

Safety Statistics for IMCA Members

Report for the Period 1 January-31 December 2004

Contents

1	Introduction.....	1
2	Background.....	1
3	Summary of Safety Statistics – 1 January-31 December 2004	1
4	Individual Company Lost Time Injury Frequency Rates.....	2
5	Comment and analysis.....	3
6	Comparison with Published Figures	4
7	Leading Indicators	5

1 Introduction

Members will recall that IMCA has produced an annual report of safety statistics (covering fatalities and injuries) supplied by members for the past eight years. This information note reports the annual statistics for 2004.

2 Background

Although only a lagging indicator of health, safety and environmental performance, safety statistics are nevertheless seen as providing a useful insight into the performance of a company in this area. The purpose of the statistics is to record the safety performance of IMCA contractor members each year and to enable IMCA members to benchmark their performance.

The Safety, Environment & Legislation (SEL) Core Committee developed leading indicators (of health, safety and environmental performance), which can be promoted to clients and adopted by members, in order to get away from the high reliance on lost time injuries (LTIs) as the arbiter of safety. An increasing number of members have provided leading indicator data in the last two years, and a summary of this is included in the final part of this document.

3 Summary of Safety Statistics – 1 January-31 December 2004

Overall lost time injury frequency rate (overall LTIFR)	1.13
Overall number of lost time injuries	164
Offshore lost time injury frequency rate (offshore LTIFR)	1.64
Onshore lost time injury frequency rate (onshore LTIFR)	0.61
Rate of overall LTIFR (second highest-second lowest)	12.4-0.58

The statistics over the past eight years have been as follows:

	1997	1998	1999	2000	2001	2002	2003	2004
Million hours worked per year	47.6	52.9	52.8	65.6	54.5	197.31	200.40	145.35
Million hours offshore						62.14	66.39	72.83
Million hours worked onshore						135.16	134.01	72.18
Total number of LTIs	236	257	196	227	162	244	198	164
Overall LTIFR	4.96	4.86	3.72	3.46	2.97	1.24	0.99	1.13
Offshore LTIFR				4.25	3.77	2.96	2.00	1.65
Onshore LTIFR				1.05	0.86	0.44	0.49	0.61
Number of fatalities overall	3	2	4	5	4	3	5	3
Overall fatal accident rate	6.30	3.80	7.60	7.60	7.30	1.52	2.49	2.06
Offshore fatal accident rate				10.12	10.14	4.83	6.03	2.75
Onshore fatal accident rate						0.00	0.75	1.39
No. of participating companies	23	32	28	31	32	32	31	36

4 Individual Company Lost Time Injury Frequency Rates

The following table shows the various LTIFR for each of the 36 companies with an identifying number and a letter indicating which band they are in.

In order for members to identify how their company compares to others of like size, four bands are used for contributing contracting companies, categorised by their annual amount of overall working hours. The overall, offshore and onshore LTIFR for each band is also shown.

A letter has accompanied this report to each contributing member which lets each recipient know only its own identifying number.

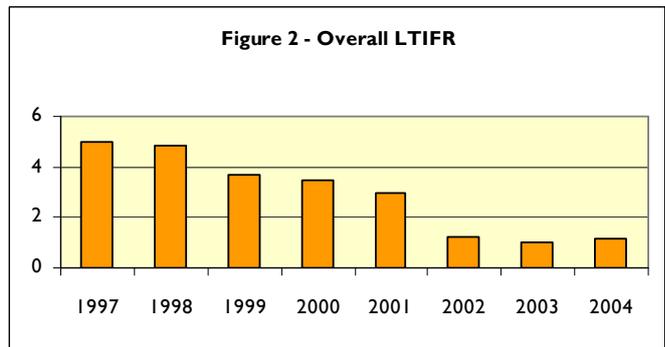
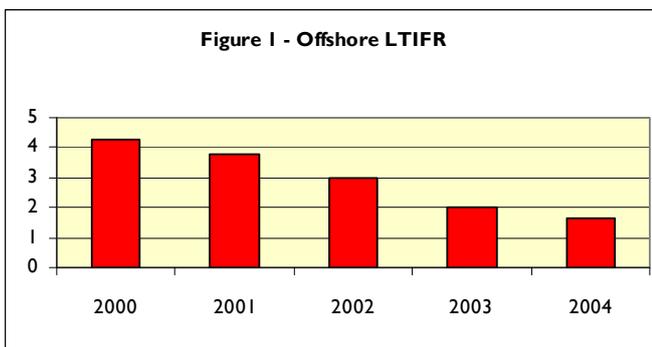
Company	Offshore LTIFR	Onshore LTIFR	Overall LTIFR	Banding	Company <i>(continued)</i>	Offshore LTIFR	Onshore LTIFR	Overall LTIFR	Banding
1	1.28		1.28	D	19	2.33	0.34	1.24	D
2	0.00	0.00	0.00	A	20	2.36	0.00	2.19	D
3	0.00	0.00	0.00	A	21	0.81	0.00	0.58	C
4	0.00	0.00	0.00	C	22	0.00	0.00	0.00	A
5	0.00	0.00	0.00	A	23	0.00	0.00	0.00	B
6	10.64	25.03	17.25	A	24	1.26	0.00	1.20	D
7	3.25	0.00	2.17	A	25	0.00	0.00	0.00	A
8	5.60	0.00	5.03	A	26	2.87	0.00	0.76	C
9	1.07	0.00	0.88	D	27	1.28	0.13	0.42	D
10	0.00	0.00	0.00	A	28	0.00	0.00	0.00	A
11	13.43	0.00	12.40	A	29	2.00	0.00	1.73	D
12	1.58		1.58	D	30	1.47	0.28	0.96	D
13	0.00	39.56	11.31	A	31	6.92		6.92	B
14	0.00	0.00	0.00	A	32	0.00		0.00	A
15	0.00	1.23	0.79	D	33	0.91	0.87	0.88	D
16	0.00	0.00	0.00	B	34	3.13	1.26	2.73	D
17	2.57		2.57	D	35	0.79		0.79	C
18	1.35	11.22	1.52	D	36	0.00	5.91	3.69	A

Band	Hours Worked	Companies in band			Overall LTIFR			Offshore LTIFR	
		2002	2003	2004	2002	2003	2004	2003	2004
A	<500,000 hours	12	11	15	5.14	3.99	3.87	3.51	3.00
B	500,000-1,000,000 hours	5	4	3	5.15	0.96	2.71	0.81	2.93
C	1,000,000-2,000,000 hours	2	2	4	1.75	1.51	0.50	1.73	0.69

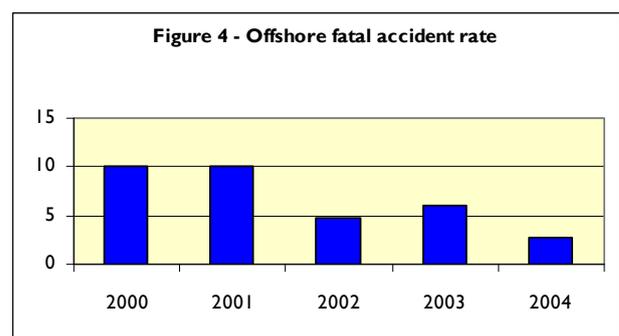
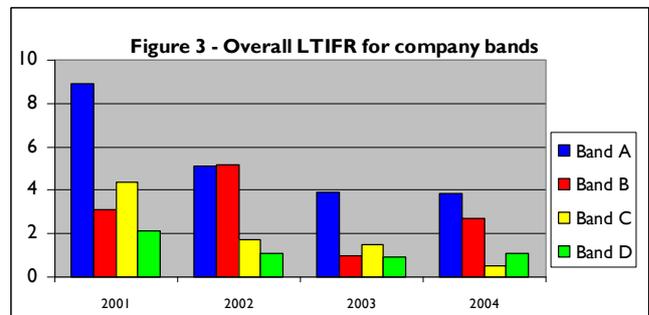
D	>2,000,000 hours	13	14	14	1.1	0.93	1.08	2.00	1.64
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5 Comment and Analysis

- ◆ **36 IMCA contractor members** participated in the 2004 exercise (31 did so for 2003), which covered about 146 million hours worked overall. It will be seen that offshore working hours have increased by some 9.7%, from 66 million man-hours in 2003 to 72.8 million man-hours in 2004.
- ◆ Overall reported man-hours decreased, largely due to reporting changes in onshore man-hours from some companies. 31 companies out of the 36 (86%) provided onshore data, compared to 23 out of 31 (74%) companies last year.
- ◆ The **offshore LTIFR** (see *Figure 1*) continues to fall; this rate is 1.65 this year, and 2.00 in 2003. It has fallen for the fifth successive year which is an encouraging trend. Of the 164 LTIs reported, 121 were offshore incidents.
- ◆ The **overall LTIFR** (see *Figure 2*) has risen slightly this year to 1.13 over 0.99 last year, although overall working hours have fallen sharply, largely due to a fall in the reported onshore working hours. This is the first recorded increase in overall LTIFR.



- The **LTIFR for the smallest (Band A) companies** continues to fall year on year, having more than halved from 8.91 in 2001 to 3.87 in 2004. This rate appears to be flattening out. Because these companies have less hours worked, any incident is likely to be reflected in a higher LTIFR than for larger companies like those in Band D.
- The **LTIFR for Band B companies** has not improved, however. At 2.71 for 2004, this is skewed by 5 LTIs at one company, which makes a considerable difference given that there are only three companies in that band.
- There is a striking improvement over last year's figures in **Band C**, from 1.51 last year to 0.50 this year. Unfortunately there are only four companies in this band.
- Amongst the **Band D** companies the LTIFR has increased slightly, from 0.93 in 2003 to 1.08 in 2004. It is to be noted that the LTIFR for larger companies in band D is on average around half that for companies in Band A. See *Figure 3*.
- Three fatalities were reported during 2004 (one onshore), which is less than the five reported in 2003 (one onshore), there were three in 2002. The Offshore FAR fell from 6.03 in 2003 to 2.75 in 2004, against a 9.7% increase in working hours. Excluding the rise caused during 2003 the offshore FAR has fallen since 2001 – See *Figure 4*.



6 Comparison with Published Figures

The reports from IADC (the International Association of Drilling Contractors), OGP (the International Association of Oil & Gas Producers) and IAGC (the International Association of Geophysical Contractors), are summarised in paragraphs 6.1-6.3 below.

6.1 International Association of Drilling Contractors (IADC)

IADC represents both offshore and onshore drilling contractors. Preliminary data for 2004 from the IADC shows 334.8 million man-hours worked overall (that is, both offshore and onshore) – an increase of nearly 11% on 2003, for which 302 million man-hours were reported. The overall LTIFR for 2003 was reported as 3.16, whereas for 2004 it is 3.07 – an improvement of 2.8%. The offshore LTIFR in 2004 was 1.58, based on 144 million man-hours. This is an improvement on 2003's figure of 1.97, based in 139.5 million man-hours.

In 2004 28 fatalities were recorded (31 in 2003) giving a fatal accident rate of 8.36 (10.27 in 2003). Eight of the fatalities were offshore, giving an FAR of 5.55.

6.2 International Association of Oil & Gas Producers (OGP)

The OGP data for 2004 is based upon 2290 million hours worked – an increase of 1.9% on 2003, covering 37 reporting companies operating in 78 countries.

OGP reported a 6% decrease in LTIFR, from 1.16 in 2003 to 1.09 in 2004. IMCA's overall LTIFR for 2004 was 1.13.

The offshore LTIFR was 1.26 (1% better than in 2003) and the onshore rate 1.04 (8% worse than in 2003). This should be compared with the IMCA offshore LTIFR in 2004 of 1.64 (and 2.00 in 2003) and 0.61 onshore.

OGP reported 18 company and 102 contractor fatalities for 2004 – nine more in total than in 2003. There were also seven third party deaths. This is against a 1.9% increase in the number of work hours reported. The offshore FAR was 6.02, which is 45% worse than the FAR in 2003 of 4.16. The onshore FAR for 2004 was 5.00 – an improvement of 3% on the 2003 figure of 5.18. These figures can be compared with the IMCA offshore FAR in 2004 of 2.75, and onshore FAR for 2004 of 1.39.

6.3 International Association of Geophysical Contractors (IAGC)

IAGC figures for 2004 tell us that IAGC man-hours increased 16% between 2003 and 2004, from 25 million to 29 million man-hours. The LTIFR for 2003 was 0.8, and in 2004 improved to 0.44. There have been no reported fatalities amongst IAGC members since 2001. Six companies provided information.

The IAGC has been using leading indicators since 1999, some of which are comparable to those developed for IMCA member's use.

It is possible to calculate a figure for overall safety observation frequency rate (SOFR) of 178.6 for 2004 and 181.8 for 2003. This is comparable with the figure for IMCA members which for 2004 is 160 (see section 7 of this report). This is based on the slightly different IAGC terminology "Number of hazard identification reports made in the year."

It is also possible to calculate a management visit rate (MVR), although this depends on the slightly more rigorous definition of a management visit, "Number of individual vessel HSE audits conducted during the year with a senior manager involved in the audit team". It yields a figure of 0.019 for 2004 against 0.014 for 2003. This interesting figure increases for every year since 1999. IMCA members' overall MVR for 2004 was 0.0352.

7 Leading Indicators

7.1 Overview

This is the second year for which IMCA has collected leading performance indicator data and thus the second occasion on which IMCA can examine leading indicators against lagging indicators.

Five companies were unable to provide leading statistics, but it is made clear where no leading indicators were provided by placing an asterisk (*) next to that company.

Some companies provided information that was insufficient to produce a rating for all the Leading Performance Indicators. These companies are marked by a hash (#).

Company	Offshore		Onshore		Overall		Leading Performance Indicators <i>(see definition in section 8)</i>				
	Hours	LTIFR	Hours	LTIFR	Hours	LTIFR	SOFR	RAL	MVR	LLR	
1	#	3123371	1.28								
2		165814	0.00	48052	0.00	213866	0.00	85.6	25.00	15.08	15.00
3	#	30216	0.00	18127.5	0.00	48343.5	0.00	53.0	15.00		2.00
4		1511187	0.00	241130	0.00	1752317	0.00	848.6	295.00	17.87	19.00
5		82712	0.00	54704	0.00	137416	0.00	26.6	45.00	3.63	22.00
6		93995	10.64	79898	25.03	173893	17.25	178.7	90.00	2.13	1.00
7		307452	3.25	153912	0.00	461364	2.17	148.3	237.50	5.04	73.00
8	#	357000	5.60	41000	0.00	398000	5.03	55.5	220.00	0.00	5.33
9		3752640	1.07	800000	0.00	4552640	0.88	17.1	360.00	0.15	3.60
10		166661	0.00	23462	0.00	190123	0.00	153.6	70.00	1.20	7.00
11		148920	13.43	12340	0.00	161260	12.40	8.1	16.67	1.57	1.67
12		3809445	1.58			3809445	1.58	0.0	585.71	0.75	2.86
13		126306	0.00	50562	39.56	176868	11.31	15.8	75.00	11.08	1.00
14		231264	0.00	37332	0.00	268596	0.00	0.0	15.00	0.00	4.00
15	#	4019441	0.00	7328792	1.23	11348233	0.79	52.7	2245.00	0.67	
16		504408	0.00	113600	0.00	618008	0.00	5.6	395.00	1.39	9.00
17	#	3884673	2.57			3884673	2.57	0.2	93.64	0.12	
18		5167569	1.35	89160	11.22	5256729	1.52	112.0	293.13	0.20	3.89
19	#	7280785	2.33	8824975	0.34	16105760	1.24	269.4	306.67		1.52
20	*	7198824	2.36	567209	0.00	7766033	2.19				
21		1233170	0.81	136160	0.00	1717843	0.58	6.3	42.50	0.12	0.50
22		67862	0.00	108980	0.00	176842	0.00	20.6	385.00	30.95	76.00
23		477420	0.00	24000	0.00	501420	0.00	94.7	0.00	9.64	19.00
24		3174911	1.26	166111	0.00	3341022	1.20	528.4	313.00	0.41	2.80
25		66372	0.00	32592	0.00	98964	0.00	36.2	45.00	4.52	2.00
26	#	348468	2.87	965052	0.00	1313520	0.76	4.6	17.50	6.89	
27	#	7803491	1.28	23096819	0.13	30900310	0.42	0.0	152.73		
28	#	12357	0.00	12600	0.00	24957	0.00	2071.7	0.00	388.44	
29	#	3503589	2.00	551235	0.00	4054824	1.73	0.0	331.25		
30	#	4774046	1.47	3550067	0.28	8324113	0.96	95.0	220.00	3.20	
31	*	722789	6.92			722789	6.92				
32	*	42970	0.00			42970	0.00				
33		4394142	0.91	24087146	0.87	28481288	0.88	1097.8	2144.00	4.06	0.15
34	#	2873151	3.13	791820	1.26	3664971	2.73	96.1	193.50		
35	#	1268212	0.79			1268212	0.79		542.50		
36	*	101827	0.00	169212	5.91	271039	3.69				

7.2 Discussion

7.2.1 Overall

	SOFR	RAL	MVR	LLR
2003	160.95	397.95	0.0254	2.72
2004	160.44	344.96	0.0352	3.96

There has been greater reporting of the leading performance indicators in 2004, with 32 companies out of the 36 total respondents (88% of total) providing significant data. In 2003, 25 out of 33 (75%) of companies provided leading performance indicators.

It can be seen that the safety observation frequency rate (SOFR) for the entire group of respondents has remained constant since 2003, at around 160, and reporting activity level (RAL) has fallen 13% from 398 in 2003 to 345 this year. The management visit rate (MVR) has grown by 38%, up from 0.0254 last year to 0.0352 this year.

The lessons learnt rate, (LLR), has been the least reported and used indicator, perhaps because of ambiguity in exactly what constitutes a 'safety bulletin', but it has grown from 2.72 in 2003 to 3.96 this year, an increase of 45%.

The safety statistics available from IAGC can be used to work out an SOFR and an MVR for the offshore seismic industry, though the definitions used are slightly different. This is discussed above in section 6.3, but it will be seen that there is a some correspondence between the figures.

There does not appear to be any correlation between RAL, SOFR and LLR and any other indicator or the LTIFR or company size.

One important point of note is that there is some ambiguity in the respondents statistics over whether the leading performance indicators are to be in reference to offshore man-hours, onshore man-hours, or overall man-hours. This year, 21 respondents provided data for offshore man-hours, 11 provided data that appeared to be referenced to overall man-hours, and one provided LPI data for onshore man-hours.

We have referenced all the figures to offshore man-hours in order to maintain continuity with 2003. A decision needs to be taken for to future years whether these statistics are to be referenced to a either overall man-hours or offshore man-hours (see section 7.2.3).

7.2.2 Management Visit Rate (MVR)

The managerial visits ratio shows an interesting inverse relationship with the size of company. The smaller the company, the more managerial visits reported per head. It can also be shown that there is a very rough correlation between MVR and LTIFR; generally, a company with a low MVR (less than 0.02) has an LTIFR over 1.0, whereas the companies with higher MVR (greater than 0.5) had an LTIFR of zero. There are exceptions to this rule, but it is an interesting confirmation of the idea that worksites become inherently safer when the boss comes to visit regularly.

However, this can be set against the clear finding elsewhere in the study that smaller companies tend to have a larger LTIFR.

7.2.3 Review of Leading Performance Indicators

At the 2005 IMCA safety seminar, held at Ajax Amsterdam Arena in early February, there was some discussion of the formulae used to calculate the leading performance indicators. One member demonstrated how it was possible for two different companies or worksites with widely differing safety cultures to have a similar reporting activity level (RAL).

Since it is clear that one of the purpose of safety performance indicators, whether leading or lagging, is to differentiate between different safety cultures, and identify the difference between safe and unsafe working practices, some form of review of the formulae underlying the leading performance indicators is deemed necessary.

The SEL committee has now established a workgroup to undertake this review. Feedback would be welcome.

8 Definitions

8.1 Lagging Indicators

In order to compile meaningful statistics, it is important that standard, consistent, well defined terms are used. For the purposes of compiling the IMCA (lagging) statistics the following revised definitions are used:

No. of Fatalities – the total number of employees and others who died as a result of an accident

Fatal Accident Frequency – number of fatalities per 100,000,000 hours worked

Hours Worked

- ◆ for **onshore** operations – the actual hours worked, including overtime hours
- ◆ for **offshore** operations – the ‘actual hours worked’ based on a 12-hour day

Lost Time Injury (LTI) – comprises all lost work day cases (including fatalities, but excluding restricted work day cases) where:

- ◆ A lost work day case is any work-related accidental injury other than a fatal injury which results in a person being unfit for work on the next shift/day; and
- ◆ A restricted workday case is any work-related injury other than a fatality or lost work day case which results in a person being unfit for full performance of a regular job on the shift/day after the injury. Work might be:
 - an assignment to a temporary job;
 - working in the regular job but not performing all the usual duties of the job

NB Where no meaningful restricted work is being performed, the incident should be recorded as a lost work day case.

Offshore Lost Time Injury Frequency Rate (Offshore LTIFR)	$\frac{\text{lost time injuries offshore} \times 1,000,000}{\text{offshore hours worked}}$
Onshore Lost Time Injury Frequency Rate (Onshore LTIFR)	$\frac{\text{lost time injuries onshore} \times 1,000,000}{\text{onshore hours worked}}$
OVERALL Lost Time Injury Frequency Rate (Overall LTIFR)	$\frac{\text{lost time injuries overall} \times 1,000,000}{\text{total hours worked (offshore + onshore)}}$

8.2 Leading Indicators – see following pages

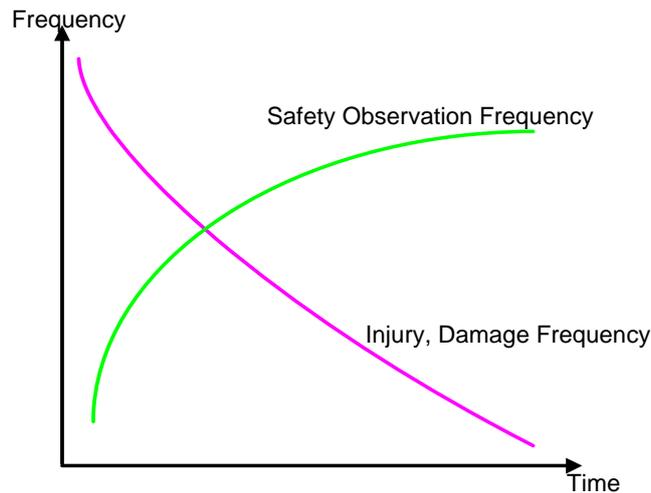


Safety Observations Frequency Rating (SOFR)

IMCA Leading Safety Performance Indicator No. 1

If we are to eliminate injuries, damage or near miss incidents, we need to focus on at-risk acts and unsafe conditions, which have not yet caused loss or harm but have the potential to. Thus we need a systematic approach to observing, correcting and recording such at-risk behaviour or unsafe situations.

This is generally called safety observation (or hazard observation). The expected result is that by increasing safety observation, there would be a reduction in injuries, damage or near misses – the undesired events.



The measure to be used by IMCA will be based on the number of safety observation records made over the course of 12 months. The measure is directly related to operational work man-hours and as such the measure should be based on frequency.

The definitions for the determination of operational work manhours is defined in information note IMCA SEL 38/02 – November 2002.

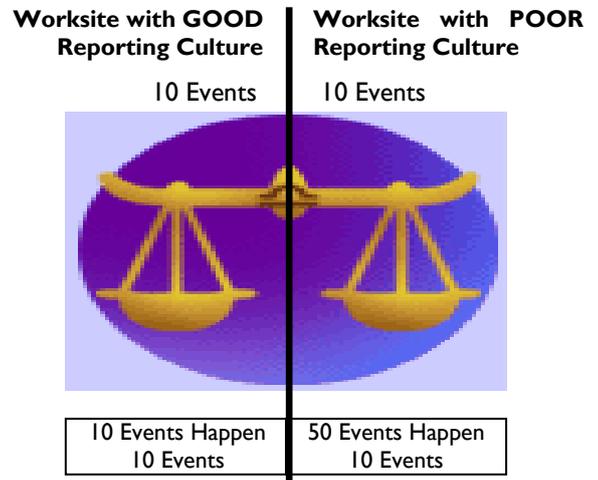
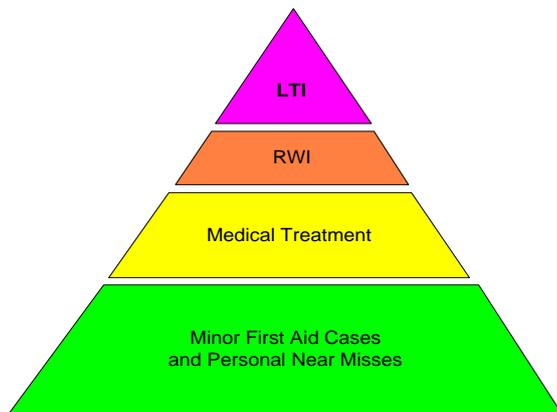
Since “pro-active” worksites are expected to generate a high level of reporting (perhaps several hundred in a year) the frequency basis shall be:

$$\begin{aligned} \text{SOFR} &= \text{Number of Safety Observation per 200,000 man hours} \\ &= \frac{\text{Number of Safety Observations} \times 200,000}{\text{Total Manhours}} \end{aligned}$$

Definitions

SOFR	Safety Observation Frequency Rating
Safety Observation	Report identifying at-risk behaviour, or an unsafe condition to prevent loss or harm e.g. STOP card.
Observational Work Manhours	for onshore operations – ‘actual’ hours worked, including overtime hours for offshore operations – the hours worked, based on a 12-hour exposure day

In a mature safety culture, where all injuries, damage or near misses (undesired events) get reported, regardless of their severity, it would be expected that there would be a much greater number of non-serious events for every serious event.



Ultimately we do not want any form of undesired event and those companies with low numbers of actual injuries, damage events or near miss incidents should not be penalised because they have a low number of reports per man-hours worked. We need to also consider the case where all events are not reported. The balance in straight numbers of events shown in the diagram below is not a fair comparison.

It may cause a degree of controversy that a leading indicator measure should be based on a series of lagging indicators but in order to demonstrate that a mature culture exists, we need to assure ourselves that every undesired event is being reported. We cannot equate one company which reports everything and has suffered a certain number of injures with another company where few injuries are reported to achieve the same number.

Thus to show an active worksite, the basis of the reporting level could be a ratio of less serious events to serious events. This can be converted to a number, which expresses the activity level from sums of “weighted” products representing injury severity and is defined as shown below:

$$\text{RAL} = \frac{(5 \times \text{FNMR}) + (20 \times \text{MTR}) + (100 \times \text{RWIR})}{(1 + \text{Number of Lost Time Injuries})}$$

Definitions

RAL	Reporting Activity Level.
FNMR	Number of First Aid injuries and personal Near Miss reports.
MTR	Number of Medical Treatment reports.
RWIR	Number of Restricted Work injury reports.
First Aid Injury	A one time treatment for the purpose of dealing with minor scratches, cuts, burns, splinters etc which do not ordinarily require medical care.
Medical Treatment Injury	Is work related injury, which requires attention from a medical practitioner (not necessarily a doctor) but does not result in either a lost time injury or a restricted work injury.
Restricted Work Injury	Is a work related injury, which causes the injured person to be assigned to another job on a temporary basis or to work at his normal job less than full time or not necessarily undertaking all of the normal duties
Lost Time Injury (LTI)	A work related injury which cases the injured person to be absent from work for at least one normal shift* after the event because he is unfit to perform any duties.

** This should take into account travel time in attending the doctor to assess the injury*

Line Managers have overall accountability for the safety of people and the protection of equipment on their worksites. They are responsible for ensuring a safe system of work but are equally responsible for listening to people's concerns with regard to safety and to then act on them. It is also accepted that managerial leadership in demonstrating their interest and involvement in issues is a key factor in improving general behavioural aspects.

Thus a measure of a pro-active safety culture is seen to be adequate qualitative visits by relevant managers to their operational worksites. The measure should not only be related to the operational man-hours expended on the site but should also link to management focus on serious undesired events. After all, sites where serious events happen, should expect a higher number of visits to correct such situations.

Thus the measure proposed is:

$$\begin{aligned} \text{MVR} &= \text{No. of Managerial Visits per 100,000 man-hours per (1 + No. of Lost Time Injuries)} \\ &= \frac{\text{MV} \times 100,000}{(1 + \text{LTI}) \times \text{Manhours}} \end{aligned}$$

Definitions

MVR Managerial Visit Rating.

MV Managerial visits may be counted if the Managers meet the criteria provided below. The visits should be made offshore during operational activities and be of at least 24 hours duration. (Management visits during port visits are seen as routine). The visit must include a safety briefing or presentation to the majority of the offshore people. It may also involve the manager making a safety performance check of the site with the people who manage or supervise the activities.

Lost Time Injury (LTI) A work related injury which cases the injured person to be absent from work for at least one normal shift* after the event because he is unfit to perform any duties.

* This should take into account travel time in attending the doctor to assess the injury

Criteria

- ◆ The manager has commercial or production responsibility for the company (e.g. Managing Director);
- ◆ The manager has responsibility for health, safety and environmental processes or other key process within the company;
- ◆ The manager is directly responsible for the operational or service support activities of the particular offshore barge or ship (e.g. Operations Manager);
- ◆ The manager is directly responsible for the conduct of the project (e.g. Project Manager).



Lessons Learnt Rating (LLR)

IMCA Leading Safety Performance Indicator No. 4

As a result of reporting undesired events, accident investigations, findings from managerial visits and inspection/audits, actions will be identified to improve safety performance. Sites where safety is given high priority or focus will be keen to see such events closed within a reasonable timescale and to pass on the lesson to others.

The lessons learnt from a series of similar events or from a more serious injury or near miss is usually notified to other worksites via a safety bulletin or safety flash. A simple measure of activity is therefore the number of bulletins issued. To be included in the IMCA leading safety performance indicator, the bulletin must have been issued to IMCA. IMCA safety flashes covering more than one subject count as a single bulletin. The lessons learnt rating is defined as:

$$\text{LLR} = \frac{\text{Number of bulletins issued}}{1 + \text{Number of LTIs}}$$

Definitions

LLR

Lessons learnt rating.

Lost Time Injury (LTI)

A work related injury which causes the injured person to be absent from work for at least one normal shift* after the event because he is unfit to perform any duties.

* This should take