



irata
International
Industrial Rope Access
Trade Association

Work and Safety Analysis 2011

IRATA Work and Safety Analysis

2011

Dr C H Robbins

Abstract

Company membership of the Association increased to 217 worldwide with a reported workforce of over 10,000 by year end 2011. Total working hours exceeded 10.5 million of which half was for work 'on rope'.

There were 65 injuries and illnesses of which 19 required more than 3 days off work and, sadly including one fatality. Greatest susceptibility to injury was on secure ground with an injury rate nearly three times greater than that for 'On Rope' or in 'Training'. There was little difference between injury rates for all three working Levels.

The reportable injury and illness rate was 203 per 100,000 workers. This is a small percentage (6-25%) of the latest available average rates for UK, the EU and the USA. The fatality resulted in a five-year average rate of 3.1. This compares with USA 2010 and EU 2008 average rates of 3.6 and 2.53 respectively but exceeds the UK 2010/11 all industry rate of 0.7. With this exception, the 2011 health and safety statistics continue to be a credit to the members of the Association.

July 2011

Table of Contents

	PAGE
List of Figures	2
1. INTRODUCTION	3
2. IRATA COMPANY MEMBERSHIP	4
3. EMPLOYMENT STATISTICS	4
3.1 Employment Levels	4
3.2 Hours Worked	6
3.3 Utilisation	7
3.4 Training	7
4. ACCIDENT STATISTICS	8
4.1 Number of Submitted Reports	8
4.2 Nomenclature	8
4.3 Consequence of Accident / Incident	9
4.4 Location of Accidents/Incidents	10
4.5 Accident Events by Grade	11
4.6 Body Part Injuries	12
4.7 Causes of Accidents / Incidents	13
4.8 Time Lost	14
4.9 Other Factors	15
4.10 Working on Ropes	15
5. COMPARISON OF ACCIDENT DATA	16
5.1 Basis for Comparison	16
5.2 Comparison with UK, EU and USA Data	16
6. SUMMARY AND CONCLUSIONS	19
7. RECOMMENDATIONS	19
APPENDICES	
TABLE 1 ACCIDENT RATES FOR 'ON ROPE' WORKING	20
TABLE 2 SUMMARY OF EMPLOYMENT BY GRADE – 2011	21
TABLE 3 SUMMARY DATA OF WORKING HOURS	21

List of Figures

- Fig.1** **Number of Companies**
- Fig.2** **Quarterly Employment**
- Fig.3** **Average Employment by Grade**
- Fig.4** **Total Hours Worked**
- Fig 5** **Working Hours by Situation**
- Fig.6** **Working Hours On Shore and Offshore**
- Fig.7** **Outcome of Accidents/Incidents**
- Fig.8** **Location of Accidents/Incidents**
- Fig.9** **Total Accidents for Grades**
- Fig.10** **Injury Categories for each Grade**
- Fig.11** **Body Part Injuries**
- Fig.12** **Cause of Accidents/Incidents**
- Fig.13** **Rate for All Accidents On Rope**

IRATA
Kingsley House
Ganders Business Park
Kingsley, Bordon
Hampshire
GU35 9LU
UK

www.irata.org

1. INTRODUCTION

This report summarises employment and accident/incident data submitted by member companies to the Industrial Rope Access Trade Association (IRATA) during the period Jan-Dec 2011. Members submitted two sets of reports:

- Quarterly employment figures, including working hours and
- Details of specific incidents or accidents including dangerous occurrences and instances of ill health.

Both sets of data are essential in order to calculate accident/incident rates.

To simplify submissions by members, changes have been made to the data required from previous years. The following summarises some of the significant changes:

- Separate submissions for sub-contractors and non- IRATA employees are no longer required (but still included in overall employment figures if not separately supplied e.g. by IRATA sub-contractors).
- Training is now specifically identified, both for employees and for hours spent training and assessment. This includes trainers and assessors.
- Time spent on site on 'secure' ground' is no longer separately identified and is included in 'Other' category location.

The implications of these changes will become apparent in the report but the most obvious will be that comparisons with previous years will not always be possible. Further, there is less confidence in the accuracy of employment and work hours data as the revised scheme comes into operation.

Data supplied was subject to quality checks prior to commencement of analysis; however, the identity of member companies supplying the information remains unrevealed to the analyst.

Throughout the report, reference is made to a number of words and phrases that have the following meanings in this report:

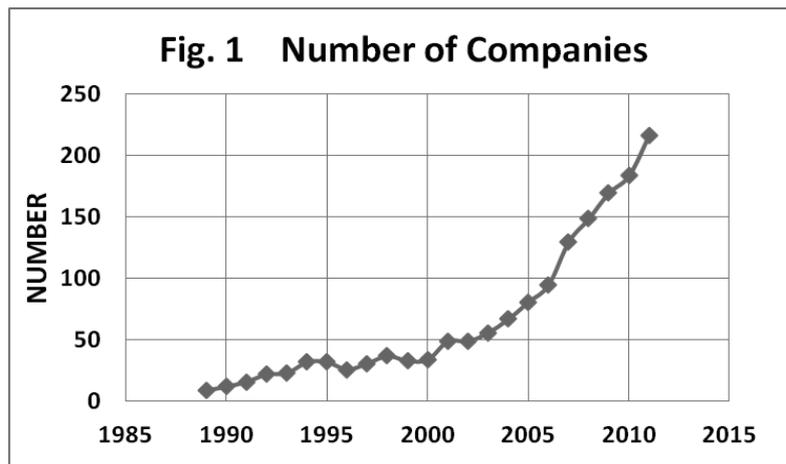
- **'On Rope'** – Arranging, using and directly involved in rope access work. It also includes access and egress activities to rope access work sites. Note that this does not necessarily require a person to be 'roped up' or physically connected to active ropes.
- **'Off Rope'** – includes work at height but not involving rope access, such as on scaffolds, roof work, provision of 'remote' support to rope access teams (e.g. communications, site surveys etc).
- **'Other'** – typically, work off-site, in offices, classrooms etc. This would include, for example, equipment inspection prior to removal to work site. 'Other' now also includes 'On Ground' for working hour reporting.
- **'Accident'** is used for events where actual harm or injury occurs.
- **'Incident'** is used for all reported events where no personal harm or injury resulted.

In future, the only categories will be 'On Rope', 'Off Rope', 'Other' and 'Training'.

This report is arranged with figures and graphs incorporated within the text to which they apply. Tables, summarising 2011 employment figures and accident/incident data since 1989, are also included at the back of the report. The report first considers overall employment figures, and then examines the accident and incident data before finally comparing IRATA incident rates with those of previous years and other industries.

2. IRATA COMPANY MEMBERSHIP

The total number of companies registered to Dec 2011 was 217, an increase of 33 over the 184 total for 2010 or nearly an 18% increase. The continuing increase in membership since 1989 is shown in the graph (Fig.1) below.

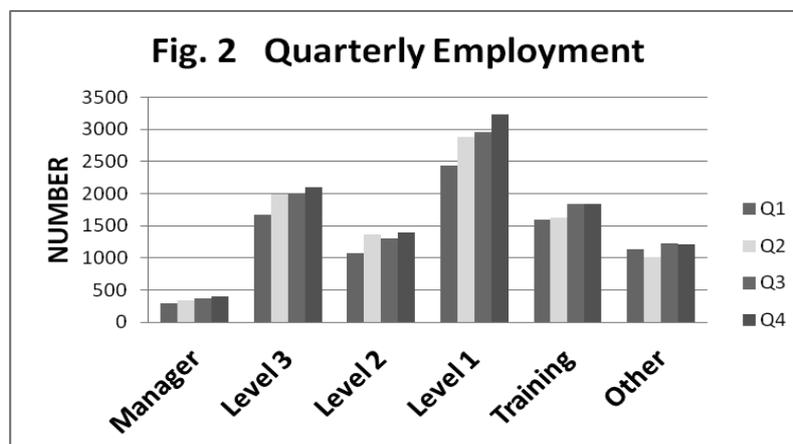


There has been a nearly linear increase in membership of the Association over the last 8-9 years.

3. EMPLOYMENT STATISTICS

3.1 Employment Levels

Average employment increased 23% from 7,558 in 2010 to 9,311 in 2011. Employment by quarters during 2011 is shown in Fig.2.



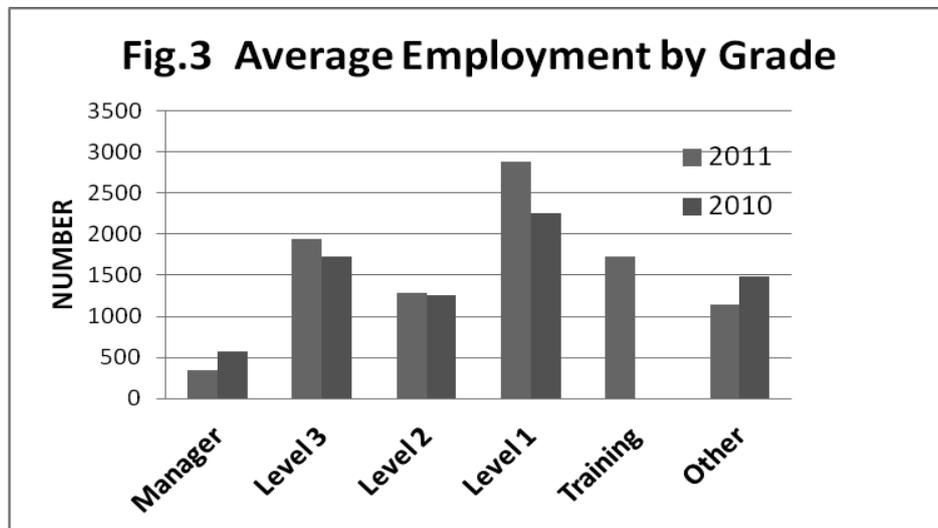
The general rise in the employed numbers in each of the categories, quarter by quarter, probably reflects the rising membership as the year progressed;

several 'late entry' companies had substantial workforces. By year end, total employed had reached 10,155. However, for subsequent purposes, the average for the year of 9,311 will be used.

There is a particularly notable increase in Level 1 operatives, during the year, rising from about 2,433 to 3,237 (averaging 2,877). This is the largest category within the average employment of 9,311.

The new addition of 'training', as expected, is a significant contributor to the total. With an average of about 1,724, this represents about 18.5% of the total workforce and reflects the emphasis the Association places on training.

Comparison of the average figures for 2011 with those for 2010 is shown in Fig.3. The 2010 figures did not have training as a separate category; training, presumably, was distributed between other categories including 'Other'. Hence, the 2011 training category probably takes numbers from all grades particularly 'Other' – hence the fall in 'Other' which probably now more properly represents the number of ancillary or non-IRATA qualified staff.



The reduction in 'Manager' category appears to be related to the probable partial omission of sub-contractor managers as a result of changes in reporting. Historically, this was a substantial addition to the grade numbers.

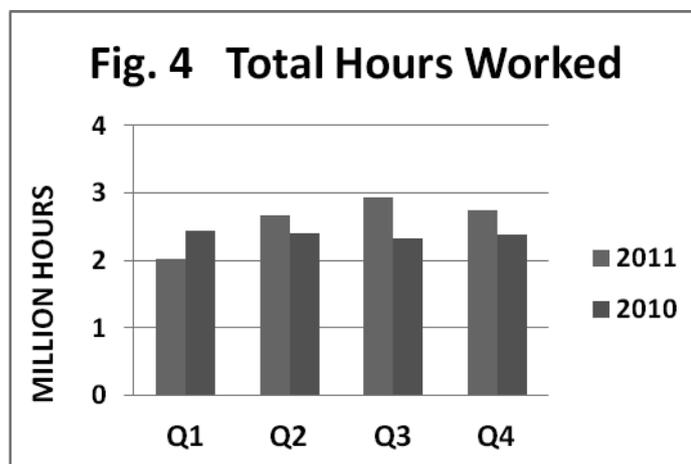
As usual, the dominant grade employed was Level 1 (2,877) followed by Level 3 operatives (1,936). Although the Level 2 numbers appear static (1,284 in 2011 versus 1,252 in 2010), it should be noted that the increase in Level 3s must arise from Level 2s (plus losses from Level 3). In turn, Level 2 promotions and losses must be made good from Level 1 promotions. Thus, although static in outturn, there must have been a significant flux in numbers. Added to this, some re-distribution to the 'Training' category may also have occurred.

The relative proportion of the three qualified worker categories appears to be returning to previous percentages, although, overall, there has been little change:

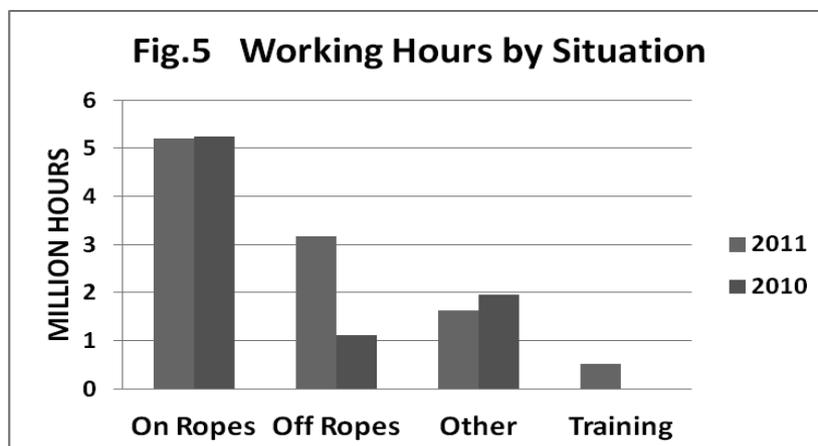
	2009	2010	2011
Level 3	29%	33%	32%
Level 2	22%	24%	21%
Level 1	49%	43%	47%

3.2 Hours Worked

Total hours worked worldwide reported for 2011 was 10,528,961. This is nearly 10% greater than the 9.59 million hours reported for 2010, but significantly less than would be expected from a 23% increase in workforce numbers. The quarter by quarter figures (Fig.4) show substantial variations over the year, from a minimum of about 2 million hours in the first quarter to a peak of nearly 3 million hours in the third quarter. The first quarter figure was significantly less than that for 2010 but, thereafter, 2011 figures exceed those for 2010.



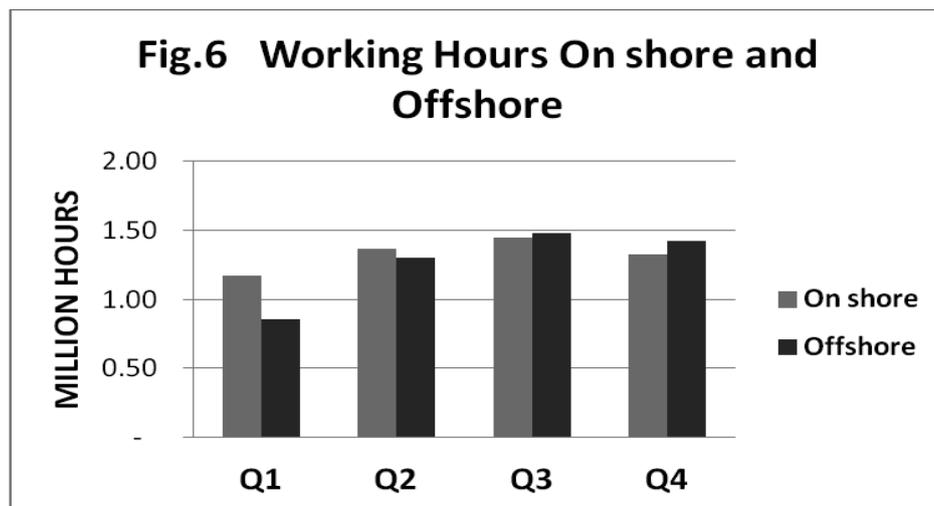
The steady increase in 'On Rope' working since 2009, from about 4 million hours to about 5.25 million in 2010, was checked in 2011 (Fig. 5) remaining at 5.21 million. However, the figures are no longer strictly comparable because of reporting changes. The 2010 'Ground' working has been combined with 'Other' hours to equate with 'Other' for 2011. Additionally, 'Training' is now specifically identified for 2011 (0.529 million hours). Inevitably, some of these hours previously would have been allocated to 'On Rope' working.



The large increase in 'Off Rope' working should be noted. The obvious explanation for this change is the effect of changing reporting categories, particularly eliminating 'On Ground'. The increase applies equally to both on shore and offshore reported hours.

It is interesting to note that 'Training' hours represent almost exactly 5% of total hours.

It has been customary to separate on shore and offshore working hours. Fig. 6 shows the quarterly totals for each. In numerical terms, on shore working (5.318 million hours) narrowly outstrips offshore working (5.054 million hours). This is largely due to significantly lower reported offshore working in the first quarter, with only minor differences thereafter. It is not known why there should have been such a reduction in offshore working for Q1 although winter weather could have been a factor.



3.3 Utilisation

A total workforce of 9,311 and total reported hours of 10.53 million hours equates to an average annual utilisation of only 1,130 hours per employee. This is significantly less than the 1,260 reported in 2010 and well below an assumed full utilisation figure of about 1,760 hours per annum. It has previously been assumed that a significant proportion of rope access technicians had alternative employment elsewhere. This may be partly born out by Fig. 5 which shows no increase in hours worked on ropes from 2010. However, the possibility of under-reporting cannot be ignored, particularly as nil submissions were encountered in some quarterly data.

3.4 Training

Previous reports have speculated on the extent of training, assessment and related activities undertaken by IRATA personnel. This is now a specific category for reported working hours and, as indicated in 3.2 above, total about 0.53 million hours, 5% of total reported hours. This significant proportion is not surprising in view of stringent training/assessment requirements of the Association. However, it is at variance with the figure of 18.5% of the total workforce employed. Quite why there should be such a difference between

number employed and reported hours is unknown. One possibility is reporting errors caused by the revised scheme.

4. ACCIDENT STATISTICS

4.1 Number of Submitted Reports

The total number of accident/incident reports submitted for 2011 was 140 (excluding a number of double counts and an RTA); this is very much higher than in 2010 when only 60 reports were received. However, over half of all reports in 2011 were Dangerous Occurrences. This is considered a very encouraging result as it reflects a more open attitude to near miss reporting.

Unfortunately, the quality of reporting was still variable despite an appeal for improvement in 2010 (Recommendation 2).

4.2 Nomenclature

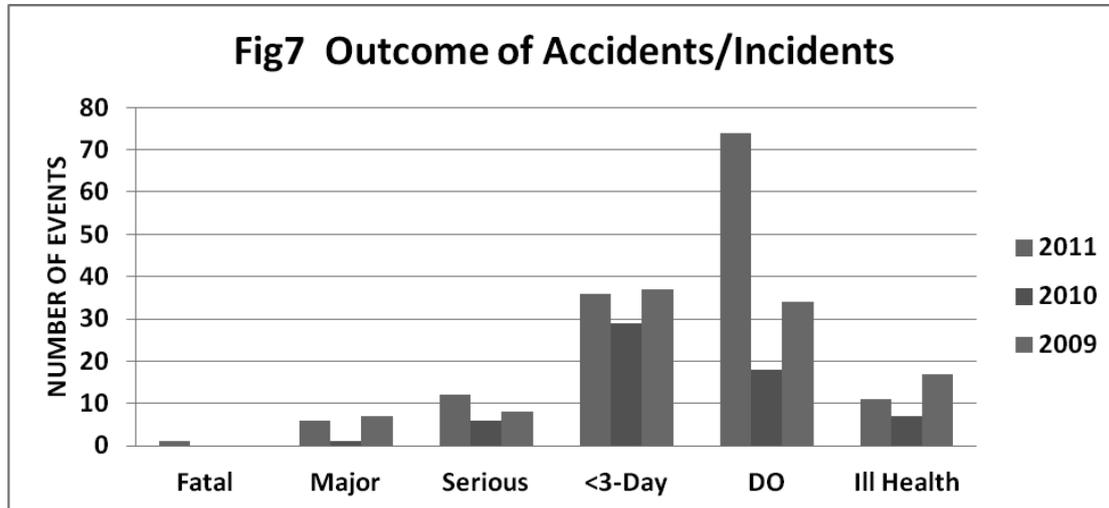
For the purpose of this report, the following meanings apply to terms used in the sections that follow:

- **‘Major’ Injury** – Injuries that meet UK HSE criteria, in common with other overseas and European agencies, and listed in IRATA reporting arrangements. There is no ‘days off work’ criterion.
- **Serious Injury** – Not a ‘Major’ injury but requiring *more than three days* away from normal work. The term ‘Serious’ is used synonymously with ‘Minor’ but the latter has the implication that the injury is of little consequence; for the individuals concerned, this may be far from reality. ‘Serious’ is the term used in Eurostat statistics. (Note that a change in 2012 to a ‘7 day’ criterion will be applied to IRATA data).
- **NRA or < 3-Day Injury** – Not reportable injury and not requiring more than three days away from normal work. This category is also termed **Non Reportable Accident (NRA)**. (Note that the reporting criterion will also change in 2012 to ‘less than 7 days off work’).
- **‘Dangerous Occurrence’ (DO)** – Incident that could have resulted in injury or death but none was incurred. DOs are not allocated to specific worker or grade category.
- **Ill Health** – Conditions leading to interruption or suspension of work due to non-injurious causes e.g. psychological, heat- or cold-stress, taken un-well (headache, stomach upset) or other non-trauma medical condition brought on by or made worse by work.
- **Sprains/Strains** – Muscular injuries that result in cessation of work.
- **Reportable** – for the purpose of this report, this term will be taken to mean fatality, major and serious injury (>3-day off work) events, as in previous years.

The proposed change to a ‘7 day’ criterion for reporting Serious (Minor) and NRA (<3-Day Injury) is to bring IRATA 2012 statistics into accord with general practice.

4.3 Consequence of Accident / Incident

The outcome or consequence of an accident or incident generally is used to analyse accident/incident data because the outcome of an event is tangible, measurable and readily analysed. This process does not reveal true underlying cause(s) but does provide a measure of overall performance and performance change with time. The chart below (Fig.7) compares the absolute numbers of accidents and incidents for the last three years:



For the purpose of comparison with previous data, Strains/ Sprains (8 injuries) and Ill Health (3 incidents) have been combined into Ill Health in the above chart.

The most significant changes are the small increases in 'Major', 'Serious' ('Minor') and in '<3-Day' (Non Reportable Accident) accidents and the very large increase in 'Dangerous Occurrences'. The single fatality that occurred in the UK offshore is sadly recorded. This event remains subject to legal process and further comment/explanation is prevented save to note that any possibility of common mode failure of suspension ropes should be constantly guarded against, as noted previously for suspension points. (See 2010 Report Recommendation 1a).

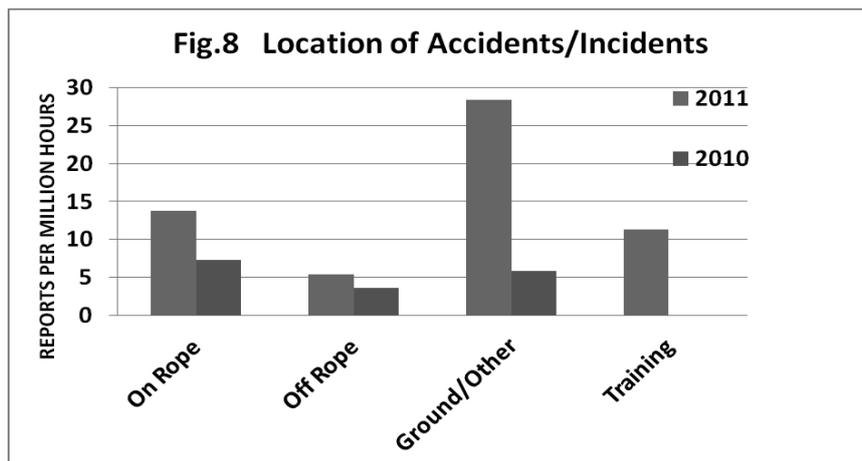
The absolute numbers used above do not take account of the increases in workforce and working hours. This is solved by dividing accident / incident data by the total working hours to obtain a slightly revised chart. However, the effect of the increased working hours has only a marginal in this case and, therefore, is not reproduced here.

There were no reported injuries to members of the public.

4.4 Location of Accidents/Incidents

Fig.8 shows the distribution of all 140 reported accidents/incidents according to location for 2011 and 2010. The figures have been converted to 'per million hours' by dividing the absolute numbers by the total reported hours for each individual situation. Whilst the accident/incident reports differentiate between 'On Ground' and 'Other' locations, the submitted quarterly work hours combine the two categories. Hence, it is no longer possible to show the

difference between 'On Ground' and 'Other' categories. Accordingly, figures for both 2010 and 2011 are displayed with these two categories combined.



The predominance of 'Ground' and 'Other' combined is clear. Two of the six 'Major' injuries occurred on 'Ground' and two occurred 'On Rope' and the remaining accidents 'Off Rope' and 'Training'. Over half of all accidents/incidents reports (76) were related to on rope working, but nearly 60% were DO reports (see table below). Therefore, the increase in rope related incidents does not imply an increase in risk of injury. The distribution of injuries sustained at the various locations is considered further below.

The higher figures, compared with 2010, are largely because of the much higher reporting level of dangerous occurrences in 2011, a trend that is encouraged. Of the 74 reported DOs, 25 were directly related to rope access itself including equipment defects/damage, handling and technique errors, omissions and misuse. This is seen as a positive finding, reflecting increase in awareness of potential hazards.

Of the 140 reports, less than half (65) involved some form of injury, ill health or, sadly, fatality. If accidents alone are considered (i.e. injuries/fatality), the rate for each location is:

LOCATION	INJURIES	MILLION HOURS WORKED	RATE (per million hours)
On Rope	30	5.2	5.8
Off Rope	8	3.2	2.5
Other (Secure ground)	24	1.6	15
Training	3	0.53	5.7

It is clear that the risk of injury on secure ground is almost three times greater than either working on rope or during training and six times greater than working off rope – perhaps surprising but reinforcing the need for constant vigilance, more so on 'secure' ground'.

One further point is the reduction in reported training accidents/incidents; 6 in 2011, reduced from 9 in 2010, and only three of which resulted in injury. It would appear that more care is being taken during training, noting that there

was one 'Major' injury (rib damage), one 'Serious' ('Minor') injury, one NRA and three DOs. This is an improvement over 2010.

The table below summarises the numerical distribution of accident and incident data for 2011.

	Fatal	Major	Serious	NRA (<3-Day)	DO	Ill Health	Strains/Sprains
On Rope	1	2	2	17	41	2	6
Off Rope		1	1	5	9		1
On Ground		2	3	7	12	1	1
Other			6	5	9		
Training		1		2	3		

4.5 Accident Events by Grade

Above, all reported events were considered. The following examines only those events that led to harm or injury. The actual number of individuals involved was 65, from a total workforce of 9,311. This gives an overall injury rate of 7.0 per 1,000. Equivalent rate for 2010 was 4.7 per 1,000 and 10 per 1,000 for 2009.

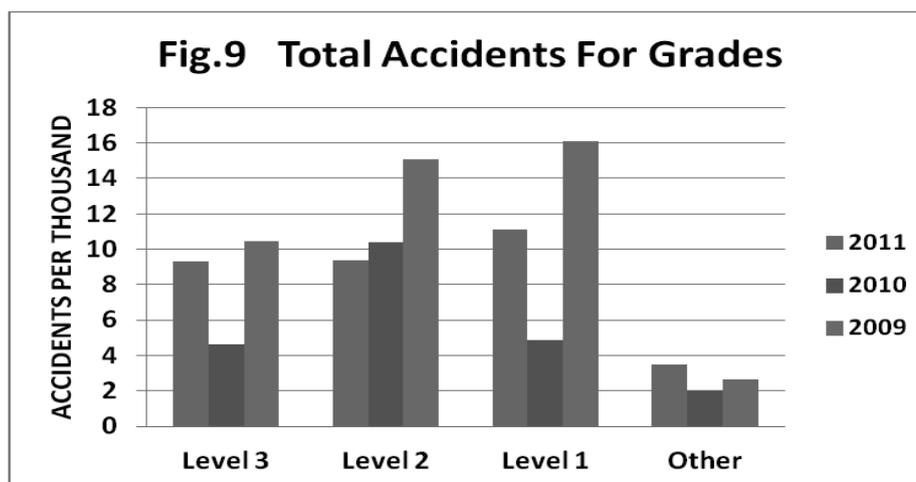
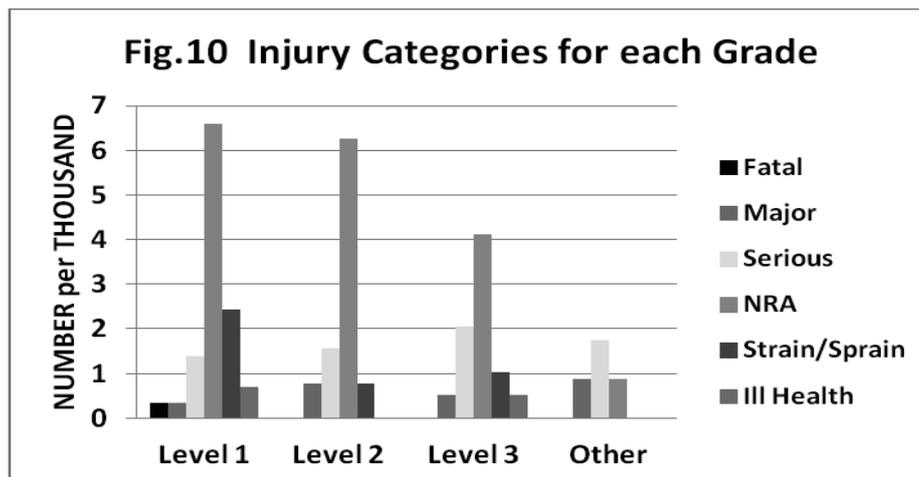


Fig.9 shows the total of injury events for each grade divided by the reported employed numbers of each grade (multiplied by 1000 to give injury rates per 1,000 employed), ignoring managers. This is to take into account the large differences in population for the different grades. The chart above also excludes Training numbers, a significant proportion of employees, as these do not specify grades within the total and, hence, cannot be apportioned, even pro rata.

The most immediate findings are that accident rates for all grades in 2011 are similar and do not show the variations of previous years. Level 1s and 3s sustained almost twice the injury rate compared with 2010 whilst Level 2s remained almost constant. These trends will be examined more closely.

The 2011 data for the various categories of injury sustained by each grade is shown in Fig.10.

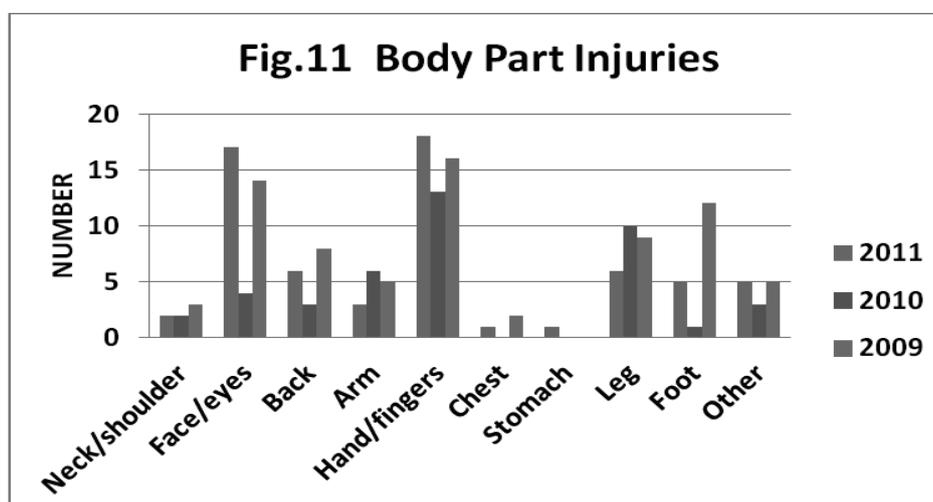


The relatively high incidence of NRA (<3-day) injuries for all grades is immediately obvious. Level 1s have usually been most prone to injury (except in 2010) closely followed by Level 3s. In terms of the more severe injuries (Major and Serious combined), Level 3s were at marginally greater risk in 2011, followed by Level 2s. However, the numbers involved are small and, hence, the analysis is suspect.

Unusually, Level 1s were at lower risk of more severe injury, despite a higher incidence of minor injury. As may be anticipated, Level 1s were most susceptible to muscular and ill health problems. Attention will now be turned to the nature of injuries suffered by personnel.

4.6 Body Part Injuries

The body part injuries sustained during 2009, 10 and 11 are shown in Fig. 11 which is in terms of actual numbers and does not take account of different employment levels. (Care is needed here because multiple injuries sustained by an individual are counted as separate items and, hence, number of injuries does not necessarily equate to injured personnel). The general reduction in injuries for 2010 was not maintained in 2011 with the exception of injuries to arms and legs.



Eye injuries have returned to previous levels and, together with hand/finger injuries, remains the predominant cause of concern in purely numerical terms. Five of the six 'Major' injuries were due to bone fractures of feet, hand, arm and ribs. The sixth was an eye injury. There may be some doubt about the strict classification of injury in at least two of these cases but the 'Major' classification, as reported, is retained here in the absence of better information.

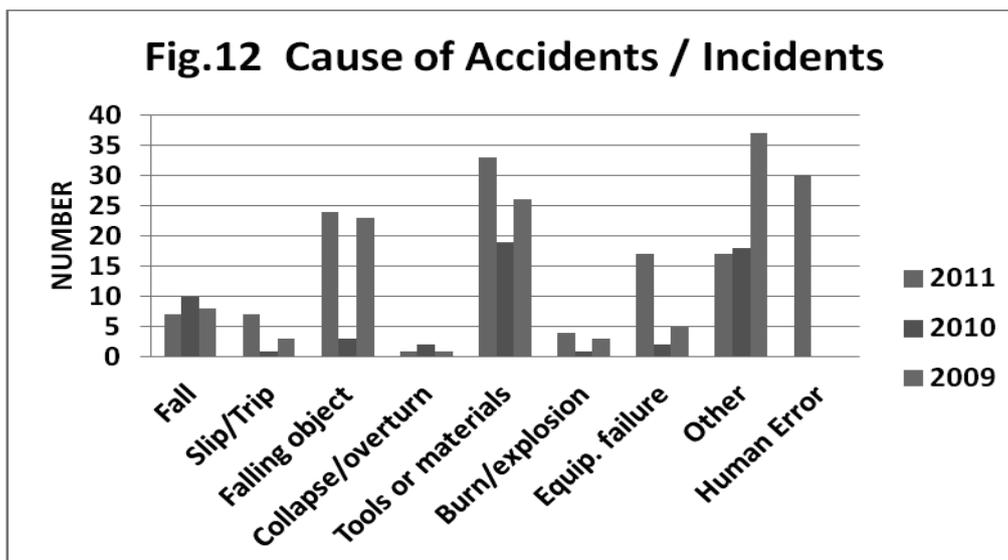
Hand/finger injuries (18) were mainly caused by trapping or impacts (7) and cuts from tools and sharp items (7) despite wearing gloves. Of the 17 face/eye injuries, at least 8 were due to debris entering the eye, again, despite protective measures. Five of these eye injuries occurred whilst using power tools (e.g. grinders, needle gun). In three cases, debris appears to have entered the eye after ceasing work.

In view of these findings, it may be suggested that selection and use of PPE to protect hands and eyes should be better matched to the job in hand and the tools in use, particularly power tools. Furthermore, preventative or avoidance measures, wherever possible, should be the first consideration.

'Other' includes instances of dizziness, heat exhaustion, bee sting, chemical burn and fatality (immediate cause undisclosed).

4.7 Causes of Accidents / Incidents

Allocation of a single specific cause for an accident or incident is rarely simple. However, for the purpose of this report, only the category that most closely describes the *immediate* cause of an accident or a dangerous occurrence is used in analysis, despite the limitations of such a process when determining root causes and corrective actions.



In Fig.12 the following should be noted:

- Not all 'causes' resulted in actual injury

- Two categories, Electric shock and Gas/Asphyxiation have been omitted to aid presentation
- Falls have been separated from Slips and Trips
- Absolute numbers are used with no account of population
- Human Error, a newly introduced category, only applies to 2011 data.

Fig.12 shows the breakdown of causes for reported accidents/incidents for 2011 together with 2010 and 2009. In common with previous years, the most common cause of accidents and incidents involved Tools and Materials. Injury to hands and eyes, discussed above, reflects this finding.

The introduction of 'Human Error' allows reports to identify numerous instances of Dangerous Occurrences arising from mistakes and omissions by people, previously allocated to 'Other' in 2010 and 2009. Of the 30 items in 'Human Errors', 19 were due to lapses in rope access equipment handling and use, a point raised again later. Most of the remainder were unsafe acts and omissions on the worksite.

'Other' now accounted for 17 items, eight of which were due to muscle strains and sprains (manual handling) and the remainder to miscellaneous causes (insect bites (2) and illness).

Unfortunately, the reduction in instances of dropped objects, reported in 2010, has not been maintained. Twenty-four instances of 'Falling Objects' were reported in 2011. At least fourteen of these were directly due to dropped objects at or near the worksite by inadequately attached tools, equipment or other items dislodged by workers. Several instances of weather (wind) causing loosening and/or falling objects in the near vicinity was also reported.

'Falls' are separately identified here to distinguish them from 'slips and trips' because of the specific interest in relation to rope access. Four of the seven falls involved slippage of rope suspension equipment for various reasons. One fall was caused by rope mishandling. Two falls resulted in water entry, one with fatal consequences. The seven 'Slips and trips' were a mix of tripping over static objects and slipping during movement over a variety of surfaces and structures.

Nine of the reported 17 equipment failures were related to rope access equipment. It may be noted that four involved descender devices that were either damaged or apparently failed to operate correctly. Two other 'failures' were instances of rope damage (excluding the fatality event). The remaining eight 'failures' covered a miscellaneous mixture of deficiencies found on site with various items of extraneous equipment (e.g. camera failure, lack of fire extinguisher, electrical failure etc).

4.8 Time Lost

Reported time lost was about 340 days which equates to 0.025 days per person per year, much the same as in 2010 (0.03 days/person). This is well below the 2010/11 HSE figure of ~ 1.05 days for combined ill health and injuries for all industries and the Labour Force Survey (LFS) value of 1.13

(see <http://www.hse.gov.uk/statistics/industry/index.htm> - Table SWIT 1 for 2010/11). Such figures, if mirrored by IRATA personnel, would equate to ~ 10,000 days!

As usual, it is probable that there is a high degree of under-reporting of lost time by IRATA companies, perhaps by a factor of ten or more.

4.9 Other Factors

- **Weather Conditions** - In four cases weather was a factor in reported incidents. One was due to sunstroke/dehydration, two to the wind blowing objects loose and blowing grit into eyes.
- **Musculo-skeletal Injuries / Manual Handling** – There were only eight reports of musculo-skeletal injury – a surprisingly low incidence of such injuries given the nature of rope access working.

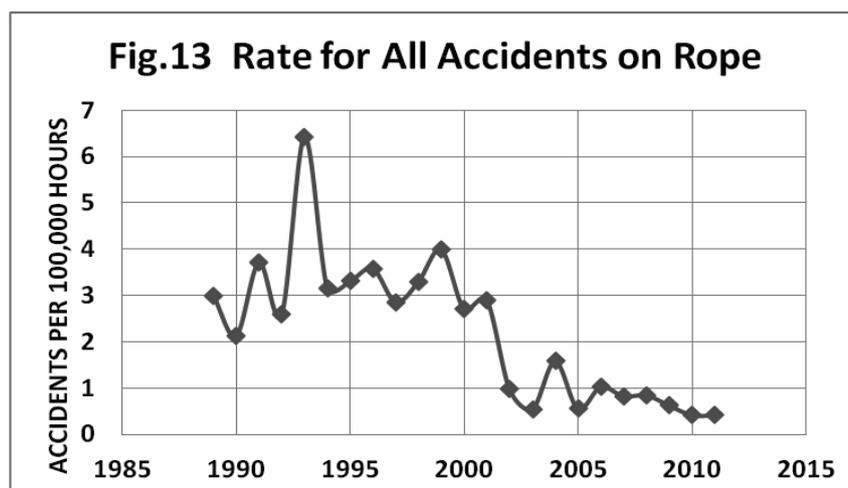
4.10 Working on Ropes

The focus of attention is with work 'On Rope', not surprisingly. Thus, this aspect of data is considered in isolation. A sorting of all accidents gave the following for work on ropes:

NRA (<3-Day)	Serious (Minor)	Major	Fatal
17	2	2	1

(The NRA total includes five 'Strains' and two 'Ill Health' incidents and 'Serious' includes one of the 'Strain' injuries).

Table 1 in Appendix is a compilation of data since 1989 and amended to include this 2011 data. A graphical presentation of the total incident rate per year is shown in Fig.13 where 'total' refers to the sum of all reportable and non reportable accidents sustained whilst On Rope (column 7 in Table 1). Dangerous Occurrences are now omitted.



The continuing maintenance of an accident / incident rate of below 1 per 100,000 hours of work on rope for the fifth consecutive year is an achievement. It is emphasised that the graph is based solely on accidents

(All figures in number per 100,000 employees).

Although inferior to 2010, IRATA figures remain impressive, being less than half the All Industry accident rate overall. Allowing for the accepted under-reporting estimates by HSE of ~50%, this falls even further to about 22% of the All Industry figure. The figures are even more impressive when compared to the Labour Force Survey (LFS) figure of 710 for Reportable Injuries (Table LFSINJ 1). The only exception to the significantly lower figures throughout is that due to the single fatality. This will be discussed further later.

Direct comparison against EU figures is limited for several reasons; hence, care is needed in interpretation. Latest available LFS EU (EUROSTAT) figures are still for 2007. EU figures are for EU-27 member states and are 'per 100,000' for '>3-Day injuries' and thus equate to combined 'Major' and 'Serious' ('Minor') injuries. Examples of EU data are shown alongside UK and other randomly chosen members.

Sources:

http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-31-09-290/EN/KS-31-09-290-EN.PDF

<http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tps00042&plugin=1>

www.hse.gov.uk/statistics/european/tables.htm

SECTOR	Average EU-27 (2007)	UK *	Germany	Spain	France	Italy
Average	3,200					
Agriculture	4,213	2,048	8,267	2,270	1,929	5,812
Construction	6,075	2,010	5,773	8,090	7,656	4,249
Manufacturing	3,656	867	3,029	7,338	3,415	3,306
IRATA (2011)	193**					

*Estimated 50% under-reporting. **Fatality excluded, hence the reduced figure.

The IRATA rate is only about 6% of the average 2007 EU-27 figure. Even allowing for the probability of some improvement over the past four years for EU-27 data, this situation is unlikely to change significantly. The incidence of fatalities at work across Europe is typically in the range 1-3 per 100,000. This puts into perspective the effect of the single fatality, equating to 10.7 per 100,000, again, discussed later.

Care is needed in comparing IRATA data with US data due to differences in the way injuries and illnesses are defined and classified. The table below presents some injury and illness data presented by US Bureau of Labor for 2010. Figures have been converted from 'per 100 workers' to 'per 100,000'. US Bureau of Labor now includes Public Sector (State and Government) figures within its analysis. The figures selected here relate solely to those taking time from work as a result of injury and illness at work and exclude other categories of injury/illness.

As with EU, the IRATA figure is only about 17% of the US 'All Industry' figure for injuries and ill health, and typically about 10-20% of the injury/illness rates for various industrial sectors.

US INDUSTRY SECTOR 2010	Incidence of Injury and Illness per 100,000 (2010)
All Industry and Public Sector	1,200
Agriculture, forestry, fishing	1,700
Manufacture	1,100
Construction	1,500
IRATA	193

(Source: <http://www.bls.gov/news.release/osh.t01.htm>)
http://www.bls.gov/news.release/archives/osh_10202011.pdf

Finally, the influence of the single fatality sustained in 2011 requires further comment. Without in any way undermining the importance and the significance of this sad event, it is necessary to consider its impact. When examining statistical data for small populations, even single events can result in distorted and unrealistic effects.

In such circumstances, where possible, it is common to accumulate data over a period until a sufficient population is reached that gives a more representative and realistic view of the impact of the event. For example, HSE* considers a five-year period for fatality rates of various industrial sectors. If the IRATA fatality is similarly treated, the five year period 2007-11 would give a total population of 32,545. The single fatality then equates to a rate of 3.1 in the comparison table below (all figures per 100,000). Increasing the time frame and, hence, population, would obviously result in a further rate decrease in the absence of any other work fatalities.

The five year average of 3.1 compares with the USA 2010 rate of 3.6* and the EU 2008 average figure of 2.53.

A figure of 3.8 per 100,000 is the figure derived for fatalities due to falls in England over a similar three year period 2008-2010*. However, this is an 'all population' figure and not comparable to employment data.

Industrial Sector	Fatality Rate UK 2010/11	Fatality Rate 5-Year Average
All Industry	0.6	0.7
Agriculture	8	9.6
Construction	2.4	2.8
Manufacture	1.1	1.1
IRATA	10.7	3.1

*Sources

<http://www.hse.gov.uk/statistics/fatals.htm>
<http://www.injuryprofiles.org.uk>
<http://stats.bls.gov/iif/oshwc/foi/cfch0009.pdf>

Although HSE gives data on fatalities due to falls alone, rates are not given, presumably because the numbers involved are too small to have statistical significance.

6 SUMMARY AND CONCLUSIONS

The following summarise basic points from the report together with some conclusions:

Membership/Employment

- Membership had risen to 217 companies by December 2011.
- Average employed increased from 7,558 in 2010 to 9,311 in 2011.
- Peak employment, by year end, reached 10,155.
- Hours worked worldwide were 10.5 million; 5.2 million was 'On Rope'.
- The increase in worked hours was less than a pro rata increase in employment would have suggested.
- Total average qualified IRATA technicians employed was 6,097, 65% of the total employed (excluding 'Training').

Accidents/Incidents

- Accident / incident submissions totalled 140, with 65 involving injury or illness to individuals:
 - 1 Fatality (nil in 2010)
 - 6 Major injuries (1 ,,)
 - 12 Serious (Minor) injuries (6 ,,)
 - 36 NRA (<3-Day) (29 ,,)(Remainder were due to Ill Health and Strains/Sprains).
- There was a significant rise in Dangerous Occurrence reporting, a trend to be encouraged.
- Risk of injury was three times greater on secure ground than either 'on rope' or training. Lowest risk of injury was 'off rope'. Average risk of injury overall was 6.2 per million hours.
- There was little difference in risk of injury for all three Grades, about 10 per thousand employed.
- Eye and hand/finger remained the consistently highest categories of injury. The adequacy of PPE protection for eyes and hands, in relation to tasks and tools, may be queried.
- The accident rate for work on rope remained at 0.42 per 100,000 for **all** injuries (Major, Serious and NRA (<3-Day)) – maintaining a rate of below 1 per 100,000 for five consecutive years.
- The injury rate of 203 per 100,000 remains, typically, between 6% and 22% of variously reported international statistics.
- The effect of the fatality reported far exceeded the impact on statistics.

7 RECOMMENDATIONS

1. Despite a continuing favourable safety record, the following areas should be considered for improvement:
 - a) Prevention of injuries to eyes and hands/fingers, from preventative measures (e.g. use of more appropriate tools) to selection of PPE better suited to potential threats.
 - b) Prevention of dropped objects particularly when 'on rope' (e.g. all tools, instruments and devices securely attached).

- c) Rigging, use and care of rope access equipment and devices.
2. The almost threefold increase in risk of injury whilst 'on secure ground', compared to other locations, reinforces the usual exhortation to *maintain vigilance at all times, not just when on ropes*.
3. Members were requested, in 2010, to improve the accuracy of accident/incident reporting incidents and accidents, particularly with respect to correct categorisation of accidents and incidents into Major, Minor (or better, 'Serious'), Not Reportable Accidents (<3-Day) and Dangerous Occurrences. **This request is repeated but noting the change from a '3-Day' to a '7-Day' reporting criteria for 'Serious' injuries and NRA (to be termed 'Very Minor Injury')**.
4. The increasing trend to report Dangerous Occurrences should be encouraged, particularly when relevant to rope access.
5. Despite a small increase in the accident rate since 2010, Membership should be congratulated on a continuing excellent health and safety record.
-

**Table 1 ACCIDENT RATES FOR 'ON ROPE' WORKING
1989-2011**

Year	Nos. of Companies	Hours on ropes	None reportable Accidents (NRA)	Reportable Accidents on ropes	AR for Reportable accidents * **	AR for All Accidents * ***
1989	9	267504	8	0	0	3
1990	12	327645	7	0	0	2.13
1991	16	457928	17	0	0	3.71
1992	22	537920	13	1	0.19	2.6
1993	23	327000	21	0	0	6.42
1994	32	348749	11	0	0	3.15
1995	32	484285	16	0	0	3.31
1996	26	559035	18	2	0.36	3.58
1997	31	699688	11	9	1.29	2.86
1998	37	1006538	23	10	0.99	3.3
1999	33	803365	29	3	0.37	3.99
2000	34	887206	21	3	0.34	2.71
2001	49	999010	25	4	0.4	2.9
2002	49	1225930	12	0	0	0.98
2003	56	1634482	9	0	0	0.55
2004	67	1457848	22	1	0.07	1.58
2005	81	2311265	10	3	0.13	0.56
2006	95	2132141	21	1	0.05	1.03
2007	130	2765483	21	2	0.07	0.83
2008	149	3859584	25	8	0.21	0.85
2009	170	4582642	15	14	0.33	0.63
2010	184	5247365	18	4	0.08	0.42
2011	217	5209056	17	5 #	0.1	0.42
TOTAL or AVERAGE		38131669	390	70	0.22	2.24
* Units for Accident Rate (AR) number per 100,000 hours worked						
** - Col 5 divided by hours			x 100,000			
*** - Col 4 + 5 ditto						
# Includes fatality						

TABLE 2 SUMMARY OF EMPLOYMENT BY GRADE – 2011

AVERAGE NUMBER OF PERSONS DIRECTLY OR INDIRECTLY EMPLOYED

QUARTER	1	2	3	4	Average
Manager	297	332	366	392	346.75
Level 3	1669	1990	1991	2094	1936
Level 2	1073	1368	1305	1390	1284
Level 1	2433	2885	2951	3237	2876.5
Training	1597	1626	1839	1835	1724.25
Other	1132	1008	1228	1207	1143.75
TOTAL EMPLOYED	8201	9209	9680	10155	9311.25

TABLE 3 SUMMARY DATA OF WORKING HOURS – 2011

ESTIMATE OF HOURS WORKED IN VARIOUS LOCATIONS

Working on ropes	Total
On shore	2591993
Offshore	2617063
Total	5209056
Working off ropes on-site	
On shore	1506140
Offshore	1668269
Total	3174409
Other (Secure Ground)	
On shore	894154
Offshore	722495
Total	1616649
Training/Assessment	
On shore	369697
Offshore	159150
Total	528847
TOTAL HOURS	10,528,961

(Tables 2 and 3 courtesy of IRATA secretariat)



Work and Safety Analysis

© 2012 Industrial Rope Access Trade Association

Kingsley House, Ganders Business Park, Kingsley, Bordon, Hampshire GU35 9LU UK
tel: +44 (0) 1420 471619 fax: +44 (0) 1420 471611 www.irata.org