

WORK & SAFETY ANALYSIS 2016





Abstract

IRATA membership rose to 356 by Q4 in 2015, an increase of 38 members operating worldwide. Total employment rose to 13,223 with associated working and training hours reaching 24 million hours. Increase in employment occurred, primarily, in Level 2 and Level 3 technician numbers.

There were 103 reported events, of which 61 were dangerous occurrences, 41 were injuries, only four of which were reportable, and, sadly, a fatality. The reportable injury rate was 42 per 100,000 workers, a small percentage of latest UK, Eurostat EU28 and USA work injury statistics, maintaining a remarkable safety record.

Over half of all reported events were due to a combination of falling or dropped objects and errors or omissions during 'on rope' working. A number of areas were identified where improvements in safer working could be achieved.

The 2016 health and safety statistics improved still further and continue to be a credit to members of the Association.

Dr C H Robbins

5 July 2016

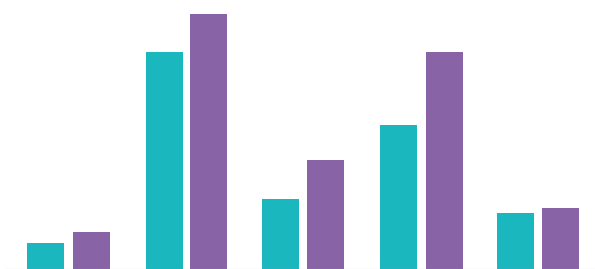


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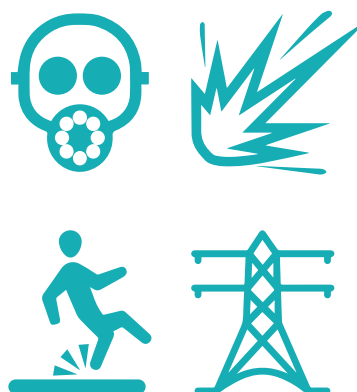


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1.Introduction

IRATA, formed in 1989 with nine companies, comprised 356 member companies worldwide by year end 2015. An integral part of membership of the Association is the obligation to submit employment and accident and incident data. This report presents summaries of the data provided during the period Jan-Dec 2015. Since 2013, members report under Regional Advisory Committees (RACs) that cover geographic areas or zones. These numbered eleven in 2015.

The report attempts to analyse the data submitted and to present comparisons of accident rates against international figures. In order to calculate accident rates it is essential to have details of employment levels as well as accident and incident data. Gratitude is due to those with the onerous task of assembling and submitting required data on behalf of members.

The complexity of submissions required inevitably lead to errors and omissions in the data supplied. Therefore, all data submitted was subject to quality checks prior to analysis. Future changes to help clarify and simplify the reporting format for both incident and employment data should further improve the accuracy of submissions with only marginal loss of content.

It is important to note that the numbers of employees reported relate to member company employees only. Actual IRATA qualified individuals, who are not members or employees of members, will greatly exceed the numbers covered by this report.

Throughout the report, reference is made to the following categories of work location that have the distinctions given below (note that these categories will change in 2016 to simplify reporting):

- **'On Rope'** – Arranging, using and directly involved in rope access work. It also includes access and egress activities to rope access work sites and setting up belays and rigging. Thus, this does not necessarily require a person to be 'roped up' or physically connected to active ropes.
- **'Off Rope'** – includes *all site work* including at height but not involving rope access.
- **'Other'** – typically includes all work off-site, in offices, etc. This would include, for example, equipment inspection prior to removal to work site. 'Other' now also includes 'On Ground' or secure areas for working hour reporting; in effect, all hours not accounted for by the above categories including non-rope access training.
- **'Training'** – all activities undertaken at rope access training facilities and establishments. For the avoidance of doubt, this will include all personnel, trainers, training staff and trainees, solely for rope access training. All other training, induction courses, trial work, specialist courses (e.g. use of breathing apparatus, first aid) are excluded and should be reported under 'Other'.

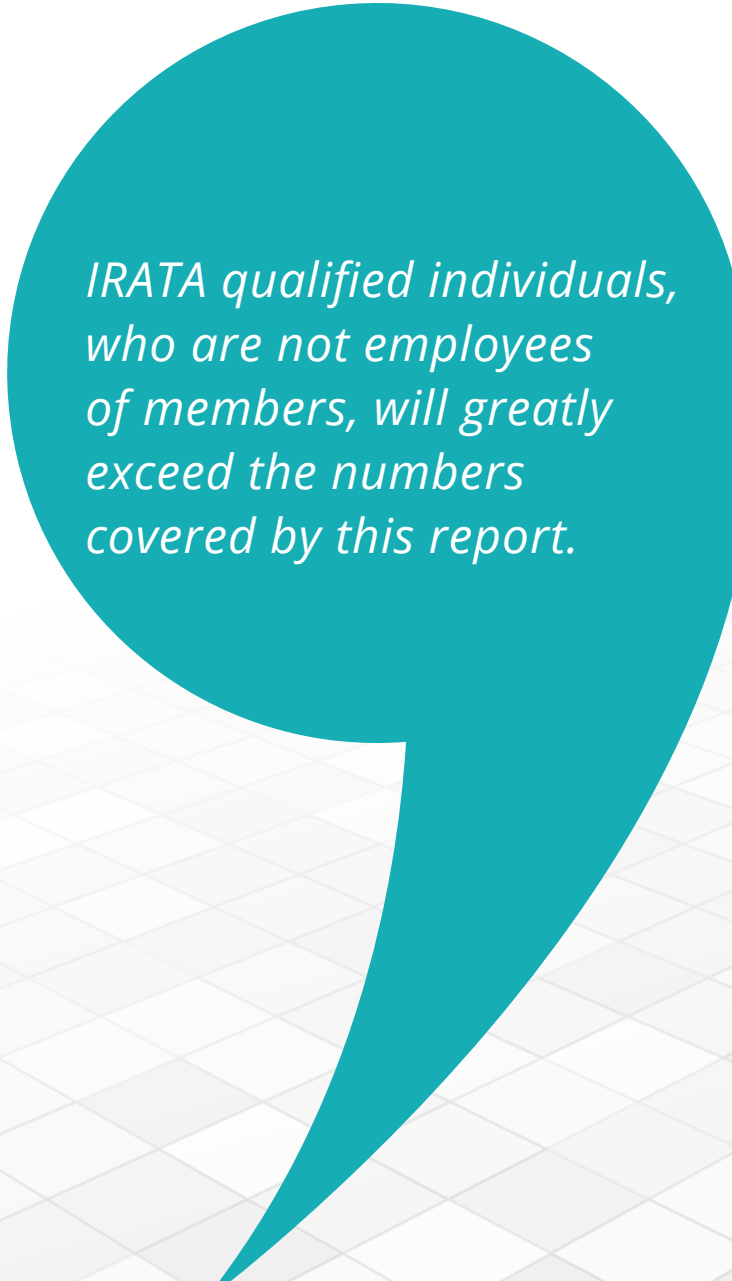
Additionally, for the purpose of this report, the distinction is made between:

- **'Accident'** - an unintended event where actual personal harm, injury or fatality occurred at work.
- **'Incident'** or **'Dangerous Occurrence'** - any event or situation where no personal harm or injury occurred but which could have led to injury or fatality.

In effect, any situation involving loss of control of a hazard would be reportable under either heading.

The report is arranged with figures, graphs and tables incorporated within the text to which they apply. The report first summarises overall employment figures, then presents the employment data for each region (RAC). All accident and incident data is then analysed and compared to available international statistics. The report presents conclusions and also makes recommendations, based on the data supplied, to raise awareness of specific work issues of relatively high frequency or seriousness.

Tables, summarising overall employment data, are included in Appendices.

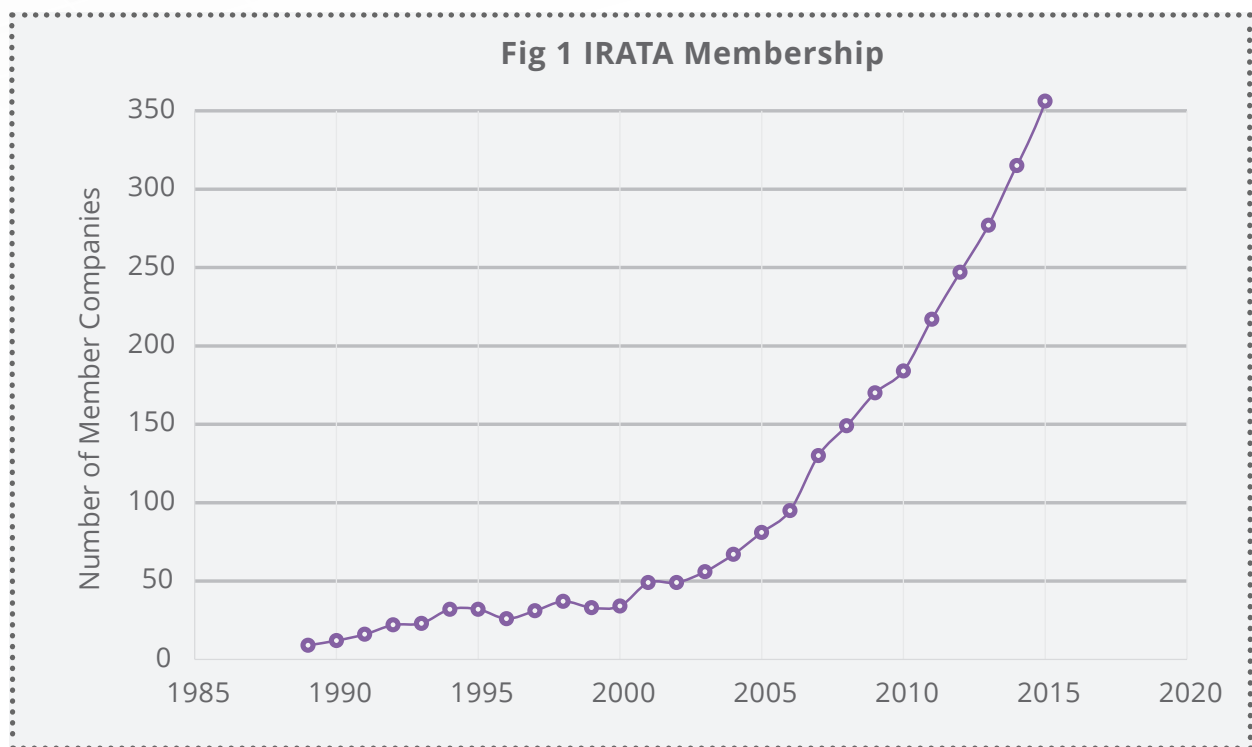


IRATA qualified individuals, who are not employees of members, will greatly exceed the numbers covered by this report.



2. IRATA Membership

The number of members rose during 2015 to 356 by Q4 (excepting those leaving or suspended). The increase in membership since 1989 is shown in Fig 1.



The 38 additional member companies maintain the almost linear upward trend that commenced in 2005.

3. Employment Statistics

3.1 Employment Levels

Fig 2 shows **average employment** figures for 2015 against those for 2013 and 2014. Significant increases occurred primarily in L2 and L3 numbers. (Note that the figures are taken as the average of the four quarterly figures submitted for the year and include all **L3 trainers, totalling 419**).

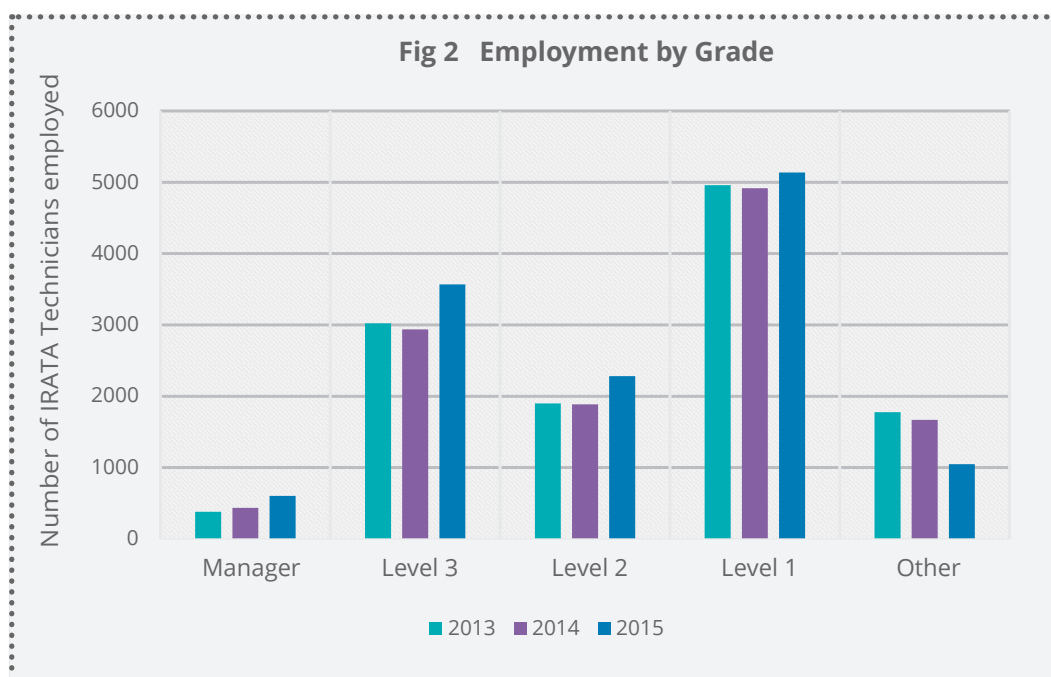
Actual employment numbers by grade for 2015 were as follows:

• Managers	603
• Level 3	3,569
• Level 2	2,282
• Level 1	5,137
• Other	1,032
• TOTAL	13,223

Reported trainers of **419** are included within the figures. In overall numerical terms, the employment level exceeded the 2014 figure of 12,369 by 854 or about 7%. However, the increase in work hours was well above this, as will be apparent in the next section.

A point to note is that increases in L2 and L3 technicians come from L1 and L2 technicians respectively. Hence, it is necessary to ensure a constant refreshment of incoming L1s if increases such as those observed are to be maintained in future years.

It should be noted that, as in 2014, clearly excessive reporting of 'Other' category workers were submitted by some companies. In some cases the numbers supplied probably represented entire workforces rather than only that actually supporting rope access. When obvious, these numbers were suitably amended.



(Note that quarterly employment figures must be averaged)



3.2 Summary of Hours Worked

The total hours worked in 2015 was **22,993,343 i.e. 23 million**. This was a substantial increase of 27% over the reported figure of about 17 million in 2014 (ignoring training hours in both cases). Fig 3 shows the worked hours for each grade plotted alongside the employment numbers for each grade, demonstrating essentially similar profiles. *(Note that the employment figures have been multiplied by 1,000 for plotting purposes).*

The apparent discrepancy between the rates of increase in membership and employment figures versus the worked hours for 2014 and 2015 requires examination.

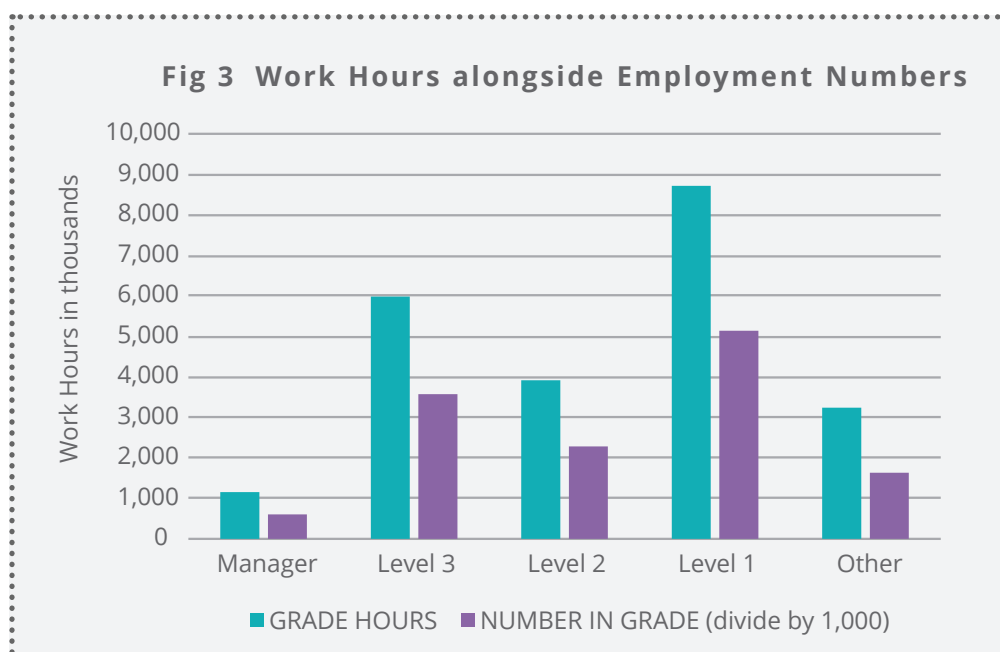
There are several possible explanations the most obvious of which involves the data submission and collection system which had been modified for 2015. Close examination of data reveals a number of differences in the way employment hours have been recorded. Additionally, simplification of reporting format may have led to improvements in the ease of reporting and a consequent

increase in response, leading to higher work hours recorded.

An alternative explanation is the achievement of higher utilisation of employees. Historically, utilisation (hours worked divided by number of employees) has been well below maximum which is usually based on 2,000 hours per employee per annum. The table on the next page summarises utilisation over the last few years together with the 2015 figure.

The significant increase in utilisation for 2015 is readily apparent.

If an increase in utilisation was the case, this was sporadic as individual RAC figures vary from as low as 1,081 to as high as 2,008. Nevertheless, it is possible that significant increases in utilisation, particularly of some of the larger RACs, maybe responsible for a proportion of the increased work hours observed.



The significant increase in utilisation argument may be supported by observed increase in the number of ill health issues, six of which appeared to be related to dizziness, feeling faint and possibly over-exertion (see 4.9).

It is suggested that a combination of the two factors, improved reporting and increase in utilisation, was largely responsible for the overall increase in work hours, relative to the employment numbers.

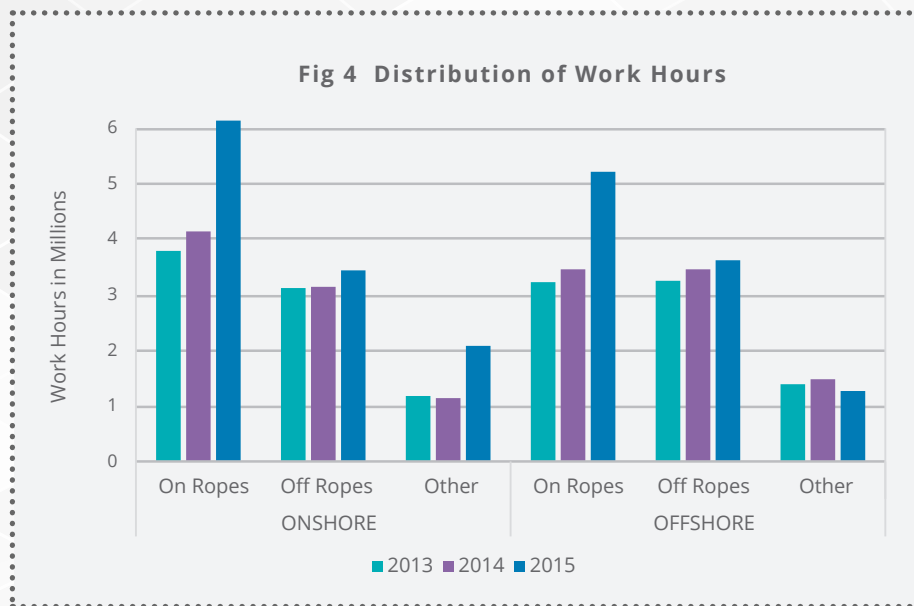
Turning now to the location of work hours, Fig 4 (on the next page), compares the distribution of work hours between onshore and offshore. The immediately obvious observation is that the majority of the increase in work hours occurred in both onshore and offshore on rope working and this would support the view that increased utilisation was a significant factor in the work hours increase discussed above. **Onshore working, in total 11.64 million hours, exceeded offshore working of 10.10 million hours**, particularly in 'on rope' working by nearly 1 million hours.

Year	Utilisation (Hrs per annum)
2010	1,260
2011	1,130
2012	973
2013	1,324
2014	1,402
2015	1,793

(The small shortfall between the totals and the overall total of nearly 23 million is due to accumulation of small errors in splitting work hours into the various work categories which are based on approximate percentage splits. Additionally, hours worked offshore are generally based on a two weeks on/ two weeks off basis with 12 hours per shift, ignoring overtime. This gives 168 hours per trip once a month. This would be equivalent to about 160 hours per month onshore. This difference has not been taken into account where it applies. So, strictly, offshore hours could be increased by at least 5% (or more), giving 10.6 million hours. An additional complication is that many offshore rope access jobs do not work to the two on/two off core crew rotation pattern).

The very distinct rise in 'on rope' working, for both onshore and offshore, will be frequently noted during examination of the individual RACs. This seems to have been a very common feature for most RACs and largely accounts for the increase in work hours recorded for 2015. **'On rope' working accounted for 11.34 million hours**, about half the total hours reported.

'Training' hours have so far been omitted but are dealt with next.



3.3 Training

The Association places great emphasis on training. The data collection system was changed in 2015 in an attempt to clarify the training hours submitted. The intention was to differentiate between hours spent by trainees on rope access courses and assessments from those hours spent by trainers instructing and testing candidates. It was emphasised that other training courses, unrelated to rope access, should be reported under 'Other'. Thus, the training referred to here should only cover rope access. The table in 3.4.12 summarises the training data for each RAC.

The total of hours reported for **training overall reached 1.035 million hours** or about 4.4% of the 23 million work hours, and exceeding the 2014 figure of 0.720 million hours by ~40%, although the two figures are not strictly comparable because different reporting regimes operated between 2014 and 2015. The total training figure includes both trainee hours and trainer hours. It is now possible to examine them individually.

Total hours reported for candidates being trained and assessed was **127,161**. This was presumably based on typical courses of about 40 hours duration, refreshers and assessments, primarily of L1, 2 and 3 technicians and aspiring L1 technicians. Given an approximate working population of, say, 12,000 and a course frequency of perhaps one every three years lasting 40 hours, anticipated training hours might be expected to reach about 160,000 hours. Thus, reported levels are somewhat lower than may be estimated.

Similarly, a total of **419 trainers** were identified by the RACs. If they were in full time occupation, the expected hours spent by the trainers might be $2,000 \times 419 = \sim 800,000$. Actual trainer hours identified was **907,812**, somewhat higher than estimate.

The above differences in the figures, in opposite directions, points to the probability that some confusion may have arisen when

submitting the hours spent on training between the two categories. This may have led to a 'loss' of 'training' hours in favour of 'trainer hours'. However, the overall total for training would still be reasonable. One final point, that will be noted later, is that a number of incidents and accidents involved 'trainees'. This may suggest that such personnel are considered to be 'training' and work hours apportioned accordingly but mistakenly.

A further point will arise during examination of individual RAC training figures. These will show a large range of ratios between 'training' hours and 'trainer' hours – from as low as 0.02 up to 0.29, with an average for the overall totals of $127,161/907,812 = 0.14$. Reasons for such a large range between individual RACs are unclear unless, as suggested, there was some confusion between the two categories.

Nevertheless, the overall figures confirm and reflect the emphasis IRATA members generally places on the importance of training. Finally, if the training hours, trainer hours and work hours are summed, the overall hours for 2015 rises to:

Work Hours	22,993,343
Training Hours	127,161
Trainer Hours	907,812
TOTAL HOURS	24,028,316

This is the figure that will be used in subsequent calculations of accident and incident rates, along with the 'population' of **13,223**.



**Work, Training
& Trainer Hours**
24,028,316



3.4 Regional Advisory Committees (RACs)

In 2012, it was decided that nine zones or regions around the world, each overseen by Regional Advisory Committees (RACs) be formed. This was increased in 2014 to 11. Members were to submit their data according to the zone or region in which they operated. The eleven RACs identified were as follows:

- Australia
- Benelux
- Brazil
- D-A-CH (Germany, Austria and Switzerland)
- Middle East
- North America
- North Sea Operators
- Other (diverse, includes W Africa, China, Japan, Nordic and several other European countries etc).
- South Africa
- South East Asia
- UK

It is now necessary to consider the returns from each of these RACs. Their respective data is presented in chart form, covering employment numbers against grade and distribution of work hours by location (Onshore/Offshore and On Rope/ Off Rope/ Other). Direct comparison between 2014 and 2015 figures is now possible as the RACs have not been changed.

Training numbers are excluded from charts but are briefly summarised in text. It may be helpful when examining the training data to be aware that the overall average training hours per technician was about 10 hours per annum.



3.4.1 Australia

Up to twenty nine companies submitted returns for work in Australia with one company dominating the submissions, particularly in the last quarter. Average employment totalled **913** for the year, a significant rise over 585 in 2014 and largely due to large increases in all three working grades of L1, 2 & 3 technicians of the single company.

Work hours totalled **1,131,109**, giving an utilisation of 1,239 hours per worker. The increase in work hours over 2014 (647,192 hours) was due to increases in onshore working, predominantly 'on rope', which more than doubled.

There was an average of **29 trainers** during the year with **57,265 trainer hours** expended which implies almost saturation utilisation of trainers with 2,000 hours on average. The **10,529 training hours** undertaken by the workforce overall gives an average of about 11-12 hours per employee for the year.

Fig 5 Australia - Employment

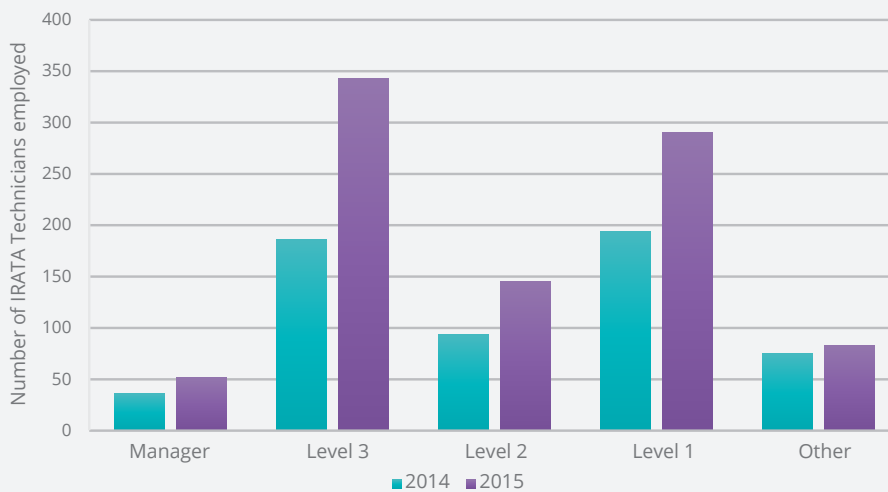
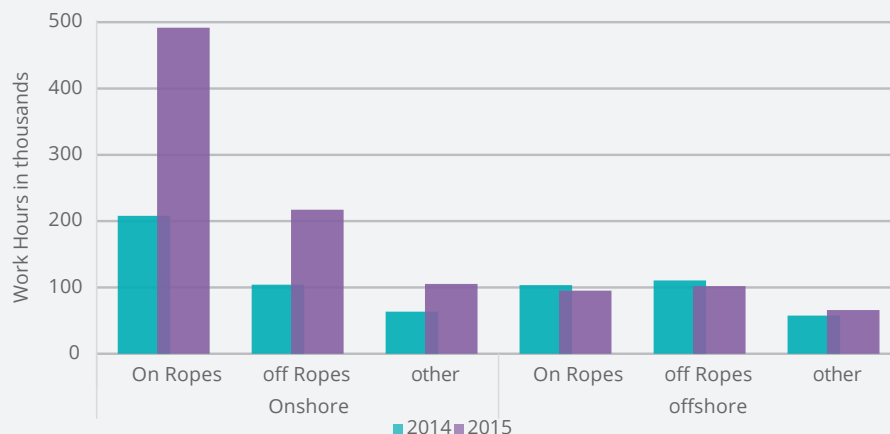


Fig 6 Australia - Work Hours

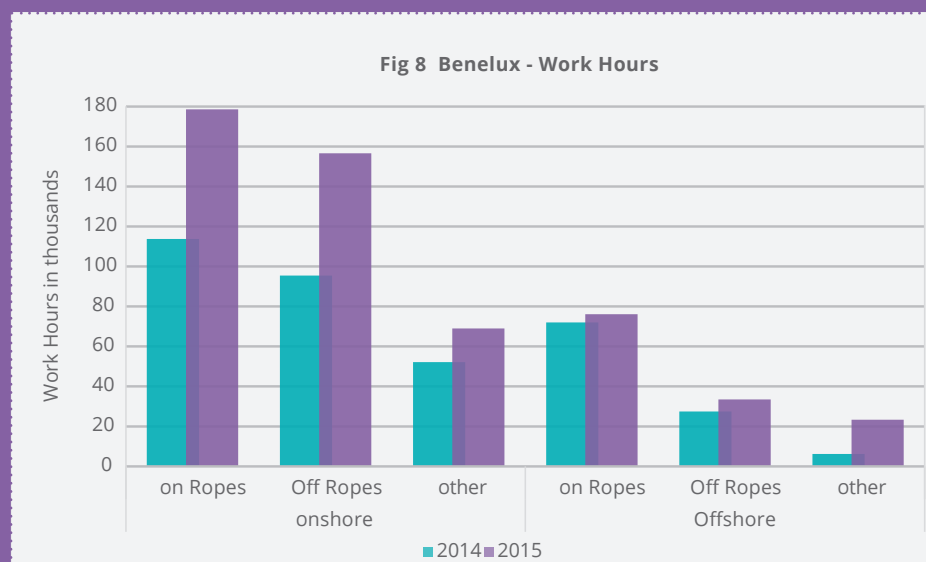
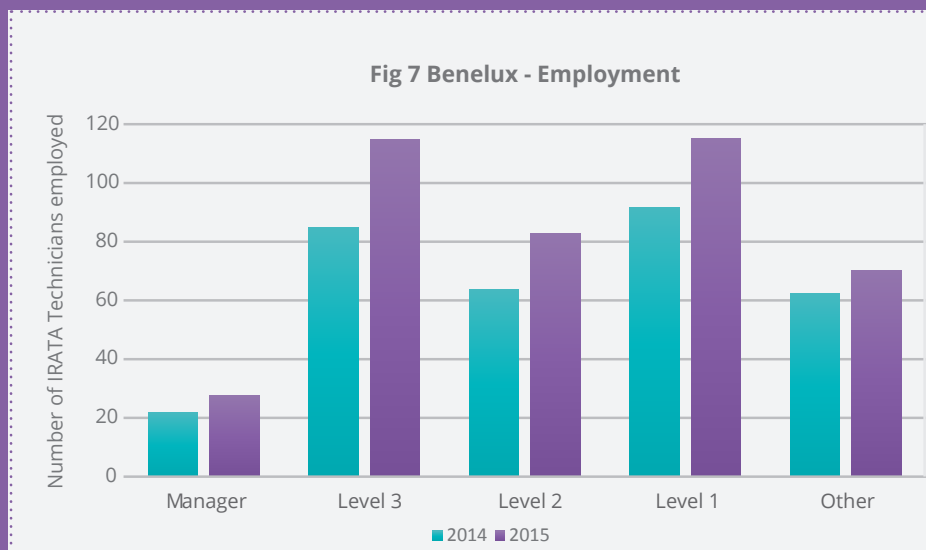


3.4.2 Benelux

Fourteen companies contributed to the Benelux data, as in 2014 although employment level rose from 325 to **410 across all grades**. This was accompanied by a general increase in all onshore work both on and off rope with offshore remaining static. Total work hours increased from 366,995 in 2014 to **543,907** in 2015, an increase of 48%, largely due to surges in L1 and L3 hours during Q2 and Q3.

Utilisation increased from 1,129 to **1,327** hrs per worker. It may be noted that there was a significant fall in Q4 work hours compared with Q2 and Q3 figures.

Training hours were given as **3,202** which is an equivalent of only about 8 hours per worker for the year. Trainer hours reached a total of **12,598** carried out by **13 trainers**, roughly 1,000 hours per trainer during the year.



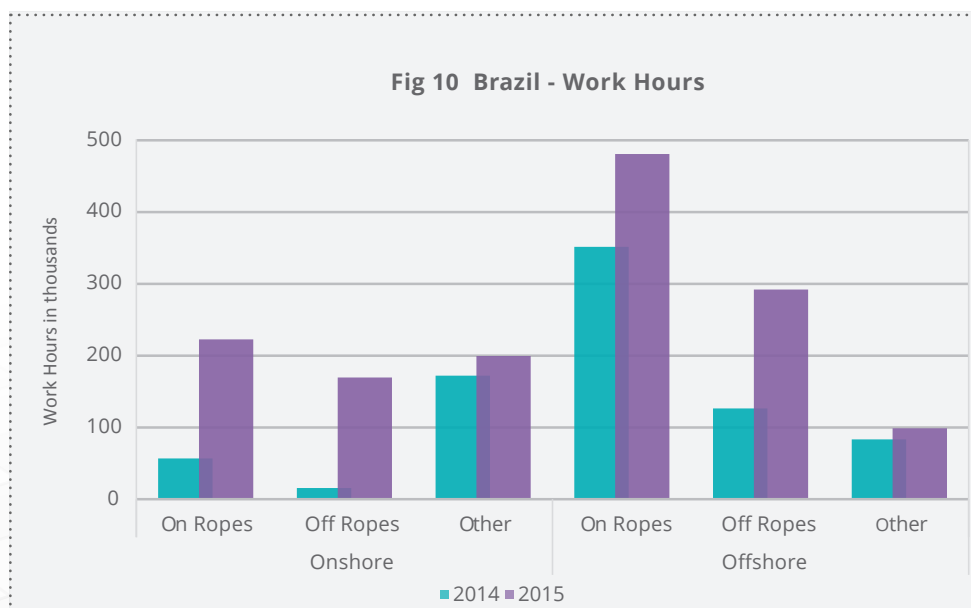
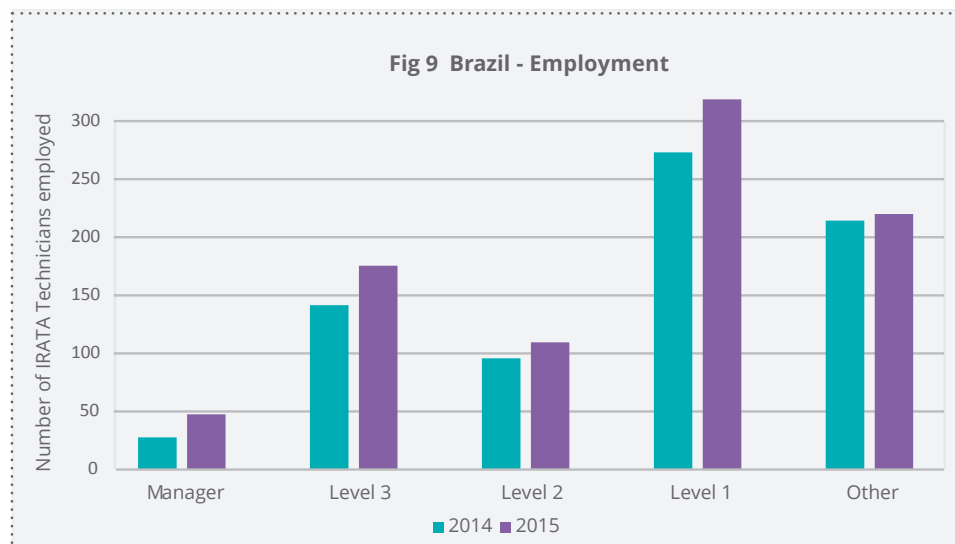


3.4.3 Brazil

Employment rose from 752 to **871** in 2015 with significant increases across all grades except 'Other' and mainly due to only 3-4 members out of a total of 25 companies.

Work hours doubled, rising from 806,085 in 2014 to **1,616,646**. It is clear from the chart below that the increases were largely due to 'on rope' and 'off rope' working both onshore and offshore. Utilisation, therefore, also rose significantly from 1,072 hrs per person per annum to 1,856, apparently approaching maximum utilisation.

Training hours reached **11,758**, representing over 13 hours per employee for the year. The number of trainers reported was **28** along with **64,169 trainer hours** which gives in excess of 2,200 hours per trainer. This suggests that either the number of trainers was understated or that there was some degree of mal-allocation of training hours.



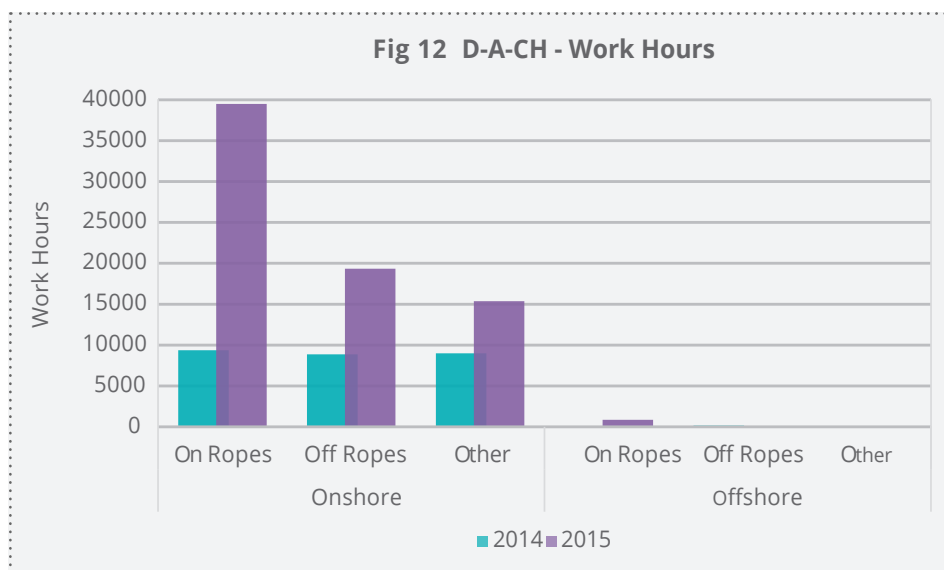
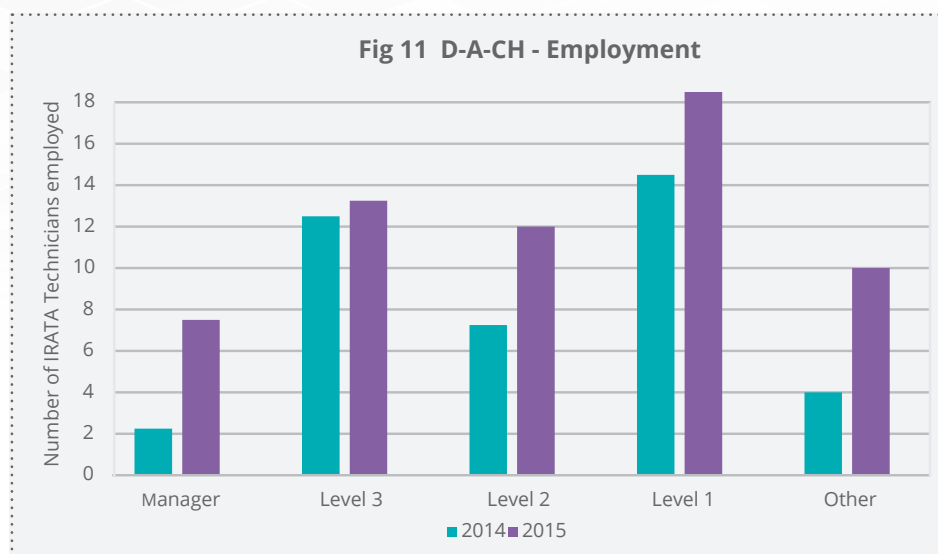
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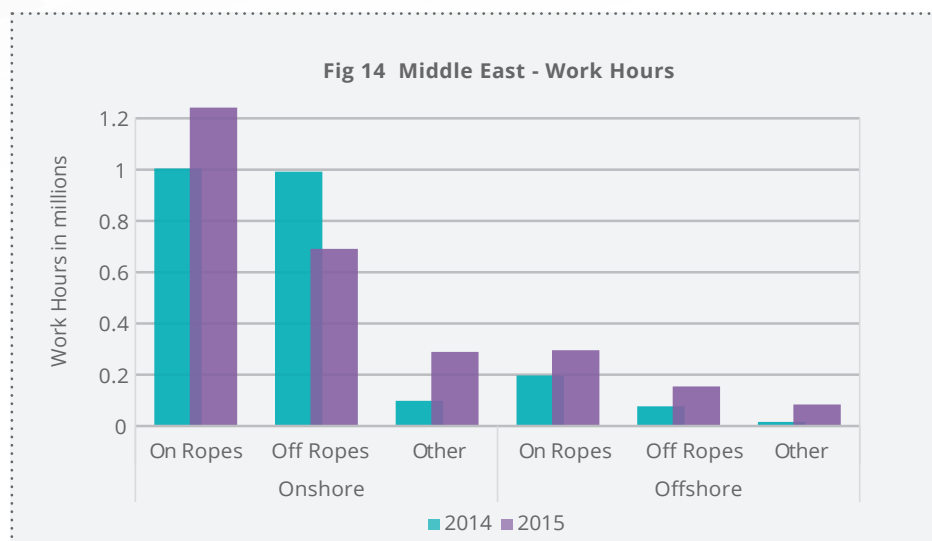
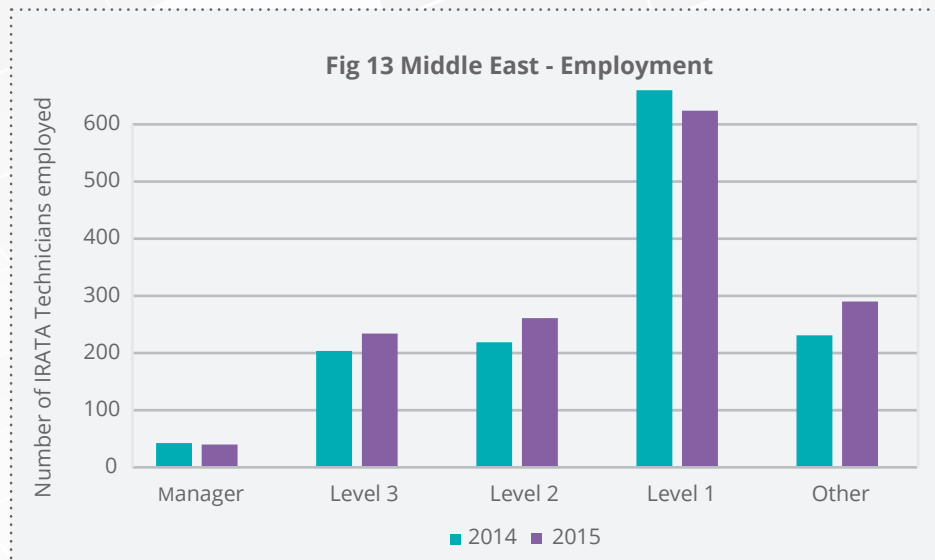
D-A-CH remains with only 6 members but with combined work hours of **89,308**, this represents triple the 27,432 hours recorded in 2014, unsurprisingly, virtually entirely undertaken onshore and predominantly 'on rope'.

With an average employment level of 61 (41 in 2014), utilisation increased from only 669 to a creditable **1,464** hrs/person/annum.

Training accounted for **1,280** hours which represented over 20 hours for each person during the year, nearly double the average. Furthermore, the **13.5 trainers** recorded **21,750 trainer hours** or 1,553 hours per annum on average per trainer.

A point to note from Fig 11 below is the significant increase in all grades, bearing in mind the relatively small populations, with the exception of L3s. Presumably, much of the training effort had been expended on creating L1s and promoting L1s to L2s.





3.4.5 Middle East

Although there were 24 members contributing data to this RAC, a single company accounted for a third of all figures. Total employment averaged **1,449 employees**, a relatively modest 8% increase over 2014. However, work hours increased from 2.38 million to **2,883,359** in 2015, an increase of over 20%. The majority of the increase was due to onshore working but only for 'on rope' and 'other' working. There were small but significant rises in all offshore working hours but onshore working remained dominant. Utilisation increased from 1,758 to nearly the maximum of **1,990** hours per employee per annum.

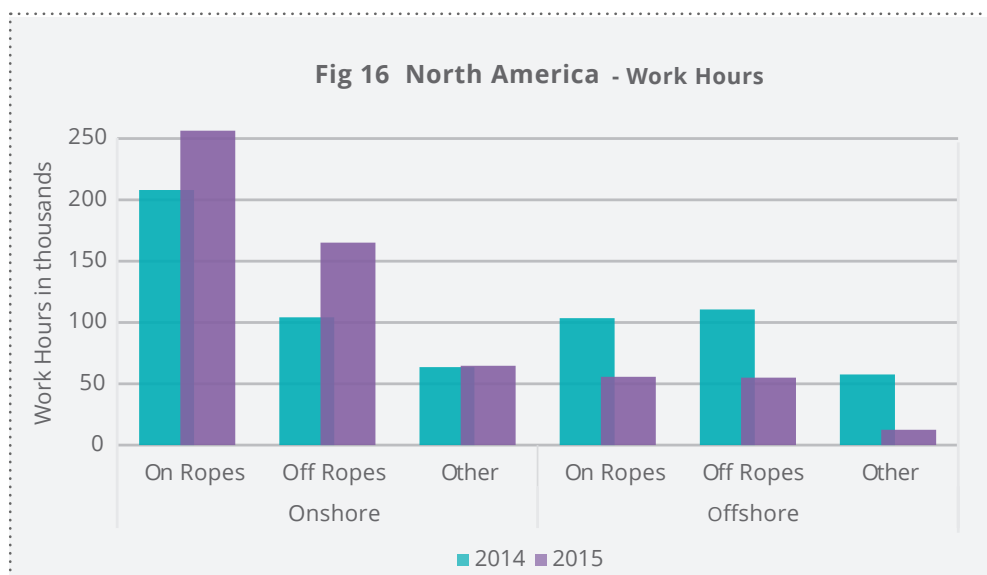
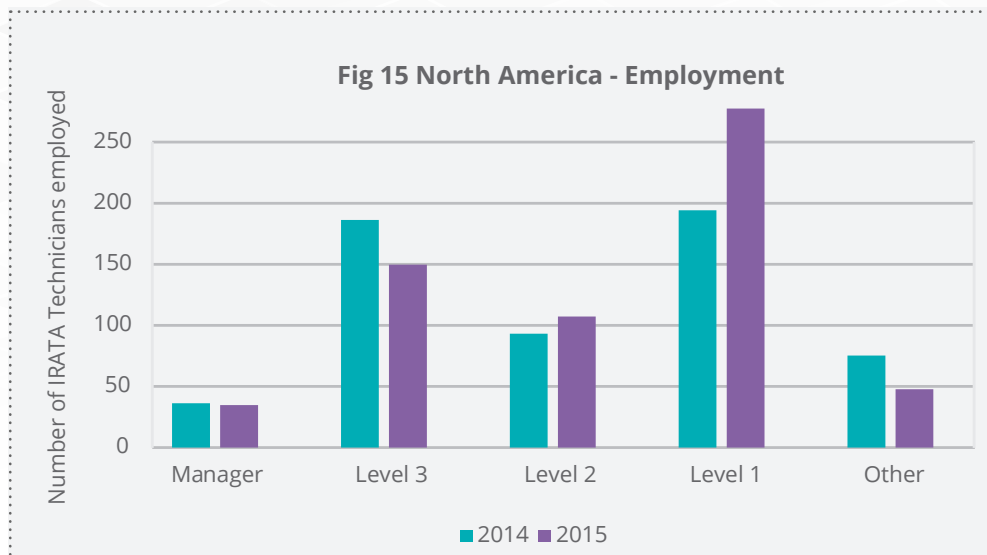
There were **44 trainers** with associated trainer hours of **104,290 hours** or about 2,400 hours per trainer which is unrealistic. Training hours for employees was **15,645**, which averages about 11 hours per employee. Thus, the trainer hours suggests that there were more trainers working than those declared or that training was also being conducted by unqualified trainers. The fall in L1 operatives may be highlighted. Presumably, this was due to transfers to L2 not being supplemented by further L1 recruitment. The relative modest number of L3s, relative to the overall workforce, may also be noted, a point also made in 2014.

3.4.6 North America

Member companies increased to 21 in Q4. However, previously, one member was responsible for well over 50% of all employment and work hours. The employment profiles varied positively and negatively for all grades except 'Manager'. The net result was a substantial increase in employment, rising from 340 to **617** with the major gain only for L1 technicians. The significant fall in L3 technicians appears to coincide with 50% reduction in offshore working, but offset by increase in onshore working.

Total hours worked was **667,182**, (501,809 in 2014) giving a relatively low utilisation of 1,081 hours per employee per annum, a significant reduction from 1,476 in 2014.

Training hours reported totalled **14,206**, averaging about 23 hours per employee for the year which is more than double the average. The number of trainers was **30** and training hours **48,100** or about 1,600 hours of training given by each trainer.





Photography by Canadian Rope Access Specialists Inc

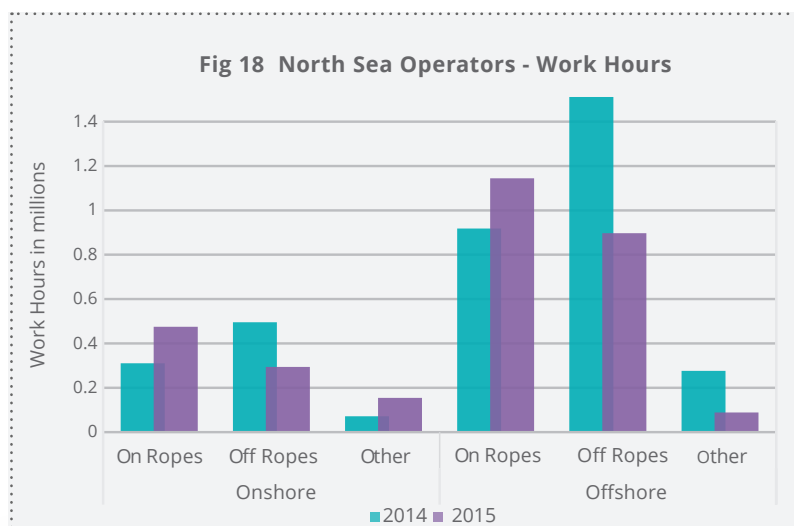
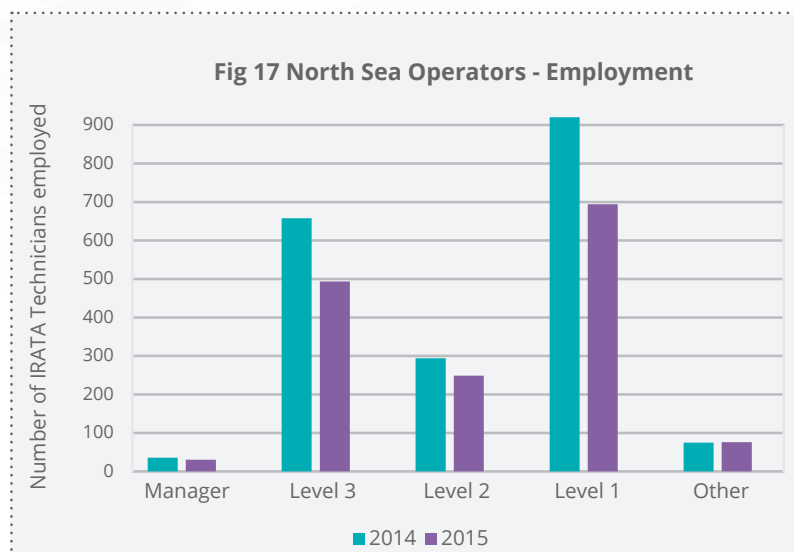
3.4.7 North Sea Operators

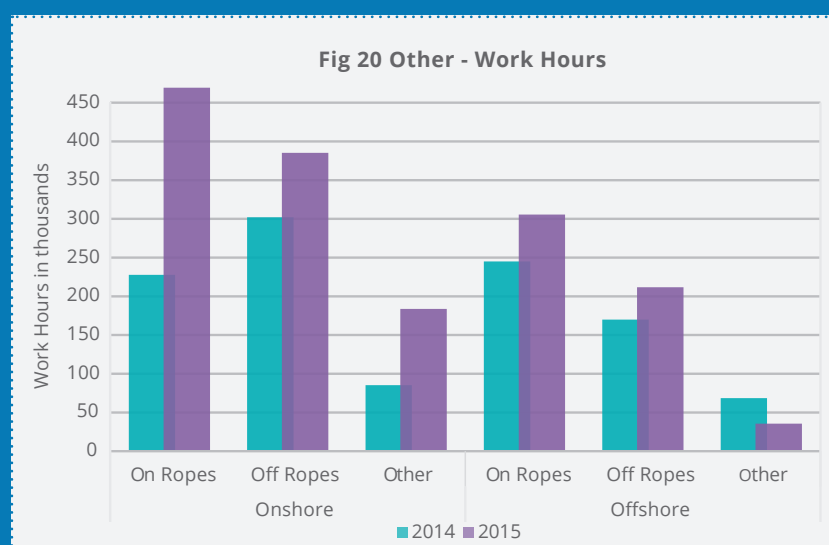
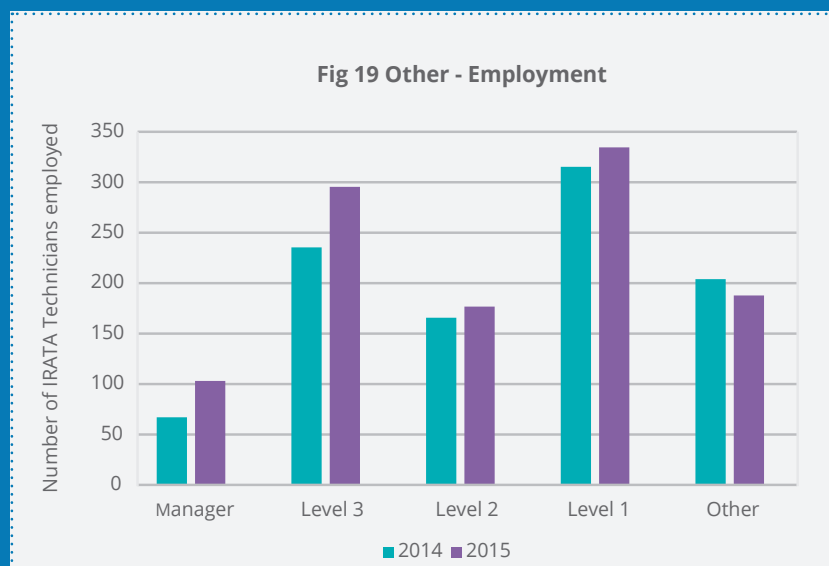
By exception, North Sea Operators show a decline in most data submitted. The number of members rose to **28** (from 24); workforce fell to an average of **1,543** (from 1,983) and work hours declined to **3,098,461** (from 3,583,351). Most of the workforce reduction occurred with L1 and L3 technicians.

Although the reductions were significant, it is interesting to note that 'on rope' working, both onshore and offshore, actually rose, implying that rope access work itself was largely unaffected by the reductions. Additionally, the utilisation rose to the maximum of **2,008**, reinforcing a view that, despite the overall reductions, 'on rope' working actually increased.

As expected, training figures were awry. Only **12** trainers were identified with an accumulated **62,747** trainer hours which is totally inconsistent. Training hours of **8,309** would equate to about an average of 5 hours per employee for the year. Again, it must be assumed that North Sea Operators 'import' the majority of qualified rope access technicians, utilising training facilities elsewhere but reporting the hours of training undertaken by other trainers. More likely, working trainee hours were being reported as 'training hours' (which should only apply to actual training).

The modest level of managers, as before, may be explained by the tendency for offshore teams to come under local platform management, requiring fewer managers on the beach.





3.4.8 Other

The diversity of member companies that fall within this RAC has been noted previously. There is little common ground and the data shown above is used only to supplement overall totals. Nevertheless, it is interesting to note that membership increased from 47 to **60** and employment levels showed remarkably consistent increases across most grades except 'Other'.

Total work hours reached **1,847,264** (from 1,098,377 in 2014), roughly split 2:1 between On shore and Offshore. The greatest single increase

occurred in working 'on ropes' onshore more than doubling. The average number employed was **1,098** (988 in 2014) giving an utilisation of **1,682** hours per worker for the year, a significant increase over 2014. As for other RACs, the dominant increase in 'on rope' working is an interesting feature of the data supplied.

Training hours totalled **16,933**, giving an average of about 15 hours per employee for the year. The number of trainers was **94.5** with a collective **142,978** of trainer hours, corresponding to about 1,500 hours per trainer for the year.

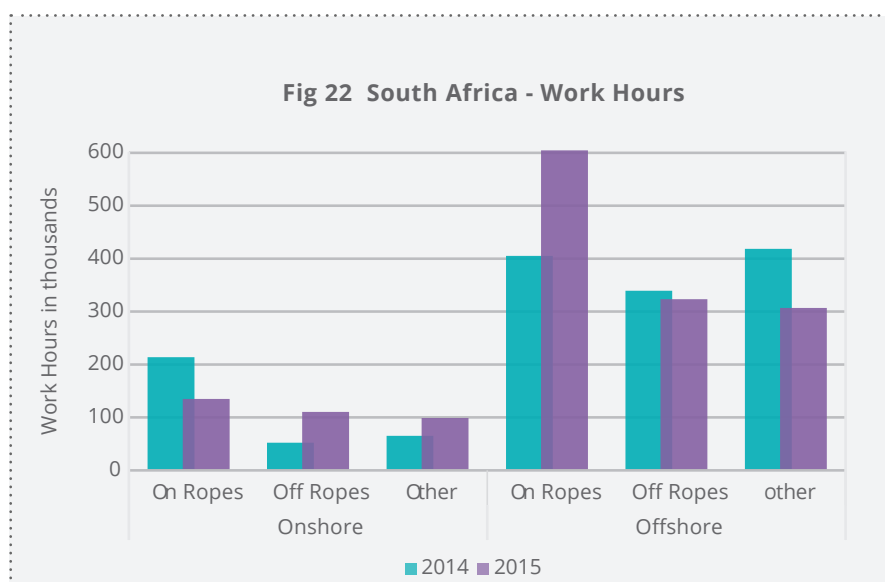
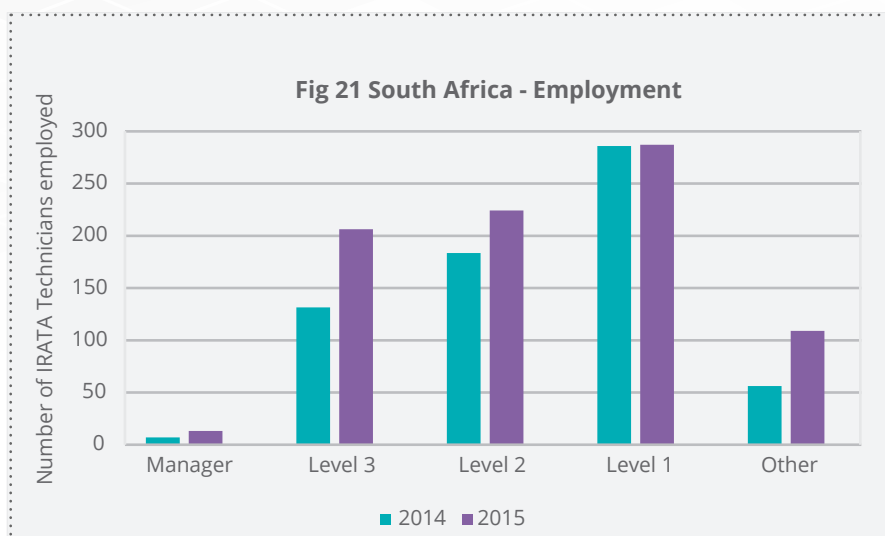
3.4.9 South Africa

Membership increased from 10 to 14 companies with one predominating and 2-3 others contributing substantially. Offshore working remained the major area of employment with a significant increase in 'on rope' working, reflecting a general trend elsewhere. Although there was little change in L1 numbers, there were significant increases in all other grades contributing to a 30% rise in employment from 664 to **840**. Strangely, the rise in employment was not reflected in the work hours which fell slightly from 1,694,393 to **1,607,546**, resulting in a near maximum utilisation of **1,914** hours per person per annum.

Training hours submitted of only **616** is clearly erroneous but is consistent for all four quarters for all members, indicating a generic problem.

This would represent less than 1 hour per employee and totally inconsistent with the **26 trainers** identified and associated **36,701 trainer hours** (1,400 hours per trainer). It may be noted that similar problems over training data for this RAC were identified in 2014.

One point to note is that the significant increases in L3(~70) and L2(~50) technicians probably arose from transfers from lower grades, necessitating training and assessment of ~120 individuals. This would require approximately 40 (hours) x 120 or 4,800 training hours as a minimum unless the increase in L2s/3s was achieved by imported technicians? The virtually static number of L1s may be of concern for the future as they are the 'feedstock' for future expansion.



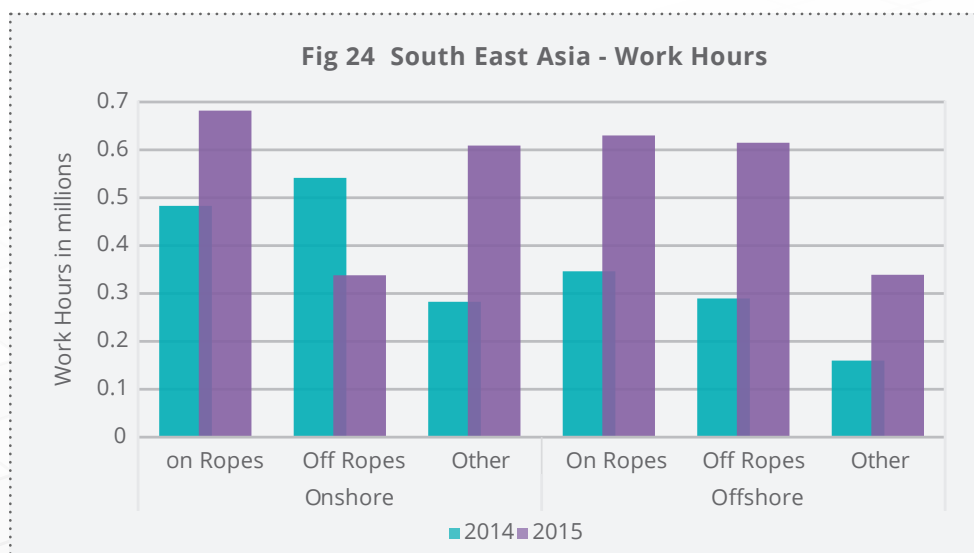
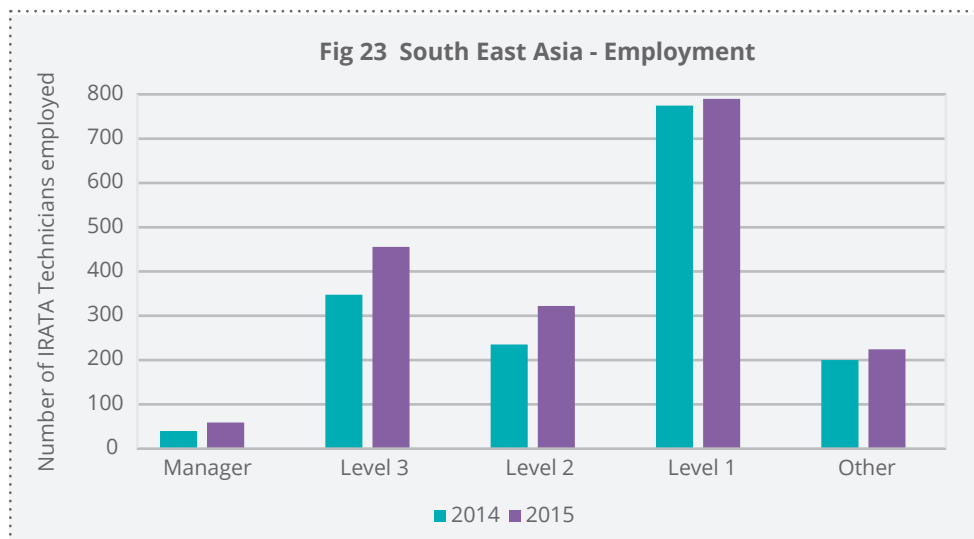
3.4.10 South East Asia

Member companies increased during 2015 to **42** from 35. Total average employed was **1,852**, a 12% rise over the 1,597 reported in 2014, primarily in L2 and L3 technician numbers but only a marginal increase in L1 numbers.

Accumulated work hours totalled **3,346,812**, a huge increase over the 2,102,541 hours in 2014, resulting in near approach to maximum utilisation of **1,807** and a significant increase over the 1,377 hours per person per annum in 2014. These figures are reflected in Fig 24 which shows major increases occurred in all sectors except 'off rope' working onshore.

Offshore work doubled in the year. In common with most other RACs, the increases in 'on rope' working were very apparent.

The number of trainers identified was **37** with associated **79,265** trainer hours (2,140 hours per trainer?). However, given that 'training' hours only reached **10,364 hours**, or about 6 hours per employee, it is suspected that there was confusion over reporting and that at least some 'training' hours were reported under 'trainer' hours, as with some other RACs.





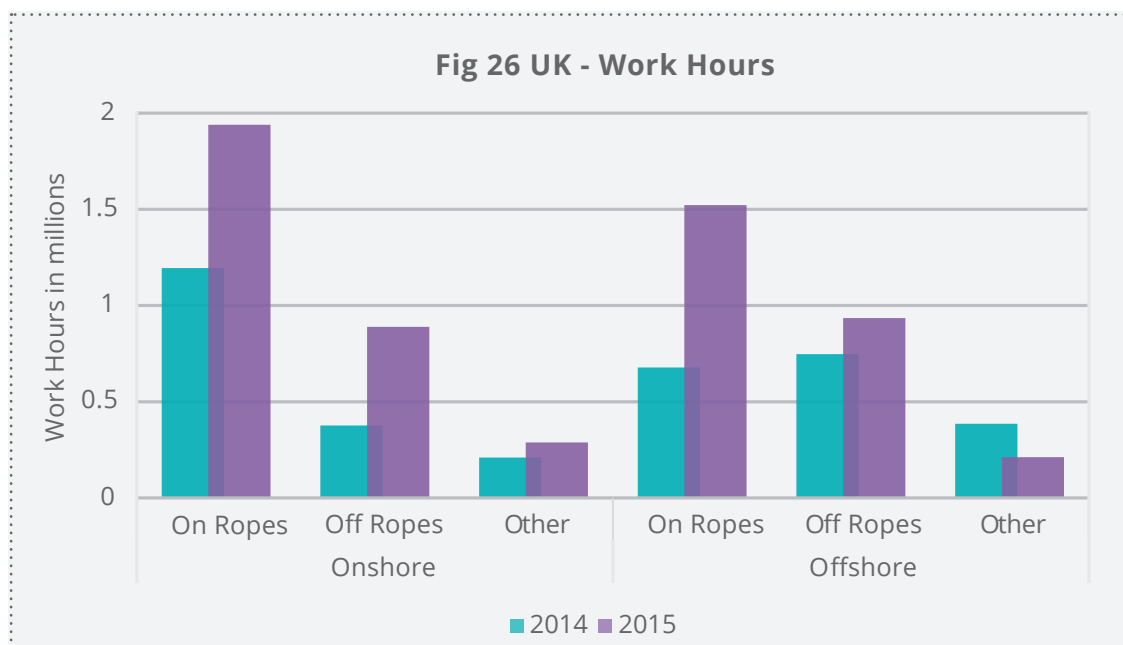
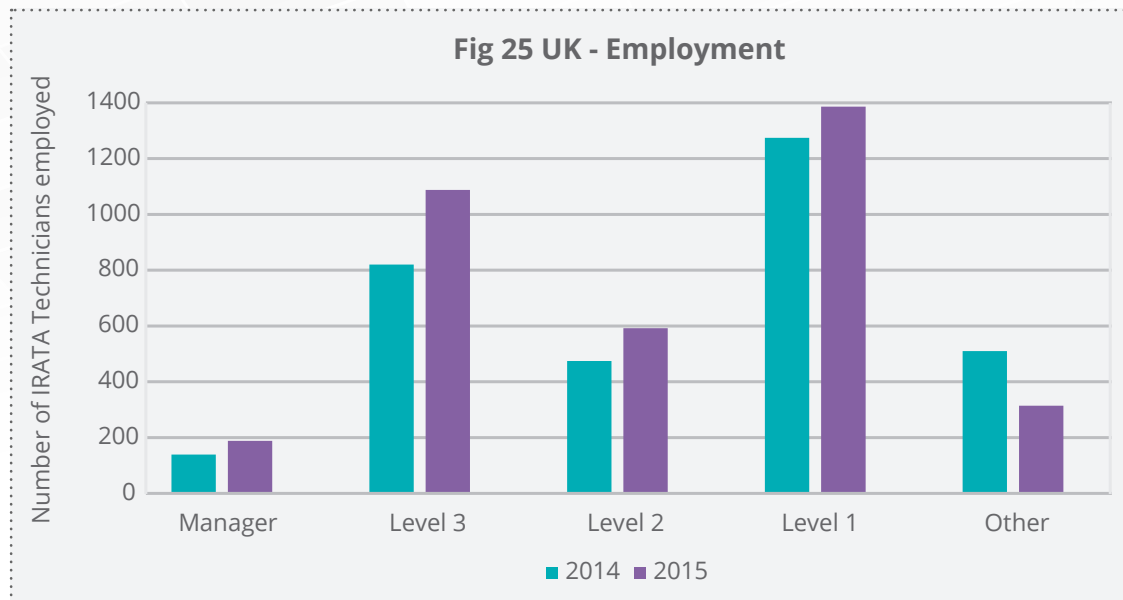

6,161,841
Total Work Hours

3.4.11 UK

Membership increased marginally to **103** by Q4 with an 11% increase in employment to **3,569**, spread across all grades except 'Other' which fell. The most notable increase was in L3 numbers. Total work hours reported was **6,161,841**, a very large increase over the 3,593,217 recorded for 2014. As a consequence, the utilisation rose from only 1,116 to **1,716** hours per person per annum. As noted for several other RACs, the major increases in work hours occurred in all 'on rope' working, both onshore and offshore.

Trainer hours were reported to total 277,949 but these hours were apparently distributed between only **92.5 trainers**. This is untenable as it suggests trainers worked 3,000 hours on average, clearly unrealistic. A somewhat more consistent picture emerges if trainers for N Sea (12) are added to UK trainers (total 105) and N Sea trainer hours are deducted from UK trainer hours to give 215,000 hours. By combining both sets of figures, a more reasonable trainer utilisation of about 2,000 hrs/annum would then result (assuming 'double counting' by N Sea Operators).

Training hours of **34,320** split among the workforce would give about 10 hours per employee over the year.



3.4.12 Summary of RAC data

The table below summarises the employment and work hours along with training data for each Regional Advisory Committee (RACs).

Regional Advisory Committee	Number of Members (at year end)	Number Employed (Av of 4Qs)	Number of Work Hours	Utilisation (hrs per employee)	Training Hours	Number of Trainers (Av 4Qs)	Trainer Hours
Australia	26	913	1,131,109	1,239	10,529	28	57,265
Benelux	13	411	543,907	1,327	3,202	13	12,598
Brazil	24	871	1,616,646	1,856	11,758	28.5	64,169
D-A-CH	6	61	89,308	1,464	1,280	13.5	21,750
Middle East	19	1,449	2,883,359	1,990	15,645	44	104,290
North America	19	617	667,182	1,081	14,206	30	48,101
NSO	24	1,543	3,098,461	2,008	8,309	12	62,747
Other	71	1,098	1,847,264	1,682	16,933	94.5	142,978
South Africa	13	840	1,607,546	1,914	616	26	36,701
South East Asia	40	1,852	3,346,812	1,807	10,364	37	79,265
UK	101	3,569	6,161,841	1,716	34,320	92.5	277,949
Totals/ Average	356	13,223	22,993,434	1,739	127,161	419	907,812

Summary of RAC data



356
IRATA Members



22,993,434
Work Hours



13,223
Staff Employed



127,161
Training Hours



4. Accident Statistics

4.1 Summary

The total number of accident and incident reports submitted for 2015 was **only 103** despite the significant rise in work hours, employment and membership. The decline in reporting levels appears to be related particularly to 'Dangerous Occurrences'. It is assumed that all reportable accidents have been submitted but any deficiency in data undermines the analysis and limits the opportunity to detect high incidence rates for reactive monitoring purposes.

Sadly, there was **one fatality** in the year. The number of individuals suffering injuries totalled **41** but, in addition to the fatality, there were only **4 other reportable** injuries, 2 'Major' and two 'Over 7 Day' or 'Serious' injuries. Of the 37 non-reportable injuries, 18 were due to sprains, strains or various ill health issues. A total workforce of 13,223 gives the injury rate of **30 injuries per 100,000 for all reportable injuries and a fatality rate of 7.7 per 100,000 workers** (discussed in further detail later).



Approximately 20% of reports received did not comply with the reporting distinction between 'DO' and 'Less than 7 Day Injury'.

4.2 Nomenclature

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

- **‘Fatality’** – Death within one year as a result of an accident.

- **‘Major’ Injury** – Injuries that meet criteria common to most European agencies and other countries and listed in IRATA reporting arrangements. Typically, ‘Major’ injuries would include, for example, broken major bones, any amputation, major dislocation, loss of eyesight and need for resuscitation. There is no associated criterion for ‘days off work’.

- **‘Over 7 Day Injury’** – Not a ‘Major’ injury but an injury requiring **more than seven days** away from normal work irrespective of cause. ‘Serious’ is synonymous with ‘Over 7 Day Injury’.

- **‘Less than 7 Day Injury’** – The criterion for a non-reportable accident is now ‘less than 7 days off work’ (although required to be recorded in the UK by duty-holders). If any injury is incurred, no matter how trivial, the minimum reporting level is ‘Less than 7 Day Injury’.

- **‘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 because many incidents are not attributable to or affect specific individuals.

There must be no actual injury but there must be potential for injury. Conversely, any injury, ill health or other medical issue arises should be reported under ‘Less than 7 day injury’ irrespective of whether or not time off work resulted.

- **Ill Health** – Medical conditions leading to interruption or suspension of work due to non-injurious cause 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. If ‘over 7 days’ lost, reported as ‘Serious’, otherwise reported as ‘Less than 7 day injury’.

- **Sprains/Strains** – Muscular injuries that result in prevention or cessation of work. As above, if ‘over 7 days’ lost, reported as ‘Serious’, otherwise as ‘Less than 7 day injury’.

- **Reportable Accidents** – for the purpose of this report, and used for comparative purposes later, this term is the total of all fatalities, major injuries and serious injuries. Thus, ‘Less than 7 day injury’ and ‘Dangerous Occurrences’ are excluded when comparisons are made with other international statistical data.

Approximately 20% of the reports received did not comply with the report distinction between ‘DO’ and ‘Less than 7 Day Injury’.

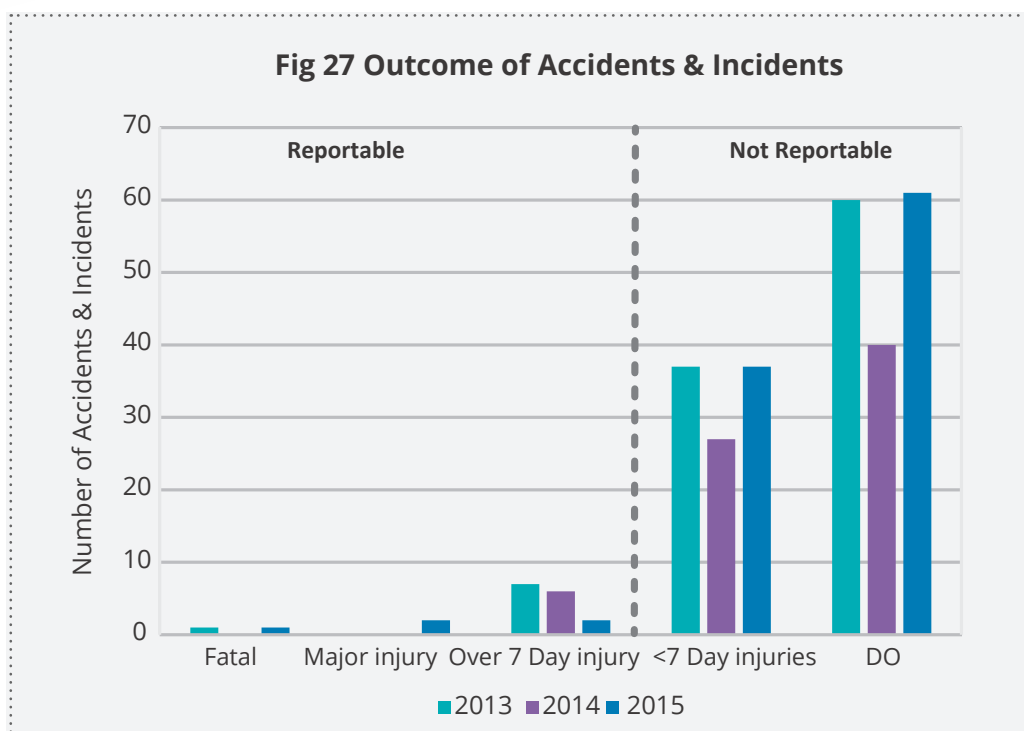
4.3 Consequence of Accidents and Incidents

The consequence of all reported accidents and incidents is shown on the chart below together with those for the previous two years. What will be immediately apparent is that reporting numbers for Dangerous Occurrences and 'Less than 7 day Injuries' is the same as in 2013 despite significant increases in employment and work hours. Further, the reported levels remain much in line with 2014, suggesting that exhortations to the membership to submit reports of all incidents had not been heeded. A total of only 103 reports were received including 61 'Dangerous Occurrences' and 37 'Less than 7 day injuries'. Reporting difficulties should no longer be an excuse for such low numbers, particularly of 'Dangerous Occurrences'.

Any reluctance to report incidents and accidents, no matter how trivial, reduces

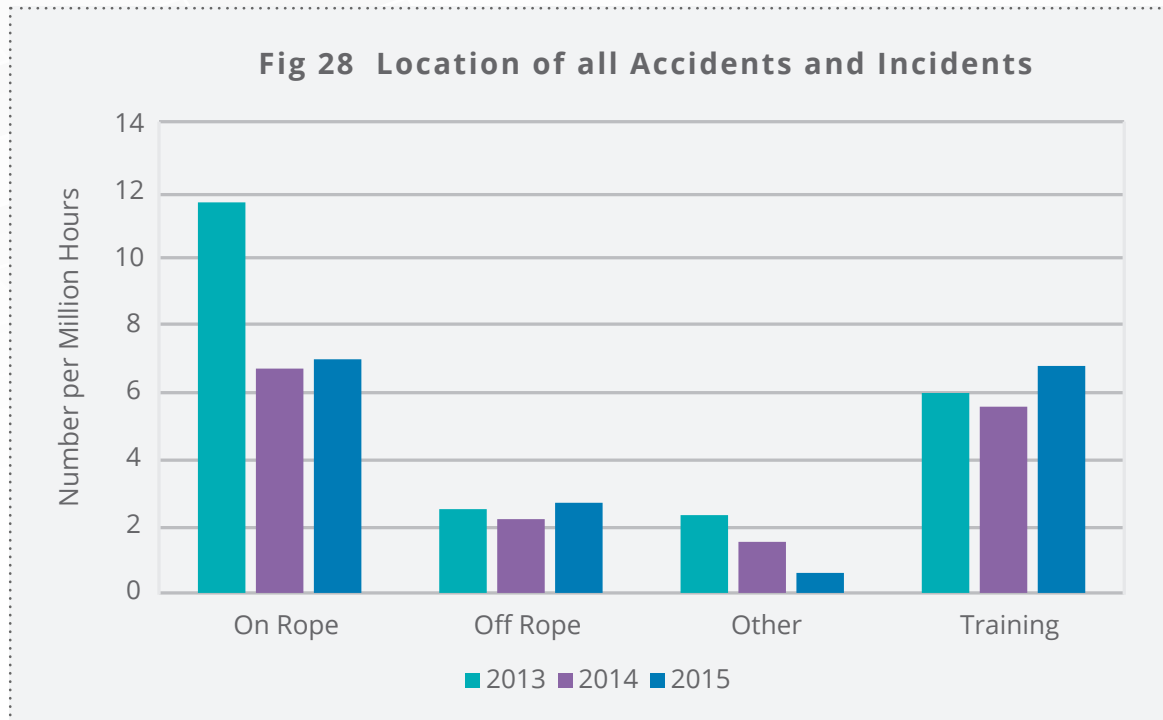
the value of the database and the statistical value of 'lessons learnt'; secondly, it hinders attempts to identify possible trends in data; finally, it casts doubt over the validity of the analysis and potentially undermines trust in the subsequent calculation of accident rates, which, hitherto, have benefitted from a high degree of confidence.

The chart shows the demarcation between reportable and non-reportable accidents and incidents. The fatal accident in 2013 is included and will be discussed later along with the fatality in 2015. The two 'Serious' or 'Over 7 Day injuries' reported in 2015 together with only two 'Major' injuries and the single fatality, means that only 5 reportable accidents occurred throughout 2015.



4.4 Location of Accidents and Incidents

Fig 28 shows the distribution of all 103 reported accidents and incidents, according to location, alongside figures for 2013 and 2014. To take into account differences in working hours for each location, numbers must be divided by the working hours for each location (from Fig 4) to give number of accidents or incidents per million hours of work. Care is needed in interpretation because of such a low number of events involved.



There was little change in the overall rate for accidents and incidents in all categories from 2014 to 2015 except a reduction in 'Other' reports with only a single event reported.

The majority of reports (78) were related to 'on rope' working, but the associated large number of work hours results in only 7 reports per million hours. Within the 'on rope' data, however, are the fatality and both 'Major' injuries – one facial fracture caused by falling rock, and the second, a broken leg following an uncontrolled rope descent. There were also 48 'Dangerous Occurrences' whilst 'on rope' and 27 'less than 7 day injuries'.

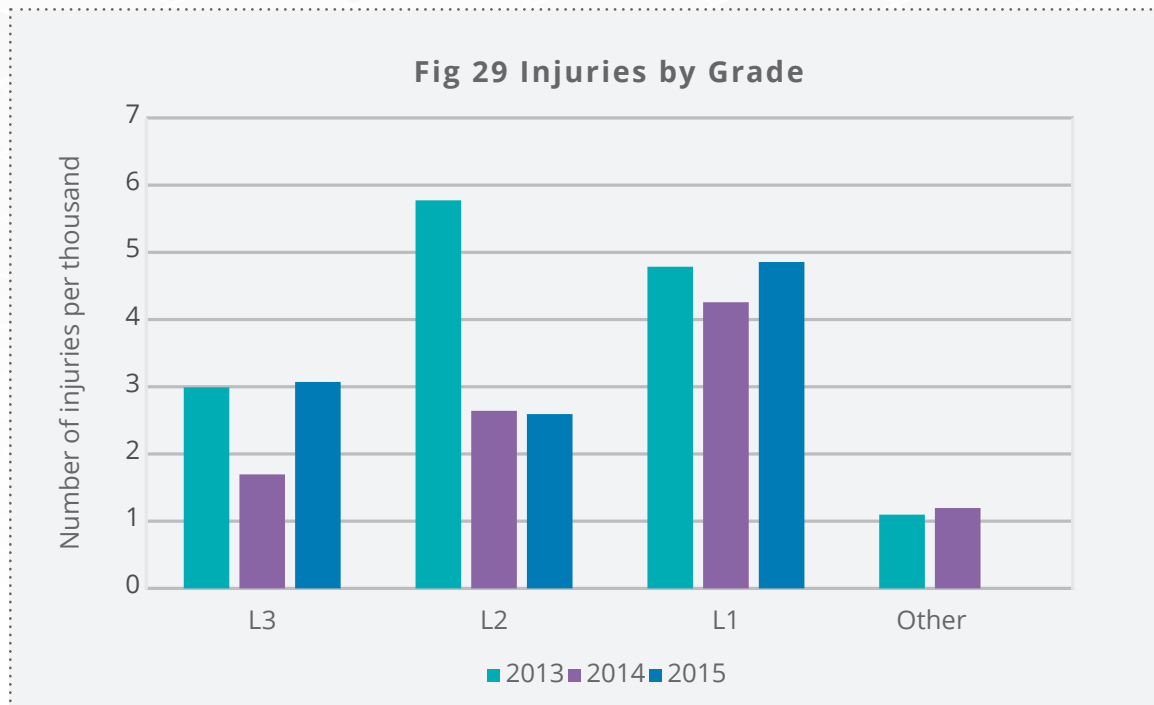
It may be noted that there were 9 reports associated with training, four of which involved ill health issues and four hand/finger injuries. However, the two 'Serious' injury reports ('Over 7 day injury') were both incurred during training – a badly damaged thumb and a shoulder injury. Nevertheless, the data does indicate the inherent dangers in training and necessity for trainers to be aware of the concerns such data may generate. But there may be an element of more diligent reporting by trainers of any events that occur during training that were beyond the expected errors and omissions normally expected of trainees. Further, the relatively low number of training hours will result in a greater 'sensitivity' to individual events.

What the chart does not show is the seriousness of any injuries sustained, dealt with later.

4.5 Accidents Events by Grade

Fig 29 shows the rates of injury for each level or grade, excluding managers (nil), obtained by dividing the actual number of injuries by the average population of each level or grade and charted alongside 2013 and 2014 figures. This takes into account differences in population for the different levels or grades.

The immediate finding is that injury rates for all three grades remained much as in 2014, with L1s marginally more prone to injury with a rate of about 5 per thousand.



There were no reported injuries to 'Other' category workers and this should have included trainee L1s. This is perhaps surprising unless such accidents were not deemed reportable or were reported under L1? The single fatality is included in the chart within the L1 data. The numbers involved are statistically small, particularly for L2 (6) and relatively large changes or differences in the chart may be misleading due to the low population. Several events noted involvement of 'trainees'. This may raise concerns that 'trainees' may not be receiving adequate supervision on site?



Photography by Height Specialists

4.6 Body Part Injuries

The body part injuries sustained during 2015 are shown in Fig 30 alongside those for 2013 and 2014. These are actual numbers and do not take account of different employment levels or work hours (i.e. time at risk). Additionally, multiple injuries sustained in a single event are shown as individual injuries. For example, an uncontrolled rope descent resulted in a fractured leg and a dislocated big toe, and both injuries are included in the chart. Thus, there could be more injuries shown than the number of actual accidents. Once again, the relatively low numbers recorded inhibit close analysis but some points do arise from the limited data.

Areas of concern revolves around extremities, notably hand/finger injuries (10), as well as face/eye injuries (6) one of which was particularly serious involving facial fractures. Injuries to the foot (5), arm (4) and leg (4) were also significant as well as to neck and shoulder (4).

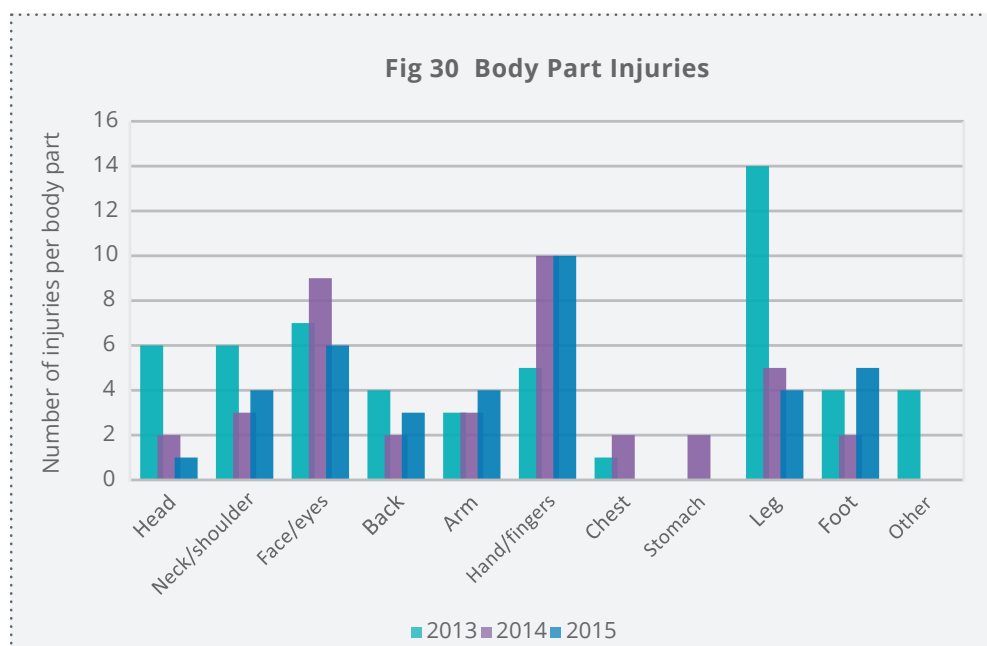
Of the 10 hand injuries, two were caused by handling tools and three during training by trapping or caught by karabiners. Falling masonry, wind-blown into a building, knife

cut during kit bag handling and thorn penetration of gloved hand made up the others. In other words, there was little common cause except perhaps for the training injuries.

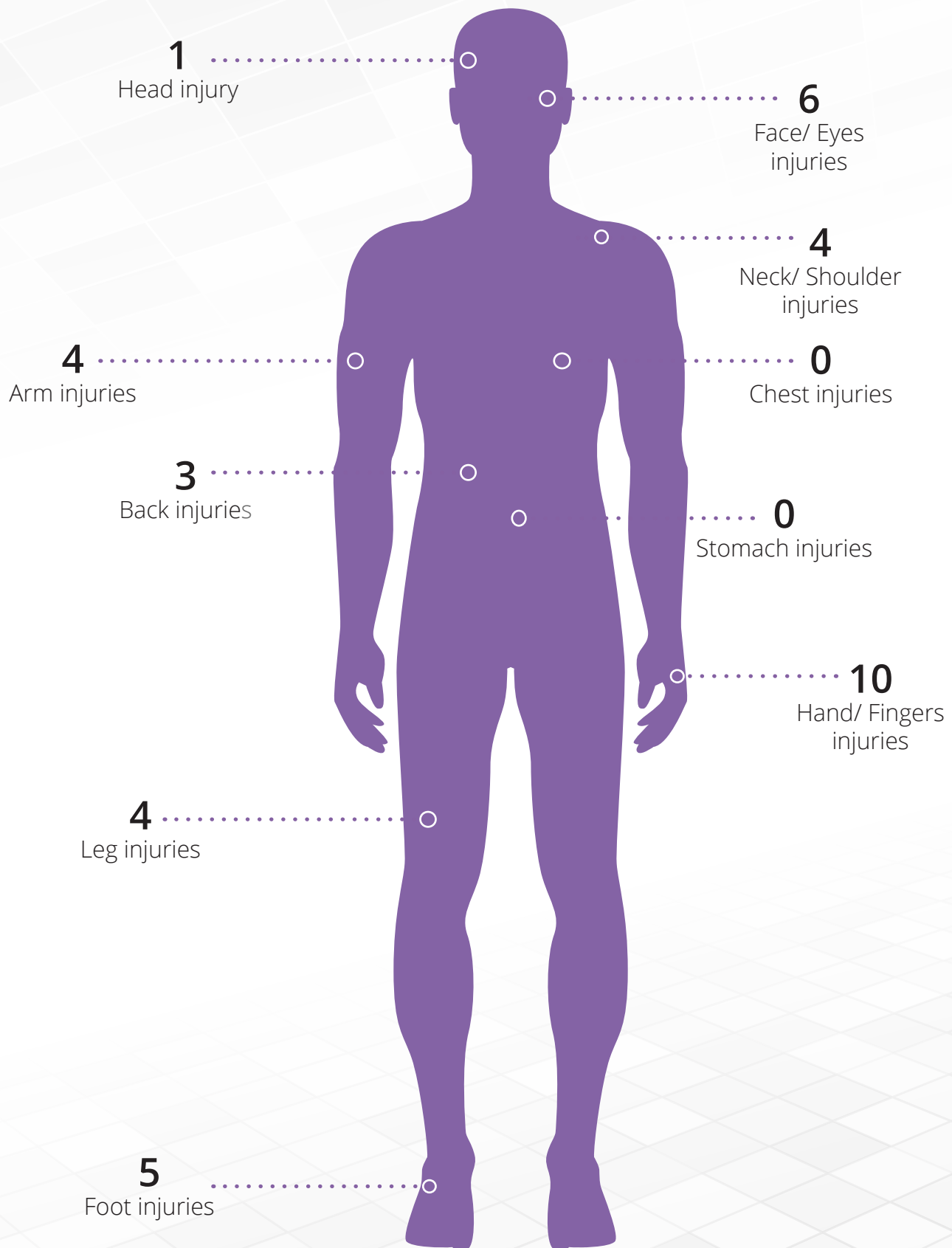
The facial and eye injuries, likewise, were caused by a mixture of events with particulates blown into eyes, struck by a dropped object on looking up after hearing a 'Below' call from above (!), sensitivity to paint causing facial itching and striking a chin on a cable tray. However, a 'Major injury' was caused by falling rock fragment passing through a protective mesh net and causing facial fractures and eye injury.

Foot injuries were caused by sprains from slipping, a HP jet minor laceration and being struck by a falling rock. Leg injuries were caused by slipping, being struck by a third party dropped object (both causing bruising) and striking the knee against an object causing a cut. The fatality was ascribed to neck injury.

Strains also accounted for a shoulder injury (trying to catch an 80 kg dummy), a back injury and an arm injury.



Body Part Injuries



Causes of Accidents and Incidents



3 Gassing Incidents



2 Explosive Incidents



5 Slips and Trips



3 Falls

4.7 Causes of Accidents and Incidents

Allocation of a single specific cause for an accident or incident is rarely possible or even accurate. Only the category that most closely describes the *immediate* cause of an accident or a dangerous occurrence is usually submitted in reports and even these may be erroneous for various reasons. It is fully acknowledged that this is a serious weakness of this analysis as it relies on such submissions and does not identify true root causes which must, inevitably, include an element of human error or omission. However, given these limitations, there are

some potentially useful points that may arise even from a superficial examination of immediate causes.

In Fig 31, it should be noted that 'Human Error' was omitted. Also, two additional factors have been added for 2015 data – 'Ambient conditions' and 'Rope error or omission'. This was to cater for a number of reports that seemed to fit these headings but no others and, therefore, would avoid examination.

It may be safely assumed that human factors will usually be present in any event, one way or another and, hence, there is little to be gained by its inclusion. 'Other' for 2013 and 2014 frequently included the two added factors, amongst others. As a consequence, they have been retained in the chart above but are not strictly comparable to 2015 data. It should be noted that the chart is based on absolute numbers with no account of populations.

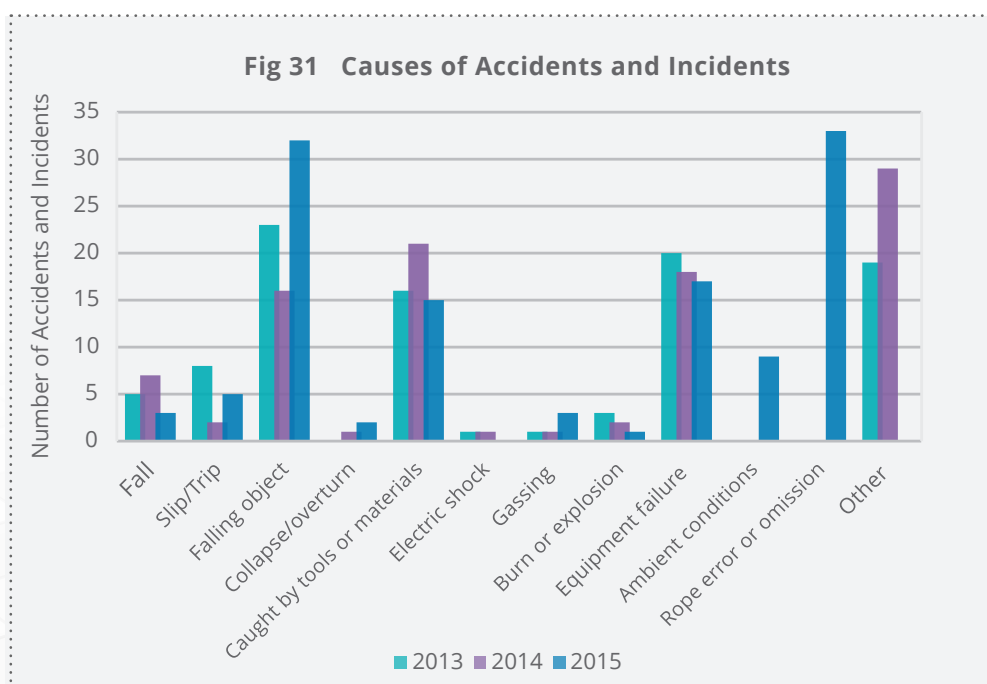
There may be more than one cause identified for some events, hence, the number of causes in the chart above will exceed the number of reported events. Of the 120 individual causes identified in the chart for 2015, about 30-40% actually resulted in or contributed towards injury. 'Slip and trip' events (5) have been separated from 'falls' (3) because the distinction is appropriate to this industrial sector.

The three consistently significant areas of concern continue, namely falling or dropped objects, injuries due to handling tools or equipment and failure or mal-operation of plant and equipment. Of the 32 cases of

falling or dropped objects, 24 were items dropped by rope access technicians, 6 of which were rope access equipment (ropes, slings, karabiners, shunts etc) along with several pieces of personal equipment. The remainder of falling objects were mainly rock and masonry and assorted materials. One item, dropped by a third party, struck and injured a technician on rope.

Only four of the falling or dropped objects resulted in actual injury, all minor with one important exception. That was one of the two 'Major injuries', facial fractures caused by falling rock penetrating protective netting.

Injuries caused by handling tools and materials totalled 14, only two of which occurred 'off rope'. The remainder were caused whilst on rope from a variety of tools and equipment including a chain saw, HP jetting, spanner and three incidents of finger damage with karabiners. The two 'off rope' injuries were caused by an unguarded knife in a tool bag and eye injury from blown dust.



Equipment failure or mal-function (or mal-operation) occurred in 17 cases leading to dropped objects in five cases, two being hammer heads detached from handles. In two cases, isolation failures allowed a conveyor belt and a wind turbine blade pitch to operate in the immediate vicinity of rope access work. A further incident involved a main line anchor failure when a beam clamp eye broke but, fortunately, the back-up clamp held and the result was a short fall onto the back-up.

Of repeated concern, there were **six instances of rope damage or severance**. In one case a rope was cut by third parties. Leaving ropes out in bad weather conditions again resulted in damaged ropes. There were two instances of rope protectors slipping and leaving ropes unprotected over sharp edges, one of which led to the fatality when both ropes were severed in turn. In one case, a rope end was found melted when the rope was retrieved. One rope was cleaned of paint deposits using paint thinners whilst on rope.

Of the two remaining falls, one was held by the back-up rope when the beam clamp failed (above) but a second fall, when a technician lost control during an abseil, result in a broken leg 'Major injury'.

Of the five slips, two resulted in sprained ankles and three resulted in other minor injuries. Of the two 'collapse' items, one involved a wall failure followed by a rock fall of ~100T of rock taking with it numerous rope access equipment left in place overnight. It was fortunate that the event occurred at night! The single 'burn' was the melted rope end, discovered during retrieval.

The added item, 'ambient', identified 9 instances where ambient conditions contributed to problems. In **six cases, high temperatures** led to dizziness, feeling faint or actually fainting probably brought on by

combinations of dehydration, over-exertion and, in some cases, confined space working. The three remaining cases involved wind, with damage to ropes in one case and two instances of wind-blown material entering eyes.

Finally, there were **33** instances of errors or omissions during rope work. They may be broadly divided into categories as below:

• Mal-operation of rope devices and equipment	8
• Carelessness or loss of concentration	13
• Deliberate departure from accepted practices	3
• Dropped rope access equipment	6
• Other	3

Perhaps the biggest concern relates to the overall total of errors and omissions in rope work, even within the limited database, and the failures to adhere to accepted practice, whether accidentally or deliberately. This includes failures to maintain attachments (nil or single point) and lack of attention or carelessness leading to several instances of poor or unacceptable technique.

'Other' included (a probable lack of restraint resulting in?) being blown into a structure by a sudden gust of wind, failure of the beam clamp and melted end of rope.

Only four of the rope reports were related to actual accidents. Two were minor 'less than 7 day injuries' but the other two were a 'Major injury' fractured leg during an uncontrolled abseil and the fatality due to slipped rope protectors allowing both ropes to be severed.

The lack of accident and incident reporting, in proportion to the employment and work hours reported, was disappointing. In effect, **what hasn't been reported and by whom?** Presumably, such concerns lay within the jurisdiction of trainers, supervisors and, ultimately, managers.



Only four of the rope reports were related to actual accidents. Two were minor 'less than 7 day injuries' but the other two were a 'Major injury' fractured leg during an uncontrolled abseil and the fatality due to slipped rope protectors allowing both ropes to be severed.

4.8 Time Lost

Of the 41 reported injuries, only 17 required any time off work. Reported days off work totalled about 212 or about $212/13,233 = \sim 0.016$ days per person, consistent with previous years. This is similar to the EU 28 figure for 2013 (latest available) which remained at about ~ 2.5 million days per 350 million working population or about 0.014 days per person.

(<http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do>)

Equivalent figures for UK (HSE Labour Force data) were 1.09 days lost per worker for all illness and injury with 0.16 days lost per worker due to injury and 0.93 days lost per worker due to illness. The average for the four reportable accidents for 2015 was 50 days per injury. If all 41 injury accidents are included, irrespective of seriousness (2 Major, 2 'Over 7 Day, 37 'Less than 7 Day), the average becomes 5.2 days per injury. Alternatively, if only those accidents resulting in time off work are considered, the average for the 17 injuries will be 12.5 days per injury.

(<http://www.hse.gov.uk/statistics/lfs/index.htm#allinjuries>) – see Table SWIT 2014/2015

US private industry median figure for 2014 was 9 days but the range over various industries was wide (5 to 31 days) and included all injuries, without days off work criteria and, perhaps, equates closely to the overall IRATA figure of 12.5 days per reportable and non-reportable accidents involving time off work. Note that the US data is a 'median', that in half the cases had fewer days and half had more days lost. This is not the same as an average. The US data also shows a steadily increasing 'days off work relationship with age, rising from 3 to 17 days at age over 65.

(<http://www.hse.gov.uk/statistics/industry/index.htm>)

(<http://www.bls.gov/iif/home.htm>)

(<http://www.bls.gov/news.release/pdf/osh2.pdf>)

- see Table 1

A further 80 days were lost by others in the course of dealing with accidents and incidents giving a total of 292 days. Given 24 million work hours or 3 million work days, days lost due to accidents represents **one day in every 10,000 work days; this excludes consideration of the fatality.**



In 3 million work days only 1 day was lost per 10,000



In 41 reported injuries, only 17 required time off work



For all illness and injuries, only 1.09 days were lost per worker



High Temperatures caused 4 ill health 'less than 7 day'

4.9 Other Factors Weather or Working Conditions

Eleven reports clearly identified weather or working conditions as a factor in accidents and incidents. Three Dangerous Occurrences were reported due to wind damaging ropes left in place during a storm, operation of a deluge system over rope access workers whilst on rope and an H2S personal alarm triggered necessitating evacuation from a confined area. One technician was also overcome by gas emissions and lack of ventilation within a confined space.

High temperatures resulted in four ill health ('less than 7 day') reports two of which were within confined spaces. It may also be noted that, despite lack of recognition in the submitted report, the single fatal accident due to severed ropes appeared to have occurred during conditions of high ambient temperature ($>40^{\circ}\text{C}$).

Windy conditions caused four incidents and minor injuries, two due to particulates entering eyes and two technicians blown into a structure. Overall, nearly one quarter of all injuries or ill health instances were related to weather or work environments.

Rescue – Rescue or direct assistance was required in ten cases, two of which occurred during training and assessment.



4.10 Working 'On Rope'

Understandably, there is interest in the statistics for **On Rope** working in isolation. The number of fatalities and all injuries and instances of ill health during on rope working for 2015 was as follows:

• Fatality	1 (Reportable)
• Major Injury	2 (Reportable)
• Less than 7 Day Injury	25
(including strains/ sprains and ill health)	
TOTAL	28

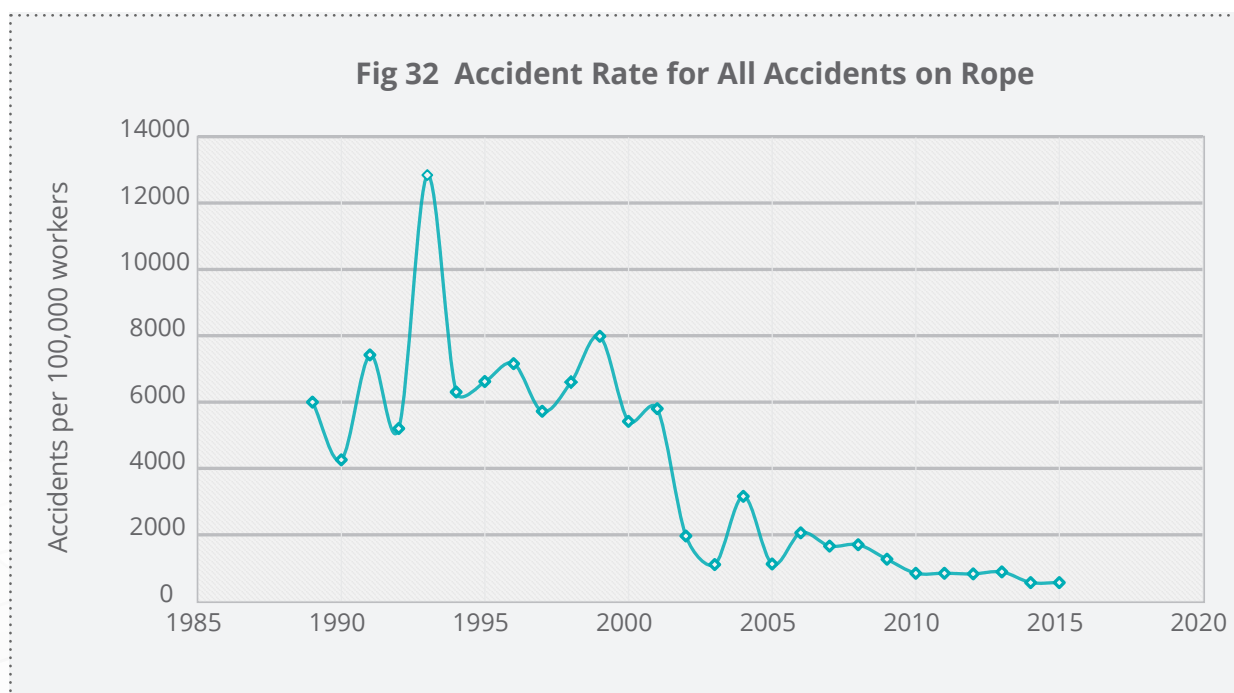
(Note that the two 'Serious' injuries occurred during training).

The total hours worked on rope in 2015 was 10.1 million hours. Thus, the accident rate per 100,000 hours is given by total injuries $\times 100,000$ / total work hours on rope = $(28 \times 10^5) / (10.1 \times 10^6) = \mathbf{0.28 \text{ all injuries per 100,000 hours}}$ or, more conventionally, the figure would be **560 all injuries per 100,000 workers**, based on 2,000 hours per person per annum (full time equivalent workers).

If only reportable events on rope were considered, the rate would be $(3 \times 10^5) \times 2,000 / (10.1 \times 10^6) = \mathbf{60 \text{ per 100,000 workers}}$, marginally greater than the overall figure of 42 per 100,000 as revealed in 5.1.

A graphical presentation of the accident rate per year is shown in Fig 32. Table 1 in Appendix is a compilation of data since 1989 and is extended to include the above figures. (Note that the graph and Table 1 are now based on 100,000 workers rather than 100,000 work hours).

It is emphasised that the graph is based solely on accidents that occurred whilst on ropes and includes all accidents including 'Less than 7 Day injuries'. Thus, it cannot be compared against other sources of data that are based solely on reportable accidents.



The Fatality

Whilst the achievement of such a low accident rate must be recognised, the single reported fatality serves as a sad reminder of the need for continuous vigilance to ensure the safety of rope access technicians. Sight must not be lost of a human tragedy which cannot be described in numbers. It is particularly saddening when the immediate cause of a previous fatality appears to have been repeated, leading to the loss of another life.

It will be noted from previous reports that fatalities also occurred in 2013 and 2011. It will also be recalled that, when dealing with such low numeric events, it is common practice to 'sum' over a period of time, typically a three- or five-year period; the latter has been selected to coincide with available UK HSE data.

Over a five year period, 2011-2015, the three fatalities would represent a fatality rate of 3 in a 'working' population of 52,000 (from accumulated employment data over the five year period). This gives a fatality rate of 5.8 per 100,000 workers. The UK HSE figure for 2014/15 was 0.46 per 100,000 and 0.53 per 100,000 for a 5 year average. The EU28 figure for 2013 was 1.8 per 100,000 with countries reporting various rates – for example Germany 0.99, France 2.96 and Italy 2.31. US data for 2014 gives an 'all

private industry' average of 3.4 per 100,000 workers but the range for individual industries was wide, ranging from 9.8 for construction to 14.2 for mining, all well within the same order as that for the calculated five-year average here.

(<http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do>)

(<http://www.hse.gov.uk/statistics/tables/index.htm#riddor>) see RIDFATAL table

(<http://www.bls.gov/iif/oshwc/cfoi/cfch0013.pdf>)

The significance of the single fatality is clearly seen from these comparisons. The negative effect on overall accident and injury data may not be very great but, when considered in isolation against other fatality data, it is seriously detrimental except against US data.

5. Comparison of Accident Data

5.1 Basis for Comparison

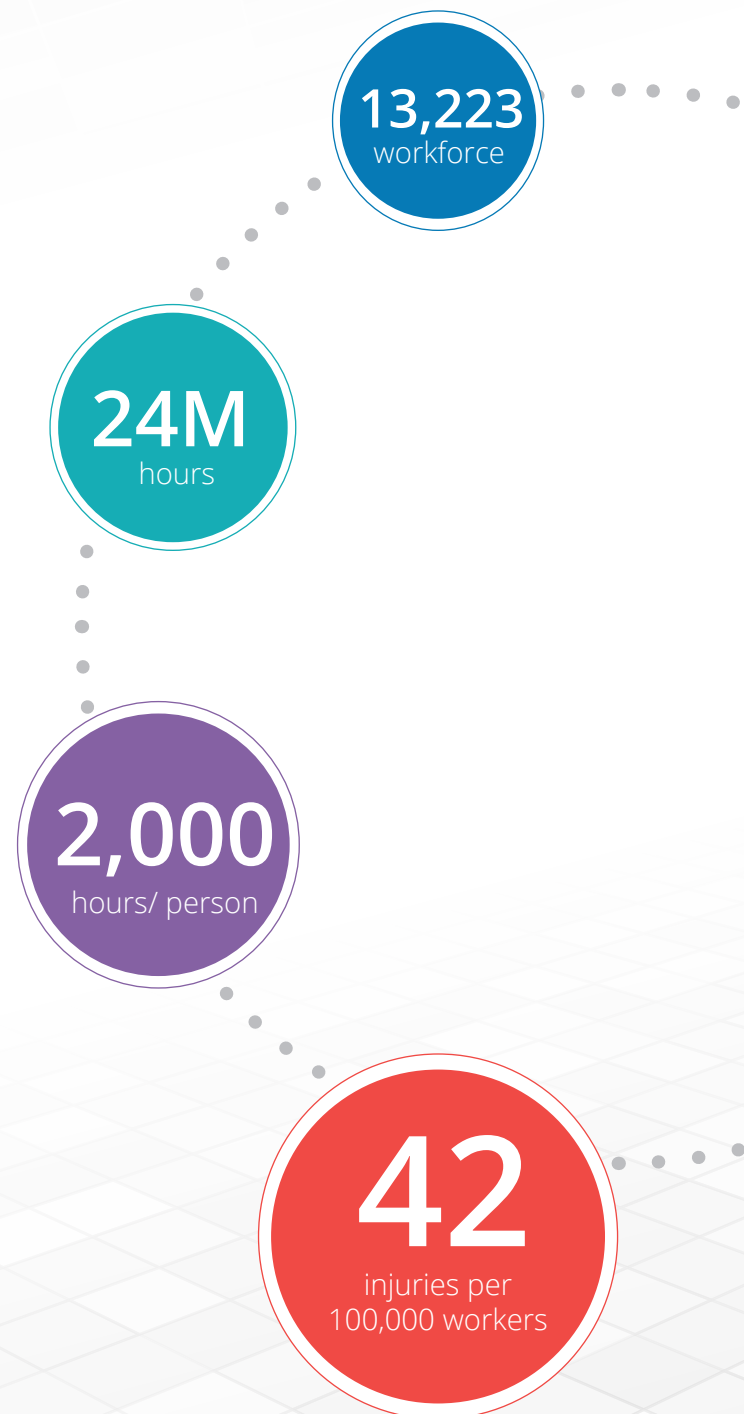
Conventionally, accident statistics are based on accidents per 100,000 workers. To maintain consistency with this practice, it is necessary to convert actual accident numbers to that equivalent to a workforce of 100,000. The workforce for 2015 was 13,223 but, as shown earlier, this does not equate to the hours worked of ~23 million for a fully employed workforce and ~1 million for training.

To maintain a pessimistic analysis, and to avoid any possibility of criticism, a workforce corresponding to the hours worked, including training, will be used i.e. time at risk. This gives 24 million hours / 2,000 hrs per person per annum = **12,000**, somewhat less than the reported workforce. This will lead to an increase in the accident rates to be calculated. The 'multiplication factor' for accidents becomes:

$$100,000 / \text{Number of Employees} = 100,000 / 12,000 = \mathbf{8.3 \text{ per accident}}$$

This figure is, in effect, the multiplication of any single event to reach the equivalent for a workforce of 100,000. Using the above, figures for the accident rates in 2015 become:

• Fatality	$1 \times 8.3 =$	8.3
• All reportable Injuries		
2 Serious (Over 7 Day) Injuries	$2 \times 8.3 =$	16.6
2 Major Injuries	$2 \times 8.3 =$	16.6
TOTAL		42 per 100,000 workers



5.2 Comparison against UK, EU and USA Data

The UK Health and Safety Executive (HSE) website key figures for 2014/15 provisional data for employees in selected industries are tabulated below together with equivalent IRATA figures. (<http://www.hse.gov.uk/statistics/tables/index.htm#riddor> (see Table RIDIND – updated 10/2015).

Overall, the IRATA figures in the table remain well below all categories including those for 'Service Industries' with the exception of the fatality, the full impact of which is now revealed. HSE acknowledges that Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) data may be *well under-reported (previously by about 50%)*.

The overall IRATA injury rate is only about 14-15% of the UK All Industry rate and even less than for comparable industries. The percentage falls even further if the under-reporting to RIDDOR is taken into account.

Direct comparison against EU figures, discussed ahead, is limited for several reasons not least because they include road traffic accidents (but not commuting) and all injuries of 'over 3 days off work'. Latest available EUROSTAT figures are still for 2013. EU 27 figures were similar to those for EU 28.

In order to compare data it is necessary to extract those accidents that more nearly approach the 'Over 3 day off work' criterion used by Eurostat for 2013 and add them to the 'Over 7 day injuries'. The number of injuries that required three or more days off work was 11 giving a rate of $11 \times 8.3 = \mathbf{91}$ **injuries per 100,000**. This figure may now be compared to EU 28 figures.

From the table, the IRATA rate for all injuries was about 6% of the 'All' EU-28 figure for 2013, much the same as in 2014. It may be of interest to note that, even if all injuries were taken into account, irrespective of time off work (41), the IRATA injury figure would still only be 22% of the EU all NACE figure.

Care is also needed in comparing IRATA data to USA data due to differences in the way injuries and illnesses are defined and classified. The table on the next page presents some injury and illness data presented by US Bureau of Labor for 2014. Figures have been converted from 'per 10,000 workers' to 'per 100,000'. US data is based on full-time workers working 2,000 hours per annum. In this respect, US figures are comparable to those in this report because the IRATA population has been reduced to the same 2,000 hrs/annum basis.

The US figures selected relate to those taking time from work as a result of injury and illness at work and may include job transfer or job restriction cases. However, US figures do not have a 'days off work' criterion and inevitably will be higher. Therefore, for comparative purposes, all injuries requiring any days off work are extracted from the data supplied, resulting in a figure of $17 \times 8.3 = \mathbf{140}$ **injuries per 100,000**. This is still well below all US figures and only **14%** of the 'All private industry' rate.

Despite adopting pessimistic assumptions and allowing for significant differences in reporting in all cases above, there can be little doubt that IRATA members continue to enjoy an enviable safety record with an injury rate only a small percentage of the injury and illness figures presented by UK, Eurostat and USA agencies.

All figures in rounded numbers of injuries per 100,000 employees

Industry	Fatalities	Major Injury*	Serious**	Total including fatal
Agriculture, Forestry & Fisheries	8	208	322	539
Mining & Quarrying	0.8	62	197	260
Manufacturing	0.6	106	381	488
Construction	1.9	142	277	421
Service Industries	0.2	58	196	255
All Industries	0.4	70	223	293
IRATA International	8	17	17	42

* Equivalent to RIDDOR Specified Injuries

**Over 7 Day injuries

Industry	EU 28
Agriculture, Forestry & Fisheries	1,644
Mining & Quarrying	1,650
Manufacturing	2,029
Construction	2,821
All EU	1,533
IRATA International	91

All figures injuries per 100,000

US Private Industry Sector	Incidence of non-fatal injuries & illnesses with days away from work per 100,000
Agriculture, Forestry & Fisheries	1,790
Mining & Quarrying	847
Manufacturing	1,031
Construction	1,327
Services	934
All Private Industries	978
IRATA International	140

<http://www.bls.gov/news.release/pdf/osh2.pdf> Extracted from Table 1

The folder containing the data is: 'Population and social conditions' and is in the sub-folder of 'health'. The data is stored under the subfolder 'Health and safety at work (hsw)' and a further sub-folder of 'Accidents at work and other work-related health problems (source LFS) (hsw_apex)'. Note change of units required in table HSW_n2_03 from which the data was extracted).

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

<http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do>



5.3 Accident and Incident Data and Regional Advisory Committees (RACs)

No attempt was made to apportion accident or incident data to RACs for the following reasons:

- RACs operate under differing conditions, environments and circumstances. Further, the types of work typically carried out vary from one to another with differing risk elements.
- Presenting a ranking order conceivably could lead to a competitive attitude that, counterproductively, may result in temptation to withhold submissions particularly of non-reportable incidents where most data resides.
- Finally, if low numbers of accidents and incidents were distributed between eleven RACs, the resulting statistics would be virtually meaningless.

6. Summary Membership and Employment



- Membership had risen to **356 members** by December 2015.
- Average employed increased from 12,544 in 2014 to **13,223 including 419 trainers and 63 managers** worldwide.
- Nearly 11,000 qualified IRATA technicians were employed by member companies, distributed as follows:
 - Level 1 - 5,137
 - Level 2 - 2,282
 - Level 3 - 3,569
- Work hours reached nearly 23 million, with an additional million spent on training giving **a total of over 24 million hours.**
- Significant increase in utilisation appeared to account for a proportion of the work hour increase from 16 million in 2014.
- Hours spent 'on rope' of 11.3 million accounted for half of all work hours.
- Hours spent working onshore was 11.6 million and about 10.1 million offshore.

There is concern that the reporting level, particularly for Dangerous Occurrences, appears well below expectation, given the level of employment and the number of work hours reported.



37
Minor Injuries



6
Rope Damage or
Severance



6
Health Issues



60
Accidents per
100,000 Workers

Accident and Incident Reports

- Accident and incident submissions totalled 103, distributed as follows:

1	Fatality
2	Major Injuries
2	Serious injuries (Over 7 Day Injuries)
37	Minor injuries (Less than 7 Day Injuries)
61	Dangerous Occurrences

- Thus, there were **only five 'reportable'** accidents.
- The majority of accidents and incidents occurred 'on rope', including the fatality and the two 'Major injuries' (one to the face and one broken leg).
- The two 'Serious injuries' occurred during training.
- A total of 37 body part injuries were reported; most vulnerable to injury were hands and fingers (10), face and eyes (6) and arms (6).
- There were **33 instances of errors or omissions during rope handling and use** and **32 falling or dropped objects**, 24 of which were by rope access technicians.
- There were **6 instances of rope damage or severance**, one leading to fatality.
- There were 9 reports, or nearly a quarter of all injuries or ill health reports, due to weather or work conditions, 6 resulting in ill health issues.
- The accident rate for work 'on rope' in isolation was **60 per 100,000 workers** for **all reportable injuries**.

There is concern that the reporting level, particularly for Dangerous Occurrences, appears well below expectation, given the level of employment and the number of work hours reported.

Comparison of Accident Rates with All Industry Data

- A five year average of the three fatalities suffered gave **5.8 fatalities** per **100,000** workers, 10 times greater than the UK HSE five year figure, 3 times the EU28 fatality rate and twice the US BLS 'all industry' rate.
- The reportable injury and illness rate of **42 per 100,000 workers** (68 per 100,000 in 2014) remained well below all international statistics for reportable injuries.
- Overall injury and illness rates were in the range **6-14%** of all latest available comparable rates provided by UK HSE, Eurostat EU28 and USA BLS.

Acknowledgements

The assistance of IRATA International staff in compiling, arranging and presenting data is gratefully acknowledged.

Also recognised is the considerable effort of member companies staff who produce and submit the data required. This report could not be prepared without their collective effort.

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7. Conclusions

The following conclusions are based on examination of the employment data and event reports supplied by member companies during 2015, as summarised and compiled by IRATA secretariat:

1. Membership should be congratulated on a continuing generally excellent health and safety record. The accident rate, covering the four reportable injuries, remained well below all industry international figures although the five year fatality rate, taken in isolation, was greater than most other international statistics.
2. Membership and employment levels increased at a modest 6% level but work hours increased significantly to reach 24 million hours including training. This may be partly explained by increased utilisation of workers and a simplified reporting system.

3. The continuing low level of reported events, particularly Dangerous Occurrences, in relation to the overall employment level, could reduce confidence in the analysis presented.

4. Primary areas of concern, identified in accident and incident reports, included:

- Number of falling or dropped objects
- Number of errors and omissions during 'on rope' working
- Number of incidents and accidents involving working conditions
- Number of rope damage and severance reports

Areas where further improvements in work safety could be achieved are highlighted under Recommendations.



8. Recommendations

1. Given the collective data on accidents and incidents occurring in various situations, the otherwise excellent safety record could be further improved by:

a) Prevention of dropped objects particularly when 'on rope'. *(Tool box item? E.g. Examination of all items prior to attachment).*

b) Closer supervision to ensure compliance with rope access procedures at all times, including periods when not actually in suspension. This is particularly the case for trainees and inexperienced technicians. *(Tool box reminders?)*

c) Improved consideration of weather and working conditions particularly in hot weather and confined spaces. *(Note supervisors and managers)*

d) Prevention of rope damage – this continues to be an area of major concern.

e) Maintaining protective vigilance of the worksite at all times. *(This is particularly the case when working with or alongside 3rd parties and ensuring the adequacy of plant isolations).*

2. Repeatedly, members should be reminded of the requirement to report all accidents, incidents and events with potential to cause injury or fatality.

Areas where further improvements in work safety could be achieved:



Prevent against falling objects



Close supervision of rope access procedures



Consider weather and working conditions such as heat and confined spaces



Prevent rope damage



Maintain vigilance over the worksite at all times

APPENDICES

Table 1
Accident Rates for 'On Rope' Working 1989-2015

Year	No. of Members	Work Hours on ropes	None reportable Accidents	Reportable accidents on ropes	Rate for reportable accidents **	Rate for all accidents ***
1989	9	267,504	8	0	0	6,000
1990	12	327,645	7	0	0	4,260
1991	16	457,928	17	0	0	7,420
1992	22	537,920	13	1	380	5,200
1993	23	327,000	21	0	0	12,840
1994	32	348,749	11	0	0	6,300
1995	32	484,285	16	0	0	6,620
1996	26	559,035	18	2	720	7,160
1997	31	699,688	11	9	2,580	5,720
1998	37	1,006,538	23	10	1,980	6,600
1999	33	803,365	29	3	740	7,980
2000	34	887,206	21	3	680	5,420
2001	49	999,010	25	4	800	5,800
2002	49	1,225,930	12	0	0	1,960
2003	56	1,634,482	9	0	0	1,100
2004	67	1,457,848	22	1	140	3,160
2005	81	2,311,265	10	3	260	1,120
2006	95	2,132,141	21	1	100	2,060
2007	130	2,765,483	21	2	140	1,660
2008	149	3,859,584	25	8	420	1,700
2009	170	4,582,642	15	14	660	1,260
2010	184	5,247,365	18	4	160	840
2011	217	5,209,056	17	5	200	840
2012	247	5,655,637	19	4	140	820
2013	277	7,012,270	28	3	86	880
2014	315	7,591,977	16	5	132	560
2015	356	10,096,489	25	3	60	560
TOTAL		68,488,042	478	85		

Based on 2,000 hours per person per annum

* Units for Accident Rate (AR) number per 100,000 workers

** Col 5 divided by col 3 x 2000 x 100,000

*** Col 4 + 5 ditto

Table 2
Summary of Employment by Grade 2015
Average Quarterly Number

RAC	MANAGERS	LEVEL 3	LEVEL 2	LEVEL 1	OTHER	TOTAL
Australia	52	343	145	291	83	913
Benelux	28	115	83	115	70	411
Brazil	48	176	110	319	220	871
D-A-CH	8	13	12	19	10	61
Middle East	40	234	261	624	290	1,449
North America	35	150	107	278	48	617
North Sea Operators	31	494	249	694	76	1,543
Other	103	296	177	335	188	1,098
South Africa	13	206	224	287	109	840
South East Asia	59	456	322	790	225	1,852
UK	189	1,088	592	1,386	314	3,569
TOTALS	603	3,569	2,282	5,137	1,632	13,223

Rounded numbers

Table 3
Summary Data of Working Hours 2015
Hours Worked by Grade

RAC	Managers	Level 3	Level 2	Level 1	Other	TOTAL
Australia	97,378	385,478	148,640	344,773	154,840	1,131,109
Benelux	45,401	138,866	98,824	126,627	134,189	543,907
Brazil	91,549	316,861	196,687	590,095	421,454	1,616,646
D-A-CH	10,488	18,274	18,967	26,331	15,248	89,308
Middle East	76,457	461,448	524,164	1,224,090	597,200	2,883,359
North America	66,224	164,490	100,469	244,014	91,986	667,182
North Sea Operators	64,129	995,234	503,355	1,371,499	164,245	3,098,461
Other	170,940	485,324	296,774	550,302	343,924	1,847,264
South Africa	28,214	385,997	420,499	557,471	215,366	1,607,546
South East Asia	125,205	783,721	593,964	1,340,726	503,196	3,346,812
UK	376,459	1,842,967	1,010,379	2,334,428	597,609	6,161,841
TOTALS	1,152,443	5,978,659	3,912,720	8,710,355	3,239,257	22,993,434

Notes



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