



*irata*  
*International*  
*Industrial Rope Access*  
*Trade Association*

# **Work and Safety Analysis 2009**

# ANALYSIS OF IRATA EMPLOYMENT AND SAFETY STATISTICS FOR 2009

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## CONTENTS

1. Introduction.....	3
2. IRATA Membership.....	3
3. Employment Statistics for 2009.....	4
3.1 Overall Employment and Hours Worked.....	4
3.2 Directly Employed v Sub-Contract.....	5
3.3 Comparison of Hours on Ropes with Previous Years / Average Company Workforce .....	5
3.4 Employment Levels During 2009 .....	6
3.5 Training .....	7
4. Accident Statistics for 2009.....	7
4.1 Submission Rate/Quality.....	7
4.2 Consequence of Accident / Incident .....	8
4.3 Situation of Accidents/Incidents .....	9
4.4 Accident Events by Grade.....	10
4.5 Seriousness of Accidents by Grade .....	10
4.6 Body Part Injuries .....	11
4.7 Immediate Causes of Accidents / Incidents .....	12
4.8 Time Lost.....	13
4.9 External Factors .....	13
4.10 Manual Handling .....	14
5. Comparison of Accident / INCIDENT Data with Previous Years and UK HSE Data .....	14
5.1 Working on Ropes.....	14
5.2 Basis of Calculations for Comparison of IRATA Data.....	15
5.3 Comparison of IRATA Accident and Incident Data with UK HSE Data .....	16
5.4 Illness .....	17
6 SUMMARY .....	18
7 CONCLUSIONS .....	19
8 RECOMMENDATIONS.....	19
TABLE 1 Accident and Incident Returns ofr IRATA Companies 1989 – 2009 (based on hours Worked On Rope Only).....	20
TABLE 2 SUMMARY EMPLOYMENT BY GRADE - 2009.....	21
TABLE 3 SUMMARY DATA OF HOURS – 2009 .....	22

## List of Figures

Fig.1	NOS. OF IRATA COMPANIES
Fig.2	SIZE RANGE OF COMPANIES - 2009
Fig.3	DISTRIBUTION OF HOURS BY QUARTER AND SITUATION
Fig.4	WORK SITUATION HOURS – 08/09
Fig.5	LOCATION OF WORKING HOURS
Fig.6	LOCATION HOURS BY QUARTER
Fig.7	HOURS ON ROPES
Fig.8	HOURS ON ROPES V NOS. COMPANIES
Fig. 9	AVERAGE EMPLOYMENT DATA
Fig.10	EMPLOYMENT LEVELS OF GRADED TECHNICIANS PER Q
Fig.11	CONSEQUENCES OF ACCIDENTS / INCIDENTS
Fig.12	ACCIDENT / INCIDENT RATE PER MILLION HOURS
Fig.13	SITUATION OF ACCIDENTS/INCIDENTS
Fig.14	SITUATION OF EVENTS PER MILLION HOURS
Fig.15	INJURY EVENTS PER 1000 EMPLOYED BY GRADE & SITUATION
Fig.16	ACCIDENT SERIOUSNESS BY GRADE
Fig.17	RATE OF ACCIDENTS BY GRADE
Fig.18	BODY PART INJURIES – 2007, 8 & 9
Fig.19	CAUSE OF ACCIDENTS/INCIDENTS – 2007, 8 & 9
Fig.20	TIME OF DAY FOR ACCIDENTS/INCIDENTS
Fig. 21	TOTAL ACCIDENT/INCIDENT RATE WHILST ON ROPE
Fig.22	ON ROPE ACCIDENT RATE
Fig. 23	ACCIDENT RATES BY INDUSTRIES – 2009

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## 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 2009. Members submit two sets of reports:

- Quarterly employment figures, including working hours (Form 020R) and
- Details of specific incidents or accidents for each event or person injured (Form 021R).

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

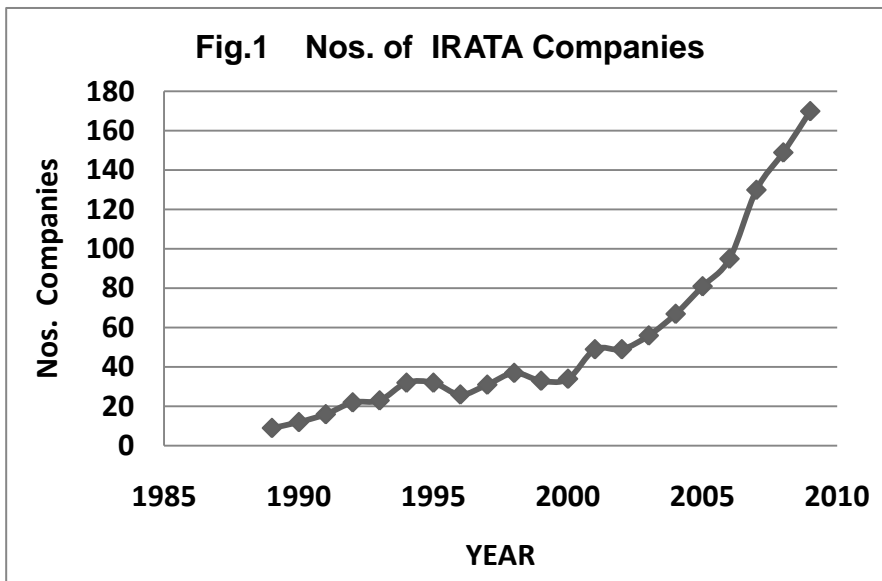
Member's employment submissions were compiled and supplied on a spreadsheet by IRATA Administrative Staff together with paper copies of all 020R and 021R forms submitted. Member companies were not identified to the analyst.

The report is arranged with figures and graphs incorporated within the text to which they apply. Tables summarising employment data are included at the back of the report.

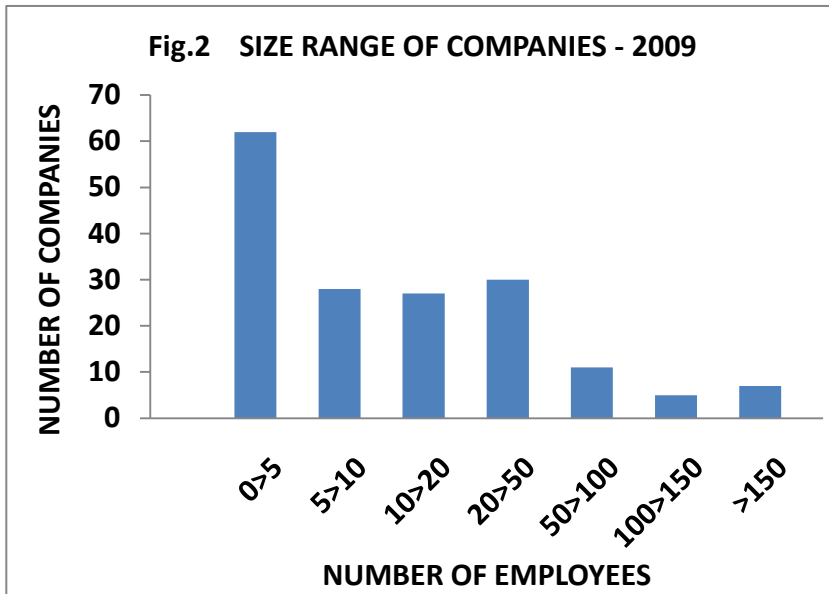
The report first considers overall employment figures, and then examines the accident and incident data before finally comparing IRATA incident rates with those of previous years and other industries.

## 2. IRATA MEMBERSHIP

The total number of companies registered to Dec 2009 was 170. This is a further increase of 21 over the 149 total (14%) of the previous year – almost the same increase as the 07/08 15% increase. This continuing level of membership increase is impressive when considered against the economic situation nationally and internationally. The graph (Fig.1) shows the increase in membership since 1989.



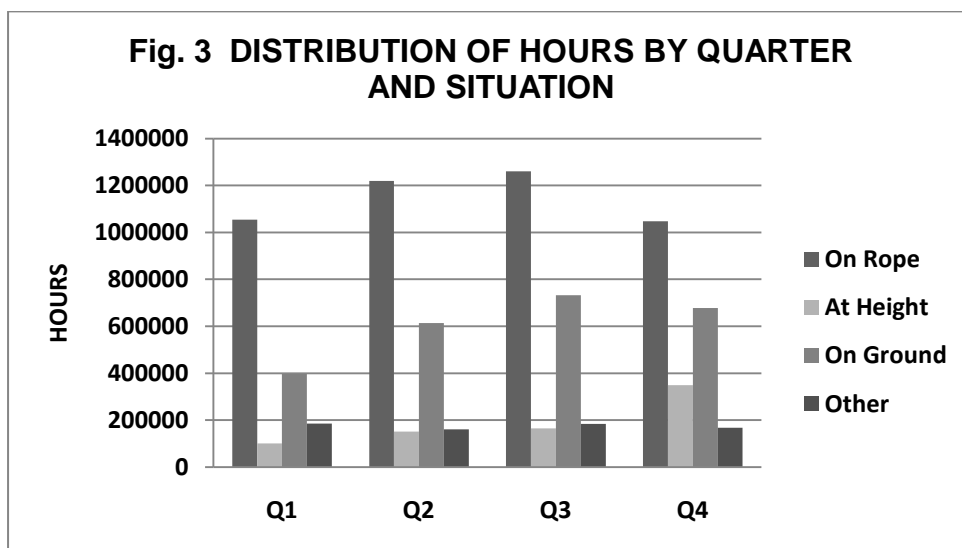
The range of company size, in terms of employees, for 2009 is shown in Fig. 2. The number employed refers only to company employees and excludes self-employed and other contractors utilised by companies. The overall profile is very similar to that in 2008. As might be expected a large proportion of member companies (about 30%) have less than five employees, representing only about 2.5% of the workforce. Median company size would be in the range 5-10 employees.



### 3. EMPLOYMENT STATISTICS FOR 2009

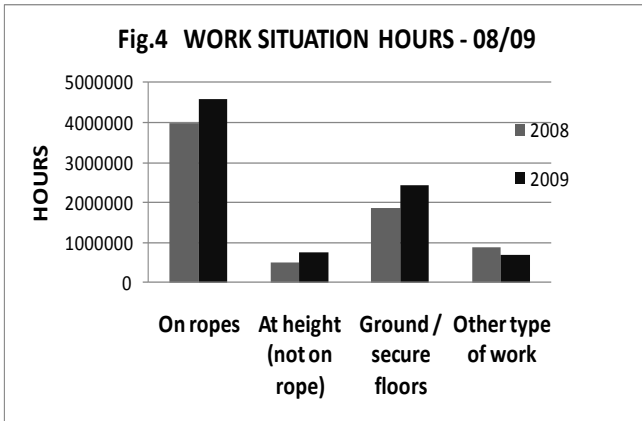
#### 3.1 Overall Employment and Hours Worked

Total hours worked worldwide in 2009 was 8,468,979, a 17% increase over the 7.22 m for 2008. This increase is slightly above a pro rata increase in membership over the period (14%). This suggests slightly more work per company than in 2008. The breakdown is shown in Fig.3 by quarter and by work situation. In general, the profiles are very similar to those of 2008. The bar chart shows the predominance of 'On Rope' working. There is a peaking of working hours in Q3.

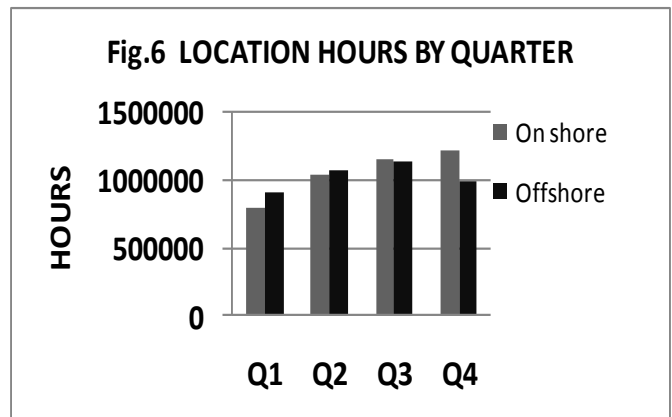
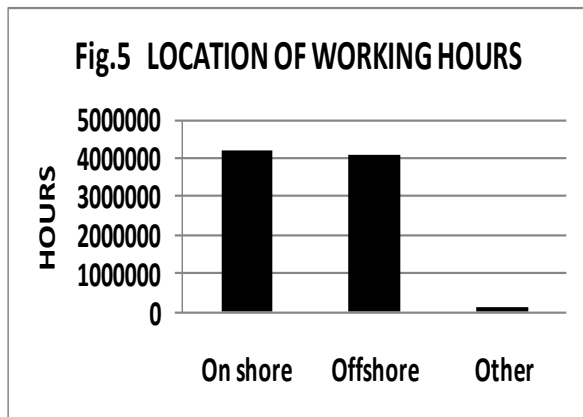


'On rope' working accounts for 54% (4.58m) of all reported hours (8.47m), about the same as in 2008 (55%). The graph (Fig.4) compares yearly totals of situation hours for 2008 and 2009.

The point of Fig. 4 is that it demonstrates that the bulk of the increase in hours from 2008 to 2009 is due largely to an increase in 'On Rope' and work on secure ground.



Historically, offshore working predominated with 57% and 55% of total hours in 2007 and 2008 respectively. The situation has now changed (Fig.5) and on shore working marginally exceeds offshore – 4.21mhours versus 4.11mhours. Drilling down into the data reveals two factors relating to the shift in emphasis. Firstly, the offshore hours showed a steady increase in hours, quarter by quarter, but then a significant fall in the last quarter (Fig.6). On the other hand, on shore hours showed a continuous rise in hours finally exceeding offshore hours by a large margin in the final quarter.



The second factor is that, although offshore has a higher 'On Rope' total (2.36mhours) than on shore (2.17mhours), this is offset by higher 'At Height' hours reported for on shore working (0.47 against 0.28mhours for offshore).

The true underlying cause(s) for the above is un-revealed in this analysis but it should be recalled that standard offshore days are 12hrs. Thus, for any given number of hours worked, this would equate to a smaller offshore workforce than the equivalent on shore. Additionally, platform personnel generally supply substantial supervisory and support effort for RATs offshore. This effort is obviously not included.

### 3.2 Directly Employed v Sub-Contract

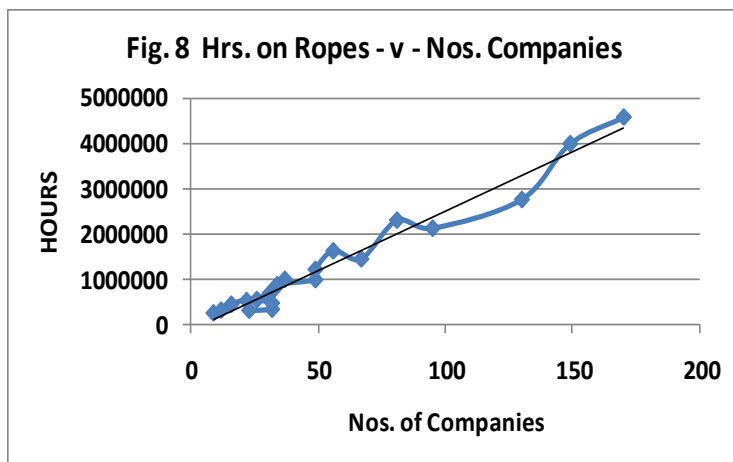
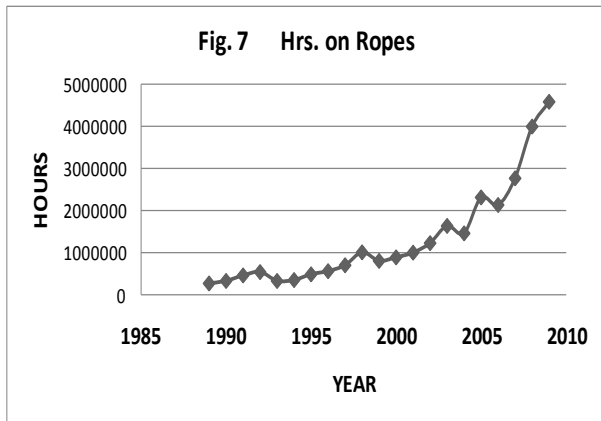
There was little difference between the ratios of Direct Employed and Sub-Contract for offshore or on shore working, offshore showing a slightly higher proportion of directly employed:

	Offshore	On Shore
Direct Employed	3.12	2.91 (mhours)
Sub-Contract	0.99	1.30

### 3.3 Comparison of Hours on Ropes with Previous Years / Average Company Workforce

Taking only the hours on rope, data from previous years in Fig. 7 shows an almost identical trend to that of the number of IRATA member companies in Fig 1. This relationship is confirmed by plotting Hours on Rope against Number of Companies (Fig. 8 below). The trend line now gives an average of

about 26,900 hours per annum per company, virtually unchanged from 2008. It is emphasised that only hours on rope is considered here.



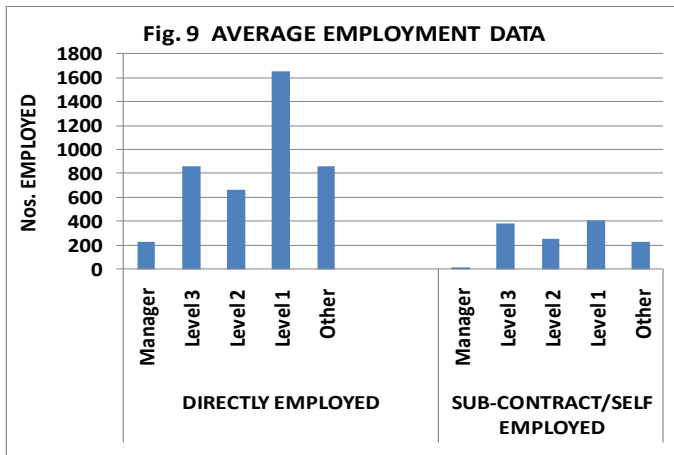
In previous reports, the average annual work hours were based on about 1,760 hours per annum per person. Hence, 26,900 hours represents an average front line workforce of about  $26,900 / 1,760 \approx 15$  per company. If due allowance is made for the *total* reported hours (as against just rope working) of 8.47 mhours, this rises to about 28 employees per company (27 in 2008). Again, this suggests average IRATA company workforces are not increasing significantly. Note that the total of 'employees' includes all labour hours including sub-contract, self employed etc.

With a total of 8.47 m hours, and assuming 1,760 hours per annum per worker, this yields a figure of  $8.47 \text{ m} / 1,760 = 4,813$  for fully employed employees, significantly below the figure of 6,509 from reported data. This is examined further in 3.4 below.

### 3.4 Employment Levels During 2009

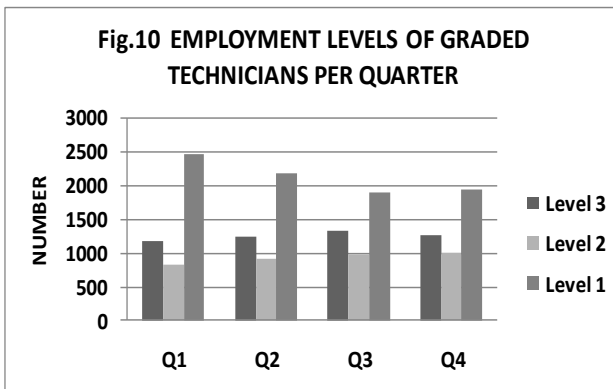
The quarterly total employment levels fluctuated during 2009. They varied from 6,204 to 6,837 with an average of 6,509 (i.e. +/- ~300 or about 5%). The chart below shows the breakdown of the average totals according to grade of employee and status (employee or sub-contractor/self-employed). 'Other' category employees (none IRATA qualified employees etc) are omitted from this figure to simplify presentation, although this averaged 950 per quarter.

The average number of IRATA trained Level 1 – 3 operatives was 4,291, 66% of the total. The high number of Level 1s was reported and commented upon last year.



It now remains to examine reasons for the wide quarterly swings. Although there is some variations between categories e.g. 'Other' sub-contractor/Self Employed, these are relatively minor in comparison to the overall changes.

If the data for graded technicians is now examined in isolation, the resulting chart (Fig.10) clearly shows the decline in Level 1 numbers from nearly 2,468(Q1) down to as low as 1,889 (Q3).



It might be argued that a number will have progressed to Level 2. Whilst there is a small increase in Level 2's (and Level 3), it is insufficient to explain the apparent 'loss' of about 500 Level 1 operatives. The explanation lies largely in loss of technicians from sub-contract or self-employed employment, whether voluntary departure or due to lack of work as the year progressed. This may be linked to a reduction in offshore working hours in the last quarter.

A consolation is that the number of Level 2 & 3 rose slightly during the year to about 1,000 Level 2s and 1,250 Level 3s.

In 3.3, the total working hours equated to a fully employed workforce of about 4,813 whilst submitted returns for employed persons averaged 6,509. As in previous years, this suggests a significant level of 'under-employment' in terms of hours worked per employee

### 3.5 Training

As with the previous reports, it is not possible to assess the training, assessment and related activities as this is not defined in data submissions.

## 4. ACCIDENT STATISTICS FOR 2009

### 4.1 Submission Rate/Quality

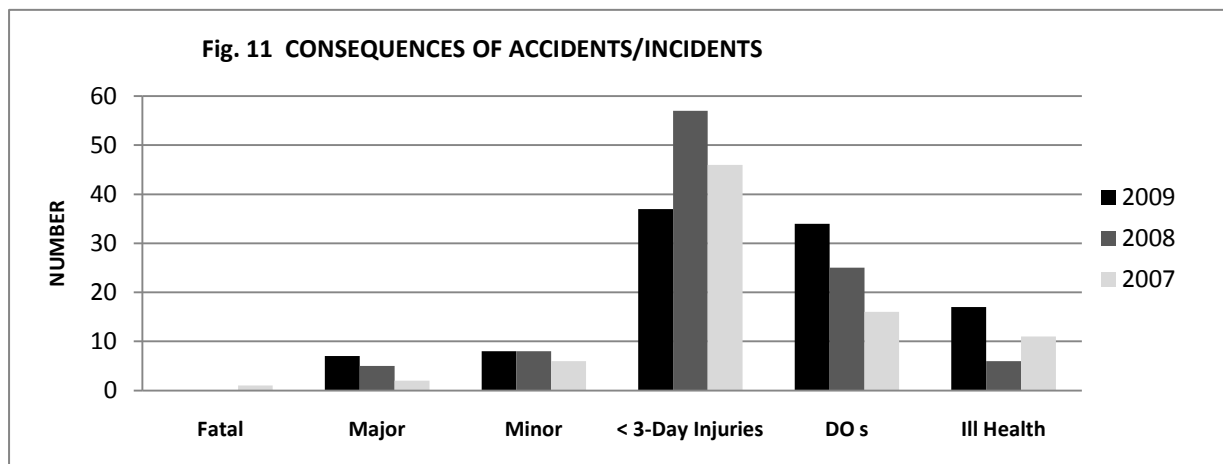
The total number of accident/incident 021R reports submitted for 2008 was 99 from 25 companies. In 2009, 99 accident/incident reports were again received from 34 companies, with one company reporting 30 separate incidents. Although the total number of reports remains the same, the significant increase in working hours of 17.1% (from 7.22 mhours in 2008 to 8.47 mhours in 2009) will have a positive influence on rates. This assumes similar levels of reporting integrity from year to year.

Of continuing and increasing concern was the poor quality of 021R returns revealed by quality checking. Significant errors and omissions were found in over 60 of the 99 submissions. Whilst a modest error level may be expected, a figure of 60% is clearly unacceptable, requiring a 100% data check before analysis could commence, as in 2008.

It is repeated: “It is tempting to suggest that the cause is solely poor attention to form completion. However, given the extent of errors and omissions, a more logical conclusion is that the 021R form profile is confusing .....the basis for the form is UK-based regulation (RIDDOR), particularly in respect of definitions for accident categories and Dangerous Occurrences..... unfamiliar to overseas companies, an increasingly important element of IRATA growth. It will [again] be a recommendation of this report to re-examine the 021R form format.”

#### 4.2 Consequence of Accident / Incident

Conventionally, the outcome or consequence of accidents or incidents is used to generate and analyse accident/incident data. The advantage of this approach is that the outcome of an event is tangible, measurable and readily analysed even though underlying cause(s) may be un-revealed in analysis. Fig.11 compares the absolute numbers of accidents / incidents for 2007, 2008 and 2009. The profiles are essentially similar with ‘< 3-Day Injuries’ and ‘Dangerous Occurrences’ (DO s) predominating in all years. As in 2007 and 2008, a common error in 021R submissions was categorising events as ‘Minor’ or ‘<3-day injuries’ (i.e. Not Reportable) when no actual injury occurred or of confusing the two categories.



There are several points arising from Fig.11:

The total number of injured persons from all causes in 2009 was 63 with some individuals receiving more than one injury.

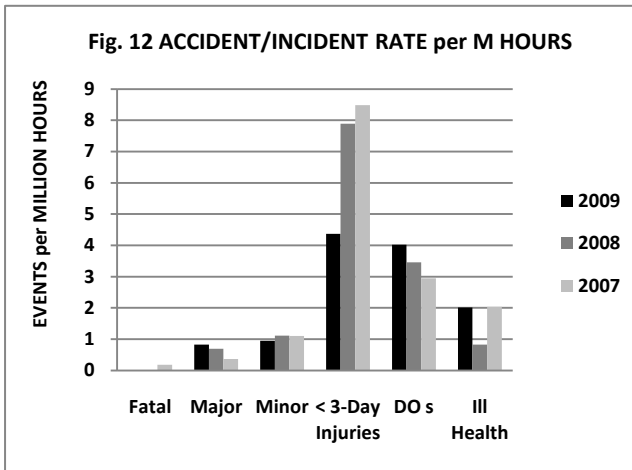
The small increase in ‘Major’ injuries (7 versus 5 in 2008) will have a significant impact in later comparisons with other industry figures. (One of the reported ‘Majors’ is questionable, depending on strict definition of ‘unconscious’ and ‘semi-conscious’. Here the distinction is in favour of the more serious condition. A second injury (facial) did not appear to meet RIDDOR ‘Major’ criteria but was apparently considered sufficiently serious to warrant the ‘Major’ category. Again, the more serious category has been retained).

There is a significant drop in ‘<3-Day Injuries’ but a corresponding rise in ‘DOs’.

The incidence of ‘Ill Health’ issues has more than doubled, largely due to an increase in strains and muscle injury.

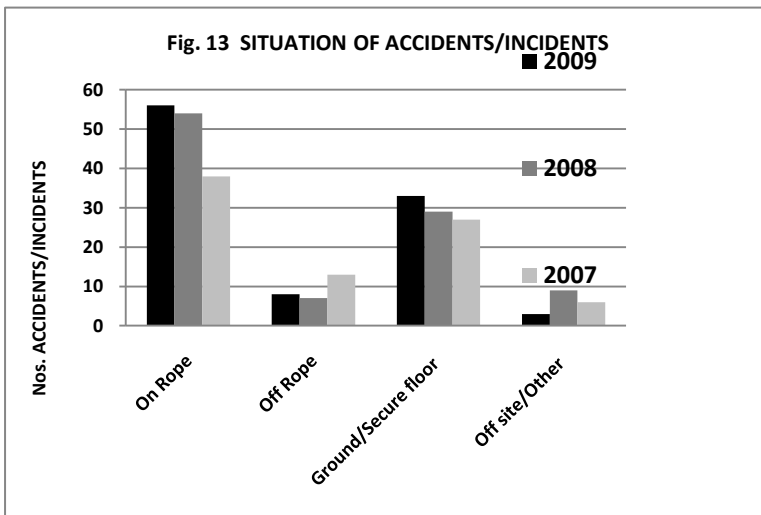
Of concern is that all ‘Majors’ occurred On Rope. Furthermore, four serious injuries occurred during rope descents, three of which were training rescue descents. Five of the injured were Level 1.

The absolute numbers in Fig 11 do not take account of the ‘hours at risk’. For this, it is necessary to divide the number of accidents/ incidents by the total work hours – 8.47m in 2009. It will be noted that the y-axis units in Fig.12 are given in number of accidents/incidents per million hours worked. The improvement in ‘<3-Day Injuries’ is now more evident but the slight increases in ‘Majors’, DOs and ‘Ill Health’ is equally evident.



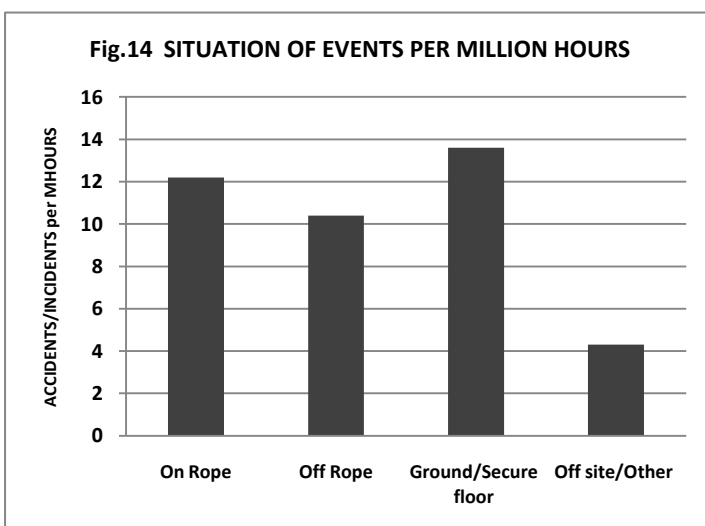
### 4.3 Situation of Accidents/Incidents

The chart (Fig.13) gives the locations of all 99 reported accidents/incidents for 2009 alongside those for 2007 and 2008.



The overall profile for 2009 is broadly similar to that for 2007/8 with one notable exception.

'On Rope' now accounts for over 54% of all incidents and is significantly greater than the 41% for the previous year. However, when the number of reported working hours for each category is also taken into account and the significant increase in 'On Rope' hours takes effect, a different picture emerges. In effect, the time of exposure at the different locations is taken into account by dividing the number of incidents or accidents by the hours spent for each situation, giving Fig.14.

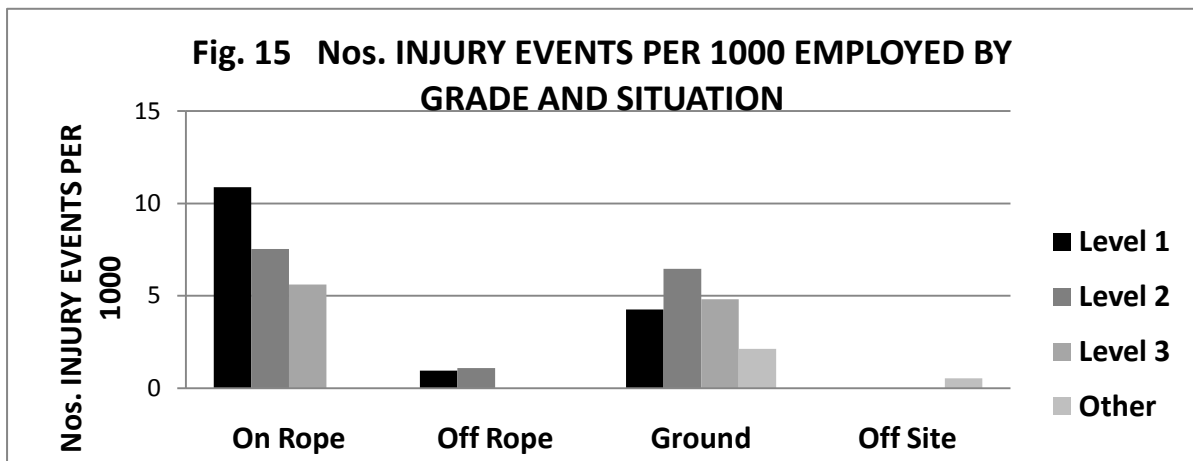


In effect, there is little difference in the rate of accidents or incidents between the different situations i.e. there is little difference in the risks associated with the different work sites. This reinforces the statement from the 2007 and 2008 reports – “One lesson for supervisors and workforce is to remain vigilant at all times and not to ignore the risks when not on ropes”.

However, sight should not be lost of the fact that all seven ‘Major’ accidents occurred whilst ‘On Rope’, four descending. In addition, whilst not a specified 021R category, there are 9 incidents of injury and ill health events associated with training. IRATA may wish to examine this further.

#### 4.4 Accident Events by Grade

In 4.3, all events were considered. The following examines only events leading to injury. Fig.15 shows the total of injury events for each grade divided by the reported employed numbers of each grade (and multiplied by 1000 to give injury rates per 1000 employed), ignoring managers. These injury rates are separated into the four situation categories to give the relative risks for each grade and situation.



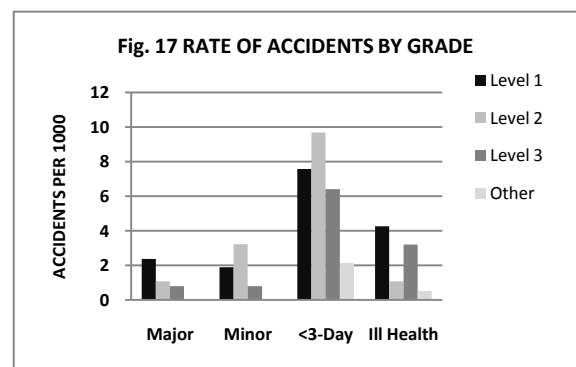
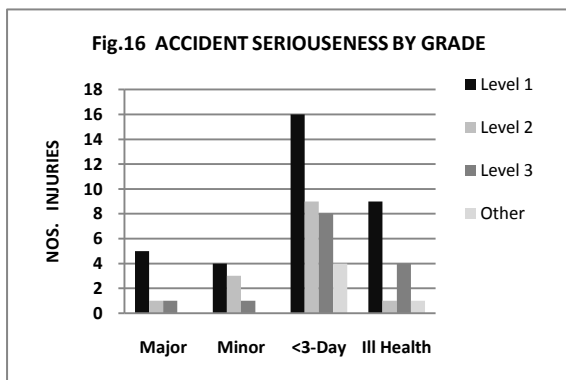
It is immediately apparent that the highest injury group is Level 1 when on ropes (11 per 1000). This group has historically been marginally more prone to injury but the difference is now significant although the overall range of 6-11 injuries per 1000 is much the same as it was in 2008. Injury rates have fallen slightly for working on secure ground, from 6-9 in 2008 to 4-6 injuries per 1000 in 2009.

In terms of injured persons, that is the actual number of injured individuals, who total 63, from a total workforce of 6,509 gives a rate of about 10 per 1000.

The above considers all injuries, irrespective of seriousness. This aspect will now be examined.

#### 4.5 Seriousness of Accidents by Grade

The total number of injuries and incidents of ill health was 69 in 2009, an overall rate of  $69 / 6,509 \times 1000 = 10.6$  injuries per 1000 or  $69 / 8.47 = 8.1$  injuries per million working hours. Fig.16 shows the distribution of the injuries with Level 1s numerically taking the brunt of injuries in all categories.



However, when the employed numbers in each grade are taken into account, the rate per 1000 modifies the chart (Fig. 17). Overall, the rates tend to equalise, particularly in respect of '<3-Day' injuries and Level 2s are seen to suffer a higher rate of injury.

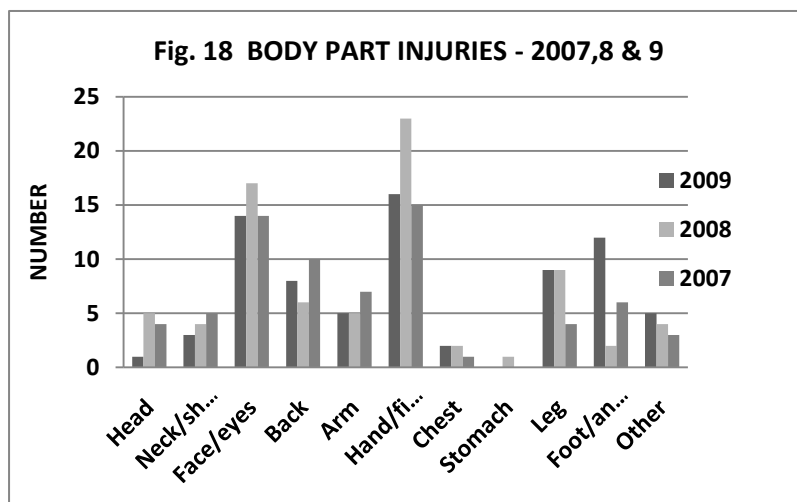
One significant difference from previous years is the higher incidence of 'Ill Health'. This will be commented upon later but, of the 17 recorded incidents, 9 were due to muscle strains and sprains. Four occurred during training.

Attention will now be turned to the actual injuries sustained by personnel.

#### 4.6 Body Part Injuries

The body part injuries sustained during 2007, 8 & 9 are shown in Fig 18. The totals have remained consistent at 69, 78 and 75 respectively. Given the progressive increase in working hours (5.42m in 2007, 7.22 m in 2008 and 8.47 m in 2009), the almost static injury numbers is remarkable. (Care is needed here because some are multiple injuries sustained by an individual but counted as separate items).

Injuries to hand/fingers and face/eyes again predominate (although lower than in 2008) with injuries to feet significantly higher than previously. Leg and back also account for a significant proportion of injuries.



Of the 12 ankle/foot injuries, six were due to impacts and four from falls; one of the falls was caused by ropes melting through against hot pipes, dropping the operative to the ground. Two other ankle/foot fall injuries were due to failure to control rope descent during rescue training. It is noted that four injuries to legs/feet/ankles were due to mishandling of high pressure jetting equipment.

Fourteen face/eye injuries were recorded seven, of which, were caused by moving objects inflicting facial injuries. Only five were a result of eye injuries caused by foreign materials entering the eye, a significant improvement over previous years. Six injuries occurred on rope, one off rope, four on secure ground and two off site.

Hand/finger injuries fell from 23 in 2008 to 16 in 2009; 11 were due to being struck or trapped by tools or equipment; the remainder by a variety of cuts, rope burn or bruising.

'Other' category injuries accounted for 5 miscellaneous items (nosebleed, suspected food poisoning etc). One was caused by smoke inhalation/asphyxia during flare start up adjacent to on-rope working.

The seven 'major' accidents resulted in injuries to finger (amputation), leg and ankle breaks (all uncontrolled rope descents), facial injury and becoming semi-conscious whilst on rope.

Perhaps of increasing concern is the number of uncontrolled descents on rope leading to lower limb injuries. These appear to be a result of errors in use of rope equipment hardware and/or training although insufficient information on these events was available.

Unfortunately, the injury categories do not precisely coincide with those used by HSE\* (quoted Labour Force Survey (LFS) figures for 2009). However, for those that do, (units in injuries per 100,000 workers) and using IRATA average workforce of 6,509 to obtain equivalent figures (multiply by

100,000/6,509 = 15.4), the table compares rates of injury per 100,000 employees for all 'Major' and '>3-Day' (i.e. 'Minor' in 021R):

			IRATA	HSE (LFS)
Back injuries	(1)	15	240 (injuries/100,000)	
Neck/Arms	(1)	15	280	
Legs/Feet	(8)	123	110	

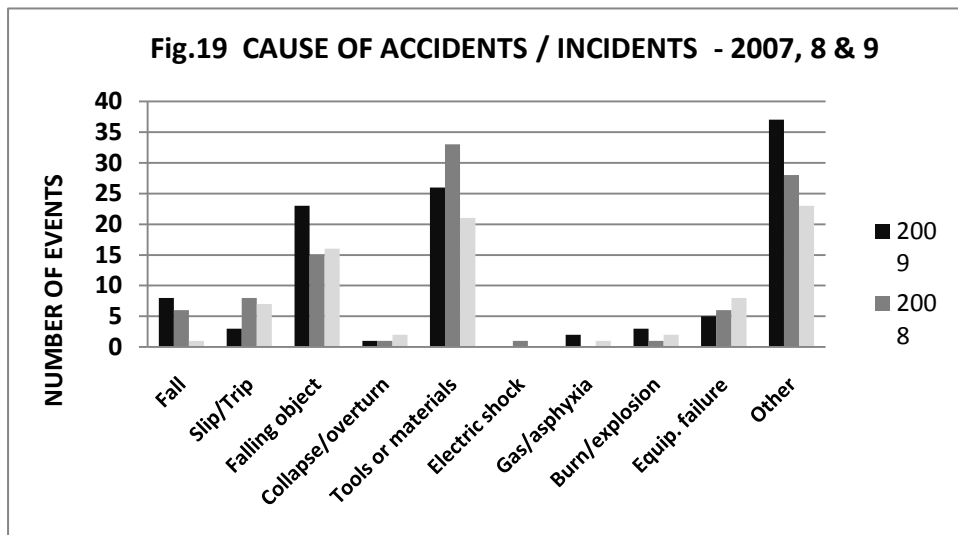
Exceptionally, IRATA matched HSE figures in one category – injuries to lower limbs.

\*HSE figures quoted here and elsewhere in the report are to be found in HSE Publication 'Health and safety statistics 2007/8' obtainable from HSE Books, PO Box 1999, Sudbury, Suffolk CO10 2WA or downloaded from [www.hse.gov.uk/statistics/swi](http://www.hse.gov.uk/statistics/swi)

#### 4.7 Immediate Causes of Accidents / Incidents

The chart below (Fig. 19) shows the breakdown of causes for reported accidents/incidents for 2007, 2008 and 2009 (108 reports). As for the 2007/8 figures, an additional category of 'Slips/Trips' has been added and re-allocations to this category made from individual reports, as appropriate, to align with current general practice.

[Note: The number of 'causes' exceeds the actual number of events because some have more than one cause for a particular accident/incident].



There is a clear similarity between the 2007 and 2008 figures with respect to the major causes – Falling Objects, Tools/Materials and Other,. Together they account for 86 of the 108.

The absence of categories relating to 'human factors' has resulted in a large number (37) of 'Other' causes reported. Of the 37, 17 were due to operatives taken ill or sustaining muscle strains or injury. This is perhaps the area of greatest increase in reported incidents in recent years. This may be due to a greater recognition that such events are genuine reasons for reporting. It would be appropriate for IRATA also to recognise the importance of this and to provide specific reporting opportunity alongside the other 'causes' in 021R which relate primarily to 'tangible objective' hazards.

Twelve reports were due to 'human factors' – errors or omissions - such as: lack of a supervisor, falling asleep, walking under a load, safety barriers removed by unauthorised third party (leading to vehicle entering area and contacting rigged rope), accidental deluge release soaking technicians etc. Five were rope access gear related incidents (excessively long shunt lanyard, stop missing from harness, single point of attachment spotted, rope cut by third party, slack harness slipping and causing chest injury).

Ill-health issues (17) varied from back injuries caused by swinging a bag, moving a 70kg dummy and shifting rope position to shoulder strains from over-reaching with percussion drill and carrying out exercises. Several reported cases of becoming unwell were brought on by fatigue or sunstroke (?), food poisoning, lack of food or being unfit.

The increasing number of falling object incidents may be noted. Whilst not examined in detail, many were associated with failure to restrain equipment/materials or carry out pre-job preparations to prevent dropped object hazards. The potential for serious injury/fatality of such incidents is obvious and the rise from 15 to 23 is disappointing.

The incidence of events due to tool handling (26) remains a significant factor, particularly in the number of strains and muscle injuries incurred in their use. Twelve incidents occurred whilst on rope, three involving use of water jetting. Seemingly, engineered safe water jetting equipment is still not in use on all sites.

Highlighted is the number of 'real' falls (i.e. uncontrolled descent). There is an increase to eight in direct rope-related accidents and, whilst representing only about 8% of the total of all reported accidents/incidents, it is a particularly sensitive area for the industry. This clearly requires closer examination particularly in conjunction with several other instances of DOs involving rope access equipment related incidents.

Of the 69 injuries, 51 were directly attributable to 'self infliction'. Thus, the majority of accidents/incidents appear to be 'subjective', caused by the personnel themselves (architect of their own disasters). Whilst these may be the immediate causes, very rarely are other underlying causes identified or considered (e.g. role of supervisors and management, training, pre-site inspection, etc) although corrective measures sometimes include these aspects.

#### 4.8 Time Lost

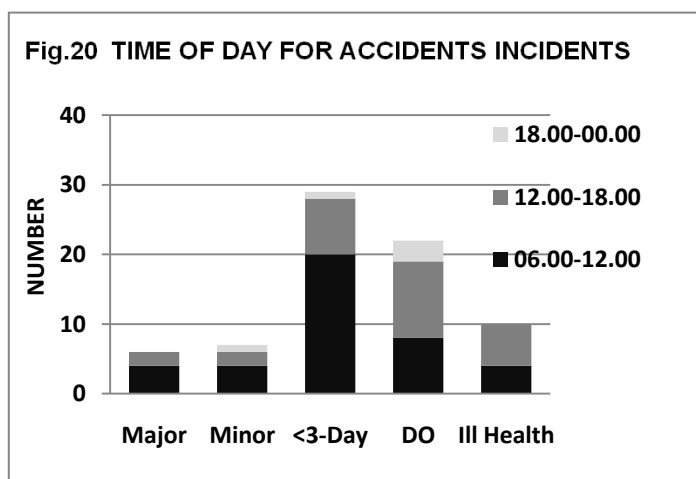
Reported time lost was about 587 days or  $587/6,509 = 0.09$  days per person per year. This is well below the 2009 HSE figure of 1.24 days for combined ill health and injuries. As usual, it is probable that there is a high degree of under reporting. A more realistic figure, if the UK national average is accepted, would be about 8 – 9,000 days, at least ten times that reported.

#### 4.9 External Factors

**Time of Day** – If the time of day, when given, for occurrence of accidents/incidents is allocated to one of the three time periods am, pm or night, and plotted according to consequence of the event Fig.20 is obtained:

The chart appears to suggest that injuries are more likely to be sustained during the morning whereas Dangerous Occurrences and cases of Ill Health are marginally more likely to occur in the afternoon.

Without knowing the time distribution of overall working hours it is not possible to determine whether the above is a 'normal' frequency or whether there is a genuine effect of time of day on incidence of accidents/accidents.



**Weather Conditions** - In only three cases was weather a possible factor in the reported accident/incident. One included nosebleed and tiredness (sunstroke?) afflicting an NDT technician working on secure ground in hot desert conditions.

**Supervision and Training** – With three exceptions, these factors were excluded as possible contributory causes of accidents. In two cases, it was accepted that inadequate training in use of HP water jetting was a contributory cause of self-injury. In a third case, where operatives on ropes were working near a flare tower, a Level 1 was affected by smoke/fumes when the flare unexpectedly ignited. He was unfamiliar with escape/shelter routines familiar to the other technicians. As in previous years, it is difficult to accept that so rarely is lack of adequate training or supervision a factor in accidents or incidents.

#### 4.10 Manual Handling

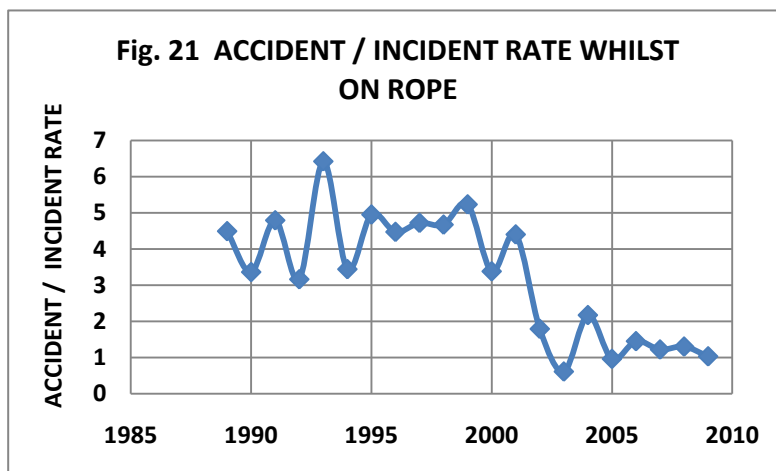
Although not a specific category within the O21R form, a search was made of all reports and 8 cases were identified where 'manual handling' appeared to be a factor involved in injury, four of which were on rope. Given that work on rope may incur an element of physical effort, it is perhaps surprising that only half of all 'manual handling' injuries occurred whilst on rope.

### 5. COMPARISON OF ACCIDENT / INCIDENT DATA WITH PREVIOUS YEARS AND UK HSE DATA

#### 5.1 Working on Ropes

To maintain consistency with historical IRATA data for work On Ropes in isolation, Table 1 is a compilation of data since 1989 and amended to include 2009 data. A graphical presentation of the total incident rate per year is shown in Fig 21 below where 'total' refers to the sum of RIDDOR reportable accidents (fatal, major, and minor), Dangerous Occurrences and None Reportable Accidents (i.e. <3-Day Injuries) sustained whilst On Rope. Ill Health incidents are excluded, as all are accidents and incidents when not on rope. The rate is given as accidents / incidents per 100,000 working hours.

(Note: IRATA DO data cannot be compared to HSE data as it does not necessarily comply with RIDDOR definitions – see RIDDOR 1995 Sch.2)

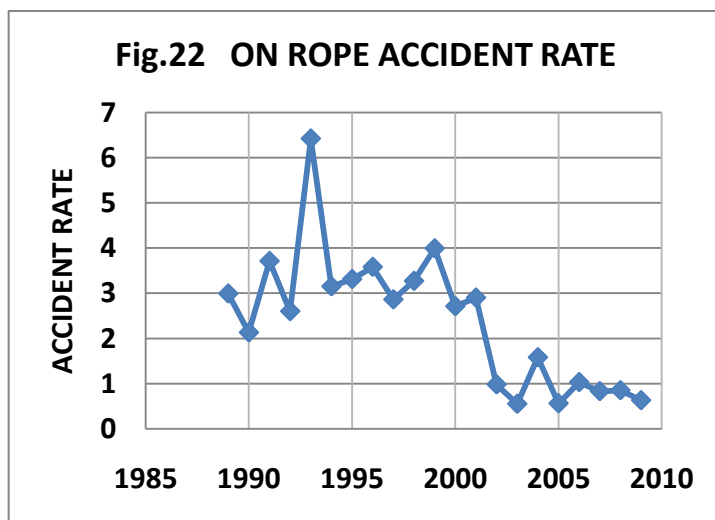


The continuing maintenance of an accident / incident rate of about 1 per 100,000 hours of work is an achievement IRATA members should find welcoming.

One of the problems with this analysis is that it includes Dangerous Occurrences (DOs). Traditionally, IRATA companies have been urged to submit reports on DOs irrespective of whether or not the reported events comply with the UK HSE RIDDOR criteria. Consequently, there is potential conflict between maintaining this valuable source of information and data without presenting an unduly pessimistic view of the safety statistics. It is proposed, therefore, that future reports should present data on the sum of RIDDOR accidents (Fatal, Major and Minor) and None Reportable Accidents (<3-Day Accident) but excluding Dangerous Occurrences. This should remove any inhibitions in reporting DOs.

(Note: Rates would be calculated as currently i.e. Divide by the annual hours on ropes and multiply by 100,000 to give accidents per 100,000 hrs).

The resulting graph (Fig.22) is little different in general profile although showing slightly lower rates because of removing the DOs. It is emphasised that the graph is based solely on accidents that occurred only on ropes.



The format of Table I has been retained for 2009 but it is suggested it be revised to reflect the proposed changes in the future.

Finally, it remains to comment on HSE publication “Statistics of workforce fatalities and injuries – Falls from a height” in relation to IRATA data. The total of major injuries reported due to falls from (low and high) height in 2007/8 was 11.1 per 100,000 workers. Given the admitted 50% under-reporting to HSE, this gives about 20 per 100,000. This would equate to about 1-2 major injuries due to a fall for IRATA personnel. In 2009, four ‘uncontrolled’ descents occurred on rope leading to major injuries. Whilst the potential seriousness of an ‘uncontrolled’ descent on rope may not be as for a ‘free’ fall, it nevertheless confirms the need for IRATA to examine means to reduce the frequency of such incidents.

## 5.2 Basis of Calculations for Comparison of IRATA Data

Although historically within IRATA there has been emphasis on the data for on rope working, this analysis will continue using total working hours for two reasons. Firstly, work off rope, on secure ground and other working account for nearly half of all reported hours; secondly, to maintain consistency with general accident/incident reporting practice, particularly UK HSE data, where all working hours are considered collectively.

It is necessary to change the units used, moving from ‘per 100,000 hours’ to ‘per 100,000 employees’. For the annual total of 8.47 m hours, numbers of incidents/accidents are multiplied by  $(100,000/8.47 \cdot 10^6) \times 1,760$  (hrs per year per employee) = 20.8.

An alternative method is to simply take the employment numbers (Table 3) and apply a multiplication factor to accident and incident data to reach 100,000 employees:

$$\text{Average employment (from quarterly figures)} = 6,509 \text{ employees}$$

To convert to 100,000 employees multiply number of accidents and incidents by  $100,000/6,509 = 15.4$

This figure assumes 100% employment and includes sub-contractors; therefore, in reality, a slightly higher figure might be expected. Bearing in mind the approximations used for both calculations, it seems prudent to select a figure between the two – the mean would be **18.1** and this figure will now be used to convert IRATA accident figures.

Using the above, IRATA figures become (injuries per 100,000 workers):

Fatalities - nil

Major Injuries - 7 x 18.1 = 127

Minor (>3-Day) - 8 x 18.1 = 145

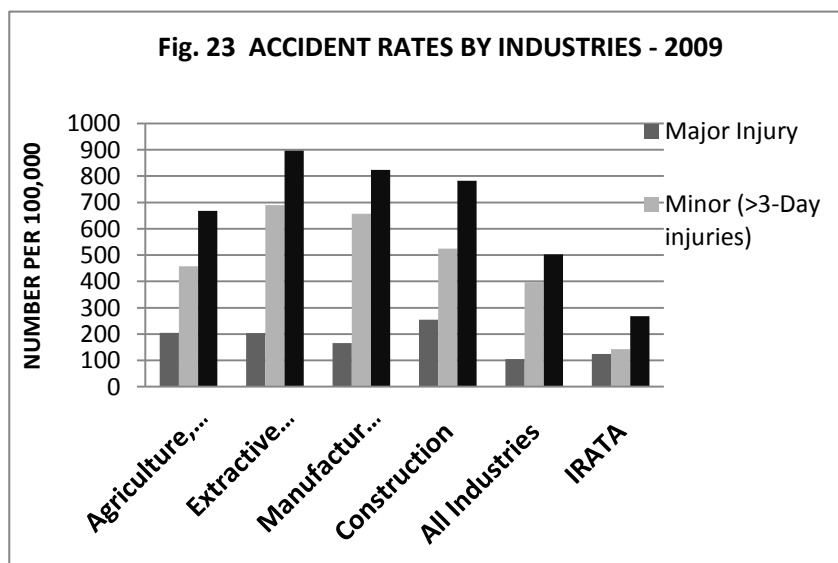
### 5.3 Comparison of IRATA Accident and Incident Data with UK HSE Data

The UK HSE website key figures for 2008/09 data for various industries (\*IND 1) are tabulated and charted below with equivalent IRATA figures.

\* <http://www.hse.gov.uk/statistics/sources.htm>

Industry	Major Injury	Minor (>3-Day injuries)	Total (incl fatal)
Agriculture, Forestry & Fisheries	205	457	668
Extractive and Utility Supply	203	690	896
Manufacturing	166	657	824
Construction	254	525	782
All Industries	105	397	502
IRATA	127	145	272

(All figures in number per 100,000 employees. Fatal injuries incorporated in 'Total' column).



The seven 'Major' accidents reported in 2009 clearly has a significant influence on the figures raising IRATA up to the level of 'All Industries' in the 'Major Injury' category – for the first time. However, it is still only about ½ that of other related industries. The 'All Industry' figures include a large population of 'low risk' workforce that must have a strong tendency to bring down the average figure. In addition, the degree in under-reporting via RIDDOR is estimated to be ~42% by HSE (for 2009), indicating that the true figure should be significantly higher. Although some under reporting may be expected in the equivalent IRATA data, it is unlikely to be of the same order.

The IRATA figure for Minor Injuries is considerably below all others, as usual, being only about 1/3<sup>rd</sup> that of All Industries and about ¼ to 1/5<sup>th</sup> that of related industries. Thus, the overall position, in terms of total injuries, is that IRATA companies maintain a significant advantage over All Industries, reporting only 272 compared to 502 injuries per 100,000. The position is even further enhanced if the overall Labour Force Survey figure of 870 injuries per 100,000 is used for comparison.

It is worth noting that some caution should be applied to the IRATA data, however, because of its sensitivity to even single events. It will be recalled that the multiplication factor for the annual total hours was 18.1. Thus, a single event represents 18 'points' in the IRATA data within the table.

A further comparison can be made with the LFS figures for some selected workforce categories:

LABOUR FORCE SURVEY	Total*
Skilled Trades	1760
Process, Plant and M/C Operators	1900
All	870
IRATA	272

\*Includes fatalities - see INJOCC1 data in [www.hse.gov.uk/statistics/indexoftables.htm](http://www.hse.gov.uk/statistics/indexoftables.htm)

For completeness, the figure for None Reportable Accidents is  $(37 \times 18.1) = 670$  per 100,000 employees. Even if these figures were added to the Reportable categories, the total (942) would still compare favourably with the above. Thus, by any standard, IRATA figures remain impressive.

In view of the major differences in reporting criteria between the US Bureau of Labor Statistics and the UK HSE, injury data comparisons are of limited value and, therefore, abandoned. Below are tabulated examples of EU data alongside UK figures. Unfortunately, the latest figures available for comparison are for 2006.

SECTOR	Average EU (2006)	UK (2006)
Total or Average	3014	1,135
Agriculture, Forestry, Fishing	3879	2,240
Construction	5974	1,550
Manufacturing	3463	1,060
IRATA (2009)	272	272

\* US Figures available at [www.bls.gov/iif/oshsum.htm](http://www.bls.gov/iif/oshsum.htm) . European figures extracted from [www.hse.gov.uk/statistics/european/tables.htm](http://www.hse.gov.uk/statistics/european/tables.htm). All numbers injuries per 100,000.

Even within EU states there are major differences in the manner in which data is gathered. This may explain, in part, some of the gross differences found in national statistics (e.g., the average 'Over 3 Day Injury' figure for Germany is 3,276, Sweden is 1,088 and Spain is 5,533). Nevertheless, IRATA data is virtually an order of magnitude below European averages.

There were no reported injuries to members of the public and no fatalities in 2009.

#### 5.4 Illness

The incidence of illness has historically been low. However, a total of 17 recorded illnesses in 2009 necessitates further consideration although further breakdown (e.g. into the various illness headings) would be of limited value due to the low numbers. The 17 cases correspond to a rate of  $17 \times 18.1 = 308$  per 100,000 workers. This is only 1/6<sup>th</sup> of the overall UK figure of 1,810, perhaps reflecting a very healthy workforce!

[Ref Table WRIAGEIW12 in HSE statistics – [www.hse.gov.uk/statistics/indexoftables.htm](http://www.hse.gov.uk/statistics/indexoftables.htm) ]

## 6 SUMMARY

The following summarise some key points from the report:

### Data Submission

60% of accident/incident submissions (021R) contained significant errors and/or omissions.

### Membership/Employment

Membership continued to rise with 170 registered companies by December 2009, a 14% increase in the year.

Total employed increased from 5,593 in 2008 to 6,509.

Hours worked worldwide reached 8.47 million, a 17% increase over 7.22 m in 2008.

Total average qualified IRATA technicians employed in 2009 was 4,291, distributed as follows (2007/8 figures in brackets):

	2009	2008	2007
Level 1	2114	(1966)	(1136)
Level 2	929	(781)	(484)
Level 3	1248	(1138)	(833)

There was a significant decline in Level 1 technicians during the year, from about 2,500 in Q1 to about 1,900 in Q4, a 'loss' of nearly 600.

The total hours 'on rope' was 4.58 million hours, 54% of total working hours.

Offshore working accounted for 4.11 million work hours; on shore reported 4.21, thus exceeding offshore for the first time.

### Accidents/Incidents

Accident / incident submissions totalled 99, 67 involving injury to 63 individuals.

There were:

7	Major injuries	(5 in 2008)
8	Minor injuries	(8 in 2008)
37	Not Reportable or <3-Day injuries	(57 in 2008)
34	Dangerous Occurrences	(25 in 2008)
17	Ill Health cases	(6 in 2008)

All 7 'Major' injuries were associated with on rope working. Four were due to uncontrolled descents.

Accident / incident rate was broadly the same for on rope, off rope and on secure ground (10-14 events per million hours)

The highest risk of injury was to Level 1 technicians when on rope; injury rate was about 11 per 1000 employed.

Of the 17 cases of ill health, 9 were due to strains and sprains.

The total number of body part injuries remains consistent with previous years at 75 (69 in 2007, 78 in 2008).

Injuries to hands/fingers (16), face/hands (14) and feet/ankles (12) predominated, closely followed by legs (9) and back (8).

There was a significant drop in eye injuries due to foreign bodies entering the eye.

108 Immediate causes of events were identified with Falling Objects (23), Tool/Materials (26) and Others (37) accounting for 86 between them.

The rise in Falling Objects, from 15 in 2008 to 23 must be disappointing.

Twelve events were directly due to 'human factors'.

Nine events occurred during training.

Lost time was assessed to be about 0.1 day per person per annum, significantly lower than the UK injury and ill-health national average reported by HSE of 1.24, implying a continuing high level of under-reporting.

Manual handling, introduced as an added category, was a significant factor in eight of the 99 reported incidents.

For 'On Rope' working only, the calculated incident rates (IR) in number per 100,000 hrs were as follows (figures in brackets for 2007/8):

	2009	2008	2007
Non RIDDOR	0.72	(1.09)	(1.15)
RIDDOR Reportable	0.33	(0.21)	(0.07)
All accidents and DOs	1.03	(1.30)	1.22)

Comparison of overall reportable accident rates with UK national statistics reveals IRATA rates to be about half the All Industry rate for combined Fatality, Major and Minor (>3-Day Injury) accidents (272 versus 502 per 100,000).

The IRATA rate for Major accidents is approximately the same as for All Industries and about 1/3rd that of related industries.

Comparisons with Labour Force Survey figures are even more favourable being 1/3rd of the LFS All Industry figure of 870 injuries per 100,000.

## **7 CONCLUSIONS**

Based on the reports provided, the following conclusions may be reached:

In 2009, IRATA continued to expand in terms of company membership, employment numbers and hours worked. Despite this, there was a significant fall in the number of Level 1 operatives by year-end.

The overall accident/incident rates were better than or similar to those of 2007 and 2008 with the exception of 'Major' accidents that were higher (7 accidents in the year). This had a significant effect on the reportable accident rate that, nevertheless, overall remained well below UK HSE and the latest (2006) EU industrial rates.

IRATA membership maintained an enviable safety record in 2009.

## **8 RECOMMENDATIONS**

To ensure that this report and the statistics therein maintain their significant value to member companies and other users member companies are urged to improve the quality of their returns and strive to eliminate the errors I have seen in some returns.

The continuing enjoyment of a favourable safety record should not impede further improvement particularly with respect to:

Fall prevention ('uncontrolled descent' on rope)

Falling (dropped) objects

Tool handling

IRATA should modify form 021R format to improve the quality of accident/incident reporting by members particularly with respect to:

Clear definition of Major, Minor and Not Reportable injury categories.

Provision for 'Human Factor' cause(s).

Ensuring brief summary of event is included *on the form itself*.

In future, 'On Rope' accident/incident rates should be calculated on the basis of Fatals, Majors, Minors and Non Reportable Accidents only, ignoring Dangerous Occurrences.

**TABLE 1 ACCIDENT AND INCIDENT RETURNS OF IRATA COMPANIES 1989 – 2009  
(BASED ON HOURS WORKED ON ROPE ONLY)**

Year	No of Companies	Hours on ropes	Dangerous occurrences (DOs)	None reportable Accidents (NRA)	RIDDOR Accidents on ropes	IR for none RIDDOR incidents* **	IR for RIDDOR accidents*	IR for all Accidents and DOs* ***
1989	9	267,504	4	8	0	4.49	0	4.49
1990	12	327,645	4	7	0	3.36	0	3.36
1991	16	457,928	5	17	0	4.79	0	4.79
1992	22	537,920	3	13	1	2.97	0.19	3.16
1993	23	327,000	0	21	0	6.42	0.00	6.42
1994	32	348,749	1	11	0	3.44	0.00	3.44
1995	32	484,285	8	16	0	4.95	0.00	4.95
1996	26	559,035	5	18	2	4.11	0.36	4.47
1997	31	699,688	13	11	9	3.43	1.29	4.72
1998	37	1,006,538	14	23	10	3.68	0.99	4.67
1999	33	803,365	10	29	3	4.85	0.37	5.23
2000	34	887,206	6	21	3	3.04	0.34	3.38
2001	49	999,010	15	25	4	4	0.40	4.40
2002	49	1,225,930	10	12	0	1.79	0.00	1.79
2003	56	1,634,482	1	9	0	0.61	0.00	0.61
2004	67	1,457,848	8	22	1	2.06	0.07	2.17
2005	81	2,311,265	9	10	3	0.82	0.13	0.96
2006	95	2,132,141	9	21	1	1.41	0.05	1.45
2007	130	2,765,483	11	21	2	1.15	0.07	1.22
2008	149	3,859,584	17	25	8	1.09	0.21	1.30
2009	170	4,582,642	18	15	14	0.72	0.33	1.03
TOTAL or AVERAGE		27,675,248	171	355	61	3.01	0.23	3.24
AVERAGE from running total						1.90	0.22	2.12

\* - units for Incident Rates (IR) in number per 100,000 hours worked

\*\* - (Col 4 + 5)/hours/100,000

\*\*\* - (Col 4+5+6)/hrs/100,000

**TABLE 2 SUMMARY EMPLOYMENT BY GRADE - 2009**

QUARTER	1	2	3	4	Average
AV NO OF PERSONS DIRECTLY EMPLOYED					
Manager	249	222	218	222	228
Level 3	810	866	926	851	863
Level 2	607	667	710	680	666
Level 1	1638	1763	1688	1540	1657
Other	603	616	1169	1056	861
TOTAL	3907	4134	4711	4349	4275
AV NO OF PERSON SUB CONTRACT OR SELF EMPLOYED (SC)					
Manager	10	25	11	15	15
Level 3	357	368	396	408	382
Level 2	204	242	258	310	254
Level 1	779	367	141	343	408
Other	94	141	343	324	226
TOTAL	1444	1143	1149	1400	1284
OTHER NON-IRATA COMPANY EMPLOYEES					
Manager	85	78	116	107	97
Level 3	1	1	2	6	3
Level 2	9	9	10	10	10
Level 1	51	41	60	45	49
Other	828	798	789	754	792
TOTAL	974	927	977	922	950
TOTAL EMPLOYED	6325	6204	6837	6671	6509

**TABLE 3 SUMMARY DATA OF HOURS – 2009**

ESTIMATE OF HOURS WORKED IN VARIOUS SITUATIONS					TOTALS
Working on ropes					
On shore	Q1	Q2	Q3	Q4	
Directly employed	379281	406204	459684	327587	1572756
Sub-contract	113941	150149	159013	176477	599580
Offshore					
Directly employed	427078	509369	494331	393848	1824625
Sub-contract	120885	144820	136370	136840	538915
Other					
Directly employed	12842	6867	5680	7732	33121
Sub-contract	820	2221	4865	5739	13645
TOTALS	1054847	1219629	1259943	1048223	4582642
Working at height					
On shore					
Directly employed	51358	75063	80198	137673	344292
Sub-contract	7998	7788	7723	104802	128311
Offshore					
Directly employed	29997	39268	40846	37282	147393
Sub-contract	8807	23309	35883	68861	136860
Other					
Directly employed	2836	3833	454	260	7383
Sub-contract	0	2041	0	192	2233
TOTALS	100996	151302	165104	349070	766472
Work at ground or secure floors					
On shore					
Directly employed	135781	148223	176363	187350	647716
Sub-contract	13264	148223	176363	187350	525200
Offshore					
Directly employed	217253	231595	274911	231414	953138
Sub-contract	30200	71917	92039	51566	245722
Other					
Directly employed	165	13448	12494	14421	40528
Sub-contract	0	65	951	5924	6940
TOTALS	396663	613471	733120	678025	2419243
Other type of work					
On shore					
Directly employed	80586	88687	88391	88391	349789
Sub-contract	16959	16959	16746	7316	45297
Offshore					
Directly employed	37657	42050	60868	53514	194089
Sub-contract	33225	7846	13053	13053	67254
Other					
Directly employed	3531	3853	1651	3112	12147
Sub-contract	13032	1978	3404	2726	21140
TOTALS	184990	161372	184113	168112	689715
TOTALS	1737496	2145774	2342280	2243430	8468979

(Derived from O20R Forms and supplied courtesy IRATA Secretariat)



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