he was not seen anywhere including in his cabin. Search and rescue mission has been done through air and sea transportation to find him but to no avail. He was presumed drowned.

What went wrong:

The missing person failed to notify the watch keeper when he left his cabin during the bad weather.

Corrective actions:

To develop bad weather procedure emphasize on the Do's and Don'ts during severe weather condition including limitation of activities on deck.

FATAL INCIDENT REPORTS BY REGION

Europe

Onshore

Romania, Drilling, 27/02/2009 **Number of deaths: 1** **Cause: Falls from Height** **Activity: Drilling, Workover, Well Services**

Age: unknown Employer: Contractor Occupation: Drilling/Well Servicing Operator

Narrative:

A Contractor LWDC occurred on 27.02.2009 which escalated to a fatality on 16.03.2009. During dismantling of the well preventer, a well sinker, from a drilling contactor slipped and fell in the well cellar. While falling, he hit the concrete border of the cellar with his head and as a result fainted. During the period in which was unconscious he vomited and a part of the released liquids entered in his lungs. He was taken to hospital with minor scratches to his head but with lungs filled with liquids. Because of the risks involved, he was transported by helicopter to Emergency Hospital in Bucharest were he could receive a more specialized medical attendance. On the 16.03.2009 he died in hospital.

What went wrong:

- *The procedure for BOP dismantling is incomplete, the risk of falling into the well cellar during slinging operations was not identified*
- *No procedure for risk identification prior to starting works*
- *Employees are not sufficiently supervised during operations*
- *The work is not organized, tasks are done by everybody, the risks are not considered, there are no dedicated riggers and slingers*
- *It is not specified in the Job Description of the mechanics the operations of rigging and slinging even if they are involved in these. Because is not specified in Job Description they are not trained for this type of operations*
- *The contractor has no specific training for rigging and slinging*
- *There is no training in place for risk identification by workers or supervisors*
- *Installation did not have any type of planks or well cellar gratings*
- *Improvised methods of slinging are used*
- *No fall arrestors or safety harnesses in use*
- *There was no tool box talk prior to commencing work*

Corrective actions:

- *Working at Height and Slinging & Rigging training*
- *Implement Risk Assessment Management System together with JSA techniques;*
- *Risk management systems MUST be implement at rig site*
- *Ensure JSA system in place at time of pre-spud inspection - NO COMPROMISE*
- *HSEQ leadership training for contractors*
- *Cascade incident report amongst ALL drilling contactors and service companies*
- *Conduct a Safety Stand Down at ALL drilling locations presenting the incident*
- *Implement STOP Work Policy amongst ALL contractors*
- *Set up a HSEQ Steering Committee with industry participation*

Romania, Drilling, 02/04/2009 **Number of deaths: 1** **Cause: Caught In, Under or Between** **Activity: Drilling, Workover, Well Services**

Age: 41 Employer: Company Occupation: Drilling/Well Servicing Operator

Narrative:

A Company employee, a well sinker, was crushed between the walking beam and the pumping gear during intervention works at the well.

What went wrong:

- *Procedures in use were not reviewed or updated.*
- *Maintenance procedure unknown to WOD Crew.*
- *Emergency Response was inadequate, poor planning.*
- *Employees have not attended any HSEQ training.*
- *Pre job safety meetings were ineffectual or not done at all.*
- *General Company Standards weren't communicated to the employees.*

Corrective actions:

- *Implement Risk Assessment Management System together with JSA techniques;*
- *Ensure JSA is in place and discussed by team before work commences*
- *HSEQ leadership training for supervisors*
- *Cascade incident report amongst ALL personnel, contactors and service companies*
- *Conduct a Safety Stand Down*
- *Implement STOP Work Policy amongst ALL locations and contractors*

FATAL INCIDENT REPORTS BY REGION

Romania, Drilling, 11/09/2009 **Number of deaths: 1 Cause: Struck by** **Activity: Construction, (de)commissioning**

Age: unknown Employer: Contractor Occupation: Drilling/Well Servicing Operator

Narrative:

A crew from a contracting Company who are contracted to dismantle and transport scrap iron were performing jobs within the yard. They were working to remove masts from written off P 80 heavy workover units. The masts were being cut by flame welding, into 3 separate 6 meters long pieces. On the P80 being dismantled, at the time of the incident, two pieces had been removed together with the crown block, and the last section had been cut on the previous day. At around 10:40 am, on the next day, September 17th, a welder, apparently on his own initiative, started to disassemble the last part of the mast. He did not recognise that the inner part of the mast was inside the remaining lower section and proceeded to cut off the lateral side of the section, near the base. As the last supporting member was cut away the interior section fell out sideways and struck the welder, throwing him 1.5 m across the yard where he impacted a solid wall. He was taken to the med Clinic on site where he passed away after a few minutes, prior to the arrival of the ambulance.

What went wrong:

- *Supervisor had received no training in supervision of personnel*
- *No JSA training for the employees involved. At no point were the barriers developed in the JSA followed by or discussed with the working crew*
- *No fall prevention equipment was employed*
- *There was no method of safe working developed by the contractor or operating company and in fact the method used was to cut sections and to allow them to fall unsecured to the ground.*

Corrective actions:

- *Implement Risk Assessment Management System together with JSA techniques*
- *Ensure JSA is in place and discussed by team before work commences*
- *HSEQ leadership training for supervisors*
- *Cascade incident report amongst ALL personnel, contactors and service companies*
- *Conduct a Safety Stand Down*
- *Implement STOP Work Policy amongst ALL locations and contractors*

UK, Production, 01/04/2009 **Number of deaths: 16Cause: Other** **Activity: Transport - Air**

Age: unknown	Employer: Contractor	Occupation: Other
Age: unknown	Employer: Contractor	Occupation: Other
Age: unknown	Employer: Contractor	Occupation: Other
Age: unknown	Employer: Contractor	Occupation: Other
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Age: unknown	Employer: Contractor	Occupation: Other
Age: unknown	Employer: Contractor	Occupation: Other
Age: unknown	Employer: Contractor	Occupation: Other

Narrative:

An incident occurred involving a helicopter inbound from the oil Field. A Total of 16 people were on the helicopter of which 14 were contractors and 2 were Air Crew.

FATAL INCIDENT REPORTS BY REGION

Offshore

Denmark, Drilling, 15/11/2009 | **Number of deaths: 1 Cause: Pressure release** | **Activity: Drilling, Workover, Well Services**

Age: 27 | Employer: Contractor | Occupation: Engineer, Scientist, Technician

Narrative:

The accident happened on a drilling rig during preparations to perform nitrogen lift operations on a well at the E&P field. Before the well could be lifted with nitrogen, all lines involved between the pump unit and the well had to be pressure tested. This included testing the line to the well with first water and then nitrogen. The objective was to pressure test lines to 500 psi for 5 minutes and 5000 psi for 15 minutes. The water test was conducted with success at approx. 16:00 in the afternoon on Sunday 15th November. The same evening, the crew from a subcontractor set to conduct the test with nitrogen. During the test, a Pressure Relief Valve (PRV) was triggered, discharging nitrogen at approx. 6.900 psi, causing the PRV to swivel at high speed in its connection to the main line. As it swivelled, it struck an operator in the forehead. The accident resulted in fatal injuries to the operator.

What went wrong:

The main causes of this accident are failure to secure the PRV when rigging it up. From the incident investigation it has been concluded that a chart recorder was fitted with the wrong scale chart. Consequently the chart recorder has shown different pressure measurement than on the pressure pump manometer. Ultimately this has lead to a pressure increase above the PRV limit due to pump operator's misjudgement of the actual pressure. These factors combined with the injured person being in "harms length" of a hazard (high pressure) throughout the operation due to the wrong positioning of the chart recorder, led directly to the over-pressurization of the system with the subsequent fatal consequence. These are all a violation of basic training in pressure testing. The investigation has revealed at least 19 underlying causes that could have prevented this accident. The causes are found within all involved parties.

Underlying causes in Subcontractor are related to:

- *Supervision of the job*
- *Training of all crew in tool functionalities and hazard awareness*
- *Training of agency hands in Subcontractors procedures*
- *Use of risk management tools: Management of Change (MOC), Hazard Analysis and Risk Control documents (HARC) and Rig up procedures.*

Underlying causes in Rig Operator Company are related to:

- *Training of client supervisors and 3rd party supervisors in correct use of Rig Operator safety tools, appropriate to their level, i.e. Toolbox Talk and Permit to Work.*
- *Inclusion of Client supervisor in the work permit process.*

Underlying causes with the Operator are related to:

- *Supervision of the contractor*
- *Contractor management:*
  - *Competence;*
  - *Management of Change*
  - *Knowledge of contract requirements.*

Corrective actions:

Preventative actions- short term:

- *Placement of personnel while pressure testing – no personnel within barriers*
- *Use of PRV - requirement, selection and installation – no external PRV required - already in the Nitrogen package*
- *Placement of Martin Decker recorder - MD recorder to be placed away from pressurised area*
- *Detailed layout of N2 & well test setup - P&ID to be produced*
- *Pressure test specifications - inform correct operating pressure*
- *Competence of N2 crew - Contractor to review crew's competence*
- *Chart inserted in Martin Decker - MD recorder clearly marked with pressure range and correct chart*
- *Rig up inspection & quality of JSA - line walk and thorough review of JSA*
- *Management of Change - any change to plan to be risk assessed*
- *Roles & Responsibilities - clear roles and responsibilities*

Preventative actions - medium to long term

- *Clarify Operator supervisors' responsibility in relation to the Offshore Safety Act - title changed to Company (Operator) representative*
- *Hold seminar on Operator/Drilling Contractors roles and responsibilities*
- *Hold seminars on Operator/contractor roles and responsibilities*
- *Improve hazard identification planning process*
- *Prepare quality plan for drilling and well service activities with regard to. See-to-it activities*
- *Review supplier contracts to ensure clear roles and responsibilities described*
- *Address all recommendations in Joint Investigation Report – prepared consolidated list of actions*

FATAL INCIDENT REPORTS BY REGION

Norway, Production, 07/05/2009 **Number of deaths: 1** **Cause: Falls from Height** **Activity: Lifting, Crane, Rigging, Deck operations**

Age: 24 Employer: Contractor Occupation: Other

Narrative:

The fatal accident happened in connection with the dismantling of a scaffold in the drilling facility on the platform. A scaffold builder fell 14m down to cellar deck, incurring serious injuries. The man received medical treatment at the platform and was transported to the hospital by helicopter. The person died after arrival at the hospital.

What went wrong:

The direct cause of the incident was the incorrect anchorage point for the safety hook. The worker opened the locking devices on the scaffold beams that had been fastened to a hanging scaffold spire in the last phase of the operation. One of the safety hooks should have been fastened to a safe anchorage point before the worker opened the locking devices.

Corrective actions:

Do not overlook risks in the last phase. There were no barriers left when the person climbed out on the two remaining scaffold beams, which were locked at one side only. The total operation was considered as a "normal and easy job" which is also one underlying cause of the incident.

FSU

Onshore

Kazakhstan, Production, 19/12/2009 **Number of deaths: 1** **Cause: Pressure release** **Activity: Maintenance, Inspection, Testing**

Age: 27 Employer: Contractor Occupation: Manual Labourer

Narrative:

A Contractor died from injuries sustained when a component failed on a trailer mounted tank which was part of a test unit. Initial findings suggest air pressure was connected to the tank to force a water/glycol mix into a small diameter pipe (approx. 25mm) in preparation for a hydraulic test of a methanol injection line.

What went wrong:

- *Equipment Failure.*
- *Used Equipment Improperly.*
- *Lack of Knowledge/Skill/Competence Inadequate Initial Task Specific Training.*
- *No Contractor Oversight Process*
- *Lack of Supervisory/Management Job Knowledge.*
- *Inadequate Maintenance of Standards*
- *Operations and Maintenance Procedures*
- *Policies and Practices - Failed/not effective*
- *Work Permits/SSOW - Failed/not effective*
- *Barriers/Guards - Not in place*
- *Engineered Safety Features - Not in place*

Kazakhstan, Unspecified, 01/12/2009 **Number of deaths: 1** **Cause: Struck by** **Activity: Transport - Land**

Age: unknown Employer: Contractor Occupation: Other

Narrative:

A vehicle carrying two persons (security contractor) was involved in a road traffic accident while driving on a main public road between two well locations. The vehicle was stationery at an intersection waiting to turn left when it was struck from behind by a truck. The force of the impact spun the vehicle around and it was subsequently struck by an oncoming vehicle. As a result of the accident the driver suffered fatal injuries and the passenger was seriously injured.

What went wrong:

Vehicle accident - investigated by local traffic police

FATAL INCIDENT REPORTS BY REGION

Russia, Production, 27/01/2009 **Number of deaths: 1** **Cause: Explosion/Burn** **Activity: Maintenance, Inspection, Testing**

Age: 46 Employer: Contractor Occupation: Maintenance, Craftsman

Narrative:

During construction of the pipeline on the settling vessel inlet point on the main terminal, prior to welding a tee, one third of the pipeline cross-section was cut. At this time oil started to drop from the pipeline. Activity was suspended, on the next day the surroundings of the work were washed and steamed out. Welding was continued. There was no eyewitness of the exact incident. One of the workers stood at 1.5m distance with his back to the welding specialist. He could hear a hissing sound, and at the next moment dense smoke covered the working environment. The worker climbed out of the black smoke and saw the welder lying on the ground with injuries, in torn clothes, 6-7 m distance from the working place. The wounded man was given first aid and then was transported the hospital where he died.

What went wrong:

- *Licensing, implementation and monitoring of highly flammable and explosive work was not executed according to regulations.*
- *In consequence of the presence of deposited pyrophorous substances in the vessel, as well as that of the formation of combustible gases and petrol vapour following steaming out, self-ignition occurred. As a result of the explosion-like chemical reaction, pressure increased. The accumulated mass left the system in the direction of disassembling, where the welder made a stay.*
- *The pipeline was not cut in its total cross-section, therefore the possibility of appearance of combustible and other gases and vapour was not eliminated in the site of work.*
- *Preliminary washing out, steaming out, ventilation and disconnection of highly flammable and explosive workplace was not executed properly.*
- *Permission for execution of highly flammable and explosive works was given by an unauthorized person.*

Corrective actions:

- *Permit to work system has to be updated.*
- *Pre-job safety meeting has to be held*

Russia, Unspecified, 17/03/2009 **Number of deaths: 1** **Cause: Exposure Electrical** **Activity: Drilling, Workover, Well Services**

Age: 39 Employer: Company Occupation: Process/Equipment Operator

Narrative:

On 17.03.2009 at 15:20pm a 5th grade production operator suffered a fatal injury while earthing the junction box of power cable for the well.

What went wrong:

- *General operations safety rules: The employee was not trained and didn't possess corresponding skills to perform such work. When the causal factors dangerous for health and life arose the work was not stopped;*
- *Isolation of electrical power source: prior to start the work the equipment was not disconnected out of electrical*

Corrective actions:

Russia, Unspecified, 17/07/2009 **Number of deaths: 3** **Cause: Struck by** **Activity: Transport - Land**

Age: 31 Employer: Company Occupation: Foreman, Supervisor
Age: 38 Employer: Contractor Occupation: Transportation Operator
Age: 34 Employer: Company Occupation: Engineer, Scientist, Technician

Narrative:

A road traffic accident occurred at the on the in-field road. As a result, three victims at the scene suffered fatal injuries.

What went wrong:

- *Preliminary risk assessment was not conducted, all safety issues were not reviewed;*
- *f life and health is under threat every employee must stop work.*

Corrective actions:

Russia, Unspecified, 07/12/2009 **Number of deaths: 1** **Cause: Caught In, Under or Between** **Activity: Construction, (de)commissioning**

Age: 27 Employer: Contractor Occupation: Heavy Equipment Operator

Narrative:

While performing preparatory work on the trunk oil pipeline between two oil fields, along the route passage a bulldoser driver instantly fell under ice. He was unable to get out the bulldozer and died.

What went wrong:

- *ice thickness was not checked and surface areas allowered for operations were not marked;*
- *working on ice alone is prohibited ;*
- *no means required for rescue of people on ice were provided;*
- *driver's cabin door was not open, no trapdoor was provided.*

FATAL INCIDENT REPORTS BY REGION

Russia, Unspecified, 30/12/2009 **Number of deaths: 1** **Cause: Caught In, Under or Between** **Activity: Maintenance, Inspection, Testing**

Age: 52 Employer: Company Occupation: Transportation Operator

Narrative:

In the shop operations premises the staff of the shop found the body of the driver without signs of life under a truck. In the absence of witnesses of the incident ambulance and militia teams were called to the site. Arriving ambulance staff pronounced death. No signs of death through violence were found. All relevant notifications to the authorities were prepared, internal investigation of the incident began.

What went wrong:

Safety violations during vehicle maintenance (failure to use screw blocks when lifting a vehicle) Prior risk assessment and review of safety issues were not done

Turkmenistan, Construction, 21/05/2009 **Number of deaths: 1** **Cause: Caught In, Under or Between** **Activity: Construction, (de)commissioning**

Age: 19 Employer: Contractor Occupation: Manual Labourer

Narrative:

The deceased was visiting his friend, a contract worker who was commencing a manual excavating job at the excavation area. The excavation work is done beside a 7 tonne pipe sleeper. They were chatting when suddenly the soil gave way resulting in the sleeper toppled over on both deceased and his friend. His friend managed to release himself and was given first aid treatment however the deceased passed away on the next day in Hospital.

What went wrong:

- *The excavation procedure was not adhered to, related to requirement of shoring or applying required slope angle.*
- *PTW was approved without specific JHA on excavation activities at limited working space trench area*
- *Unauthorized personnel (the deceased) has entered area without notification*

Corrective actions:

- *To strengthen PTW enforcement and implementation which to attach JHA with strict compliance to the related procedures of the job.*
- *Strict enforcement on controlling the manpower entrance to site construction area.*

Offshore

Azerbaijan, Drilling, 15/06/2009 **Number of deaths: 1** **Cause: Water related, Drowning** **Activity: Drilling, Workover, Well Services**

Age: unknown Employer: Contractor Occupation: Drilling/Well Servicing Operator

Narrative:

Employee reported overboard.

Middle East

Onshore

Kuwait, Construction, 30/06/2009 **Number of deaths: 1** **Cause: Pressure release** **Activity: Construction, (de)commissioning**

Age: 51 Employer: Contractor Occupation: Manual Labourer

Narrative:

Dewatering and swabbing activity was in progress, using the pig to drain the residual water from a pipeline by pneumatic pressure. The first pig was received. The header flange and vent valves were fully opened to vent out the remaining pressure. During the process of removing the second pig, one contractor employee was hit by the pig and died after he was moved to hospital for treatment.

What went wrong:

Lack of supervision and lack of training for the Contractor employees. Underestimation of the risks involved in the operation. Working in front of the pig receiver keeping the pig receiver foor open without knowing the risks involved in the operation.

Corrective actions:

Strict supervision of the contractual activities. Training and awareness of the Contractor employees on Job Safety Analysis, Hazards and Risks involved in the operations being carried out where the work is in progress, strict enforcement of Work Permit System etc.

FATAL INCIDENT REPORTS BY REGION

Kuwait, Construction, 08/07/2009 **Number of deaths: 1** **Cause: Struck by** **Activity: Transport - Land**

Age: 36 Employer: Contractor Occupation: Manual Labourer

Narrative:

A Contractor employee was working on Repair and Maintenance of the Road, inside an isolated working area, when he was accidentally hit by a company hired vehicle. The vehicle was driven by a company employee who was travelling from the Gathering Centre to send the oil samples in the Lab. This incident resulted in the fatality of the contractor employee.

What went wrong:

Improper implementation of Work Permit System, Lack of training of the contractor employees on the risks involved in the activities being carried out, Lack of Job Safety Analysis, Lack of Supervision, Improper barricading of the area.

Corrective actions:

Strict enforcement of Work Permit System, Proper barricading of the work area to protect the employees working inside the isolated area, proper training to the employees on Job Safety Analysis, Hazards and Risks involved in the work, Strict enforcement on Speed driving.

Kuwait, Construction, 29/07/2009 **Number of deaths: 1** **Cause: Caught In, Under or Between** **Activity: Construction, (de)commissioning**

Age: 41 Employer: Contractor Occupation: Process/Equipment Operator

Narrative:

During an auguring operation for installing dewatering pipes, the overall of a Contractor employee who was working as operator assistant got stuck in the rotating drilling bit and pulled him, causing serious injuries to the right-side of the body. Immediately the machine was stopped and the emergency service was contacted. The injured worker was admitted to Hospital by the rescue team where he later died.

What went wrong:

Lack of training of the contractor employees, Lack of understanding on the Hazards and Risks involved in the activities being carried out, Lack of Supervision, Lack of Implementation of Work Permit System/Job Safety Analysis.

Corrective actions:

Strict enforcement of Work Permit System, proper training to the employees on Job Safety Analysis, Hazards and Risks involved in the work, Strict enforcement on proper supervision, Use of proper PPE.

Kuwait, Construction, 13/09/2009 **Number of deaths: 1** **Cause: Struck by** **Activity: Construction, (de)commissioning**

Age: 41 Employer: Contractor Occupation: Maintenance, Craftsman

Narrative:

A Contractor employee (Fabricator) along with a co-worker (Helper) were working under a 6" diameter pipe which is 20m in length and 90cm height on the scaffolding jack support from the ground. They were trying to install the pipe on the H beam and when the employee's (Fabricator) shoulder came into contact with the pipe, it fell on his head and caused his head to hit the H beam. The employee was immediately taken to Hospital where he was pronounced dead.

What went wrong:

Lack of Implementation of Work Permit System/Job Safety Analysis, Lack of Training to the contractor employees, Lack of understanding of the Hazards and Risks involved in the activities being carried out.

Corrective actions:

Strict enforcement of Work Permit System, proper training of the employees on Job Safety Analysis, Hazards and Risks involved in the work.

Kuwait, Drilling, 03/04/2009 **Number of deaths: 1** **Cause: Struck by** **Activity: Lifting, Crane, Rigging, Deck operations**

Age: unknown Employer: Contractor Occupation: Drilling/Well Servicing Operator

Narrative:

A workover rig crew was lifting a kelly hose to the drill rig floor. A chain was wrapped around the hose and attached to a hoist. The floor man was standing between the hose and a nearby valve; he was pushing the hose away from a handrail to keep the hose from hanging up on the floor handrail.The chain slipped while the hose was being lifted, causing the hose to swing and strike the floor man. The impact of the hose pushed the worker into the valve; he struck his head, and sustained a fatal injury.

What went wrong:

- *Use of a chain as a lifting device violated the contractor's general lifting procedures.*
- *The contractor crew considered the task of lifting the kelly hose to be routine and job planning was inadequate.*
- *The contractor's crew did not complete a JSA for this task.*
- *Contractor personnel did not recognize the hazards (line of fire).*
- *Contractor HES management mitigation activities for low rated contractors were not followed.*

Corrective actions:

- *Lifting and rigging procedures should be strictly followed.*
- *Job planning should include JSAs and hazard recognition with focus on staying out of harm's way (line of fire).*
- *Follow Company mitigation plans for low rated Contractors.*

FATAL INCIDENT REPORTS BY REGION

Kuwait, Drilling, 29/08/2009 **Number of deaths: 2 Cause: Struck by** **Activity: Drilling, Workover, Well Services**

Age: 43 Employer: Contractor Occupation: Maintenance, Craftsman
Age: 37 Employer: Contractor Occupation: Drilling/Well Servicing Operator

Narrative:

During the process of cutting a drill pipe which got bent during the Drilling operation, a welder and an Assistant Driller were standing on the Rig Floor to support the operation. Due to the release of stored energy, all of a sudden the pipe which was cut, swung around and hit the Welder who was standing on a man basket and the Asst. Driller who was holding it to facilitate the smooth operation. This resulted in the fatality of two contractor employees; the Asst. Driller and the Welder.

What went wrong:

Lack of Training of the contractor employees, Lack of understanding on the Hazards and Risks involved in the activities being carried out, Lack of Implementation of Work Permit System/Job Safety Analysis.

Corrective actions:

Strict enforcement of Work Permit System, proper training of the employees on Job Safety Analysis, Hazards and Risks involved in the work.

Qatar, Construction, 30/03/2009 **Number of deaths: 1 Cause: Struck by** **Activity: Lifting, Crane, Rigging, Deck operations**

Age: 36 Employer: Contractor Occupation: Heavy Equipment Operator

Narrative:

On 30th March, 2009 at about 1820hrs, two truck-mounted cranes were off-loading interlocking brick pallets on the right verge of the road. The extended crane boom of Truck mounted crane #1 struck the guard wire (height limit wire) of high-tension power cable protection gantry line, bringing down the pole. As the pole was falling, it struck the head of the operator of Truck-mounted crane #2. He was fatally injured and pronounced dead at the scene. The truck-mounted cranes belonged to a sub-contractor.

What went wrong:

- *Job Hazard analysis was not done for the interlock brick unloading activity even though it had been done for some other activities.*
- *Contractor did not have a method statement for the use of mobile cranes for such lifting activity prior to the incident. Standardised crane operating procedures were not followed.*
- *There was inadequate supervision at the site for the simultaneous unloading operations going on at the site. Contractor's Safety Officer was away on leave, no replacement Safety Officer was available, and there were also no banks men (signal men) for either of the cranes.*
- *Poor communication between Contractor and Sub-contractor as well as internally in Sub-contractor's organisation led to late arrival of the delivery consignment on site and hence hurried unloading to beat the approaching nightfall*
- *There is a general lack of commitment to HSE in the Contractor and Sub-Contractor's organisations and as such, HSE Management in both organisations is poor. The contractor's HSE Plan for the contract is seen as just a paper exercise. Employees in both organisations have not received any form of HSE training, toolbox talks are not held, cranes are not inspected, incidents are not investigated for learning points.*
- *Poor visibility at the site due to approaching dusk and inadequacy of warning signs regarding the guard wire contributed to the accident.*
- *There is inadequate communication and co-ordination between Sponsor departments and MIC Safety such that HSE issues relating to contracts are not properly addressed. The Contractor's HSE Plan for this project was not reviewed and approved before work started and also instances of poor implementation of the plan have not been adequately addressed.*
- *Contractor's emergency response procedures and arrangements are inadequate and are not properly understood by its employees.*

Corrective actions:

- *MHS and MIP should review the Contractor's Risk Assessment/Job Safety Analysis to ensure that all activities in the project are analyzed and adequate controls are established to address the hazards.*
- *Contractor to develop and implement a method statement for use of mobile cranes to be reviewed and approved by MIC Safety division. The Method statement should include mandatory use of banksmen and inspection of cranes.*
- *The Contractor should develop a list of HSE related requirements which are to be handed over and discussed with all its sub-contractors at the time of initial engagement. The list to also address latest time of day for deliveries and specify consequences of non-compliance.*
- *The Sub-Contractor should review its internal communication process to ensure there is clear channels of communication and therefore no misunderstanding of client instructions.*
- *MHS should (with approval from DI) explore the possibility of erecting bold warning signs near overhead guard (height limit) wires on roads to draw attention to the hazard present. In addition, the possibility should be explored of influencing the electricity corporation to, in view of this accident, increase the visibility of warning signs on all its guard wires at power line road crossings across Qatar to prevent similar accidents.*
- *Infrastructure Department and all company sponsor departments should always involve Regional HSE units at project initiation stage and all through the phases of the contracting process so that HSE requirements can adequately be included and addressed. MIC Safety should also be invited to Contract progress review meetings.*
- *Infrastructure department should ensure that all its Contract Holders attend the up coming "HSE Management in Contracts" training to enable them understand and effectively play their roles.*
- *Infrastructure department to communicate to all its Contractors stressing the need to establish a list of HSE requirements to be handed over and discussed with their sub-contractors.*

FATAL INCIDENT REPORTS BY REGION

Qatar, Construction, 21/05/2009 **Number of deaths: 1** **Cause: Caught In, Under or Between** **Activity: Construction, (de)commissioning**

Age: 22 Employer: Contractor Occupation: Manual Labourer

Narrative:

A 22 year old contractor employed as a flagman to control traffic during road grading operations on a large construction site, put himself between a reversing grader and another car in an attempt to prevent a collision. The grader driver did not hear or see any warnings and hit the car. The flagman fell and was run over by the grader.

What went wrong:

- *Unsafe behaviour of the flagman by positioning himself between the reversing grader and the vehicle and the driver of the vehicle stopping his car too close to the grader (blind spot) and on the same side of the road*
- *Work process controls not fully implemented*
- *Flagsmen were used to control traffic around the grading operation, but not the grader*
- *The flagmen were not directing traffic to the correct side of the road (compounded by lack of physical traffic segregation)*
- *Role or flagman unclear to driver (controlling grader or controlling traffic)*
- *There is no visible distinction on site between banksmen and flagsmen*

Corrective actions:

There was a lack of understanding of the potential hazards involved in the task, in particular with the interaction of third party vehicles. This is partly due to the repetitive and mobile nature of the task undertaken by a crew used to working together in what was perceived as a relatively controlled environment.

Qatar, Construction, 04/08/2009 **Number of deaths: 1** **Cause: Caught In, Under or Between** **Activity: Construction, (de)commissioning**

Age: 22 Employer: Contractor Occupation: Manual Labourer

Narrative:

At, or about 0630 Hours on Aug 4, 2009 a crew of twenty-nine (29) personnel comprising of nineteen (19) from a supplier of machinery, Nine (9) from a sub-contractor, and One (1) from the company that supplied a PT Roller, reported for work. There were two Supervisors. The main job was Road asphalting and it involved workers from all the three companies. At or about 1020 Hours, all workers and machinery were withdrawn from the worksite to the other end of the road because the job was almost completed and only the Roller was putting finishing touches to the asphalt work. At about 1030 Hours, the Roller Operator raised an alarm that one of the workers had been crushed by the machine. Emergency responders arrived at the scene and the victim was declared dead on the spot by the doctor.

What went wrong:

- *As the job was almost completed, the two banksmen who were initially working with the Roller operator were withdrawn from the site and turned to Flagmen to control traffic at the intersection. Therefore, the Operator was working without any banksman.*
- *The Safety Officer, who was from the sub-contractor, was not at the work site during the accident. He had withdrawn from the worksite to the other end of the road because the job was almost completed and only the Roller was putting finishing touches to the asphalt work. At about 1030 Hours, the Roller Operator raised an alarm that one of the workers had been crushed by the machine. Emergency responders arrived at the scene and the victim was declared dead on the spot by the doctor. He had gone to another project site belonging to another company for site preparation. He was supervising safety at two different sites without the knowledge of the contracting company.*
- *The Job Safety Analysis in the Project Method Statement prepared by the contractor requires the presence of a Safety Officer at worksite anytime there is work in progress.*
- *The sub-contractor management did not inform the contractor that the Safety Officer had been assigned to an additional worksite and was therefore not concentrating on the approaching machine.*
- *The contractor gave a copy of the Method Statement which contains Job Safety Analysis for the Road Construction Project to the sub-contractor. However, neither the Roller Operator nor the two Supervisors ever saw the JSA and, despite their inability to read, write or speak English language, nobody discussed the document with them.*
- *Tool box talk did not address all hazards on the job. It was very generic:"Work safely and watch the machinery".*

Corrective actions:

- *Contractor to develop a system to ensure all contractors and sub-contractors' foremen meet a certain pre-determined level of safety and supervisory competence.*
- *Contractor to issue a Note to all sub-contractors that, on no occasion shall a machine be operated without a banksman or look-out person as any deviation from the Method Statement will not be tolerated.*
- *Company to get involved in interface management whenever a particular job involves more than two different companies.*
- *Contractor to conduct various communication sessions for all his workers to understand role and responsibilities with respect to Method Statement*

FATAL INCIDENT REPORTS BY REGION

Qatar Construction, 11/08/2009 **Number of deaths: 1** **Cause: Falls from Height** **Activity: Lifting, Crane, Rigging, Deck operations**

Age: 22 Employer: Contractor Occupation: Other

Narrative:

A tower crane was in the process of being dismantled. A section of platform around the jack-up component of the tower crane became dislodged by another section that was being lifted. The deceased was secured to, and standing on, the dislodged platform which fell approximately 30 metres to the ground.

What went wrong:

- *Procedures: (1) No specific method statement for dismantling the jacking cage; (2) No Job Safety Analysis for dismantling the jacking cage.*
- *Pre-job Briefing: No specific pre-job briefing for dismantling jacking cage.*
- *Supervision: Supervision was less than adequate by allowing subordinates to engage in unsafe practices with*
- *the full knowledge of the supervisor.*
- *Training: Working at heights training does not specify the section of appropriate tie-off points.*

Corrective actions:

- *Method Statements, Job Safety Analysis and Toolbox Talks to be developed specific for the work.*
- *Vendor/Original Equipment Manufacturer advice/instruction to be included in Method Statements etc.*
- *Company instruction prohibiting securing of safety harnesses to hand rails, baskets and platforms.*
- *Jacking cage to be dismantled at ground level.*
- *All work to be planned to minimise working at height.*
- *Trial lifts to ensure loads are balanced.*
- *Working at height training should specify appropriate tie-off points.*
- *Supervisory training for contractors with oversight responsibilities.*

Qatar, Construction, 21/08/2009 **Number of deaths: 1** **Cause: Caught In, Under or Between** **Activity: Construction, (de)commissioning**

Age: 40 Employer: Contractor Occupation: Manual Labourer

Narrative:

A crew of 18 personnel and a site engineer, foreman and safety officer, commenced work on southern breakwater. The main job was road asphalting. The asphalt paver machines had completed the main asphalt laying job and a pneumatic roller was in the course of rolling asphalt. During the same period, while the roller was moving, the workers were assigned different work activities. The victim was assigned the task of placing fine materials into the segregation void on the newly laid asphalt. The roller machine was reversing towards the direction of the victim and its operator did not notice anything behind him. The roller hit him, with the rear tyres rolling over the upper part of his body with his left arm stuck underneath. The alarm was raised and the victim was pulled out from the roller by his co-workers.

What went wrong:

- *There were clear violations of the project method statement and the Job Safety Analysis.*
- *Requirements for Banksmen and Charge hands were clearly stated in the document but these were not provided at the work site.*
- *Site foreman was unaware of Method Statement and JSA documents. Site engineers had seen the above documents but not paid an attention. Supervision at work site was weak.*
- *When the Roller machine was working the site engineer, safety officer and site foreman were at different locations for various reasons hence no close supervision was given at site.*
- *The operator was from a different company and he was not given tool box talk and site induction.*
- *Both Banksmen were untrained and assigned this job.*

Corrective actions:

- *Company to put system in place to ensure an improved supervision on the project site.*
- *Company to review the Method statement with contractor and ensure all requirements are met.*
- *Company to issue note to contractor that further violation of any AP safe work practices will not be tolerated.*
- *Contactor to conduct various communication sessions for all his workers to understand role and responsibilities with respect to Method Statement*

FATAL INCIDENT REPORTS BY REGION

Qatar, Drilling, 28/10/2009 **Number of deaths: 1 Cause: Pressure release** **Activity: Maintenance, Inspection, Testing**

Age: 39 Employer: Contractor Occupation: Drilling/Well Servicing Operator

Narrative:

On a drilling rig and during RIH, crew was checking pressure on Annulus-1 and the gauge showed 850 psi while the choke manifold (connected to 2 7/8" tubing) indicated pressure of 0 psi. This created a doubt in their mind and since the well was packer-less (no packer), where both tubing and Annulus-1 pressures gauges reading should be identical, the decision was to confirm the Annulus-1 pressure and verify that pressure gauges were properly working.

What went wrong:

- *Rig up was inadequate/improper for the operation:*
  - *No standard rig up and operation layout drawing.*
  - *Rubber hose was used during operations, only treating iron line shall be used.*
  - *Annulus-1 permanent pressure gauge was not installed at X-mass tree (from the day one and before well operation start up). The 1st option was the easier and quicker choice, however and before swapping the gauges, the Deceased / Pumping operator suggested verifying the Annulus -1 pressure from the drain hose of the pumping unit, as the pumping line was already rigged up earlier in the morning to annulus-1, by crack opening a 2x2 low torque valve on the pump drain hose and confirm the pressure from there. At 08:25 hours, it was decided to open the low torque valve on the pump flexible drain hose in order to physically check/verify if there was pressure in Annulus-1; to do so, the crew lined up the drain hose, which consisted of 8 meters long and 2 inch diameter hose, ending with a 2 meter long pup joint (chicksan, treating iron), which was intended for securing the drain hose. The hose was rigged up initially just to drain the pumping unit and surface lines after completing the job, when there is no high pressure expected and was not meant for bleed off or flowing back well. The drain hose was not secured and free ended, although that crew member wrongly thought that fitting the pup joint to the hose would secure it by adding more weight. When the valve was cracked open, crew noticed a high pressure discharge from the line and the Pump Operator was instructed to close the valve immediately. A very loud noise was followed by a dust cloud in the area. Crew escaped and gathered at the muster station. When the dust cleared, the Pump Operator was found lying face down on the ground. He was dead having being hit by the hose coupling.*
  - *Pumping lines were used for flowing back.*
  - *Check valve should have been placed as close as possible to x-mass tree and in front of drain line, if that was implemented, then the short cut (flowing back trough pump line and the drain hose) would not have been possible.*
- *Modified rig up was not reviewed and risks were not assessed before operation*
  - *Using the drain hose to check pressure was not carefully reviewed and risk assessed,*
  - *The existing JSA was not amended after modifying the rig-up.*
  - *The safety briefing of that morning did not cover the use of drain hose as it was not planned for.*
- *There were deviations from the coiled tubing work instruction manual of February 2009 which stipulates step-by-step actions on coiled tubing and stimulation activities. The use of flexible drain hose was outside the work instruction manual.*
- *As the flexible drain hose was not expected to be used for a pressure-check, it was not properly secured.*
- *Non availability of rig up equipment layout in operations procedure was not detected by company drilling Dept.*

Corrective actions:

- *Contractor shall review the JSA/JHA, amend it to reflect the new changes and develop a mechanism to trigger immediate update in order to ensure it's adequacy when there is a change in job process or new activity introduced.*
- *Contractor shall develop or review safe operation checklist for the Job Supervisor to ensure safe rig-up, commissioning, and rig down operations.*
- *Contractor shall review the entire Standard Operating Procedure (SOP) to cover all activities under the current contract with the company. This shall be submitted to the company for review and approval.*
- *Drilling department to consider getting more involved in the review of various elements of their contractors, operational standards and procedures.*

FATAL INCIDENT REPORTS BY REGION

Qatar, Unspecified, 20/01/2009 Number of deaths: 2 Cause: Caught In, Under or Between Activity: Lifting, Crane, Rigging, Deck operations

Age: 31 Employer: Contractor Occupation: Manual Labourer
Age: 28 Employer: Contractor Occupation: Manual Labourer

Narrative:

Cargo Operations commenced on board a vessel at 0700 hours on the 20th of January, 2009 when two stevedore gangs boarded the vessel and prepared for their operations. The actual discharge commenced at 0745 hours on the same date from the tween deck of No.1 Hatch by one gang. The tween deck of the ship was stowed with some general cargo for discharge.

The unloading from tween deck was completed at 1520 Hours on the same afternoon. The ship's crew opened the tween deck covers and unlashed the cargo stowed in the lower hold. Cargo discharge from the lower hold commenced at 1620 Hours on the same date. Stevedores performed discharge of prefabricated steel bundles from the lower hold of this hatch until the end of day shift at 1900 Hours without any incident.

Two gangs boarded at approximately 1900 hours for the night shift and cargo operations from No.1 Hatch resumed with one gang at 1925 Hours after completion of their normal handing over. The shift supervisor discussed the cargo operations to be performed in No.1 Lower Hold with the rigger foreman and directed that one bundle of long heavy steel beams be discharged at a time. Each bundle weighed about 8.6 tons.

At approximately 2005 Hours, the ship's crane was in the process of discharging two bundles when the belt slings failed and cargo fell back into the hatch. The impact of the falling cargo caused other cargo still in the hatch to topple over and trap two of the rigger helpers between the displaced cargo and ship's side. The two riggers sustained fatal injuries.

What went wrong:

- *Supervision: There was no dedicated site safety officer from the contractor for the cargo operations as there was no such requirement stipulated in the contract.*
- *HSE MS: The contractor has no formal 'Safe System Of Work' in place as no Risk Assessment, Job Safety Analysis, or Task Hazard Control System were developed. Neither site safety induction programme nor Tool Box Talk was implemented at work site and no work procedure with roles and responsibilities.*
- *Training: The Riggers were not trained on the safe lifting and offloading techniques which made them adopt a wrong lifting and offloading method which subjected the sling to excessive stress by lifting two bundles of 4 pieces at a time instead of one bundle of 2 pieces as had been directed by their supervisor. This deviation was attributed to the tight stowage encountered inside the compartment.*
- *Standards and Procedures: Though the contract stipulates that the contractor shall comply with company safety procedures, practices and standards, he did not request any and none was given to him.*
- *Management of loose gears: Contractor was found to have no system in place to manage and control loose gears for loading and offloading activities. This allowed workers to make use of inappropriate slings which neither belonged to the company nor were appropriate for the task.*

Corrective actions:

- *The Port Management, along with concerned HSE & contract departments, shall liaise with the Contractor to deploy a dedicated site safety officer for each of the shifts. In future contracts of this nature, the operating company shall incorporate specific job categories to cover the site safety officer and gear locker management.*
- *The Contractor shall immediately put in place an effective HSE Management system acceptable to the company which will identify all hazards associated with cargo operations and institute appropriate controls in place to remove and/or mitigate them. Contractor may consult with the company RLC Port & HSE Departments in developing this system. Development and implementation of this system will address most concerns identified in this report and eventually prevent recurrence.*
- *RLC Port Regulations Dept. to review the Port Regulations to incorporate relevant portions of the ILO convention on Occupational Safety & Health (Dock Work) convention of 1979.*

Qatar, Unspecified, 26/02/2009 Number of deaths: 1 Cause: Water related, drowning Activity: Office, Warehouse, Accommodation, Catering

Age: 32 Employer: Contractor Occupation: Other

Narrative:

A 32 year old security guard, employed by contract security firm, was found dead in the swimming pool of a residential compound. The most probable cause of the incident is a slip or trip that caused the deceased to fall into the water.

What went wrong:

- *The swimming pool was not within a fenced off area and the security guards walked along the swimming pool during their night shift patrol.*
- *The victim was unable to swim, which could have been a contributing factor.*

Corrective actions:

Employers should consider identifying a swimming pool as a risk i.e. set requirements for security staff in the residential area to be competent swimmers.

FATAL INCIDENT REPORTS BY REGION

UAE, Construction, 23/06/2009 **Number of deaths: 1** **Cause: Falls from Height** **Activity: Construction, (de)commissioning**

Age: 24 Employer: Contractor Occupation: Other

Narrative:

Fall through gap in scaffolding as person making his way down. Fall of 15metres.

What went wrong:

Inadequate work planning, management and supervision.

Corrective actions:

- *Scaffolding not constructed to standard, gin wheel inside scaffolding causing gap.*
- *Supervision of activities.*

UAE, Production, 03/02/2009 **Number of deaths: 3** **Cause: Confined Space** **Activity: Maintenance, Inspection, Testing**

Age: 48 Employer: Company Occupation: Foreman, Supervisor
Age: 40 Employer: Contractor Occupation: Manual Labourer
Age: 53 Employer: Contractor Occupation: Manual Labourer

Narrative:

Four employees (three Contractors and one operating company) were exposed to hydrogen sulfide in Corrosion Coupon Pit for Transfer Line. Three employees died and one was transferred to hospital in critical condition.

What went wrong:

- *Skill Level*
- *Communication*
- *Management/Supervision/Employee Leadership*
- *Work Rules/Policies/Standards/Procedures*
- *Tools & Equipment*

Corrective actions:

- *Provide personal hydrogen sulfide detectors to all personnel including labourers/helpers working in hydrogen sulfide exposed areas*
- *Ensure all helper/labourers are fully trained for performing their assigned tasks*
- *Establish Access Control on all confined spaces with effective markings, signs & tagging; and locking, where applicable*
- *Ensure PTW is issued based on task risk assessment (TRA) and the high risk TRA has been endorsed by a safety professional (Safety & Loss Prevention Engineer (SLPE) as minimum)*
- *Confined space entries cannot be made unless a SLPE has signed off the Confined Space Entry Certificate and he has reviewed the emergency plan.*
- *Include practical element (step test) and confined space entry in H2S/BA training course and for all operation/production*
- *and HSE staff*
- *Empower labourers/workers to STOP unsafe activities and initiate contractual arrangements to protect/encourage individuals exercising STOP Policy*

UAE, Production, 18/07/2009 **Number of deaths: 1** **Cause: Struck by** **Activity: Transport - Land**

Age: 24 Employer: Contractor Occupation: Transportation Operator

Narrative:

An empty sulphur truck left the highway and collided with a palm tree.

What went wrong:

Driver killed instantly and no witness. Condition of tyres inadequate.

Corrective actions:

Speed recorder not fitted and should have been by contract. No defensive driving training for night time.

UAE, Production, 07/09/2009 **Number of deaths: 1** **Cause: Struck by** **Activity: Transport - Land**

Age: 45 Employer: Contractor Occupation: Transportation Operator

Narrative:

An operating company vehicle carrying three passengers and driver collided with a private trailer truck on the Road towards the specific area. Another vehicle drove into the collided with the operating company vehicle. It had resulted into three fatalities, serious injuries to three and one worker escaped with minor injuries.

What went wrong:

- *Work Planning*
- *Communication*
- *Management/Supervision/Employee Leadership*

Corrective actions:

- *Reconfirm operation philosophy for Contractor staff (with respect to accommodation and work location) to reduce road exposure on ALARP principle.*
- *Minimise number of road trips and reduce risk potential for the necessary trips.*
- *Influence authorities to build a dual carriageway.*
- *Determine if there is a means to warn the driver i.e. Using IVMS or other means.*
- *Clarify and reinforce safe driving practice during foggy conditions.*

FATAL INCIDENT REPORTS BY REGION

North America

Onshore

Canada, Construction, 17/10/2009 **Number of deaths: 1** **Cause: Struck by** **Activity: Maintenance, Inspection, Testing**

Age: unknown Employer: Contractor Occupation: Unknown

Narrative:

A Contractor was cleaning out the tank of a vacuum truck when the hatch of the tank closed, striking the worker and resulting in a fatality.

What went wrong:

Investigation ongoing

USA, Drilling, 21/01/2009 **Number of deaths: 1** **Cause: Struck by** **Activity: Drilling, Workover, Well Services**

Age: unknown Employer: Contractor Occupation: Drilling/Well Servicing Operator

Narrative:

A workover rig crew was pulling tubing out of the well. As the tubing collar was passing through the slip assembly, a fluid surge beneath the pipe wiper rubber likely caused the slips to tilt (precise cause of incident has not been determined). The tubing collar lifted the slip assembly upward and caught underneath rig floor thus raising rig floor from its operating position and causing the injured person to lose his footing. The IP suffered injuries that resulted in his death two weeks following the incident.

What went wrong:

- *Slips were installed below the rig floor (Proper Condition)*
- *Fluid came to the surface (Proper Condition)*
- *As the tubing collar passed through the slips:*
  - *Fluid surge lifted the pipe wiper rubber*
  - *Wiper rubber tilted the slips*
  - *Securing chain on one side of the slips likely contributed to the tilting of the slip assembly*
  - *This occurred just as the tubing collar passed through the slips*
- *The tubing collar edge caught the slips; the slips raised and lifted the rig floor.*
- *The design of the system did not allow the operator time to detect and prevent the incident from occurring.*

Corrective actions:

- *Risk assessed design standards and safe working procedures should cover all rig components and associated equipment used in well work operations.*
- *Human reaction/intervention should not be relied upon as an adequate safeguard for hazard control.*

USA, Production, 06/04/2009 **Number of deaths: 1** **Cause: Struck by** **Activity: Lifting, Crane, Rigging, Deck operations**

Age: 51 Employer: Contractor Occupation: Heavy Equipment Operator

Narrative:

On April 6, 2009, at a contract-drilling rig, two crewmembers were in the process of retrieving drill collar slips from a storage box with a forklift. They had previously completed a job safety analysis and performed a pre-use inspection on the forklift. The forklift operator retrieved the forklift attachment. Neither crewmember attached the tie back cable. The forklift operator and injured party (IP) installed a lifting sling. They retrieved two sets of drill collar slips and were in the process of attaching a third. At some point, the operator tilted the forks down. The IP connected the third set of drill collar slips and signaled the forklift operator to lift the slips. The forklift operator raised the boom to lift the load. The lifting device slid off the forks and fell, striking the IP. He was standing inside the 15ft buffer zone. The IP was immediately transferred via ambulance to a local hospital for medical attention. Several days later, the IP passed away.

What went wrong:

- *Key lifting and hoisting/safety requirements were not followed:*
  - *Neither crew member visually confirmed tie back cable was installed. The lifting device tie back cable was not secured.*
  - *The IP did not stay 15 feet away from the load as per job safety analysis (to ensure he was safeguarded from entering the path of the load).*
  - *Job safety analysis was not fully executed.*
- *The model of forklift being used at the time of the incident was similar to but not exactly the same as the one regularly used. The controls were different. The familiarity of the operator with the replacement forklift was not verified.*

Corrective actions:

- *All facilities utilizing forklift/loader attachments and accessories used for lifting and hoisting MUST develop and utilize an installation procedure, clearly indicating safety precautions for installation and use, including accountable parties that are responsible for ensuring the check list is utilized. If this cannot be accomplished for any reason, remove the lifting device from service.*
- *All leaders with operational responsibilities shall hold a session with their teams to review the learnings of this incident.*
- *VPs shall verify their supervisors are participating in worksite reviews of job safety analyses and work permiting processes for applicable areas.*
- *All facilities to confirm that training requirements are in place for operators when new/different equipment is introduced to the work site (e.g. similar equipment with different controls).*

FATAL INCIDENT REPORTS BY REGION

USA, Production, 18/11/2009 **Number of deaths: 1** **Cause: Caught In, Under or Between** **Activity: Maintenance, Inspection, Testing**
Age: unknown Employer: Contractor Occupation: Other

Narrative:

An unoccupied truck rolled, pinning a technician against a well flow line that he had been marking for inspection.

Offshore

USA, Drilling, 07/03/2009 **Number of deaths: 1** **Cause: Struck by** **Activity: Lifting, Crane, Rigging, Deck operations**
Age: unknown Employer: Contractor Occupation: Drilling/Well Servicing Operator

Narrative:

The rig crew was using an air hoist to lift a hose assembly in preparation for a well pressure test. The lift bail being used failed causing the hose assembly to fall striking two members of the rig crew, fatally injuring one.

What went wrong:

- *Use of a rig fabricated, non-certified lifting device was generally accepted by the contractor's crew and was in place for years.*
- *Contractor's personnel did not recognize the hazard of standing underneath the load (line of fire) and Stop Work Authority was not used.*
- *The contractor's crew considered the task of lifting and moving the hose assembly to be routine and job planning was inadequate.*

Corrective actions:

- *Lifting & Rigging Policy should be strictly followed.*
- *Review and improve job planning including JSAs, hazard recognition with focus on staying out of harms way (line of fire).*
- *All rig fabricated or non-certified lifting and rigging equipment should be identified and removed from service.*

USA, Drilling, 03/09/2009 **Number of deaths: 1** **Cause: Caught In, Under or Between** **Activity: Lifting, Crane, Rigging, Deck operations**
Age: 37 Employer: Contractor Occupation: Other

Narrative:

On 3 September 2009, at approximately 10:25hrs, a drilling contractor floor-hand was working on deck as a spotter during pipe handling operations. During the pipe handling operation the floor-hand moved to a location in the travel path of the pipe handler while the pipe handler was traversing, resulting in the floor-hand becoming caught between the traversing deck pipe handler and a support stanchion, causing fatal head injuries to the floor-hand.

What went wrong:

Root Causes identified by the drilling contractor:

- *Ineffective communication of corrective actions and recommendations;*
- *Ineffective monitoring of deck operations;*
- *Ineffective use of the tools in the Safety Management System;*
- *Ineffective management of change (MOC) by line management.*

Corrective actions:

- *Install permanent barriers and signage to prevent access to travelling path of pipe handler;*
- *Investigate possibilities for re-engineering of pipe handler (PH) to eliminate human interface;*
- *The area in the path of the PH to be kept clear and not used for storage;*
- *All corrective opportunity actions to be communicated to the installation and tracked;*
- *Develop a plan to ensure the correct level of monitoring and supervision is given to all tasks, to include a clear demonstration of visible leadership;*
- *Review MOC on the installation with specific reference to the assignment of personnel, taking into consideration their experience and competence levels as operators and as supervisors.*

FATAL INCIDENT REPORTS BY REGION

USA, Production, 04/01/2009 **Number of deaths: 8 Cause: Other** **Activity: Transport - Air**

Age: 23	Employer: Contractor	Occupation: Maintenance, Craftsman
Age: 24	Employer: Contractor	Occupation: Maintenance, Craftsman
Age: 29	Employer: Contractor	Occupation: Maintenance, Craftsman
Age: 35	Employer: Contractor	Occupation: Maintenance, Craftsman
Age: 35	Employer: Contractor	Occupation: Maintenance, Craftsman
Age: 53	Employer: Contractor	Occupation: Maintenance, Craftsman
Age: 46	Employer: Contractor	Occupation: Transportation Operator
Age: 63	Employer: Contractor	Occupation: Transportation Operator

Narrative:

A Sikorsky S-76C++ helicopter crashed into marshy terrain approximately 7 minutes after take-off. Both pilots and six of the seven passengers on board were killed. One person was critically injured. A company flight plan was filed with the contractor communications center that provided weather updates and flight following for the helicopter crew. The flight was being tracked via Outerlink, a satellite based fleet-tracking system. The Outerlink track suddenly ended about 7 minutes after departure at 1409. There were no reports of any problems from the flight crew on the contractor radio frequencies or emergency transmissions on any monitored air traffic control frequencies. A search and rescue operation was initiated at 1414 after the US Air Force notified PHI and the United States Coast Guard of a distress signal being transmitted with the unique identifier that is part of the Emergency Locator Transmitter (ELT) signal that transmits the Aircraft registration number and latitude and longitude coordinates. The helicopter wreckage was found shortly thereafter near the location of the loss of the track and transmitted ELT signal location by the U.S. Coast Guard. The wreckage was found partially submerged and exhibited very little main rotor blade damage. The twin-engine, 14-seat, 2-year-old helicopter was equipped with glass cockpit instrumentation, a combination cockpit voice recorder (CVR) and flight data recorder (FDR), an enhanced ground proximity warning system (EGPWS), solid state quick access recorder (SSQAR), and a VXP vibration recorder. The two Turbomeca Ariel turbo shaft engines were equipped with digital engine control units (DECU). All of these devices were recovered and evaluated. The weather conditions reported at 1430 CST were; scattered cloud layers at 1,500 feet and 3,500 feet, a broken cloud layer at 10,000 feet, visibility 10 miles, winds at 160 degrees at 6 knots, temperature of 24 degrees Celsius, and dew point of 19 degrees Celsius.

What went wrong:

Waiting for NTSB Final Report - The following is an INTERIM FACTUAL SUMMARY of this accident investigation. A final report that includes all pertinent facts, conditions, and circumstances of the accident will be issued upon completion, along with the Safety Board's analysis and probable cause of the accident.

Interim report noted a detailed examination of the wreckage and components had not revealed any evidence of pre-impact engine, transmission, hydraulic servo, or systems failures. The main rotor transmission had no external damage and the rotor shafts were free to rotate. The transmission case was opened and all internal components appeared normal with no damage. Additionally, no evidence of a midair collision, or in- flight rotor blade failure was found. Fuel was found in the wreckage. All three main rotor hydraulic servos and the tail rotor servo were found in good condition with no external leakage or damage. Functional tests and tear downs revealed no problems. Hydraulic reservoirs were full and no leakage was found. Data from the combination flight data recorder (FDR) and cockpit voice recorder (CVR) were analyzed at the NTSB's Recorders Laboratory with download assistance from the manufacturer's facility in England, and the US Army Safety Center in Fort Rucker, Alabama. Both recorders captured the accident flight. The CVR captured the sound of a bang and a loud air noise followed by a substantial increase in the background noise level that was recorded on both intercom microphones and cockpit area microphone. Less than a second after the bang and loud air noise, the CVR captured the sound of decreasing rotor and engine rpm. Seventeen seconds later, the recording ended. The non-volatile memory (NVM) from the engines' digital Engine Electronic Control Units (EECUs) was successfully downloaded, and no faults were recorded. The engines were examined. No anomalies were noted that would have prevented normal operation. A bird specialist with the U.S. Department of Agriculture (USDA) examined the helicopter for evidence of a bird strike. A visual examination did not detect any such evidence, but a swab was taken from the pilot-side windscreen. The sample was sent to the Smithsonian Institution Feather Identification Lab for identification. Results from DNA testing on that sample showed that microscopic remains of a hawk variety were present. The swab was taken from an area of the windscreen that exhibited concentric ring fractures. Similar concentric rings were visible in the gel coat of the fuselage area just above the windscreen. Additional swabs for bird remains were taken from the fuselage; empennage; various inlets, including the engines; and from the rotor hub and main rotor blades. Examination revealed the presence of small parts of feathers under a right side windscreen seal and in the folds of the right side engine inlet filter.

Corrective actions:

Waiting for NTSB Final Report - The following is an INTERIM FACTUAL SUMMARY of this accident investigation. A final report that includes all pertinent facts, conditions, and circumstances of the accident will be issued upon completion, along with the Safety Board's analysis and probable cause of the accident.

FATAL INCIDENT REPORTS BY REGION

South America

Onshore

Argentina, Production, 12/03/2009 **Number of deaths: 1** **Cause: Falls from Height** **Activity: Drilling, Workover, Well Services**

Age: 34 Employer: Contractor Occupation: Drilling/Well Servicing Operator

Narrative:

The IP was descending from the derrick through the side stair of the equipment using full safety harness and locked to the fixed live-line, and equipped with falling arrestor. The IP slipped on one of the rungs of the staircase and fell down backwards hitting his left leg (inside of the thigh) against a pipe intended to support a hydraulic key. The IP rested over this pipe and the side metallic structure (right arm of the equipment). This caused a deep wound to the IP and an exposed fracture of the femur of the left leg which resulted in a fatal outcome after transfer to medical facilities.

What went wrong:

The live line was fixed on the right side of the stair and the falling arrestor was fitted on the right bolt of the harness. This was the incorrect side to anchor it because it does not facilitate quick stopping in the case of a person falling horizontally, which was the case. The main contributor to the accident was a metallic support (of an hydraulic key) in the landing area of the stair, that hit the IP. Another contributor was a gap of 0,2m between the vertical levels of the first two rungs of the staircase.

There was an insufficient identification of risks in working at height and no boundaries were established for the use falling arrestors. No Management of Change was carried out to record changes in personnel roles, and mandatory training and competence according to the new role. There was a lack of risk assessment during the design and modification of the equipment, putting an obstacle in the falling line of the access stair (support for the hydraulic key).

Corrective actions:

- *Modification of the position of the live-line, placing it in the centre of the stair.*
- *Assess the falling arrestor in order to include improvements.*
- *Include with the drilling equipment, rescue at height equipment, certified personal training in the subject.*
- *Inspection and record of the live-line using a checklist.*
- *Training and competence of all personnel in the use of the new position of the live-line.*
- *Review and control of all the access and descending engrees of the equipments.*
- *Implement a Management of Change process that includes assessment of changes in roles of pulling and other team members.*
- *Modify the stair to place all the steps at the same level.*
- *Remove the hydraulic key from the stair landing area.*
- *Remind the Contracting companies about the existing emergency procedure.*

Brazil, Construction, 01/06/2009 **Number of deaths: 3** **Cause: Other** **Activity: Transport - Air**

Age: 29 Employer: Company Occupation: Unknown
Age: 30 Employer: Company Occupation: Unknown
Age: 37 Employer: Company Occupation: Unknown

Narrative:

Three employees were onboard the Air France airplane (AF447) that crashed in the Atlantic Ocean. Since the three employees were on a business trip, the incident is included in the HSE accounting.

What went wrong:

The incident is being investigated. Our company was not in operational control of the air plane and has no insight in what went wrong.

Corrective actions:

None

FATAL INCIDENT REPORTS BY REGION

Brazil, Drilling, 10/02/2009 **Number of deaths: 1 Cause: Struck by** **Activity: Drilling, Workover, Well Services**

Age: 27 Employer: Contractor Occupation: Manual Labourer

Narrative:

During a tripping out operation to change the drilling bit the drill pipe sections were set at rest in storage slots at monkey board level. The last section was a short one (15,35 m) and did not have height to rest against the storage slot (level 17,10m) so it was leaned against the longer tubes. The shorter section foot began to slide at drilling table level and the upper part fell through empty spaces between the drill pipe and heavy weight columns, moving the sections of drill pipes and protruding out of the other side, falling and sliding toward the mud tanks where a Drilling Helper was painting equipment. The worker was hit in the head by the short drilling section. He received first aid at the site and was removed in an ambulance but he died on way to the hospital.

What went wrong:

- *Inadequate storage of short section, leaning it against the other sections already in storage slots.*
- *Failure to attend the operational procedure;*
- *Did not use the alternative of providing extenders to complement the length of short section and allow its correct positioning at storage slot.*
- *Did not use alternative of breaking the short section to allow the horizontal storage of drilling pipes.*
- *The entire manoeuvre was not planned so that all sections have enough length to allow their correct storage at slots.*

Corrective actions:

- *Review the operational procedure emphasizing that the length of the drilling sections to be stored at storage slots must be greater than the height from drilling floor to slot and defining alternatives to manoeuvre with short sections.*
- *Retrain all personnel involved in the manoeuvre of drilling string (drillers, derrick hands and platform hands), reviewing and strengthening the concepts of the procedure.*
- *Establish a systematic procedure for approval of manoeuvre by a Drilling Supervisor, considering safety*
- *Strengthen at drillers training courses the aspects of operational planning and safety during manoeuvres.*

Brazil, Production, 01/11/2009 **Number of deaths: 1 Cause: Struck by** **Activity: Drilling, Workover, Well Services**

Age: 46 Employer: Contractor Occupation: Maintenance, Craftsman

Narrative:

During an operation to recover production of a pumped well, the bottom valve was being "fished" through a procedure involving inserting a column in the well with a screw fisher at the bottom, sustained by a mobile crane and turning it clockwise manually at surface to screw the fisher in the bottom valve, and then remove the column out of the well with the components for carrying out due maintenance. This operation involves putting the column under torsion stress when turning it clockwise and this tension has to be carefully released by lifting the column with the crane while sustaining the turning tool with a rope and then gradually move around the well.

After turning the column seven times with the turning tool, the worker tied a rope to it and asked his teammates to move from the vicinity of the well in order to release tension from the column. When the column was lifted the worker sustained the torque at the turning tool but when he tried to change to sustain it with the rope he was unable to do it, as he tripped and became unbalanced, releasing the rope. At that moment there was a sudden uncontrolled reversal of the column with the turning tool attached and the worker was hit in the temple, below the safety helmet, by the turning tool. The worker was moved to a hospital where he died from the head trauma.

What went wrong:

- *Inadequate engineering: The turning tool used had no safety barriers that block the hazards in case of any failure to perform as stated in procedure as the worker stays within the radius of the turning tool in certain phases of the operation.*
- *Inadequate procedure: The written procedure to the task approaches only in a general way the operation of rotation of column and subsequent release of the accumulated torque. The procedure does not specify hazards and safety precautions to do the task.*
- *Operational practice was not followed: The people involved in the operation knew the written practice of carrying out the service, as evidenced in interviews and in training records. At the time of the accident, the operation was being performed only by a worker when the procedure determined the simultaneous participation of an auxiliary. Before the release of the turning tool, the auxiliary should have sustained the torque through the rope, allowing the worker to leave the radius of the tool.*
- *Floor inadequate to the task: The arrangement of surface lines and well head hindered the correct installation of floor railings. This did not allow the complete closure of the well pit and created an irregular and unstable work surface.*
- *Ineffective supervision: There was evidence of the lack of supervision in relation to operational discipline.*

Corrective actions:

- *Update Project: Update the turning tool, checking the best practices used in other sites and in the oil industry.*
- *Procedure Review: Review procedure taking into account the methodologies for hazard identification and risk control and best practices (company and industry).*
- *Operational practice not followed: Apply ample verification of compliance with operational procedures in well intervention tasks.*
- *Floor inadequate for the task: Rearrange the wellhead lines and valves in order to make possible adequate work surface; evaluate the possibility of eliminate the well pit.*

FATAL INCIDENT REPORTS BY REGION

Colombia, Exploration, 02/12/2009 **Number of deaths: 1** **Cause: Falls from Height** **Activity: Seismic/Survey operations**

Age: 24 Employer: Contractor Occupation: Manual Labourer

Narrative:

A Seismic Recording worker, who was walking along the seismic line, fell from his own height down a steep slope, and as a consequence suffered polytraumatism. The worker was rescued, evacuated and lead to the nearest infirmary. Immediately was driven by helicopter to the nearest hospital where the worker died.

What went wrong:

- *The worker took the wrong way looking for a shady place to have lunch.*
- *He did not apply the procedure of support for critical areas.*
- *The worker used the standards and specifications wrongly.*

Corrective actions:

- *Qualify the workers in reading risk panoramas.*
- *Educate the community in incident prevention (not to remove signs of warning, ropes, etc).*
- *Supervision in the stage of squad storage.*
- *Have rescue team available to support in critical activities/areas (crossing bodies of water, pronounced slopes, vertical slopes).*

Offshore

Brazil, Production, 04/01/2009 **Number of deaths: 1** **Cause: Pressure release** **Activity: Construction, (de)ommissioning**

Age: 37 Employer: Contractor Occupation: Maintenance, Craftsman

Narrative:

During a scheduled production stop, the employee and two others were disassembling a temporary fitting set at interface of one oil well line to production system manifold at an offshore production platform. At the time of the accident the valve connected to the oil well line had a drain inserted in the open flange in order to check tightness of valve. There was a perception by those involved in work that the valve and this flange with drain are two different barriers of protection against pressure. In fact the flange was part of the valve. The pressure at that point was 122 kgf/cm2. During the removal of last two screws of flange (diameter opposing positions) the pressure against the valve caused the release of the internal components of the valve and the sudden expulsion of the flange. There was a violent release of fluids under pressure from the line, which hit the worker body, causing internal injuries in chest and abdomen, causing his death.

What went wrong:

- *No perceived need for management of change*
- *Deficient detailed design*
- *Lack of risk analysis of the project comprising all phases of work*
- *Deficient planning of task*
- *Lack of knowledge of internal characteristics of the ball valve and its risks*
- *Non-compliance with work permit procedures*

Corrective actions:

- *Maintain strict operational discipline in implementing Management of Change*
- *Make an inventory of ball valves similar to the model involved in this accident, signalling them to prevent their disassembly when pressurized*
- *Communicate the inventory of these valves to maintenance and construction personnel and to production operators*
- *When dealing with projects with interface between new equipment and equipment already in operation, the project shall be detailed to construction and operation tasks, in order to identify hazards and establish measures to control risks*
- *When carrying out work in pressurized systems, follow existing safety requirements and question the training and knowledge of people performing the work*
- *Instruct professionals responsible for the design, planning and authorizing work in pressurized systems to consult documentation of valves and equipment that will be opened*
- *Maintain operational discipline in Work Permit issuing*

Appendix D
Significant incident reports by region

Appendix D gives details of the significant incidents reported for 2009. Significant incidents are defined to be incidents which cause or have the potential to cause serious injury and/or fatality, or significant structural damage (which may place personnel at risk). The description of the incident should be sufficiently detailed to allow other organisations to share important safety learnings arising from the incident. Organisations are requested to limit the number of significant incident descriptions submitted to those which have high learning value on a broad basis.

17 of the 43 companies submitted significant incident reports in 2009. The total number of reports is 57. Care needs to be taken in drawing conclusions from the data as, for example, vehicle incidents are likely to be under-represented.

Africa

Onshore

Algeria, Drilling **Cause: Overexertion, Strain** **Activity: Drilling, Workover, Well Services**

A worker manually lifted a joint pipe (10' length and 30kg weight) while rigging up line on rig floor. The IP complained of pains on the lumbar region. The Doctor on-site recommended Medevac and a further exploration at hospital revealed the need of surgery intervention to recover from damage on the backbone.

What went wrong:

The IP confirmed that in order to lift the pipe (30 Kg joint), he bent his knees to use the strength of his legs. But because of the material, which was in front of him, he was forced to bend himself forwards to grip the load.

Failed to implement strong safety culture (i.e. Stop work authority was not used). The training provided to the IP on manual handling was not efficient enough.

Corrective actions & recommendations:

- *Periodical training for all personnel regarding safe manual handling, and ensuring that supervisors understand the risk and consequences of manual handling accidents.*
- *Review the risk assessment, highlighting the hazards related to the incorrect manual handling and study plan before manual handling operations.*
- *Issue technical instruction, hand-book and posters for manual handling.*

Ethiopia, Drilling **Cause: Falls from Height** **Activity: Drilling, Workover, Well Services**

At 1330 hours on 26 July 2009,a team of 7 men were assigned to spool the drill line at derrick which was in horizontal position resting on head stand as part of rig up operation.

At 1700 hours the Derrick Man (IP) while working in the Crown cage at the height of 19 feet, unhooked the safety harness lanyard (single) from the guard rail as he wanted to move to a new position. While moving to the new position, the IP lost his balance and fell to the ground. He landed vertically on both feet before dropping on his back on the ground.

What went wrong:

- *Unavailability of correct PPE for working at height i.e. double safety lanyard and platform during work activity.*
- *Work procedure for specific activity is not available.*
- *The hazard of rig activities are poorly assessed and risk reduction measures are inadequate.*

Corrective actions & recommendations:

- *Plan and organise work activities to comply with HSE requirements*
- *Establish work procedure for all critical activity*
- *Ensure supervisors and team leader are provided with adequate training*

Offshore

Congo, Production **Cause: Falls from Height** **Activity: Maintenance, Inspection, Testing**

A scaffolder was going to the scaffold storage area. He did not see an opening in the grating floor and fell down 5 metres. He incurred fracture injuries.

What went wrong:

- *The grating had been removed by a maintenance team to prepare for a crane load test and was not barriered off.*
- *The injured person was using dark safety glasses in an area of shadow.*
- *The work permit did not include the grating opening, only the crane test. Preparation of the job was not described or evaluated.*
- *Lack of grating work or removal risk awareness*

Corrective actions & recommendations:

- *Job preparation and risk analysis to also be well identified and studied regarding risk evaluation and control as part of activity or separately, but in the same manner i.e., subject of formal work permit and risk analysis.*
- *Awareness campaign about grating risks regarding removal but also design, maintenance and inspection.*

Congo – Democratic Republic of (formerly Zaire), Production Cause: Explosion/Burn Activity: Maintenance, Inspection, Testing

Explosion of a skimmer tank occurred during welding job on 12" piping located about a meter above the top of the tank. The explosion occurred when the welding rod came into contact with the tank. Two seriously injured (burns), weeks of recovery needed.

What went wrong:

- *Inadequate Risk Assessment and mitigation measures*
- *Deficient Application of Permit To Work procedure*
- *Hot Works close to explosive atmosphere*

Corrective actions & recommendations:

- *Reminder of PTW Procedure and Job Risk Analysis communicated to the whole organisation.*
- *Safety alert/notification issued.*

Niger, Drilling Cause: Other Activity: Transport - Air

A helicopter carrying 16 passengers and 2 crew had a mechanical failure that resulted in a controlled ditching offshore. All 18 persons were recovered by a near by seismic vessel, no injuries were sustained. They were all assessed by the medic onboard the vessel and certified okay. The helicopter was recovered from the ocean.

Nigeria, Production Cause: Explosion/Burn Activity: Maintenance, Inspection, Testing

The incident occurred on an FPSO, during an oily water system operation. Condensate was sent to the hazardous open drain and, via the overflow, to an open, non-hazardous drainage system. Condensates following the non-hazardous drain lines reached the sea by overboard line. At that time hot works that were in progress along the hull lit the condensates. 2 LTIs, 3 FAC, (burns) light material damages, and 36 hrs of production losses. The FPSO was still under start-up condition.

What went wrong:

- *The oily water system was not fully operational; a temporary line was installed to drain the close drain header to the open hazardous drainage system. As the drain line to the slop oil tank was closed by an activated SDV, the condensates overflowed to the open drain and further to the sea.*
- *The SDV was closed due to earlier shut-in and not reset.*
- *Installation in downgraded situation due to start-up condition and lack of personnel for current construction and commissioning activities.*
- *Drainage of hydrocarbons in the open drain system.*
- *Lack of overview of the activities in progress and associated risks (SIMOPS control)*

Corrective actions & recommendations:

- *Improve downgraded situations control;*
- *Improve installation overview awareness for operational personnel (status of process equipment and hand over of systems);*
- *Improve work sites and permit to work control;*
- *Never send HC to open drain system in intentional manner;*
- *Improve control system by generating alarms for SDVs when they are not in operational status.*

Asia/Australasia

Onshore

Papua New Guinea, Unspecified Cause: Other Activity: Transport - Air

A helicopter experienced mechanical problem whilst delivering a load to a rig site. On inspection, it was noted that one of the rotors was cracked.

What went wrong:

Equipment failure.

Corrective actions & recommendations:

- *Component has been replaced and the affected part shipped to the USA for further analysis.*
- *Closer and more frequent inspection regime in place including twice daily inspection of particular*

Papua New Guinea, Unspecified Cause: Other Activity: Transport - Air

Upon take off there was a sudden loss of power from the helicopter. The helicopter settled to the ground with no damage to the machine.

SIGNIFICANT INCIDENT REPORTS BY REGION

What went wrong:

Hairline crack at in the Py line due to higher than normal engine vibration.

Corrective actions & recommendations:

- *Adopt international guidelines.*
- *Review manufacturers recommendations for change-out of failed component.*

Papua New Guinea, Unspecified **Cause: Other** **Activity: Transport - Air**

Upon arrival at the airport, it was reported that the freighter aircraft was overloaded.

What went wrong:

- *The cargo was not correctly weighed*
- *Procedures and training for employees was inadequate.*
- *Department responsible did not have the appropriate procedures for weighing cargo.*
- *Aircraft owner had the appropriate procedures but had not adequately or properly assigned responsibilities for load reception at the airport.*

Corrective actions & recommendations:

- *Operator owner to transfer a senior traffic officer with cargo handler experience to the airport.*
- *Weighing to be supervised at the warehouse by operator.*
- *Department responsible to implement the Aviation Cargo Handling Procedures.*
- *Department responsible to ensure that all freight is weighed in the presence of the Operator at airport*
- *Review training and procedures to ensure alignment with responsibilities as consignor of cargo for aircraft carriage and to align with Company procedures.*

Thailand, Drilling **Cause: Explosion/Burn** **Activity: Drilling, Workover, Well Services**

Pulling tubing from well. Some gas bubbles/oil seen in return fluid. Flow check done – nothing detected. Continued pulling tubing. Well took oil and gas kick. Ignition occurred. Personnel evacuated rig. Significant fire

What went wrong:

- *Failure to act on warning signs.*
- *Lack of awareness and supervision.*
- *Poor shift handovers and communication between supervisors.*

Corrective actions & recommendations:

- *Ensure competent personnel are in position; make sure checks are done. This to include all levels of personnel.*
- *Ensure improved hazard awareness and knowledge of appropriate actions required to pre-emergency situations.*

Offshore

Australia, Construction **Cause: Exposure Noise, Chemical, Biological, Vibration** **Activity: Construction, (de)commissioning**

On Sunday 25th October 2009, a purpose built project modular gangway for jacket access from a construction platform parted at the jacket end and fell to the water. Failure occurred in a vertical pin of a Swivel Unit which caused the modular gangway to separate from the Gimbaled support. This pin failure also caused the Gimbaled support to rotate free of the support bar on the gangway landing platform. As a result, the fixed end of the modular gangway detached from the Gangway landing platform and fell into the water. No one was injured in the event.

What went wrong:

Investigation has determined that a weld around the centre of the failed pin was omitted during the fabrication process. The missing weld may have increased the stress levels in the pin considerably and contributed to the failure. It was further determined that:-

- *Although the yield strength of the material was as specified in the design, the incorrect grade of material for the pin was ordered.*
- *The ordered pin material did not conform to mechanical property requirements.*
- *Failure of the material requisitioning process to ensure the designed grade material was procured.*
- *Failure to identify the impacts of different grade material on the fabrication process.*
- *QA/QC system did not ensure that all welds were completed as per design.*
- *Insufficient design fail-safe mechanisms to ensure gangway integrity in the event of a material failure (slings or chains or other measures).*
- *No documented procedure for the modular gangway assembly, installation and operation.*

Corrective actions & recommendations:

- *Importance of a robust procurement and materials requisitioning process to ensure the correct grade of materials for a design are specified and ordered.*
- *Understanding of how different grades of materials may affect the fabrication process.*
- *QA/QC process must be rigorous with regard to identifying any fabrication deviations from the intended design.*
- *Importance of designing for fail safe mechanisms in the event of failures to ensure integrity via secondary means e.g. Restraints (redundancy via slings/chains or other fail to safe mechanisms).*

Significant incident reports by region

Australia, Drilling **Cause: Exposure Noise, Chemical, Biological, Vibration** **Activity: Transport - Air**

A helicopter was in the process of landing on a drill rig, when a large container housing a personnel transfer basket and weighing more than 200kg, was lifted by the airflow from the helicopter's rotor. The container passed over a handrail and fell approximately 10m to the deck below. Nobody was hurt and the container sustained minor damage.

The box had been stored on two horizontal pieces of timber resulting in a small air gap beneath the base of the box, the air blowing across the box resulting in a lifting force which tipped the box over the handrail. The storage location of the box was a flat area of deck adjacent to the helideck, with a continuous handrail around the circumference of the storage area. The helideck and adjacent areas had been inspected by the helicopter operator and the storage of the box in this area was not raised as a concern. Seven previous flights had not affected the Billy Pugh in this storage location.

What went wrong:

- *Location of Box: the box and Billy Pugh had been deliberately placed on the roof to limit boom movement and for ease of access for previous operations prior to arrival in Australia, and thus helicopter operations. It was considered that this location would also provide protection for the Billy Pugh.*
- *Box on battens-The box had been placed on 2" battens so that it could be handled. This created an air gap.*
- *Box was Unrestrained - The box was not secured to the deck, however, the lid had been secured to the box by the use of a strap.*
- *Box Design - The surface area of the box was considered to have been a contributory factor.*
- *Rotor Wash - The downward rotor wash provided the lift for the fibreglass box with the Billy Pugh inside it.*
- *Hazard Identification - The box and Billy Pugh had not been identified as a hazard during any of the previous*

Corrective actions & recommendations:

- *Very heavy objects can become airborne if not restrained when close to helicopter operations.*
- *Placing objects on battens can allow sufficient air beneath the load to promote lift.*
- *Surveys of areas adjacent to helicopter operations need to consider the aerodynamic energy that helicopter arrivals and departures can generate (Eurocopter 225 moves roughly enough air to lift 11 tonnes into the air on take off).*
- *All containers or storage systems close to helicopter operations are recommended to be secured to the supporting structure.*

Australia, Production **Cause: Exposure Noise, Chemical, Biological, Vibration** **Activity: Maintenance, Inspection, Testing**

A gasket leak was found on the dehydration regeneration circuit. During a routine check, a gas leak was detected. On investigation a gas leak was discovered at the downstream side of the non return valve on the dehydration regeneration line. A Lower Explosive Limit (LEL) check was immediately carried out and this confirmed an LEL reading of 60% approximately 10 metres downwind of the leak. This was reported to the Central Control Room (CCR) and Shift Superintendent. A second visit was then carried out with the Shift Superintendent and discovered the leak had ceased due to increased regeneration temperature expanding the pipe work thus stopping the flow.

What went wrong:

Two causal factors were identified in the investigation:

- *Initial change in the design of regeneration. Design changed from controlling the regeneration gas temperature by means of the turbine exhaust bypass, to mixing the hot and cool gas to achieve the desired temperature. The change was made to improve reliability of the bypass mechanism.*
- *Failure in the management of change within project design implementation was a causal factor. The piping modifications to reduce pipe stresses and flange moments were not carried out. Similar issues on other regeneration lines were recognised, but the recommended piping arrangement changes (stress analysis) were not incorporated into the piping isometrics. There was no signoff by the stress engineer on the final piping isometrics and there were no barriers preventing start-up without proper signoff.*

Corrective actions & recommendations:

Key outcomes from the incident included:

- *The need to update management of change process(es) to ensure closeout of design changes should be a part of the project deliverables.*
- *The requirement for a guideline or similar outlining measurable quantities which detail the company expected responses upon the detection of a hydrocarbon gas, to ensure operators undertake the correct and appropriate action.*
- *The need to review the requirement for the installation of line of site gas detectors, CCTV and/or permanent fire monitors around the flanges of the hot regeneration lines based on the residual risk of leaks.*

Australia, Production **Cause: Exposure Noise, Chemical, Biological, Vibration** **Activity: Maintenance, Inspection, Testing**

Following the completion of shutdown repair work on a Fractionation reboiler, the unit was being prepared for return to service. While drying process lines, an incorrect line-up allowed LPG to flow to a flare drum which went into high level alarm (25%). The process line-up was corrected at 60% level, however, the level increased.

What went wrong:

- *Inadequate control of a complicated operational risk.*
- *Incorrect procedure was used in response to the drum level.*
- *Confusion about the approvals required to deviate from procedures.*
- *Incorrect action taken on 25% level in flare drum.*
- *Normalisation of alarm conditions.*
- *Failure to act, communicate and/or escalate alarm conditions.*
- *Inadequate supervision and governance.*

SIGNIFICANT INCIDENT REPORTS BY REGION

Corrective actions & recommendations:

The following are the key lessons learnt from the incident:

- *Experienced personnel can overlook hazards and/or miss warning signs. Be wary of complacency and remain vigilant to warning signs.*
- *Reinforce the importance of conducting a pre-job risk assessment and applying the appropriate level of control for the activity being undertaken. Perceived routine activities may have serious consequences when barriers*

Australia, Production **Cause: Exposure Noise, Chemical, Biological, Vibration** **Activity: Maintenance, Inspection, Testing**

A hand switch was used to shutdown a stripping gas compressor (SGC) for scheduled maintenance. The SGC was being shut down to execute a planned routine water wash on the SGC export compressor. Activation of this switch also tripped the lube oil/seal oil supply pumps. A level valve closed while the level in the seal oil overhead tank (OHT) continued to fall. Subsequently, a 'low low' level trip was activated on the OHT which caused a SGC emergency shutdown. Shutdown valve closed on demand however the package blowdown valve (BDV) failed to open when initiated.

The level in the OHT continued to decline as oil supply was maintained to the primary compressor seals. Oil passing through the seals was returned to the Lube Oil/Seal Oil Reservoir via the low pressure casing drains, driven by pressure from the compressor balance line. Once the entire OHT oil supply had been depleted, a gas blow-by path was created back to the reservoir and ultimately to atmosphere via the reservoir vents. A gas release through the oil tank vents was detected on six gas detectors causing an ESD2. Approximately 12 minutes after the ESD2 had been triggered, the blowdown valve moved from its closed to open limit position.

What went wrong:

- *The lube oil/seal oil supply pumps stopped as initiated by the hand switch, which called for a SGC shutdown without blowdown. If the pumps had not stopped, then the gas would not have found a migration path.*
- *The BDV had recently been replaced. The replacement valve and actuator assembly with an increased factor of safety failed after seven months in service.*

Corrective actions & recommendations:

Key learnings from the incident included:

- *Importance of ensuring that all safety systems (BDVs, SDVs. etc) work as per performance standard or that an approved risk assessment is in place prior to restarting the plant.*
- *The value of a standardised reporting guideline to ensure a standardised approach is used when reviewing the performance of ESD systems prior to system restart.*
- *The requirement for other facilities to check similar shutdown/blowdown philosophy on compressors with wet seals.*
- *The requirement to update Emergency Response Plans to include checks to ensure the root cause of the incident has been identified and acted upon prior to re-starting the package, and to ensure appropriate safety barriers have been put in place to prevent reoccurrence.*

Malaysia, Drilling, **Cause: Struck by** **Activity: Transport - Sea, incl. Marine activity**

A barge had completed the offloading activity at Bay 2 and required vessel shifting to enable the pipe loading activity at Bays 4 & 5. The port provided 2 harbour tugs to assist the shifting process. The IP was located on board the barge, when suddenly the mooring rope at the bollard nearby snapped and hit the IP's right leg. He sustained a fracture of the tibia-fibula.

What went wrong:

- *Misunderstanding of specific instruction between pilot and marine crew on work to be performed which lead to tension of mooring rope*
- *No proper inspection and maintenance procedure in place for mooring rope*
- *No pre-job briefing prior to the vessel mooring and shifting activities*

Corrective actions & recommendations:

- *The port management to incorporate mooring rope inspection and maintenance as part of planned maintenance for vessel/barge*
- *The team to conduct pre-job meeting/briefing prior execution of work*

Thailand, Production **Cause: Other** **Activity: Maintenance, Inspection, Testing**

Severe corrosion of 32" gas export line found underneath passive fire protection. Production was reduced and a temporary repair executed. Permanent repair in 2010.

What went wrong:

- *Corrosion due to ingress of water (rain etc) between concrete PFP and export pipeline.*
- *Difficult to inspect due to presence of PFP.*
- *Cracks in PFP also allowed water ingress.*
- *Inadequate assessment of risks created by application of PFP.*
- *Subsequent inadequate inspection – bot visual external due to PFP and internal.*
- *The line had never been pigged due to operational issues.*

Corrective actions & recommendations:

- *Ensure no new hazards created by modifications.*
- *Ensure proper inspection, even if it is difficult/operationally challenging*

SIGNIFICANT INCIDENT REPORTS BY REGION

Thailand, Production **Cause: Explosion/Burn** **Activity: Unspecified - other**

Catastrophic failure of gas compressor turbine during operation. Significant damage to equipment and enclosure. Reduced gas export potential. No injuries to personnel.

What went wrong:

Probable failure of HPT forward shaft.

Corrective actions & recommendations:

Better liaison and control of vendors work activities.

Europe

Onshore

UK, Production **Cause: Struck by** **Activity: Lifting, Crane, Rigging, Deck operations**

A four-man contractor rigging crew was cross hauling as part of the process for removal of a 1.3 tonne pipe spool, using a combination of fixed and movable chain blocks as well as a crane. The Banksman & Rigger were positioned close to the suspended load.

What went wrong:

- *The risks associated with a complicated lifting activity were not properly identified and mitigated by means of the SVT Control of Work process*
- *The Lift plan was not sufficiently detailed and did not specify a method of slinging the load*

Corrective actions & recommendations:

- *The role of site leadership/supervision in the setting, implementation & enforcement of standards/procedures is critical.*
- *Competence – in addition to adequate training, the ability to recognise/prevent/mitigate hazards*

Offshore

Denmark, Drilling **Cause: Caught In, Under or Between** **Activity: Transport - Sea, incl. Marine activity**

A Drilling Operator employee was disabled in connection with a accident while drilling a well. Four fingers on his left hand were injured and three of the finger tips were amputated.

The accident happened while the lead tug was being disconnected from the main towing bridle and bridle was passed back to the rig. During this operation the injured person got his left hand fingers caught in a sheave for the towing bridle lifting arrangement. Despite the serious injury, he was at end of November reported fit for duty and was able to return to offshore work again.

What went wrong:

DE - The entire arrangement of the handling system is inadequate. Design and engineering are poor.

EC - The noise level next to tugger winch is high, which makes it difficult to communicate on the radio.

OR - Planning of the operation was poor. The task was considered routine and no SJA, TBT were documented.

DF - No barriers in place to prevent access to the wire.

Corrective actions & recommendations:

Conclusion of the Incident report:

It is concluded that the direct cause of the accident is the IP's sudden unsafe action attempting to get the wire clear of an obstruction using his hand. The IP usually works on the rig floor where it is stated to be standard practice to guide wires by hand. The IP did not perform his own risk assessment utilising tools such as the spot check practice. A spot check is likely to have prevented the accident and made the IP conscious of the risk. The IP has 11 years of experience and should be capable of identifying the risk.

It is obvious that the systems to identify risk have not been utilised and documented. In particular where more simultaneous operations are in progress, and personnel from one department, provides resources to another department without having the routine with the activities, the personnel should stop and perform risk assessment. Apart from that the crew had varying concepts of the operation and only the OIM and Barge Engineer were aware that the operation was defined as a special operation where risk assessment etc. is required prior to commencement of the job.

The design of the arrangement enables actions as the one leading to the injury. The wire and snatch block are easily accessible. Gripping the wire represents a major risk of accidents, as the one in question, as the snatch block is located close to the hang off points. The entire hang off arrangement is complex and should be redesigned.

The European and Danish legislation requires assessment of workplaces. In this case, a work place assessment would have identified the inadequacy of the design and initiated preventive action both at the tugger winch area and below the helideck. This could also have highlighted the risk of performing blind operations. The drilling industry has a long record of accidents and fatalities caused by blind operations with a radio as the only link, furthermore, any blind operation carries an inherent delay until the order is transmitted and executed by the winch operator.

In general blind operations are unacceptable and should be avoided.

SIGNIFICANT INCIDENT REPORTS BY REGION

Netherlands, Production **Cause: Falls from Height** **Activity: Lifting, Crane, Rigging, Deck operations**

The injured person was found on the deck next to the tank container. Apparently the injured person had climbed the tank to check the fluid level inside by lifting the lid. His injuries indicated that he had fallen off the tank, a height of approx. 2.2m. He was working alone at the time, there were no witnesses.

What went wrong:

Climbing tank containers was viewed as normal operations. The tank containers even have a ladder built into the protection frame and grating on the top. No special precautions were taken.

Corrective actions & recommendations:

Special procedures to basically forbid climbing tanks. Redesign tank, have level gauge inside frame visible from deck level. Investigate collapsible hand railing for tank container top.

Netherlands, Production **Cause: Struck by** **Activity: Transport - Sea, incl. Marine activity**

While on stand by, close to a platform for attending scaffolding activities, the vessel suddenly drifted and struck a platform leg. As a result of the action of the current, re-direction by choc effects, and crew reaction, the vessel then drifted to an other platform where its superstructures became entangled in scaffolding. As a result there was damage to the scaffolding structure, a number of pieces fell in the sea and onto the vessel deck, as well as damage to vessel superstructures, mast, antenna and radar. Fortunately, the scaffolders had left the area few minutes before.

What went wrong:

- *The vessel was positioned too close to the platform - in a 200 metre exclusion zone.*
- *The current pushed the vessel towards the platform;*
- *The chief officer did not activate the telegraph he was using to resolve the situation, its manoeuvring intentions remained without effect until the captain arrived and regained control of the vessel.*

Corrective actions & recommendations:

- *Allowing vessels to work in a 200 metre safety zone had become normal practice;*
- *The marine operating manual regarding position relative to current and access to platforms area (500 metre and 200 metre safety zone) were not respected;*
- *Failure of crew to establish status of control equipment*
  - *improve knowledge and respect of procedure*
  - *more drills for crew to react in abnormal/downgraded situation*
  - *better coordination between platform staff and vessels crew, involvement in coordination meetings.*

Norway, Drilling **Cause: Struck by** **Activity: Unspecified - other**

A person was hit by a loose cover in the aux landing area. Due to strong wind (approx 40 knots) one end of a cover loosened. The cover, weighing approx 30 kg, got a pendulum movement and brushed against the helmet of the injured person, who was sent onshore due to dizziness.

What went wrong:

A part of the entry door (a design to "cover" the door) to the landing area is not sufficiently resistant to harsh weather conditions, and is not attached well enough to the door, it blew off the door.

Corrective actions & recommendations:

Design changed, both for cover and door. Information transferred to other parties of industry, to avoid similar incidents.

Spain, Unspecified **Cause: Falls from Height** **Activity: Drilling, Workover, Well Services**

During the disassembling phase of the Annular Preventer, the Derrick Services equipment could not release the rubber Packing Unit of the superior cap in spite of having hammered it very insistently with woods. The Derrick supervisor asked to use the crane to put the weight of a Drill Pipe Joint (DP) on the packing unit, and thus be able to release the rubber. The last time the operation was repeated, the hook of the crane opened and the DP fell.

What went wrong:

Our preliminary in-situ investigation concluded that the hook opened because the safety hook system forced it to come free when striking against something (the cable, a curtain ring or the antigiratory one, etc) when the cable was not under tension.

Corrective actions & recommendations:

The cause of this incident is the inadequate use of the hoisting material.

This operation, that implies the total liberation of the tension of the hook, could only have realised with a hook with hidden inner safety system.

UK, Drilling **Cause: Cut, Puncture, Scrape** **Activity: Lifting, Crane, Rigging, Deck operations**

Wireline crew were in the process of rigging down the lubricator as work had finished. The Wireline Crew consisted of a Wireline Winch Operative, a Senior Wireline Operator, a Wireline Assistant and a Platform Crane Operator. At the time of the incident the crew were ready to cut the wire to release the tool so they could wind the wire back on the drum. The Wireline assistant at this point took the decision to cut the wire on his own (at NO time was the operative in the worksite on his own), which as explained is a task completed by them on a regular basis. The process to follow was to grab hold of the wire running to the drum, move the wire close to the deck, place one leg of the wire cutters resting up against the deck and, with the person's free hand, operate the cutters to cut the wire.

At this point in the operation, the wire the Wireline Assistant was holding slipped out of his hand and caught him across the

Significant incident reports by region

face, scratching him on both cheeks and drawing blood. At this point the job was stopped and the Wireline Assistant was sent to the medic to have his injury looked at and cleaned up.

What went wrong:

The immediate causes for the incident are considered to be:

- *Poor level of hazard awareness and intervention - operatives raised the point that it was not uncommon to complete the task of cutting the wire on your own, but is easier and more controlled with two persons.*
- *Poor planning and supervision. Work sites hazards were not adequately identified during the pre-job planning and task risk assessment (which was checked and found to be out of date).*
- *Congestion/restriction at the work site potentially contributed to the injured person's poor work position.*

The organisational factors are considered to be:

- *Poor near miss reporting and follow-up – this was a task that is performed many times by a sole operator and had happened before, but because no injury has occurred it went unreported.*
- *Poor risk and change management – thorough the investigation the accompanying paperwork for the job was checked. All permit to work, toolbox talk and forms were completed. The attached "Generic" risk assessment for the "Rig Up and Down" of Wireline (Fixed Installation) Assessment was checked and found to be out of date. In addition, there was NO reference to the task of "Cutting the Wire" in the generic risk assessment.*
- *Workforce competence/training – a relatively inexperienced operative was assigned to an activity that required either a greater level of experience or supervision.*
- *Contractor management – checking of contractor paperwork and task planning was inadequate.*

Corrective actions & recommendations:

- *The task of cutting the wire needs to be thoroughly assessed and pointing to the need for two persons to complete the task, utilising the correct PPE i.e. Gloves for holding the greasy wire.*
- *It should go out as a safety bulletin to pass onto other companies who are involved in the same operations.*
- *Contractor need to carry out a full review of their "Generic" Risk assessments so that they truly capture the hazards involved with the tasks assessed.*
- *Supervision of all parties involved needed to make sure that, when reviewing paperwork for a task, it is current and in date.*
- *Incident ascertains a requirement to identify persons who may be at particular/greater risk, in this case a relatively inexperienced operative, and to provide closer supervision to those persons.*

UK, Drilling **Cause: Exposure Noise, Chemical, Biological, Vibration** **Activity: Drilling, Workover, Well Services**

The operation was washing in the hole with coiled tubing utilising 9.5ppg brine taking returns to the well test spread surge tank. Due to the fluid level in the left hand surge tank compartment, the well test company's operators intention was to switch to the right hand compartment. They should have opened the right hand valve first and then closed the left hand valve to avoid deadheading the system. However, they closed the left hand valve before opening the right hand valve. This resulted in a system pressure increase and the pressure relief valve lifted discharging brine into the sea via the relief line.

What went wrong:

- *The valve handles supplied were incorrect and a pipe wrench was used. There were also no position indicators. The operator had been distracted and when returned had forgotten the valve position*
- *The ESD system had been modified offshore and was incorrectly set up. It would not have operated on loss of air supply or a damaged return line. It was also in the horizontal and not vertical plane. The small needle valve had likely blocked with sand, preventing the hi pilot ESD to operate.*
- *The PSV had been installed incorrectly in the horizontal allowing it to trap sand and thus stick, operating at a higher than set pressure. The PSV lifted at 1600psi and then 2200psi and was set to lift at 1100psi. Operators had never been trained on how to install a PSV correctly.*
- *The incorrect drawing had been used at the job planning stages - the drawings did not reflect the 'as built' status.*

Corrective actions & recommendations:

- *Pre-job risk assessment needs to address all interfaces between both equipment and contractors.*
- *Changes to safety critical systems must follow the established change control process which includes risk assessment and formal written approval.*
- *The process safety integrity of well test equipment requires to be demonstrated by the service company then verified and formally accepted by the operating company prior to the introduction of well fluids. Acceptance requires that all protective devices are correctly installed, calibrated and certified and that all layers of protection have been successfully function tested.*
- *Crew competency requires to be reviewed prior to personnel travelling to site.*
- *Review of management of valve handles & position indication*
- *Revision of surge tank procedures*
- *Revision of PSV installation procedures*
- *Revision of ESD operating procedures*
- *New ESD verification checklist*
- *Revised block valve (ball) arrangement for pilots*
- *Revised risk assessment*
- *Client interface questionnaire*

SIGNIFICANT INCIDENT REPORTS BY REGION

FSU

Offshore

Turkmenistan, Drilling **Cause: Caught In, Under or Between** **Activity: Transport - Sea, incl. Marine activity**

The IP was trying to perform personnel transfer to an installation barge from a tug boat by jumping towards the monkey ladder at the barge when suddenly his left leg was caught in between the boat landing pole and the tug boat fender. He was the first person to jump out of 4 personnel to the transfer boat to connect the mooring line.

What went wrong:

- *Improper way of personnel transfer which is not using transfer basket*
- *Mismatch of vessel and boat landing where boat landing of the barge is meant for fast rescue craft and*

Corrective actions & recommendations:

- *Develop a comprehensive procedure for boat landing inclusive of different types of vessel and transferring method*
- *To have dedicated personnel to supervise and guide during transferring process*

Middle East

Onshore

Kuwait, Drilling **Cause: Other** **Activity: Drilling, Workover, Well Services**

Crude Oil Leak occurred when a grader belonging to a contractor hit the wellhead accidentally during a preparatory job (grading work) for Rig movement.

What went wrong:

- *Lack of Supervision, Lack of knowledge and training to the contractor employees about the risks and hazards involved in the activities being carried out.*
- *Non implementation of Work Permit System.*
- *Improper Handing over of the job*

Corrective actions & recommendations:

- *Strict supervision is required while working in the critical and hazardous areas where risk factor is high.*
- *Contractor employees need to be trained on the Hazards and Risks involved in their area of work, Job Safety Analysis, and Work permit System.*
- *Proper handing over is required while Oil Wells are being handed over for Drilling and Workover operations.*

Kuwait, Production **Cause: Other** **Activity: Maintenance, Inspection, Testing**

During the maintenance of a 36" pipe line, the line was partially drained. A employee opened the drain valve and found no flow. He then tried to flush/clean the elbow just to make sure that nothing was inside the pipe. All of a sudden a strong flow came out from the elbow and caused an overflow of Crude Oil.

What went wrong:

Improper implementation of Work Permit System. No Job Safety Analysis. Lack of Training on Hazards and Risks involved in the activities being carried out.

Corrective actions & recommendations:

Strict enforcement of Work Permit System and Job Safety Analysis, Training on Hazards Identification and Risks involved to the employees who are dealing with the activities.

UAE, Drilling **Cause: Other** **Activity: Transport – Air**

Helicopter tail swinging too close to bow leg of the rig during a lifting off.

What went wrong:

Lack of pilot skill and not familiar with the location.

Corrective actions & recommendations:

- *After this incident it has been decided to maintain proper time management to avoid unnecessary delay.*
- *Helicopter marshalling procedure has to be followed to avoid this in future and the aviation company has been instructed to give proper information to the new pilot.*

UAE, Drilling **Cause: Struck by** **Activity: Drilling, Workover, Well Services**

A floorman was attempting to secure a shackle hanging from injection manifold at 7 feet height from the rig floor. He escalated power tong to reach the shackle and rested his left hand on the tong rotary and right hand at the other end of the tong which accidentally rested on the operating part of the tong, injuring his left hand finger. He was taken to the Hospital for further treatment/observation.

Significant incident reports by region

What went wrong:
- *Communication*
- *Management/Supervision/Employee Leadership*

Corrective actions & recommendations:
- *Ensure proper procedures are followed*
- *Awareness on safe hand placement*
- *Proper training regarding HAZID on rig floor*
- *Man riding should be used for working at height on rig floor PTW*
- *Revise pre job safety meeting for that specific operation*
- *Enhance communication between Company and Contractor tong operator and awareness on rig floor*
- *Ensure good supervision while performing jobs*
- *Empower the crew to stop the work if unsafe*
- *Team work spirit have to be established (no one work alone during any job)*
- *Contractor to write and implement a procedure with regards to tong operations (switch on and off)*
- *Disciplinary action*
- *Ensure good planning is done before any job.*

UAE, Drilling **Cause: Slips and Trips (at same height)** **Activity: Drilling, Workover, Well Services**

While going to load a 4" pipe joint, from a tool box to the rig floor, the assistant driller was riding on the left side of the forklift and a roustabout was on the right side. On their way to the box, suddenly the roustabout fell down on the ground and complained of pain to his back. He was moved to the hospital for further treatment.

What went wrong:
- *Work Planning,*
- *Inadequate enforcement of PSP.*

Corrective actions & recommendations:
- *Restrict working at night to areas with appropriate lighting & visibility*
- *Provide adequate illumination for all tool bins*
- *Ensure proper planning for the coming jobs involving use of forklift*
- *Ensure safe position of workers and avoid any blind corner when working around civil equipment*
- *Coach ADs to ensure they are familiar with rig drilling equipments*
- *Keep all tool bins near by the rig*
- *Advise all crew during safety meeting regarding the prohibition of riding on civil equipment*
- *Observe job supervisor to ensure they are leading by example and not violating GSR, apply disciplinary actions against intentional violators*
- *Carry out a drill for ambulance and helicopter as a part of a rig acceptance and maintain a record for the same*
- *Review emergency response from RAMS to ensure prompt response to rigs emergency calls.*

UAE, Production **Cause: Explosion/Burn** **Activity: Office, Warehouse, Accommodation, Catering**

While a contractor was trying to ignite portable gas oven, a fire-ball came out from the oven resulting in first and second degree burns (face and hand). He was transferred to the hospital for treatment and later discharged.

What went wrong:

Skill Level

Corrective actions & recommendations:
- *Always use standard, branded kitchen appliances, preferably electrically operated.*
- *Always deploy experienced & skilled staff.*

UAE, Production **Cause: Struck by** **Activity: Transport – Land**

Sulphur truck overturned injuring driver.

What went wrong:

Lack of driver concentration.

Corrective actions & recommendations:

Driver behaviour inadequate. Driver to undergo retraining.

UAE, Production **Cause: Struck by** **Activity: Construction, (de)commissioning**

While the contractor's bulldozer was collecting sand from a manually excavated site, it failed to stop and hit two labourers of sand crew. One of the labourers sustained multiple fractures and the second labourer escaped with minor injuries. Both labourers received the first Aid at the clinic and then transferred to hospital for further evaluation. One labourer with multiple fractures was admitted to the hospital for treatment and the second labourer was discharged.

What went wrong:
- *Skill Level*
- *Work Rules/Policies/Standards/Procedures (PSP)*
- *Management/Supervision/Employee Leadership*

SIGNIFICANT INCIDENT REPORTS BY REGION

Corrective actions & recommendations:

- *Use proper/suitable equipment for the specific job.*
- *Always follow PTW rules and strictly adhere to the procedures.*
- *Always ensure competence of assigned employee for the task.*

UAE, Unspecified **Cause: Other** **Activity: Transport - Land**

The transport pool driver (the contractor) left Abu Dhabi with passengers for to the rig. Once he dropped the passengers, he left the Rig back to specific area, he lost control of the vehicle and the vehicle rolled over. He was taken to the clinic and then transferred to the Hospital.

What went wrong:

Work Rules/Policies/Standards/Procedures (PSP)

Corrective actions & recommendations:

- *Contract administrators to ensure that pre-employment and in-service medical checks are carried regularly and results are sent to occupational heath physician.*
- *Occupational heath physician to assess fitness to work and communicate assessment to the contract administrators.*
- *Contract administrator and transport supervisors to ensure that professional drivers are medically declared fit before their assignments.*

Yemen, Drilling **Cause: Falls from Height** **Activity: Unspecified – other**

A contractor was collecting cuttings samples from the shale shakers. He proceeded to walk down the stairway from the shakers carrying three sample bags. While approaching the bottom of the stairs he fell, landing on the ground. He sustained a head injury and loss of consciousness for a brief period.

What went wrong:

- *The contractor did not take sufficient care and attention when walking down the steps. In doing so his foot was not placed correctly on the step where it then came off the step causing him to fall to the ground.*
- *The contractor was a trainee on his first ever employment and had no one directly advising and guiding him in the hazards of an oil rig.*
- *Site Safety Induction does not cover the requirements for walking up and down stairways.*

Corrective actions & recommendations:

- *The contractor to be formally instructed in the procedure for walking up and down stairs in a safe manner.*
- *Assign all new-to-rig site operators an experienced "Workplace Safety Buddy" who will mentor and guide the new operators in safe working practices for a 2 week period.*
- *Determine all those who are new to oil rig sites at arrival induction.*
- *Those personnel who are new to a rig site are to wear a bright coloured helmet for the first 4 weeks of their time on site.*
- *Site Safety Induction to cover the requirements for safe walking up and down stairways with and without carrying materials*

Yemen, Drilling **Cause: Other** **Activity: Transport – Land**

A 4wd car was travelling eastwards when it had a puncture in one tire after passing a bend. The driver lost control of the vehicle and as a result the vehicle left the road and rolled.

What went wrong:

Driver had been sick and bedded down by the doctor for 5 days. He was en-route to visit his mother on his first day back on duty.

Corrective actions & recommendations:

- *Drivers must attend onsite monthly driver revision training sessions.*
- *Driver to receive and successfully pass four Check Ride Assessments and must be accompanied by a licensed driver at all times for the period of two full working months when driving.*
- *Review current land transport procedures concerning using company vehicles for personal use.*
- *The Driver Check Ride Assessment Process to be implemented on the project area on a monthly basis for all project drivers. Each Project driver is to have a Check Ride Assessment.*
- *No travel is allowed without notice to the appropriate personnel and compliance with the Travel and transport procedures.*

Offshore

UAE, Drilling **Cause: Caught In, Under or Between** **Activity: Drilling, Workover, Well Services**

While moving 5 1/2" drill pipes from pipe rack on the main deck, one drill pipe became unbalanced and rolled towards the Assistant Driller, causing his leg to be caught between two drill pipes. He sustained an open wound.

What went wrong:

- *Wrong positioning – the Assistant Driller was standing in the line of fire*
- *Wrong materials used - the wood chock was short causing the pipe to roll.*

Corrective actions & recommendations:

- *Safety talks and tool box talks tackled the issue of correct positioning*
- *All wood chocks and packing materials were inspected and wrong materials replaced*

Significant incident reports by region

UAE, Drilling **Cause: Other** **Activity: Maintenance, Inspection, Testing**

Leaky seal of Blow out preventer actuator in a coiled tubing was found during the blow out preventer test.

What went wrong:

Poor work design, layout and lack of knowledge.

Corrective actions & recommendations:

Follow the Operational control procedures and testing procedures.

UAE, Production **Cause: Exposure Noise, Chemical, Biological, Vibration** **Activity: Maintenance, Inspection, Testing**

Gas leak at sour gas dehydrator scrubber drain line.

What went wrong:

Corroded pipe joints due to lack of maintenance and supervision.

Corrective actions & recommendations:

Frequent inspections on all high pressure drain lines through NDT testing.

UAE, Production **Cause: Struck by** **Activity: Unspecified – other**

Flare drum drain line level control valve stuck in open position , hence gas containing H_2S was passing out from downstream line

What went wrong:

Due to inadequate maintenance , wear and tear.

Corrective actions & recommendations:

- *Preventive maintenance on instruments to be carried out.*
- *Float chamber level gas connection pipes to be flushed with water once in a month.*
- *LCV movement to be checked once in a month*
- *Increase vigilance during patrolling*

UAE, Production **Cause: Caught In, Under or Between** **Activity: Drilling, Workover, Well Services**

While the Rig Mechanic was removing tools from a steel locker the entire locker tilted towards him. He stepped back to try and get clear of the falling locker but his left foot was caught between the top edge of the locker and the floor. This resulted in swelling and multiple fractures of the bones in his left foot.

What went wrong:

Locker not installed and secured correctly. Improper placement of tools. Lack of awareness and position for the task.

Corrective actions & recommendations:

- *Ensure that tools and equipment are fitted and stored properly.*
- *Locker correctly installed and secured by welding.*
- *Equipment relocated.*
- *Awareness given to workforce at safety talks and meetings.*

UAE, Production **Cause: Exposure Electrical** **Activity: Maintenance, Inspection, Testing**

A short Circuit Flash incident took place on 3.3KV switchboard-6A, inside a substation due to Flash over. Three Personnel suffered partial burn injuries (2^{nd} and 3^{rd} degree burns) while carrying out the routine maintenance on a switchgear (Motor starter for the Propane Loading Pump Motor).

What went wrong:

While removing a protection plate of the Bus Bar for 3.3 KV suddenly an electrical flash occurred most probably due to the Plate touching a live bus bars. The main root causes for this accident can be summarized as:

- *Employee ignored the warning signs*
- *Hazard was inadequately identified*
- *Employees who were conducting this maintenance work were not competent for working with 3.3kv bus Bars*
- *Lack of proper and adequate authorization for the job.*

Corrective actions & recommendations:

- *Close supervision for this type of activity, PTW required even if it is only for a minor check and only personnel certified for the maintenance of High voltage Bus Bar should authorized to conduct maintenance work.*
- *It is recommended to train the concerned employees to be certified as high voltage maintenance personnel, to provide the correct electrical PPE, to review and amend as necessary the standing instruction for the maintenance of these type of bus bar and substation*
- *Review the design of these bus bar arrangements*
- *Review similar substation to verify the correct wiring arrangements during bus bar outages and to replace the bus bar system for this particular substation.*

Yemen, Construction **Cause: Exposure Electrical** **Activity: Office, Warehouse, Accommodation, Catering**

On 18 July 2009 a High Potential Near Miss incident occurred in a company villa which could have resulted in a fatality. An electric shock to the right arm was received by the resident from the cold water tap in the villa kitchen. An immediate initial

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investigation by an electrician revealed that all the villa's water system-associated pipes and taps were live. No electrical system safety devices had operated. Further investigation revealed that a roof water pressure pump had overheated and caused melting of an internal capacitor. This had consequently made contact with the pump chassis which had then transferred current into the steel water pipes and associated equipment throughout the house. Physical contact with the kitchen cold water tap had been just the lightest of touches. Had the resident got hold of the tap, the outcome could have been very different. In addition to establishing the failure of the water pump in question, the electrician found that the three water pumps comprising the system as a whole were not wired through the main property electrical system but through an external supply with no earthing and no circuit breaker protection.

What went wrong:

- *Inadequate electrical protection fitted.*
- *Inadequate maintenance of the electrical system.*
- *Inadequate earthing and no earth leakage protection.*

Corrective actions & recommendations:

Electrical safety audit of all villas against a good international standard such as the IET Wiring Regulations (17th edition) with specific emphasis on:

- *earthing integrity*
- *wiring integrity*
- *overcurrent protection*
- *residual current protection*
- *earth leakage protection*

Yemen, Construction **Cause: Struck by** **Activity: Construction, (de)commissioning**

At about 14:45 on the North side of a compressor on ground level an air-blowing pre-commissioning activity was ongoing. The pressure released from the 10" (inch) diameter pipe blast blew off an empty cable drum (around 2m diameter and 50 kg) located at about 5m in front of the pipe. The "projectile" rolled on a distance of 15 meters and hit a passer-by (contractor) on the back of his lower left leg. He received a big shock and fell down on the paved ground floor. He was stabilized by the medical team before to be taken to the site clinic.

The victim underwent an X-ray (negative result, no fractures) and a Voltaren injection. He returned to work the next day in the morning.

What went wrong:

- *Inadequate Risk Assessment issued for this activity.*
- *Inadequate implementation of the risk assessment findings*
- *Barriers must be installed, correct signage should be provided, proper public announcement , etc.*

Corrective actions & recommendations:

- *Need improved control of Subcontractor to respect the Risk Assessment issued for this activity.*
- *The subcontractor must implement the risk assessment submitted and carried out the job as per risk assessment: Barriers must be installed, signage, public announcement , etc.*
- *CTA need to submitted, Recommendations need to be monitored and control by the company*
- *Need to submit the medical report and medical certificate for the patient if he is deemed to work in normal duty*
- *The subcontractor needs to issue an incident report in a timely manner*

North America

Onshore

Canada, Production **Cause: Other** **Activity: Maintenance, Inspection, Testing**

Horse head and walking beam fell off and hit ground, striking wellhead and flow line piping.

What went wrong:

Bridle cable/horse head misalignment. Bridle cable caught side of horse head applying sideways torque on head causing separation from the walking beam.

Corrective actions & recommendations:

Weekly inspection of alignment to be documented on operator checklist. Pump jack awareness training for operators.

USA, Construction **Cause: Struck by** **Activity: Lifting, Crane, Rigging, Deck operations**

Contractor LWDC - A short service employee (SSE) contract forklift operator was driving to a location to remove an adapter from his forks. The forklift operator was accompanied by a spotter. A sling hanging from the forks was swinging. Rather than focusing on the location of the spotter, the operator focused his attention on the swinging sling. The spotter stepped in front of the forklift to control the sling. The spotter was struck by the front left tyre, and his ankles and feet were seriously injured. The spotter was treated on site, and medivaced to a nearby hospital.

What went wrong:

- *Inadequate Risk Assessment: Keeping spotter in line of sight not identified as a hazard. Spotter being aware of*

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surroundings not identified.
- *Spotter and operator did not maintain line of sight.*
- *Contractor field supervisors did not ensure that their workers fully understood Permit to Work /Safe Work Practice Requirements: – they did not identify risk mitigation actions nor get a permit signed before beginning work.*
- *Contractor field supervisors did not have documentation of the forklift operator's prior experience; he should have been considered an SSE, requiring a mentor & identification.*
- *Contractor field supervisors did not follow their own forklift operator certification process - they did not visually observe the operator's abilities prior to his beginning work.*

Corrective actions & recommendations:
- *Completion of the Permit to Work and Job Safety Analysis is imperative to ensure proper understanding of Hazards and Safeguards before allowing work to start.*
- *Contractor's compliance with Contractor Safety Management (CSM) Processes is necessary to help contractors comply with the requirements.*
  - *SSE Programs*
  - *Equipment operator certification & other training requirements*
  - *Deployment of Managing Safe Work Processes*
- *CSM audits need to be expanded to include local offices and shops. This will help ensure that Company expectations are understood at the field level, as well as at the contractor management level.*

USA, Production **Cause: Other** **Activity: Maintenance, Inspection, Testing**

Operators and contractors isolated and began draining the FWKO to enable repairs. The vessel collapsed as it was being drained.

What went wrong:

Check valve and nipple were used as makeshift vacuum prevention devices. Check valve used to prevent vacuum failed to open. Vacuum protection was makeshift and gauge was not installed in vapour space of vessel. No procedure available for the task.

Corrective actions & recommendations:
- *Address FWKO design to address appropriate vacuum relief and to evaluate appropriate service application for the pressure gauge.*
- *Develop step by step procedure for FWKO drainage.*

USA, Production **Cause: Struck by** **Activity: Construction, (de)commissioning**

While preparing a pad location, a front end loader inadvertently struck and severed the wellhead causing an uncontrolled release of natural gas.

What went wrong:
- *Equipment operator drove the front-end loader with the bucket elevated, causing a collision with the wellhead.*
- *Barrier material was available, but was not installed.*

Corrective actions & recommendations:
- *Install barriers around wellheads and process equipment prior to motorized construction activity.*

Offshore

USA, Drilling **Cause: Falls from Height** **Activity: Drilling, Workover, Well Services**

A drillship was laying out 13-3/8" casing onto the Forward Pipe Catwalk during drilling operations. A joint of casing was remotely landed on the mobile bucket using the tubular handling facility. The retaining arm was released and the operator then retracted the luffing arm. He then activated the roller park facility before the luffing arm was fully retracted, which resulted in the luffing arm moving upwards. The steel rod on the side of the luffing arm glanced the casing enough to push it out of the bucket and over the side of the catwalk. The casing joint swung uncontrolled towards the well centre.

The Injured Party (IP), whose job was to fit protectors on to sections of pipe, was standing next to the extended catwalk between the casing and the well centre. The casing came into contatct with the IP as he was trying to escape causing him to fall over the Iron Roughneck rail on the deck. The IP sustained multiple fractures to his left foot.

What went wrong:
- *The contract operator did not allow the luffing arm to fully retract before initiating the luffing-up action.*
- *The IP was positioned in a place of danger and he did not recognize the potential for the casing to be ejected by the roller.*
- *The contractor did not develop a formal training program for this equipment/task.*

Corrective actions & recommendations:
- *The contract IP should have performed his job while standing in a less hazardous area.*
- *The contractor's written risk assessment (both for task and equipment) did not provide sufficient detail. Simply warning personnel to stay out of the red zone did not address other potential hazards where much of the work activity took place.*
- *Contractor's incident investigation determined that the equipment manufacturer should be contacted to determine if adequate physical barriers and mechanical interlocks can be installed to prevent the casing from being ejected so readily, as well as, to ensure that each action must be completed before permitting the next sequence of activities to commence.*

SIGNIFICANT INCIDENT REPORTS BY REGION

USA, Production **Cause: Other** **Activity: Transport – Air**

During a helicopter approach for landing, an unsecured 4' x 8' sheet of 5/8" plywood weighing 65 lbs was lifted approximately 20' to 25' from a tote tank storage area by rotor wash. The plywood landed approximately 15' northwest from the original location onto the side of an elevated walkway. No employees were working in or near the impacted area at the time of the incident.

What went wrong:

- *The investigation team determined that concentrated rotor wash forces through a Rig Support Module staging area (currently used for tote tank storage) created enough force to lift the 65 lb. sheet of plywood 25' feet into the air resulting in a dropped object event.*
- *The unsecured plywood had been used as a solid flooring surface during a recent Turn Around (TAR) and was recognized as a possible tripping hazard. In its original location and orientation, it was not recognized as a potential dropped object hazard that would arise from concentrated rotor wash forces.*

Corrective actions & recommendations:

- *Designate and mark a "Rotor Wash Awareness Zone" (RWAZ) area that is susceptible to excessive rotor wash forces during helicopter approaches and landings.*
- *Include RWAZ designation in ISSOW system and during morning work planning, identify RWAZ activities and assure individuals working within this area comply with hazard identification and securing of materials appropriate for rotor wash impact.*
- *Leadership conduct daily RWAZ sweeps.*
- *Provide training on potential hazards and work expectations within the RWAZ.*
- *Aviation and engineering should be consulted to confirm whether any existing wind model studies can be updated to qualitatively assess the potential impacts of any structural modifications (additions) to the quarters on rotor wash patterns or concentrations and on landings/takeoffs.*

USA, Production **Cause: Falls from Height** **Activity: Maintenance, Inspection, Testing**

While carrying out a dynamic load test of a lifeboat's release gear, a master link connecting the aft fall wire to the boat's release hook assembly failed. The dynamic weight of the lifeboat was transferred to the forward fall wire overloading it to failure causing the boat to drop over 90 feet into the sea. The released energy caused the cantilevered deck and davit to bounce violently. The contractor standing on top of the davit operating the winch brake grabbed onto an adjacent section of handrail to keep from falling overboard.

What went wrong:

- *The life boat falls were changed from original equipment manufacturer (OEM) to a Non-OEM vendor without formal risk assessment or management of change (MOC) process.*
- *Defective master links were supplied to the facility.*
- *Persons placing the material requisition and changing the equipment supplier did not fully recognize that the action would create a change in technical specifications and hence the need for an MOC.*
- *The requisition, procurement and manufacturing process associated with the master links was deficient, resulting in defective master links of a differing specification being delivered to the facility.*
- *Handrails located on the upper section of the lifeboat davit were unsecured.*

Corrective actions & recommendations:

- *A formal MOC should be used where a replacement In kind (RIK) application cannot be positively confirmed. RIK is defined as a replacement that satisfies the original design specification and includes changes that confirm use of the same size, material, style, type, range, chemicals, controls, operations and procedures.*
- *Standard maintenance and inspection practices should be established for lifeboat and FRC equipment and all components of lifesaving equipment should be classified as safety critical equipment.*
- *A formal assessment of QA/QC processes being implemented by a supplier for safety critical equipment should be adopted. All necessary certification and QA/QC should be confirmed before equipment is put into service.*
- *The use of safety pendants between the lifeboat hook and fall wire Flemish eye to be adopted for load testing of the lifeboat.*

South America

Onshore

Colombia, Construction **Cause: Caught In, Under or Between** **Activity: Construction, (de)commissioning**

The worker was installing a support to prevent land falls in a dig hole for a concrete base construction. Suddenly one of the planks used for the support fell down and caught the left hand of the worker on his wrist. The Emergency Plan was applied immediately. Because of the severity of the injury, the worker was driven to the nearest Hospital looking for specialized care. As a consequence of the incident the worker lost his left hand.

What went wrong:

Difficulty in determining the risk.

Significant incident reports by region

Corrective actions & recommendations:

- *Include this risk in the Safety analysis for that kind of work and in civil work training.*
- *Update and share the procedure for referenced work to avoid incident repetition.*

Guatemala, Production **Cause: Falls from Height** **Activity: Maintenance, Inspection, Testing**

During maintenance activities inside of a crude storage tank (sand blasting/painting) a contractor was seriously injured after the scaffolding collapsed. Back injury, possible permanent incapacity.

What went wrong:

- *Poor risk assessment of hazardous activities, inadequate scaffolding design.*
- *Scaffolding unstable if not tied/secured to tank structure.*
- *Working at height with life line not attached to fixed structure.*

Corrective actions & recommendations:

- *Review process of contractor evaluation and selection.*
- *Produce scaffolding verification Check List to verify compliance with industry standards.*
- *Ensure sufficient supervision of contracted work at facility.*

Offshore

Brazil, Drilling **Cause: Caught In, Under or Between** **Activity: Lifting, Crane, Rigging, Deck operations**

The activity was to take the hoses from the Shakers and Sacks store area and store them in the Metal Box Container on the main deck. The IP was caught between the cover lid and the edge of the box suffering First Aid injuries. The IP put himself with his upper half of the body inside the box and the other half outside.

What went wrong:

- *There was a failure in the planning and identification of all the risks associated with the task. A piece of pipe was used to hold the cover lid instead of a proper support.*
- *The cover lid of the box doesn't have a Handle support inside of the box to keep it half open.*

Corrective actions & recommendations:

- *- Any open metal box container should be evaluated and inspected before opened.*
- *- The two individuals involved in the accident were advised about that and the importance of to communicate the incident immediately.*

Trinidad & Tobago, Production **Cause: Struck by** **Activity: Lifting, Crane, Rigging, Deck operations**

At approximately 10:20hrs on October 21st 2009, while transferring a high pressure water pump, from the western side of the separator deck to the supply vessel, the pump came in contact with a railing. This caused it to become dislodged and fall into the sea. No one was hurt during the incident.

What went wrong:

Immediate cause (s):

- *High pressure water pump contacting railing;*
- *Deviation from standard control of work procedure/practice.*

Underlying root causes:

- *Inadequate communication of standards;*
- *Inadequate maintenance of standards and procedures ;*
- *Inadequate task analysis;*
- *No relevant task observation done.*

Corrective actions & recommendations:

- *Railings to be bolted to platform and not slotted in.*
- *Ensure all mandatory necessary procedures and practices followed.*
- *Ensure lifts are not placed too close to railings.*

Appendix E
Glossary of terms

Accident severity
The average number of lost days per lost workday case.

Caught between
Injury where injured person is crushed or similarly injured between machinery moving parts or other objects, caught between rolling tubulars or objects being moved, crushed between a ship and a dock, or like incidents.

Company employee
Any person employed by and on the payroll of the reporting Company, including corporate and management personnel specifically involved in exploration and production. Persons employed under short-service contracts are included as Company employees provided they are paid directly by the Company.

Construction
All construction and fabrication activities and also disassembly, removal and disposal (decommissioning) at the end of the facility life. Construction of process plant, fabrication yard construction of structures, offshore installation, hook-up and commissioning, and removal or redundant process facilities are all included.

Contractor
A 'Contractor' is defined as an individual or organisation performing work for the reporting company, following verbal or written agreement. 'Sub-contractor' is synonymous with 'Contractor'.

Contractor employee
Any person employed by a Contractor or Contractor's Sub-Contractor(s) who is directly involved in execution of prescribed work under a contract with the reporting Company.

Drilling
All exploration, appraisal and production drilling and workover as well as their administrative, engineering, construction, materials supply and transportation aspects. It includes site preparation, rigging up and down and restoration of the drilling site upon work completion. Drilling includes ALL exploration, appraisal and production drilling.

Exploration
Geophysical, seismographic and geological operations, including their administrative and engineering aspects, construction, maintenance, materials supply, and transportation of personnel and equipment; excludes drilling.

Explosion or burn
Incident caused by burns, toxic gases, asphyxiation or other effects of fires and explosions. 'Explosion' means a rapid combustion, not an overpressure.

Fall from height
Incident caused by falling off, over or onto something.

Fatal accident rate (FAR)
The number of company/contractor fatalities per 100,000,000 (100 million) hours worked.

Fatal incident rate (FIR)
The number of fatal incidents per 100,000,000 (100 million) hours.

Note: 3rd party fatalities were included until 2005

First aid case
Cases that are not sufficiently serious to be reported as medical treatment or more serious cases but nevertheless require minor first aid treatment, eg. dressing on a minor cut, removal of a splinter from a finger. First aid cases are not recordable incidents.

Hours worked
The actual 'hours worked' are recorded in the case of onshore operations. For offshore workers, the 'hours worked' are calculated on a 12 hours workday. Consequently average hours worked per year will vary from 1600 to 2300 hours/person (averaging 2000) depending upon the shift on/off ratio. Vacations and leaves are excluded.

Hours worked in year (000's)
Hours are rounded to the nearest thousand.

Key Performance Indicators (KPI)
In this report, these include: number of fatalities, fatal accident and incident rates, lost time injury frequency, restricted work day case + lost time injury frequency and total recordable injury rate.

Lost time injury (LTI)
A fatality or lost workday case. The number of LTIs is the sum of fatalities and lost workday cases.

Lost time injury frequency (LTIF)
The number of lost time injuries (fatalities + lost workday cases) incidents per 1,000,000 hours worked.

Lost workday case (LWDC)
Any work related injury other than a fatal injury which results in a person being unfit for work on any day after the day of occurrence of the occupational injury. "Any day" includes rest days, weekend days, leave days, public holidays or days after ceasing employment.

Medical cause of death
This is the cause of death given on the death certificate. Where two types of causes are provided, such as "pulmonary oedema" caused by "inhalation of hot gases from a fire", both are recorded.

Medical treatment case (MTC)
Cases that are not severe enough to be reported as fatalities or lost work day cases or restricted work day cases but are more severe than requiring simple first aid treatment.

Number of days unfit for work

The sum total of calendar days (consecutive or otherwise) after the days of the occupational injuries on which the employees involved were unfit for work and did not work.

Number of employees

Average number of full-time and part-time employees involved in exploration & production, calculated on a full-time basis, during the reporting year.

Number of fatalities

The total number of Company's employees and or Contractor's employees who died as a result of an incident. 'Delayed' deaths that occur after the incident are included if the deaths were a direct result of the incident. For example, if a fire killed one person outright, and a second died three weeks later from lung damage caused by the fire, both are reported.

Occupational injury

Any injury such as a cut, fracture, sprain, amputation, *etc* which results from a work-related activity or from an exposure involving a single incident in the work environment, such as deafness from explosion, one-time chemical exposure, back disorder from a slip/trip, insect or snake bite.

Offshore work

All activities and operations that take place at sea, including activities in bays, in major inland seas such as the Caspian Sea, or in other inland seas directly connected to oceans. Incidents including transportation of people and equipment from shore to the offshore location, either by vessel or helicopter, should be recorded as 'offshore'.

Onshore work

All activities and operations that take place within a landmass, including those on swamps, rivers and lakes. Land-toland aircraft operations are counted as onshore, even though flights are over water.

Other (as a category of work)

Major construction and fabrication activities and disassembly, removal and disposal (decommissioning) at the end of the life of a facility. Includes factory construction of process plant, offshore installation, hook-up and commissioning, and removal of redundant facilities. Also includes personnel and incidents that cannot naturally be assigned to exploration, drilling construction or production.

Note: *the function 'other' was replaced by 'construction' for the first time in 2006.*

Production

Petroleum and natural gas production operations, including administrative and engineering aspects, repairs, maintenance and servicing, materials supply and transportation of personnel and equipment. It covers all mainstream production operations including:

- wireline
- oil (including condensates) and gas extraction and separation (primary production)
- heavy oil production where it is inseperable from upstream (*ie* stream assisted gravity drainage) production
- primary oil processing (water separation, stabilisation)
- primary gas processing (dehydration, liquids separation, sweetening, CO_2 removal)
- Floating Storage Units (FSUs)
- gas processing activities with the primary intent of producing gas liquids for sale
  - secondary liquid separation (*ie* Natural Gas Liquids [NGL] extraction using refrigeration processing)
  - Liquefied Natural Gas (LNG) and Gas to Liquids (GTL) operations

Excluded are:

- production drilling or workover
- mining processes associated with the extraction of heavy oil tar sands
- heavy oil when seperable from upstream operations
- secondary heavy oil processing (upgrader)
- refineries.

Restricted workday case (RWDC)

Any work-related injury other than a fatality or lost work day case which results in a person being unfit for full performance of the regular job on any day after the occupational injury. Work performed might be:

- an assignment to a temporary job;
- part-time work at the regular job;
- working full-time in the regular job but not performing all the usual duties of the job

Where no meaningful restricted work is being performed, the incident is recorded as a lost workday case (LWDC).

Struck by

Incidents where injury results from being hit by moving equipment and machinery, or by flying or falling objects.

Total recordable injury rate (TRIR)

The number of recordable injuries (fatalities + lost workday cases + restricted workday cases + medical treatment cases) per 1,000,000 hours worked.

Land transport/vehicle incident

Incidents involving motorised vehicles designed for transporting people and goods over land, *eg* cars, buses, trucks. Pedestrians struck by a vehicle are classified as vehicle incidents. Fatal incidents from a mobile crane would only be vehicle incidents if the crane were being moved between locations.

Water related

Incidents in which water played a significant role.

Work-related injury

See occupational injury.

Appendix F
Contributing companies

The table below shows the size of the database in thousands of hours worked for each contributing company and whether reported data includes information on contractor statistics, breakdown by function, medical treatment cases, restricted workday cases, and days lost following lost workday and restricted workday cases. All company submissions include data on numbers of fatalities and lost workday cases.

Company	Hours ('000)	Contractor data	Data by function	MTCs	RWDCs	LWDC days	RWDC days
ADNOC	163,752	yes	mostly	yes	yes	yes	yes
BG	77,615	yes	mostly	yes	yes	yes	yes
BHP	9,705	yes	mostly	yes	yes	yes	yes
BP	164,361	yes	mostly	yes	yes	no	no
Cairn Energy	70,041	yes	mostly	partly	mostly	mostly	no
Chevron	354,296	yes	no	yes	yes	yes	yes
CNOOC	82,345	yes	mostly	yes	no	yes	no
ConocoPhillips	92,569	yes	no	yes	yes	no	no
Dolphin Energy	12,802	yes	yes	yes	yes	yes	yes
DONG Energy	1,854	yes	no	yes	yes	yes	yes
Eni	162,804	yes	mostly	yes	yes	yes	no
ExxonMobil	147,016	yes	mostly	yes	yes	no	no
GDF Suez	4,769	yes	mostly	mostly	mostly	mostly	mostly
Hess Corporation	25,288	yes	mostly	yes	yes	yes	yes
Hocol	8,969	yes	mostly	partly	partly	partly	partly
INPEX	3,261	yes	mostly	yes	yes	mostly	mostly
Kuwait Oil Company	88,723	yes	mostly	yes	yes	yes	no
Mærsk	24,103	yes	mostly	yes	yes	no	no
Marathon	17,894	yes	mostly	yes	yes	no	no
MOL	18,088	yes	mostly	partly	partly	partly	partly
Nexen Inc	29,517	yes	mostly	yes	yes	yes	partly
Oil Search	8,625	yes	mostly	mostly	mostly	mostly	mostly
OMV	73,044	yes	mostly	partly	partly	partly	partly
Perenco	22,826	yes	mostly	yes	yes	yes	no
Petrobras	218,536	yes	yes	yes	yes	yes	no
Petronas Carigali Sdn Bhd	76,036	yes	mostly	yes	yes	yes	yes
Petropars	4,122	yes	yes	yes	yes	partly	no
Premier Oil	3,809	yes	mostly	yes	yes	no	no
PTTEP	14,786	yes	mostly	yes	yes	yes	yes
Qatar Petroleum	488,036	yes	mostly	yes	yes	yes	yes
Rasgas	104,164	yes	yes	yes	yes	yes	yes
Repsol	62,744	yes	mostly	yes	mostly	yes	mostly
Saudi Aramco	42,333	no	yes	yes	yes	yes	yes
Shell	242,768	yes	mostly	yes	mostly	mostly	mostly
Statoil	92,700	yes	mostly	yes	yes	no	no
Suncor	38,101	yes	mostly	yes	yes	yes	mostly
Talisman	39,843	yes	mostly	mostly	mostly	partly	no
TNK-BP	223,083	yes	no	yes	yes	yes	no
Total	169,531	yes	mostly	mostly	mostly	mostly	no
Tullow Oil	6,571	yes	mostly	mostly	mostly	mostly	mostly
Wintershall	8,005	yes	mostly	yes	yes	yes	yes
Woodside	59,953	yes	mostly	partly	partly	partly	partly
Yemen LNG	26,454	yes	mostly	yes	yes	no	no

Note: A data row is a single entry for a company for one country and location (one of company onshore, company offshore, contractor onshore, contractor offshore), e.g. Acompany, UK, company offshore.
yes = reported for all data rows
mostly = reported for more than 50% of data rows
partly = reported for less than 50% of data rows
no = not reported at all.

Appendix G
Countries represented

The tabulation shows the breakdown of reported hours worked in regions and countries. Also shown is the number of companies reporting data in each country. The table does not necessarily show all hours worked in the upstream petroleum sector in each country.

Country	No. reporting companies	Hours ('000)
Africa		
Algeria	10	22,759
Angola	8	82,952
Cameroun	3	6,385
Chad	1	15,859
Congo	4	37,231
Congo (Democratic Republic of)	1	4,006
Egypt	9	58,099
Equatorial Guinea	3	8,820
Ethiopia	1	1,721
Gabon	5	19,465
Ghana	2	2,061
Ivory Coast	1	8
Libya	17	40,711
Madagascar	2	60
Mauritiana	5	1,740
Morocco	2	377
Mozambique	2	17
Namibia	1	9
Niger	1	52,174
Nigeria	8	173,232
Senegal	1	13
South Africa	1	218
Sudan	1	45
Tanzania	2	194
Tunisia	5	12,077
Uganda	1	1,877
Asia/Australasia		
Australia	14	52,080
Bangladesh	4	9,538
Brunei	1	824
Cambodia	2	14
China	10	102,073
India	5	74,788
Indonesia	14	218,817
Japan	3	1,573
Malaysia	8	100,145
Myanmar	4	5,943
Nepal	1	14
New Zealand	2	1,671
Pakistan	8	41,352
Papua New Guinea	3	9,294
Philippines	2	2,181
Singapore	6	4,263
South Korea	4	588
Taiwan	1	12
Thailand	7	65,515
Timor Leste	1	314
Vietnam	7	6,525
Europe		
Albania	1	16
Austria	1	2,822
Croatia	1	1,289
Denmark	4	9,664
Faroe Islands	1	149
Finland	1	12
France	5	13,426

Country	No. reporting companies	Hours ('000)
Europe (continued)		
Germany	3	8,355
Greenland	1	193
Hungary	2	7,219
Ireland	4	3,489
Italy	6	6,479
Latvia	1	2
Monaco	1	44
Netherlands	9	19,212
Norway	18	99,984
Poland	1	2
Romania	2	55,501
Spain	1	2,013
Sweden	2	67
UK	24	89,240
FSU		
Azerbaijan	6	23,328
Kazakhstan	10	72,708
Russia	12	244,139
Turkmenistan	3	10,206
Ukraine	1	200
Uzbekistan	1	211
Middle East		
Iran	6	13,308
Iraq	3	570
Israel	1	10
Jordan	2	27
Kuwait	5	105,292
Oman	5	3,537
Qatar	10	614,473
Saudi Arabia	4	46,866
Syria	3	12,659
Turkey	2	1,750
UAE	9	172,915
Yemen	5	47,275
North America		
Canada	10	93,391
Cuba	2	14
Mexico	4	398
USA	17	226,738
South America		
Argentina	4	55,671
Bolivia	3	2,706
Brazil	12	230,963
Colombia	8	23,359
Ecuador	3	5,631
Falkland Islands	1	47
Guatamala	1	2,107
Guyana	2	125
Peru	5	4,448
Surinam	2	40
Trinidad & Tobago	6	7,575
Venezuela	8	4,343

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