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SECTOR COMPANIES IN LATIN AMERICA AND THE CARIBBEAN

STATISTICS ON INCIDENTS IN OIL AND GAS INDUSTRY FOR LATIN AMERICA AND THE CARIBBEAN

2009 STATISTICS FOR ARPEL MEMBER COMPANIES

ARPEL REPORT

STATISTICS ON INCIDENTS IN THE OIL AND GAS INDUSTRY FOR LATIN AMERICA AND THE CARIBBEAN

2009 STATISTICS FOR ARPEL MEMBER COMPANIES

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ARPEL
Report on statistics on incidents in the oil and gas industry for Latin America and the Caribbean - 2009 Statistics for ARPEL Member Companies
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1.0 EXECUTIVE SUMMARY

One of the activities of the Environment, Health and Safety Committee of the Regional Association of Oil, Gas and Biofuels Sector Companies in Latin America and the Caribbean (ARPEL) focuses on the initiative of compiling information on occupational injuries, diseases and fatalities in the oil industry of Latin America and the Caribbean.

In this sense, the present report represents the thirteenth annual compilation of data in reference to occupational injuries, diseases and fatalities, for ARPEL Member Companies. The objective of this report is to contribute to eradicate damages to people and facilities from the oil industry's activities. The same provides a comparative analysis of the performance in occupational health and industrial safety of the oil industry, for ARPEL's member companies in 2009. This report also includes comparisons with ARPEL's data compiled in previous studies, from 1997 to now, and some of the results are compared with the OGP[1] Report Nº 439 on safety performance indicators for year 2009.

Four indicators of reactive nature are analyzed, considering the *total of incidents,* their *gravity* and *frequency,* and *fatal incidents.* Compiled data correspond to companies' workers and contractors separately; a "combined" result is also provided for companies' workers and contractors as a whole. These four indicators are analyzed for on-shore and offshore activities, together in a first instance; after that, a specific analysis is included for offshore activities as well. Besides the comparative analysis at the level of the oil industry as a whole, the individual reactive indicators of each Member Company of ARPEL in 2009 are also comparatively analyzed (keeping the confidentiality of these data).

This report also includes two indicators of proactive nature: *Safety Tasks Planned Observations and Safety Training Intensity,* both for company workers only. This report includes all main sectors of the oil industry, which, different to previous years, are grouped in eight functions: Exploration and Production, Refining, Transport of liquids through pipelines (Transport – pipelines for liquids), Transport of gases through pipelines (Transport – pipelines for gases), Transport through pipelines in general (Transport – pipelines not separated), Maritime Transport (Transport – Maritime), Distribution, and Others. The definitions of such functions correspond to ARPEL User's Manual, 5th Edition (2010). Fatality causes are also analyzed for year 2009 and compared to previous years.

Nine ARPEL Member Companies reported Contractors data and four reported data on offshore activities, out of thirteen ARPEL Member Companies that reported data for year 2009.

[1] *International Association of Oil and Gas Producers*

Table 1.0: List of companies that answered to the study of 2009 on Statistics on Incidents of the oil and gas industry in Latin America and the Caribbean.

ANCAP	PETROBRAS
CHEVRON	PETROPERU
ECOPETROL	PETROTRIN
ENAP	RECOPE
PCJ	RepsolYPF
PDVSA	STAATSOLIE
PEMEX	

1.1 Selected results for year 2009

- The total Man-hours (in thousands) reported in this report amounts to 2,081,201, considering both companies and contractors and correspond to 13 Member Companies.
- The Total Incidents Rate (for all functional units) for companies and contractors combined was of 3.287 incidents per 1,000,000 worked hours (Companies only: 3.835. Contractors only: 2.967). The function with the largest number of incidents was "Transport – pipelines for gases" for Contractors, with 8.229 incidents per 1,000,000 worked hours.
- In average for all functional units, the Companies' workers lost 57.61 days per 1,000,000 hours worked, compared to 62.63 lost workdays by Contractors. The function that lost the largest number of workdays was "Transport – pipelines for gases" for Contractors, with 164.62 lost workdays per 1,000,000 worked hours.
- The incidents' Frequency rate with lost workdays considering all functional units for both Company and Contractors, corresponds to 2.355 cases of lost workdays per 1,000,000 hours. (Companies only: 3.421. Contractors only: 1.730)
- As in 2007 and 2008, the oil sector that registered the largest number of fatalities in 2009 was "Distribution" for Contractors, with a Rate of 0.257 fatalities per 1,000,000 worked hours. This value corresponds to more than ten times the value for all functions for both Companies and Contractors: 0.023 fatalities per 1,000,000 worked hours.
- None of the companies participating in this report registered fatalities in any of the Transport and "Distribution" functional units for the Company's workers during 2009. Likewise, none of the contracting companies registered fatalities in any "Transport" function.
- Fatalities occurred in 2009 were mainly caused by "Car Accidents" causing 33% of fatalities of own employees and contractors.
- Being this the seventh year in which safety proactive indicators are reported, twelve companies reported data for their calculation.
- Considering all functions, 3.93 task planned observations were carried out per employee during 2009 for the companies' workers. "Refining"was the functional unit that received more safety training hours, with 0.30 hours of training per 100 worked hours during 2009.

1.2 Selected comparative results for the term 1997/2009

- The number of reported worked hours exceeds those of previous hears, despite not belonging to a record number of participating companies.
- The Total Incident's rate (that includes diseases, injuries and fatalities) for most functional units considering both the Company's workers and Contractors, seems to be relatively constant during the thirteen years' period. In average for all functions - the lowest values of this rate correspond to the years 2002 to 2004, for the company's workers, contractors and combined.
- The number of lost workdays as from 2006 is lower than that corresponding to previous years, for almost all functions of the Company's workers and Combined.
- The Incident's Frequency rate with Lost Workdays increased from 2008 to 2009 considering almost all functions for both Company's workers and Contractors.
- By and large, companies have registered a better performance regarding the fatal incidents rate of their own employees compared with contractors, throughout the thirteen years of study. Likewise, the number of fatalities recorded per 1,000,000 worked hours for the average of all functions shows a constantly decreasing tendency, both for company's workers and contractors.
- "Fires and Explosions" is still the main weighted cause of fatalities for the period 2001-2009.
- Offshore activities lost the lowest number of workdays per 1,000,000 worked hours for all the period considered for workers of the Companies (52.69 days per 1,000,000 worked hours).
- The Task Planned Observations Rate showed an important increase in 2009 with respect to previous years, almost tripling the average value in 2008 (3.93 versus 1.35 in 2008). Nonetheless, the Safety Training Intensity Rate in 2009 was the lowest of all the period.
- Following there is a graph showing the total reported Man-hours (in millions, for both the Company's workers and Contractors and including offshore activities) and the number of Member Companies that participated in each year's report for the term 1997/2009.

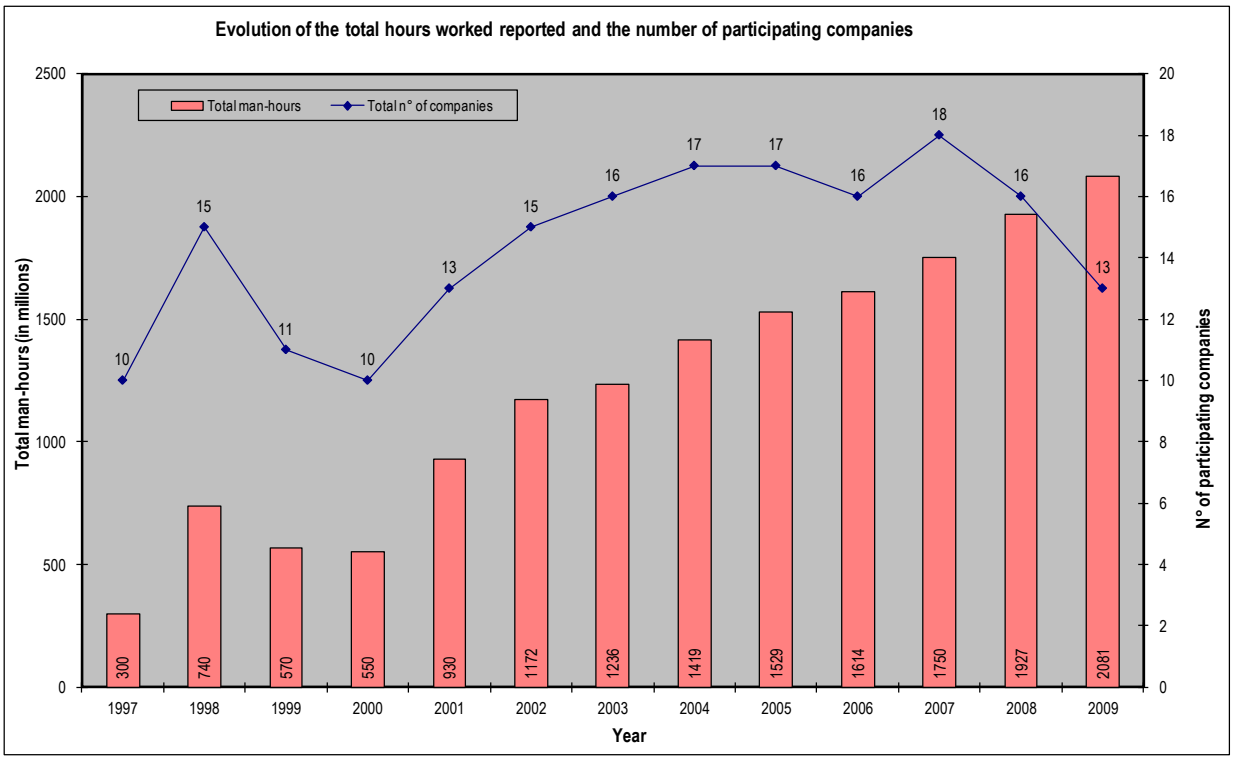
Evolution of the total hours worked reported and the number of participating companies
Total man-hours
Total n° of companies
Total man-hours (in millions)
N° of participating companies
Year
2500
2000
1500
1000
500
0
20
18
16
14
12
10
8
6
4
2
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
300
740
570
550
930
1172
1236
1419
1529
1614
1750
1927
2081
10
15
11
10
13
15
16
17
17
16
18
16
13

Figure 1.2

2.0 REACTIVE INDICATORS – onshore and offshore activities

Explanatory notes

Different to previous years in which the four reactive indicators were reported as "incidents per 200,000 worked hours", since 2009, these are reported as "incidents per 1,000,000 worked hours". Consequently, all reactive indicators in this document are reported as "incidents per 1,000,000 worked hours". For brevity's sake, only a numeric value is provided and units are as aforementioned.

Not all companies reported data required to calculate all indicators. For this reason, and for each indicator, only those companies that reported all required data correspondent to the specific indicator were considered to calculate it. Thus, the total man-hours reported in tables 9.1 to 9.4 (APPENDIX B) does not always match the value used to calculate the rates. The total man-hours effectively used for the calculation of each indicator are noted in each case.

2.1 Total incidents' rate (per functional unit); data of year 2009

The total incidents' rate is defined by means of the following formula:

$$\text{Total incidents' rate} = \frac{\text{Total recordable cases} \times 1{,}000}{\text{Worked hours in thousands}}$$

(Please refer to Chapters 6.0 and 10.0 of the User's Manual)

Function	Number of companies that reported data related to this indicator	Total reported man-hours (company and contractors) - in thousands.	Man-hours used for the calculation of this indicator (company and contractors) – in thousands
E&P	8	890,231	890,231
Refining	11	313,838	312,723
Transport – pipelines for liquids	5	22,094	22,094
Transport – pipelines for gases	8	13,032	13,032
Transport – pipelines not separated	*7*	*74,283*	*74,283*
Transport - Maritime	10	26,577	26,576
Distribution	9	108,910	108,691
Others	9	632,237	631,938
Total	13	2,081,201	2,080,421

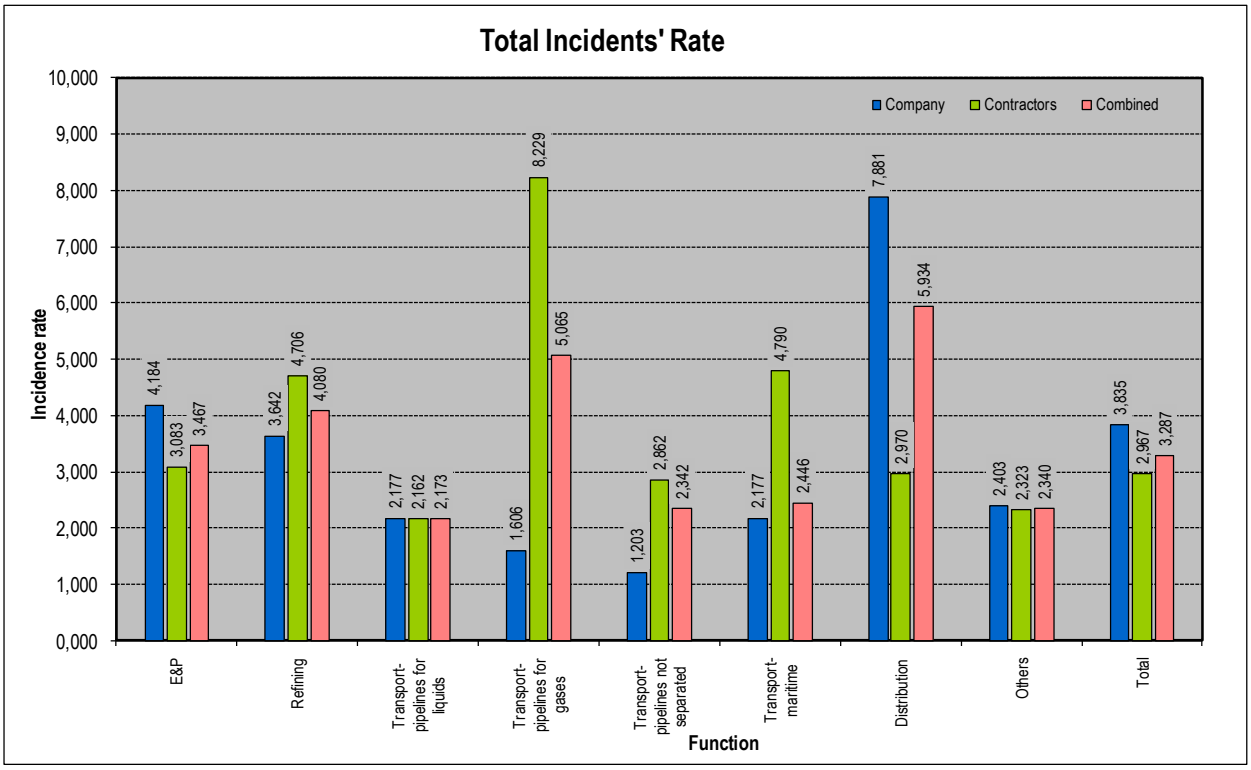

Figure 2.1

2.2 Evolution of the total incidents' rate (per functional unit)

2.2.1 Company data

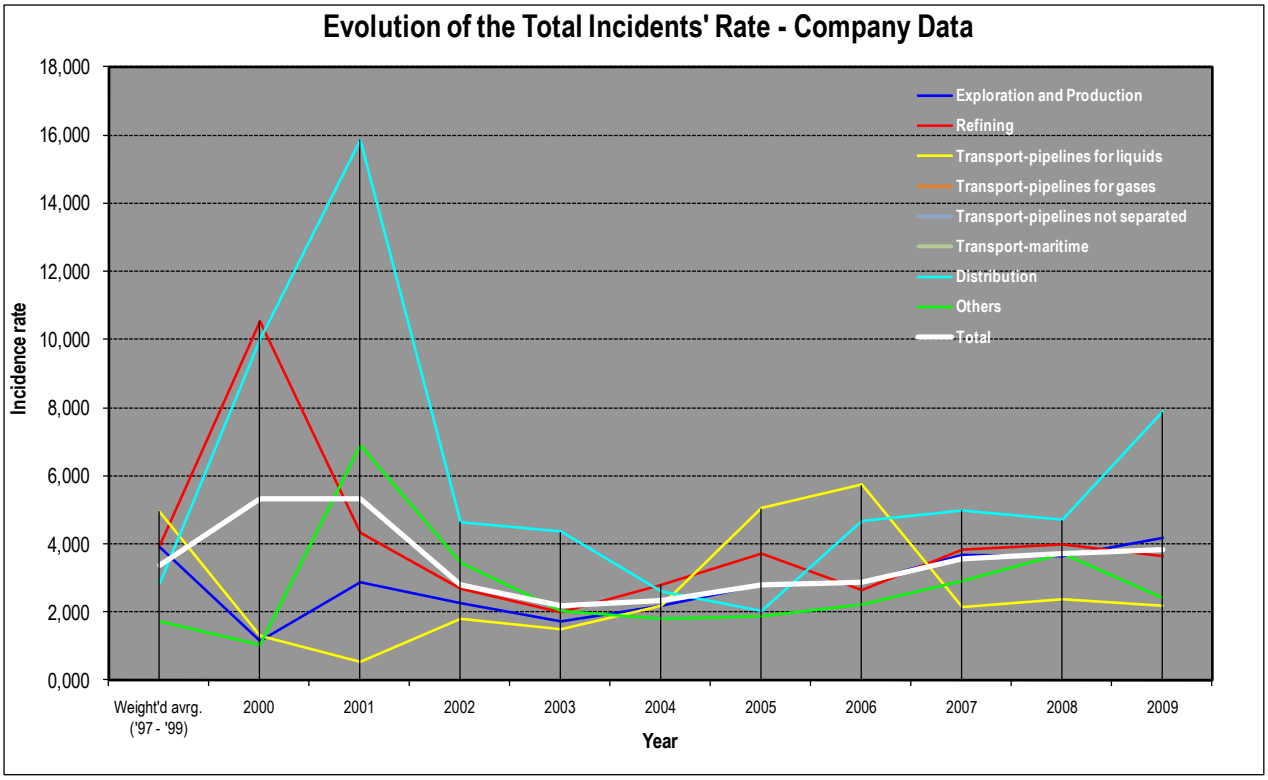

Figure 2.2.1

2.2.2 Contractors data

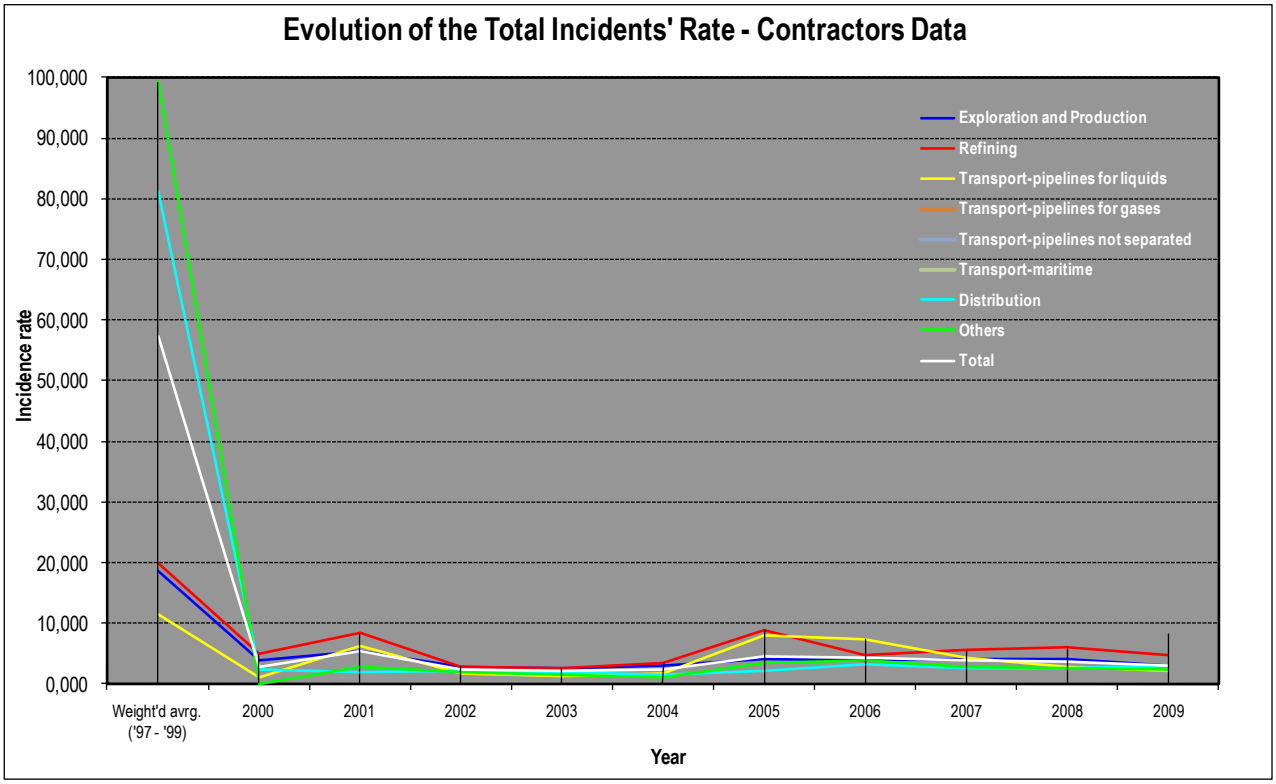

Figure 2.2.2

2.2.3 Combined data

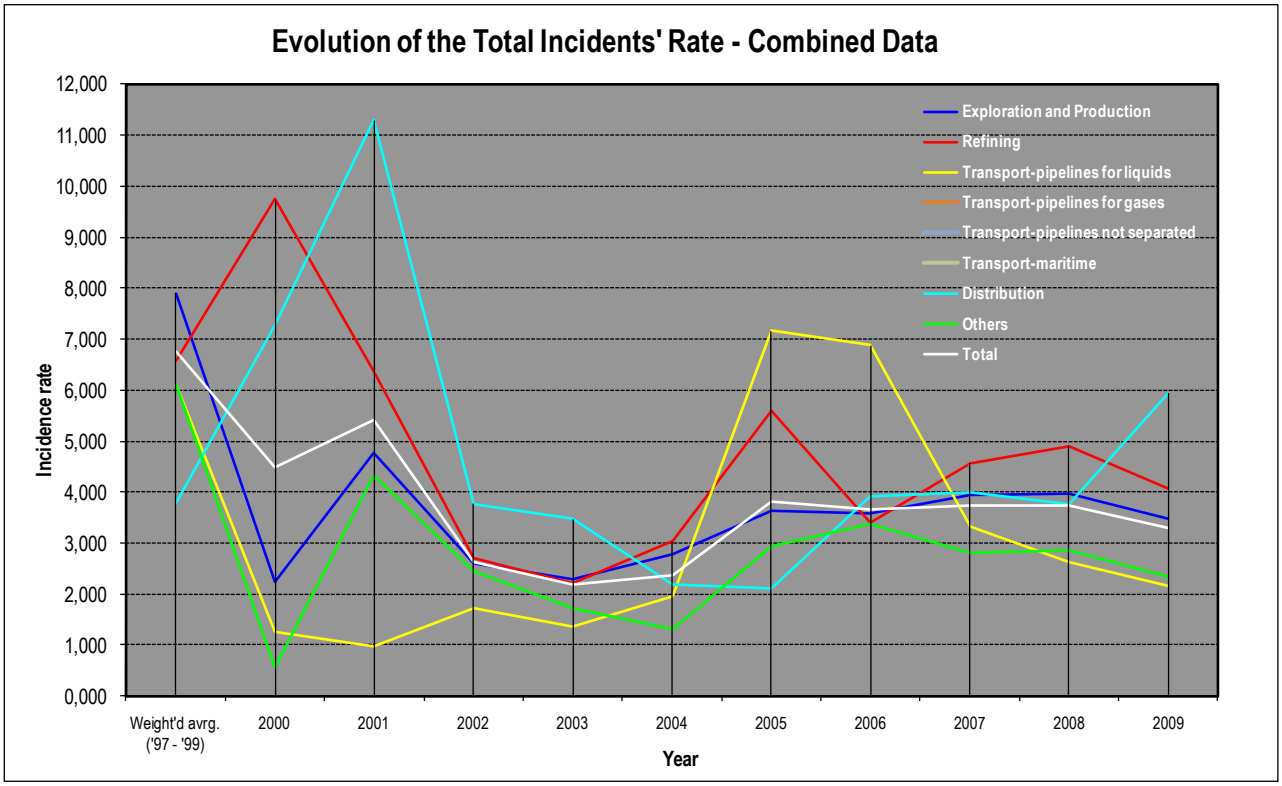

Figure 2.2.3

Figures 2.2.1 to 2.2.3 show the results for company's employees, contractors and combined, respectively, of the total incidents' rate for term 1997/2009, calculated as "incidents per 1,000,000 worked hours". The corresponding tabulated results are shown in APPENDIX A. The combined "Total" (figure 2.2.3) represents data reported by the following number of companies according to the year in consideration:

	Number of companies that reported data	
Year	For this indicator	For this report
1997	10	10
1998	15	15
1999	11	11
2000	10	10
2001	11	13
2002	15	15
2003	16	16
2004	17	17
2005	17	17
2006	16	16
2007	18	18
2008	16	16
2009	13	13

2.3 Incidents' gravity rate (per functional unit); data of year 2009

The incidents' gravity rate is defined by the following formula:

$$\text{Incidents' gravity rate} = \frac{\text{Number of days away from work} \times 1{,}000}{\text{Worked hours in thousands}}$$

(Please refer to Chapters 6.0 and 10.0 of the User's Manual)

Function	Number of companies that reported data related to this indicator	Total reported man-hours (Company and Contractors) - in thousands.	Man-hours used for the calculation of the indicator (Company and Contractors) – in thousands
E&P	8	890,231	667,724
Refining	11	313,838	300,039
Transport – pipelines for liquids	5	22,094	20,737
Transport – pipelines for gases	7	13,032	11,694
Transport – pipelines not separated	*5*	*74,283*	*74,283*
Transport - Maritime	9	26,577	26,048
Distribution	9	108,910	106,281
Others	9	632,237	601,946
Total	13	2,081,201	1,809,655

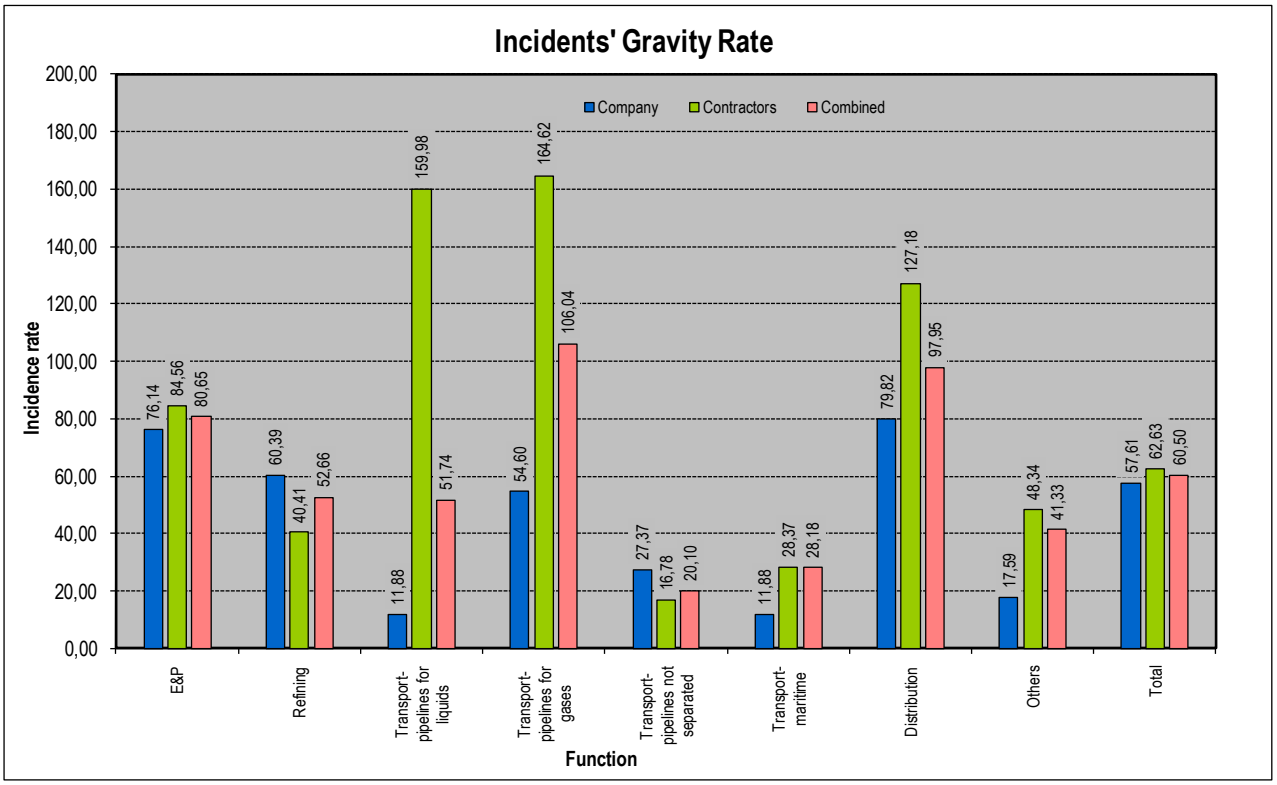

Figure 2.3

2.4 Evolution of the incidents' gravity rate (per functional unit)

2.4.1 Company data

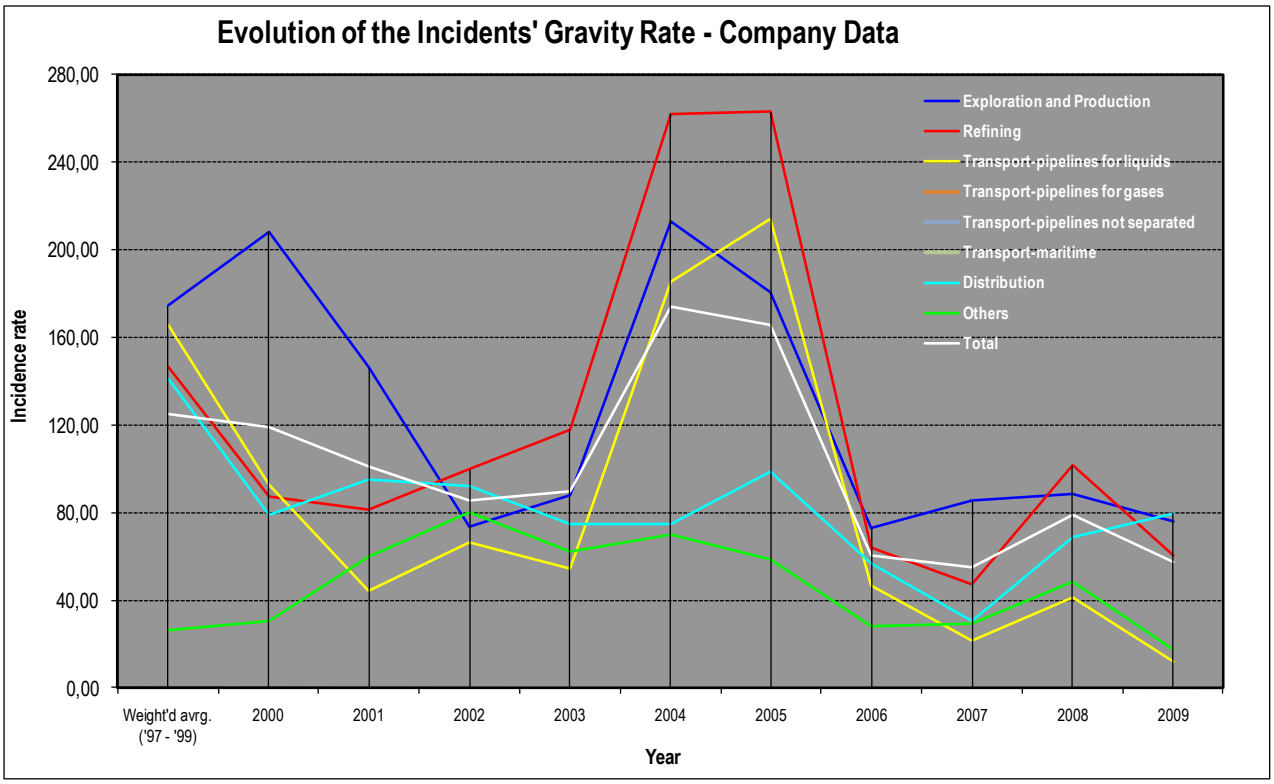

Figure 2.4.1

2.4.2. Contractors data

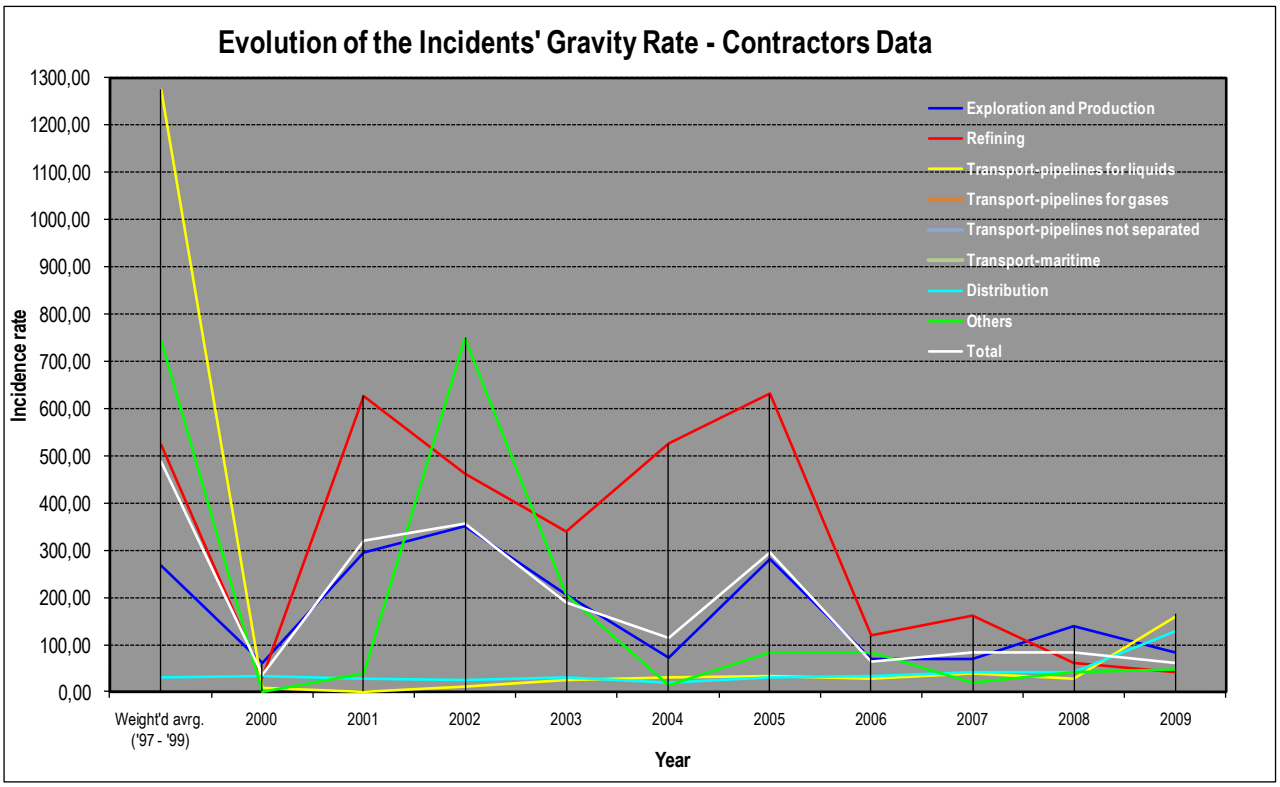

Figure 2.4.2

2.4.3 Combined data

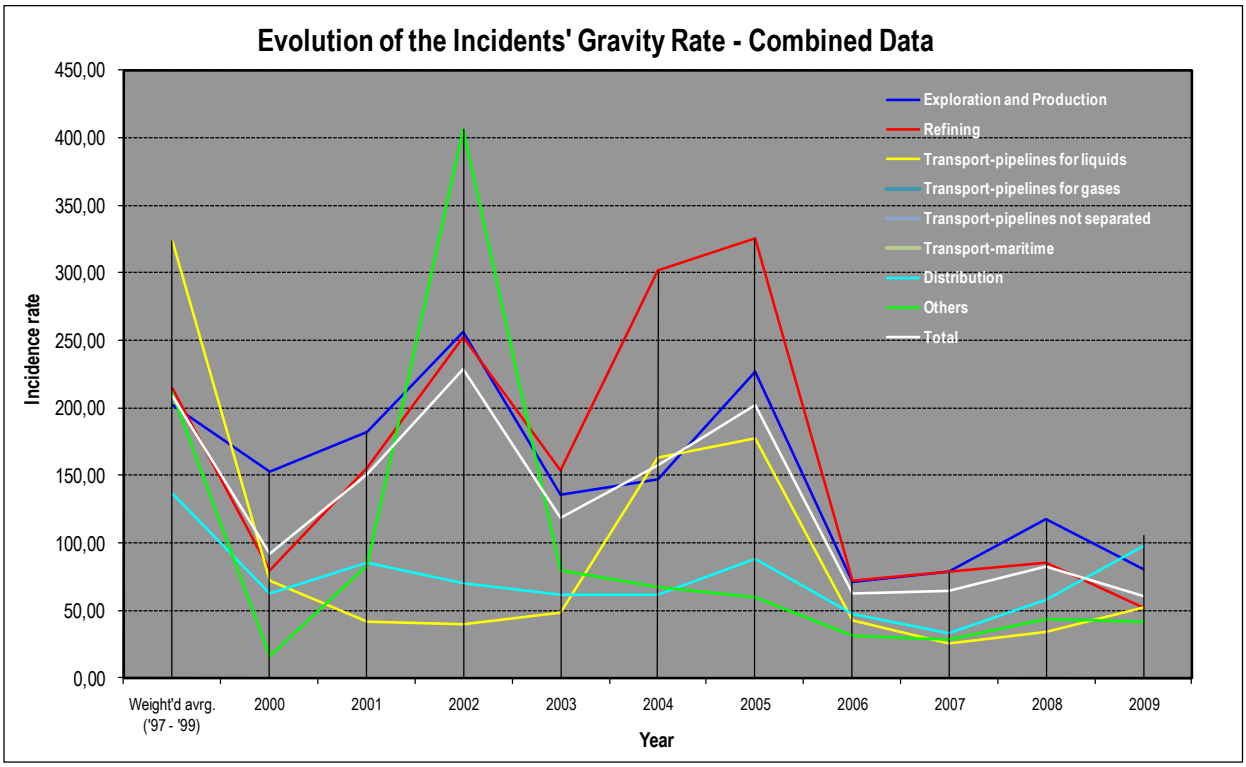

Figure 2.4.3

Figures 2.4.1 to 2.4.3 represent the results of the incidents' gravity rate for the Company's workers, Contractors and Combined, respectively, for the term 1997/2009, calculated as "incidents per 1,000,000 worked hours". The tabulated results corresponding to the thirteen years are shown in APPENDIX A. The combined "Total" (figure 2.4.3) represents data reported by the following number of companies according to the year in consideration:

	Number of companies that reported data	
Year	For this indicator	For this report
1997	10	10
1998	15	15
1999	10	11
2000	10	10
2001	12	13
2002	13	15
2003	15	16
2004	17	17
2005	15	17
2006	14	16
2007	18	18
2008	16	16
2009	13	13

2.5 Incidents' frequency rate with lost workdays (per functional unit); data of year 2009

The incidents' frequency rate with lost workdays is defined by the following formula:

$$\text{Incidents' frequency rate with lost workdays} = \frac{\text{Lost workdays cases} \times 1{,}000}{\text{Worked hours in thousands}}$$

(Please refer to Chapters 6.0 and 10.0 of the User's Manual)

Function	Number of companies that reported data related to this indicator	Total reported man-hours (company and contractors) - in thousands	Man-hours used for the calculation of this indicator (company and contractors) – in thousands
E&P	8	890,231	890,231
Refining	11	313,838	312,723
Transport – pipelines for liquids	5	22,094	22,094
Transport – pipelines for gases	8	13,032	13,032
Transport – pipelines not separated	*7*	*74,283*	*74,283*
Transport - Maritime	10	26,577	26,528
Distribution	9	108,910	108,691
Others	9	632,237	631,938
Total	13	2,081,201	2,080,421

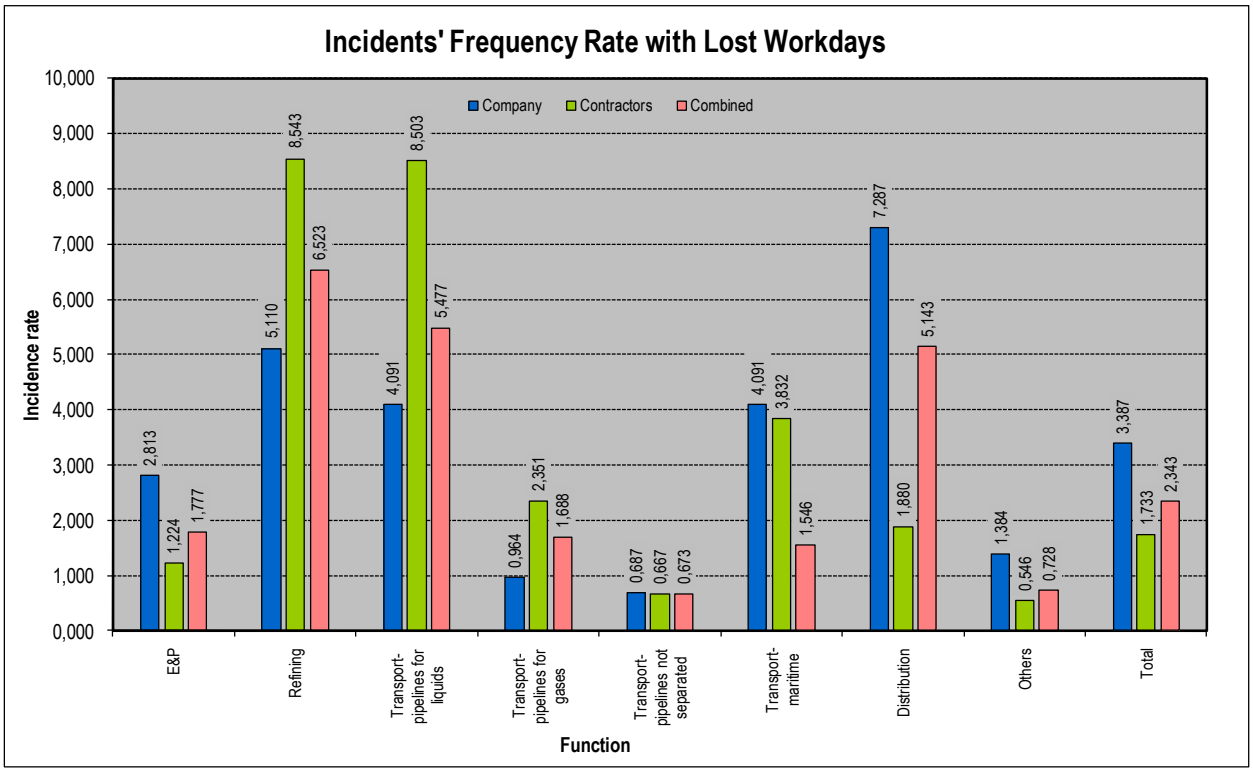

Figure 2.5

2.6 Evolution of the incidents' frequency rate with lost workdays (per functional unit)

2.6.1 Company data

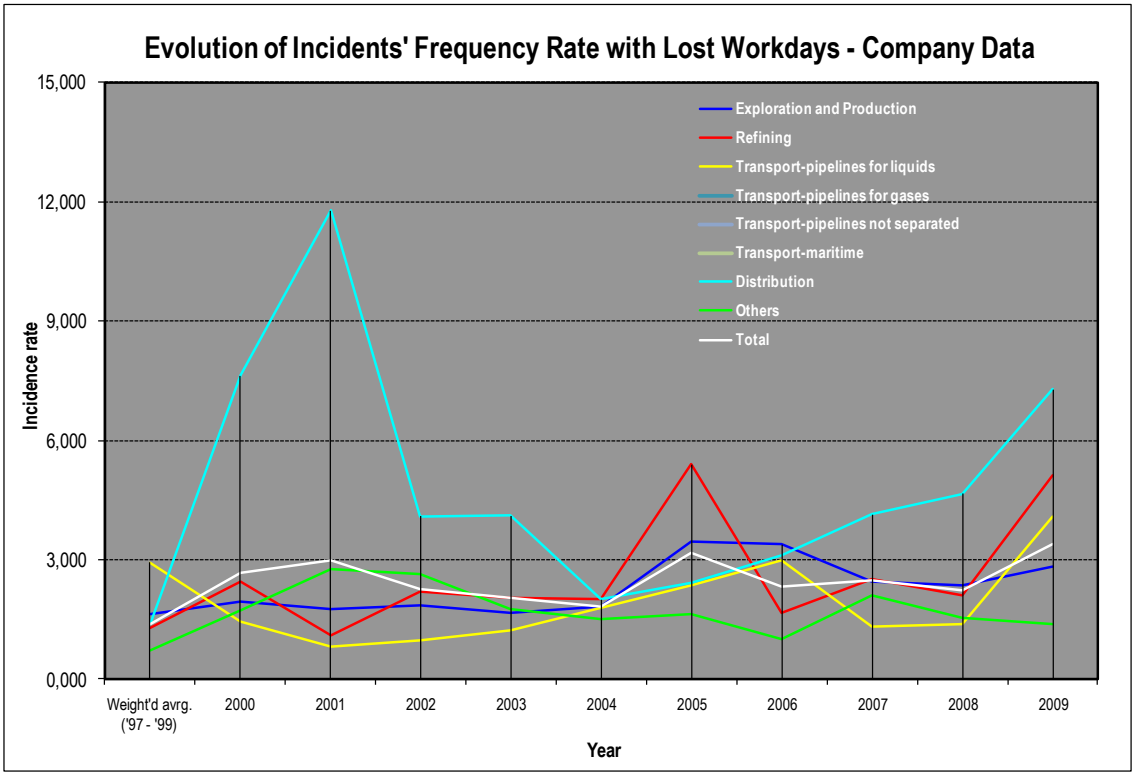

Figure 2.6.1

2.6.2 Contractors data

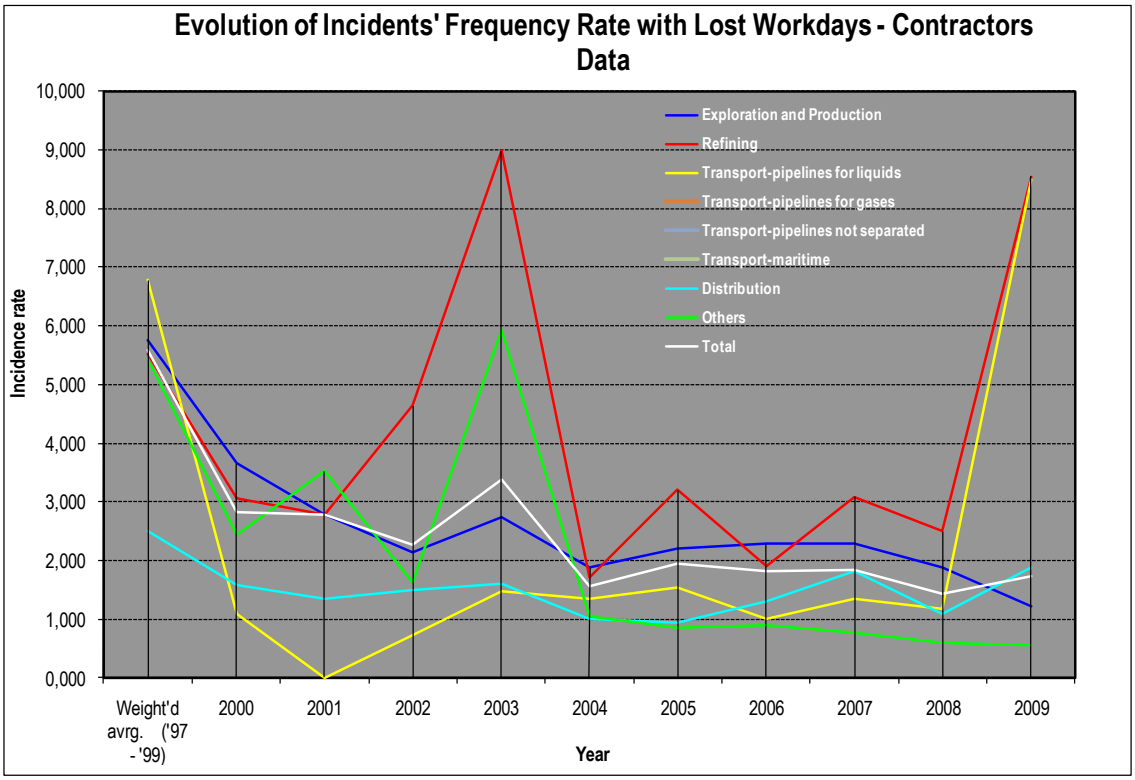

Figure 2.6.2

2.6.3 Combined data

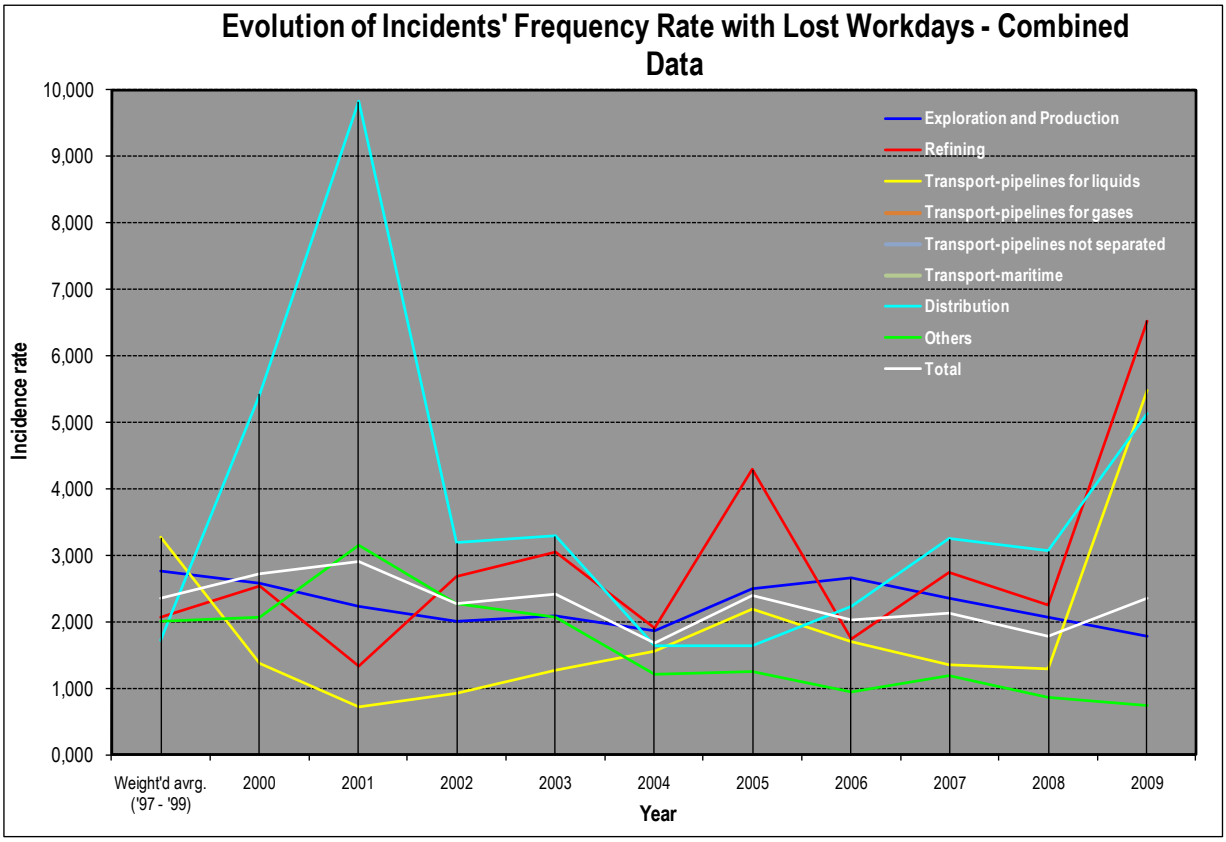

Figure 2.6.3

Figures 2.6.1 to 2.6.3 represent the results of the incidents' frequency rate with lost workdays for the term 1997/2009 for the company's workers, contractors and combined, respectively, calculated as "incidents per 1,000,000 worked hours". The corresponding tabulated results are shown in APPENDIX A. The combined "Total" (figure 2.6.3) represents data reported by the following number of companies according to the year in consideration:

	Number of companies that reported data	
Year	For this indicator	For this report
1997	10	10
1998	14	15
1999	11	11
2000	9	10
2001	10	13
2002	14	15
2003	15	16
2004	16	17
2005	17	17
2006	14	16
2007	18	18
2008	16	16
2009	13	13

2.7 Fatal incidents' rate (per functional unit); data of year 2009

The fatal incidents' rate is defined by the following formula:

Fatal incidents' rate = $\frac{\text{Number of fatalities x 1,000}}{\text{Worked hours in thousands}}$

(Please refer to Chapters 6.0 and 10.0 of the User's Manual)

Function	Number of companies that reported data related to this indicator	Total reported man-hours (company and contractors) - in thousands.	Man-hours used for the calculation of this indicator (company and contractors) – in thousands
E&P	7	890,231	887,400
Refining	10	313,838	308,023
Transport – pipelines for liquids	5	22,094	22,094
Transport – pipelines for gases	8	13,032	13,032
Transport – pipelines not separated	*7*	*74,283*	*74,283*
Transport - Maritime	9	26,577	26,528
Distribution	8	108,910	108,431
Others	9	632,237	631,518
Total	11	2,081,201	2,071,788

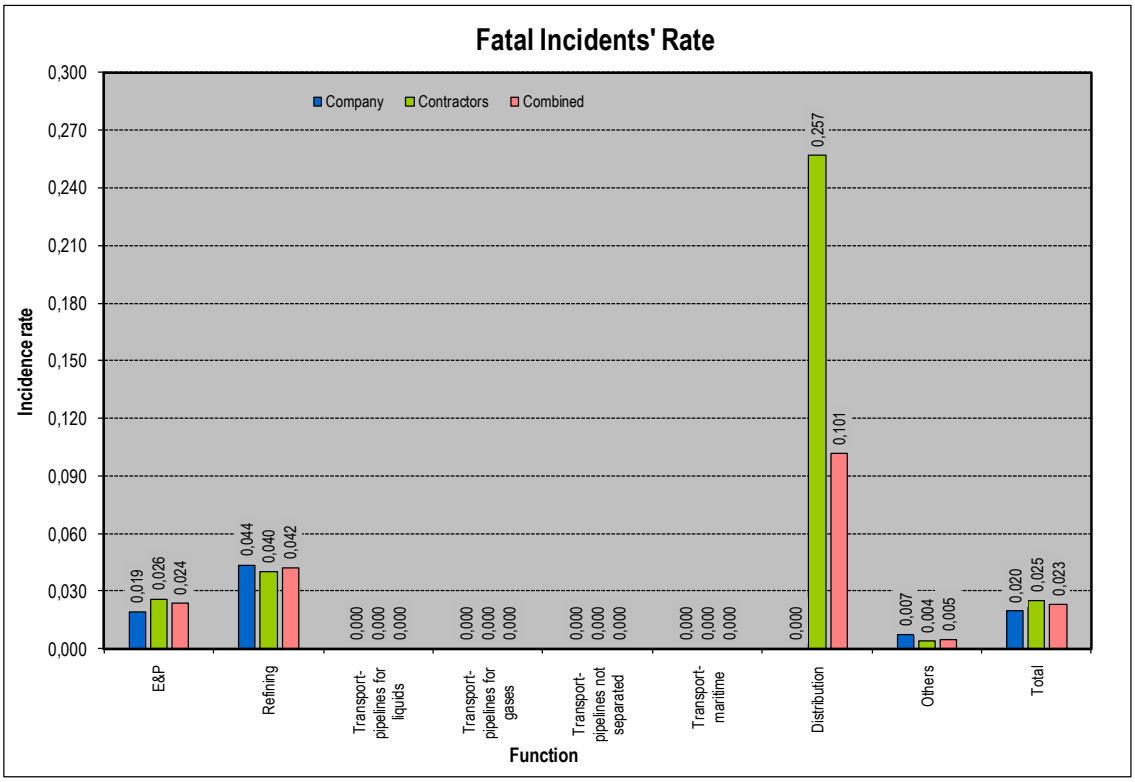

Figure 2.7

2.8 Evolution of the fatal incidents' rate (per functional unit)

2.8.1 Company data

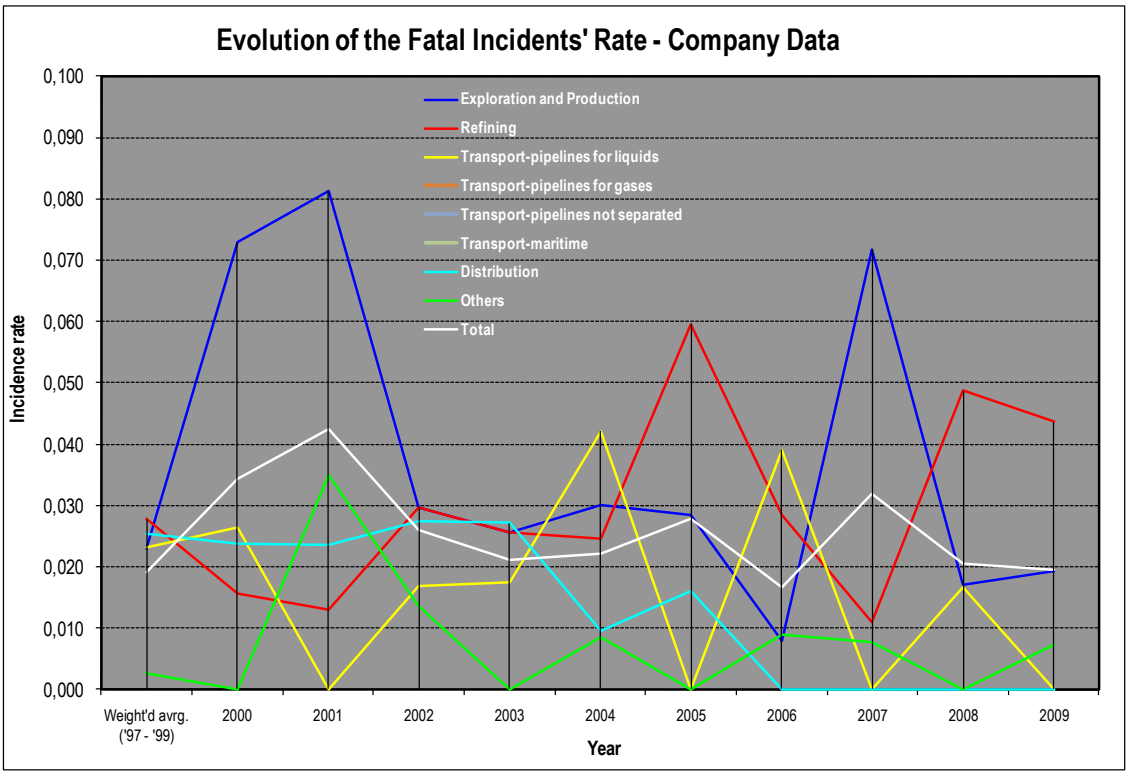

Figure 2.8.1

2.8.2 Contractors data

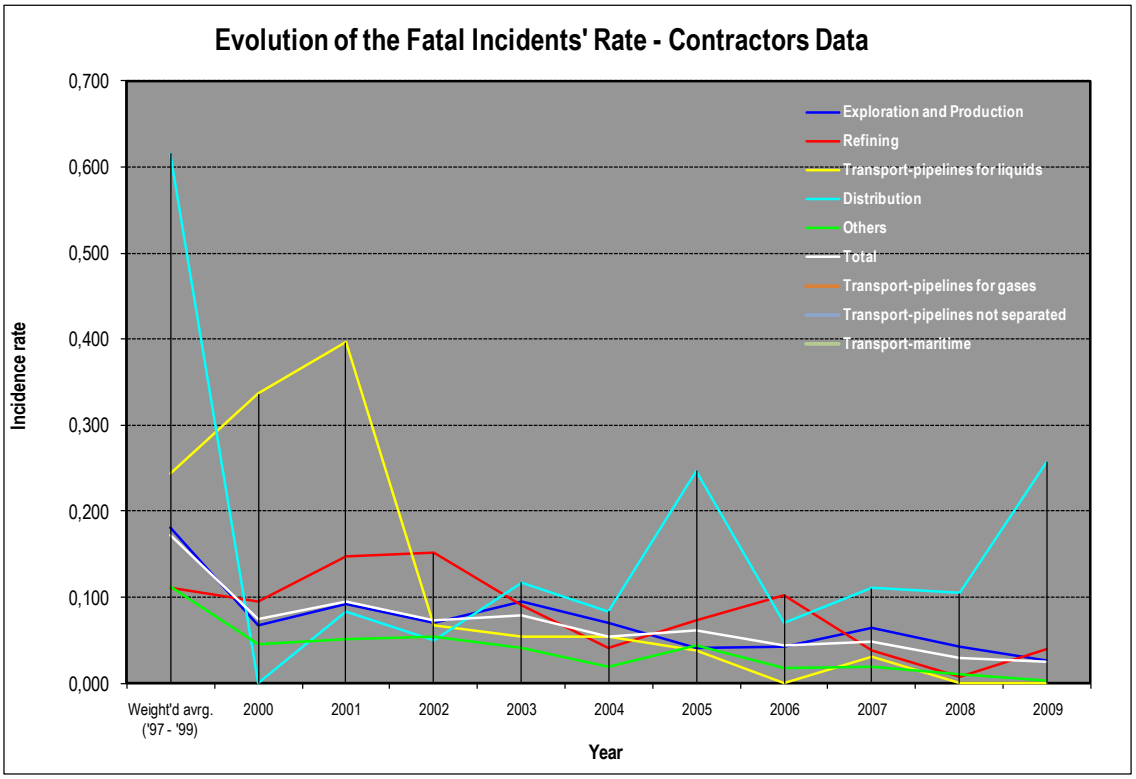

Figure 2.8.2

2.8.3 Combined data

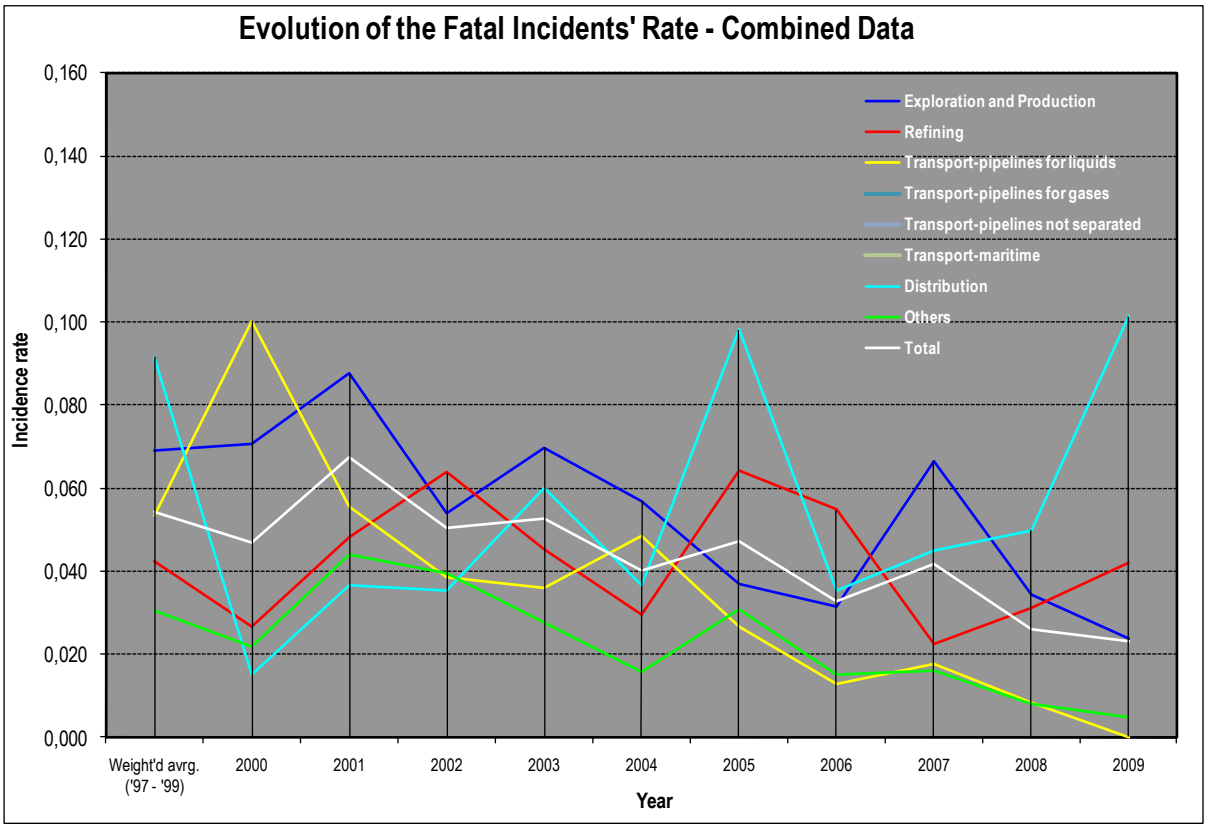

Figure 2.8.3

Figures 2.8.1 to 2.8.3 represent the fatal incidents' rate for term 1997/2009 correspondent to the company's workers, contractors and combined, respectively, calculated as "incidents per 1,000,000 worked hours". The corresponding tabulated results are shown in APPENDIX A. The combined "Total" (figure 2.8.3) represents data reported by the following number of companies according to the year in consideration:

	Number of companies that reported data	
Year	For this indicator	For this report
1997	10	10
1998	13	15
1999	8	11
2000	8	10
2001	10	13
2002	15	15
2003	16	16
2004	17	17
2005	17	17
2006	14	16
2007	18	18
2008	16	16
2009	11	13

The table below shows the OGP[2] fatal incidents' rate reported in its safety performance indicators Report Nº 439 for year 2009, and it is compared to the corresponding ARPEL data:

		Category		
"Exploration and Production"		Company	Contractors	Combined
Onshore and offshore	ARPEL	0.019	0.026	0.024
	OGP	0.016	0.031	0.028

[2] *OGP only comprises "Exploration and Production", so this is the only function considered when comparing results with ARPEL Statistics. Moreover, this rate is originally reported by OGP as "number of fatalities per 100 million hours worked". For this reason and to make comparisons, results were converted to "number of fatalities per 1,000,000 hours worked"(ARPEL units).*

2.9 Comparative incidence rates (per Company); data for year 2009

This chapter shows the individual codified results of companies for each of the rates seen so far, for all functional units. Each letter represents a company that reported data.

In the cases that both company data and contractors' data was provided, the combined result represents the average between company data and contractors' data. In the cases in which only company's workers data was provided, the combined result equals the result for the company.

2.9.1 Total incidents' rate per company

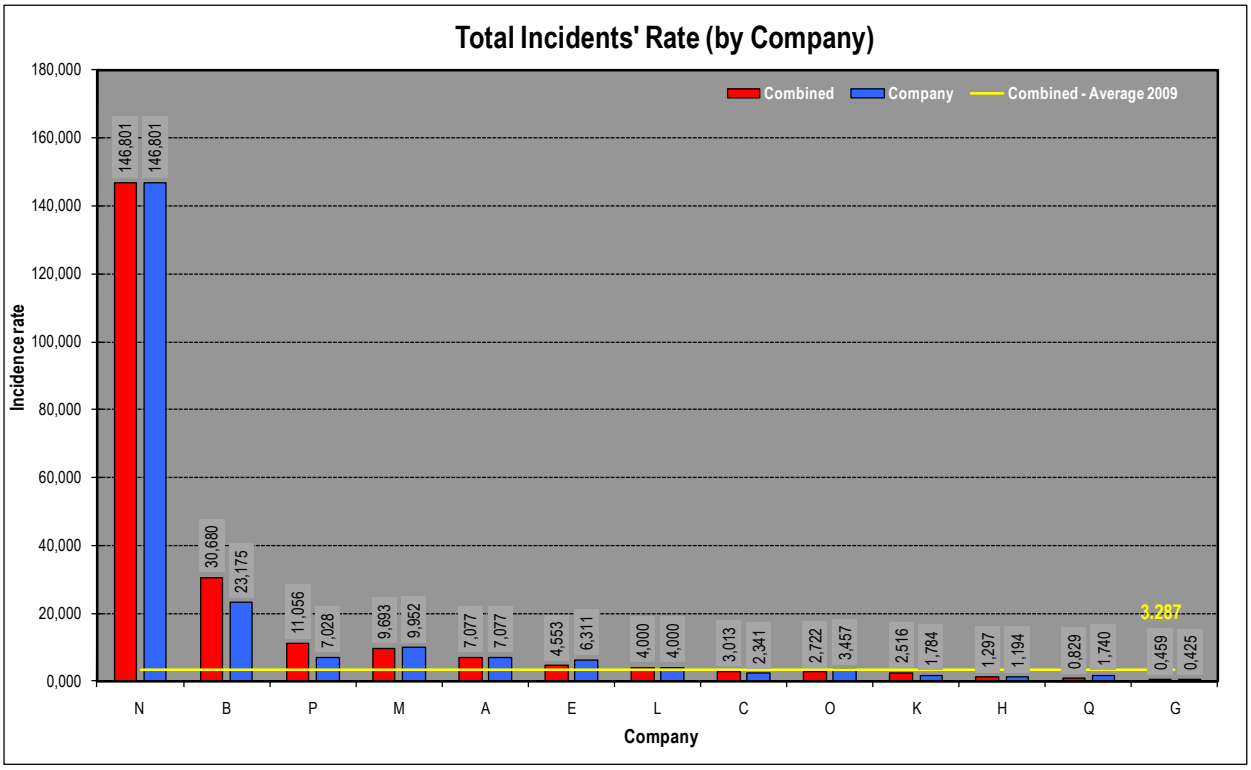

Figure 2.9.1

2.9.2 Incidents' gravity rate per company

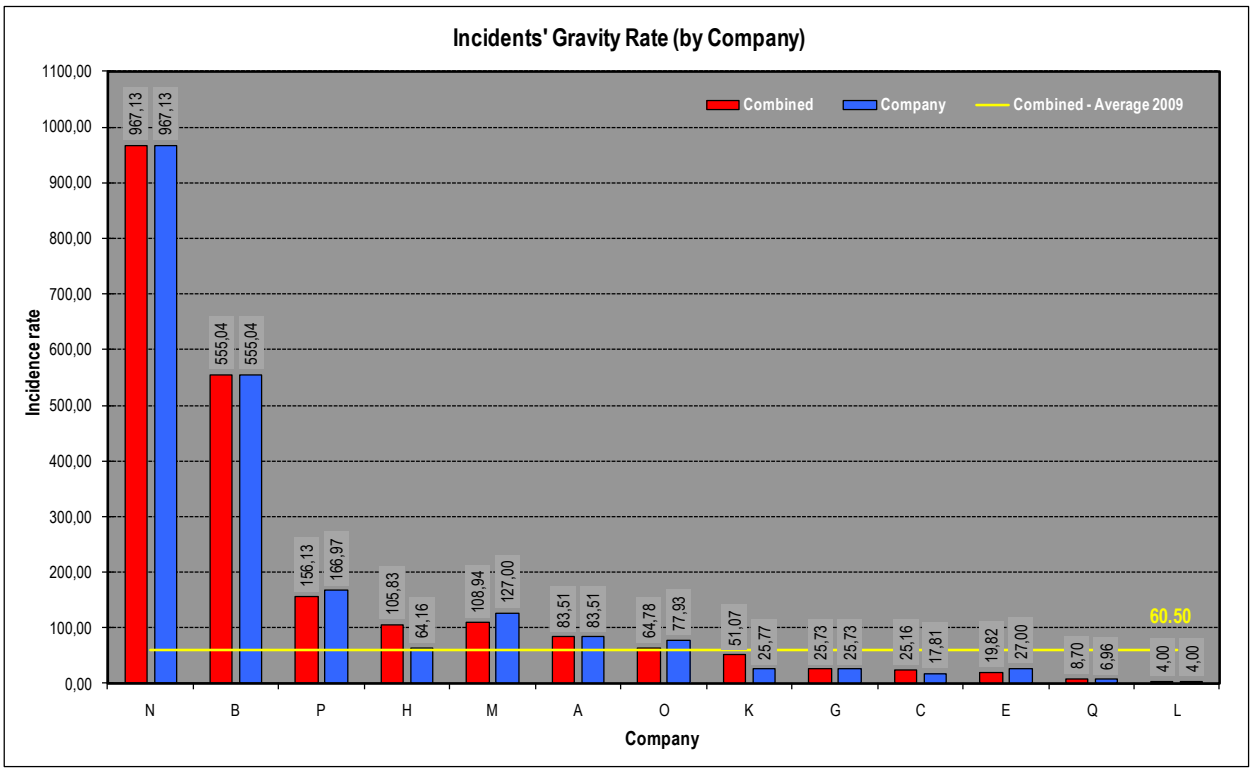

Figure 2.9.2

2.9.3 Incidents' frequency rate with lost workdays per company

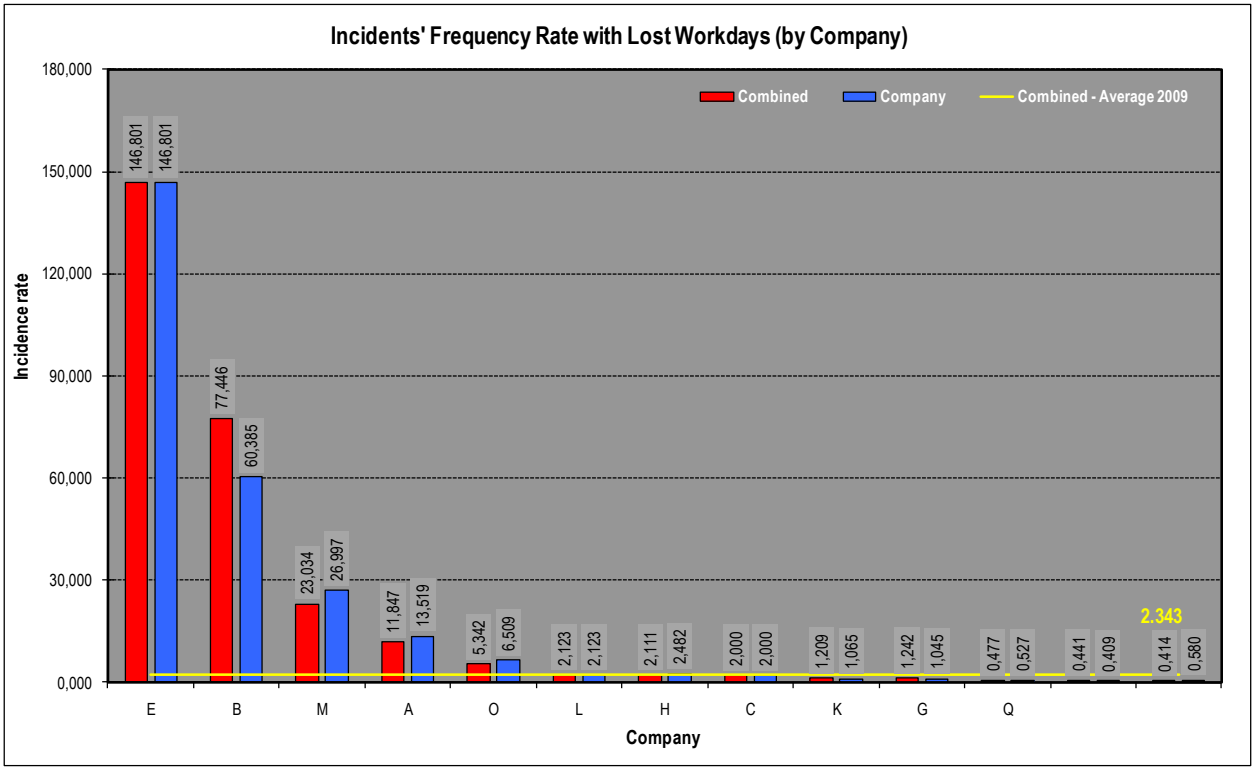

Figure 2.9.3

2.9.4 Fatal incidents' rate per company

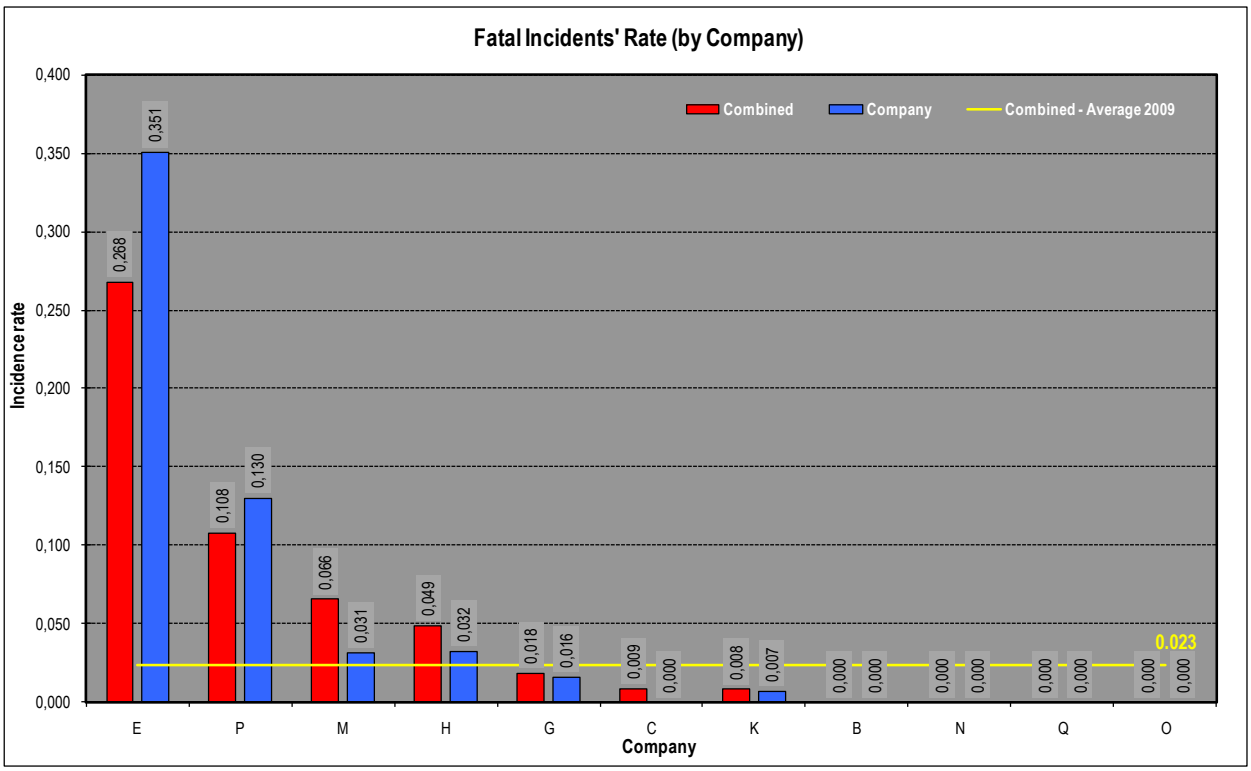

Figure 2.9.4

3.0 REACTIVE INDICATORS – offshore activities

The previous chapter presented the results of the four reactive indicators for all activities from those ARPEL Member Companies that reported data, including offshore activities. This chapter presents the results of the same four indicators specifically calculated to offshore activities, where the only functional unit is Exploration and Production.

The table below shows the number of ARPEL Member Companies that reported specific data to offshore activities year by year.

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Nº of companies	2	1	0	0	4	4	4	5	5	6	5	4

The tabulated results corresponding to this chapter's graphs are presented in APPENDIX A.

3.1 Total offshore incidents' rate

Year	1998	1999	2002	2003	2004	2005	2006	2007	2008	2009
Number of companies that reported data to this indicator	2	1	4	4	4	5	5	6	5	4
Total worked hours (company and contractors) - in thousands.	42,960	33,376	100,880	101,741	70,649	101,311	149,545	95,001	82,135	97,968
Worked hours used to calculate this indicator (company and contractors) – in thousands	42,960	33,376	100,880	101,725	70,649	101,311	149,545	95,001	82,135	97,968

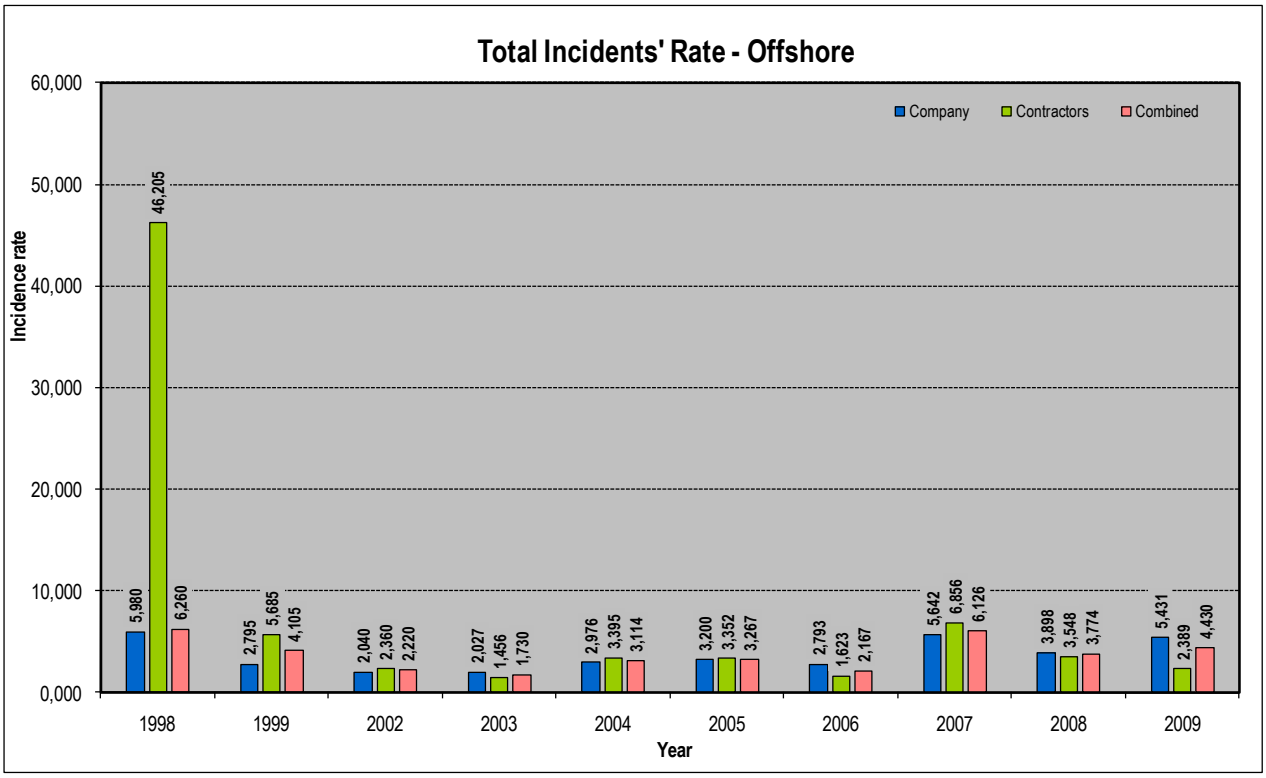

Figure 3.1

3.2 Offshore incidents' gravity rate

Year	1998	1999	2002	2003	2004	2005	2006	2007	2008	2009
Number of companies that reported data to this indicator	1	1	2	4	4	5	5	6	5	4
Total worked hours (company and contractors) - in thousands.	42,960	33,376	100,880	101,741	70,649	101,311	149,545	95,001	82,135	97,968
Worked hours used to calculate this indicator (company and contractors) – in thousands	40,377	33,376	3,450	50,785	49,084	76,883	149,545	76,477	63,746	77,099

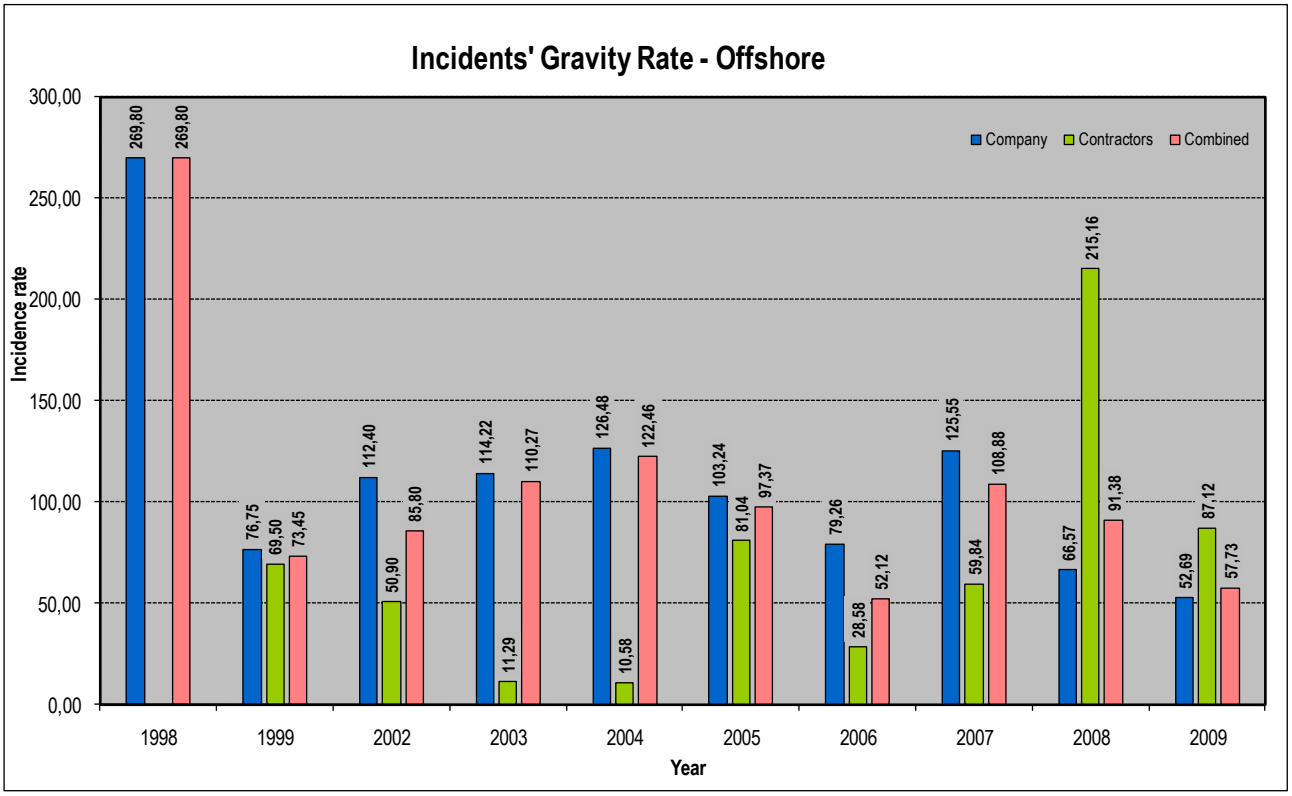

Figure 3.2

3.3 Incidents' frequency rate with lost workdays offshore

Year	1998	1999	2002	2003	2004	2005	2006	2007	2008	2009
Number of companies that reported data to this indicator	2	1	3	4	4	4	5	6	5	4
Total worked hours (company and contractors) - in thousands.	42,960	33,376	100,880	101,741	70,649	101,311	149,545	95,001	82,135	97,968
Worked hours used to calculate this indicator (company and contractors) – in thousands	42,960	33,376	100,877	50,785	70,649	32,549	149,545	76,477	63,746	97,968

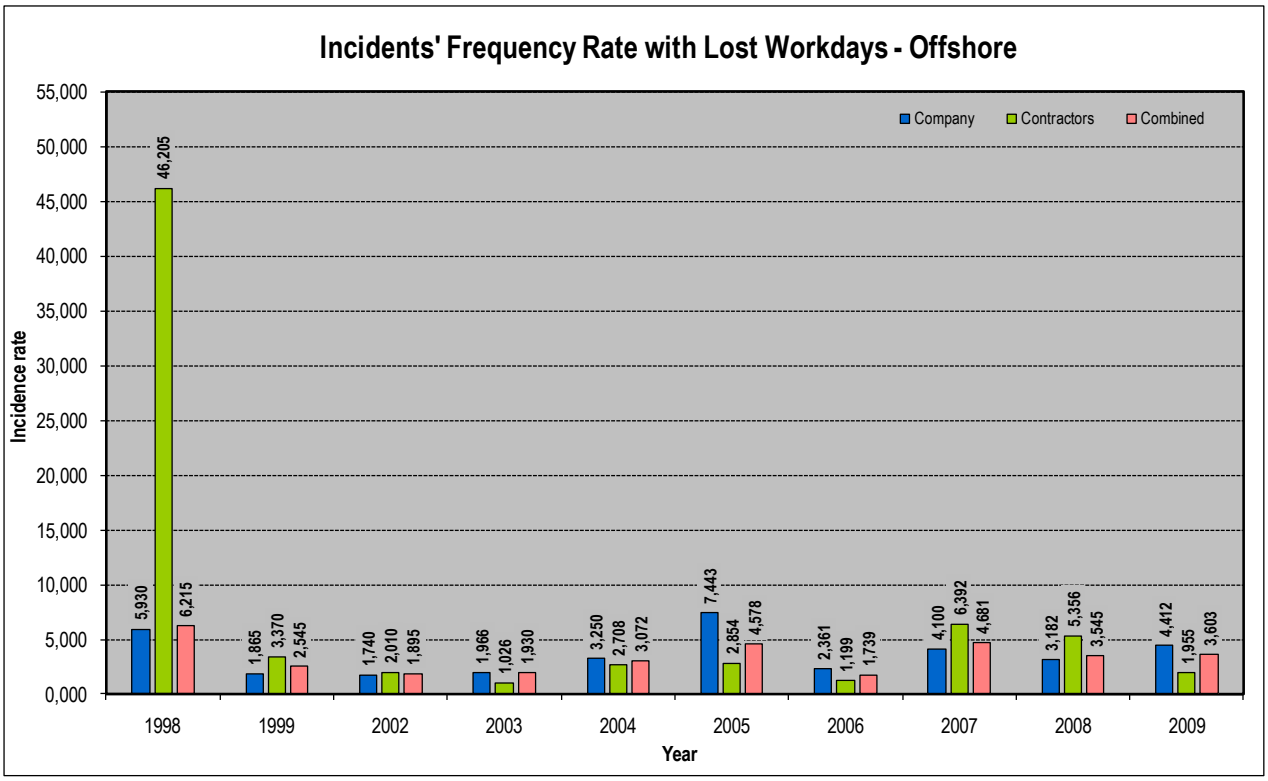

Figure 3.3

3.4 Fatal incidents' rate offshore

Year	1998	1999	2002	2003	2004	2005	2006	2007	2008	2009
Number of companies that reported data to this indicator	2	1	3	4	4	5	5	6	5	4
Total worked hours (company and contractors) - in thousands.	42.960	33.376	100.880	101.741	70.649	101.311	149.545	95.001	82.135	97,968
Worked hours used to calculate this indicator (company and contractors) – in thousands	42.960	15.123	100.877	101.725	70.649	101.311	149.545	95.001	82.135	97,968

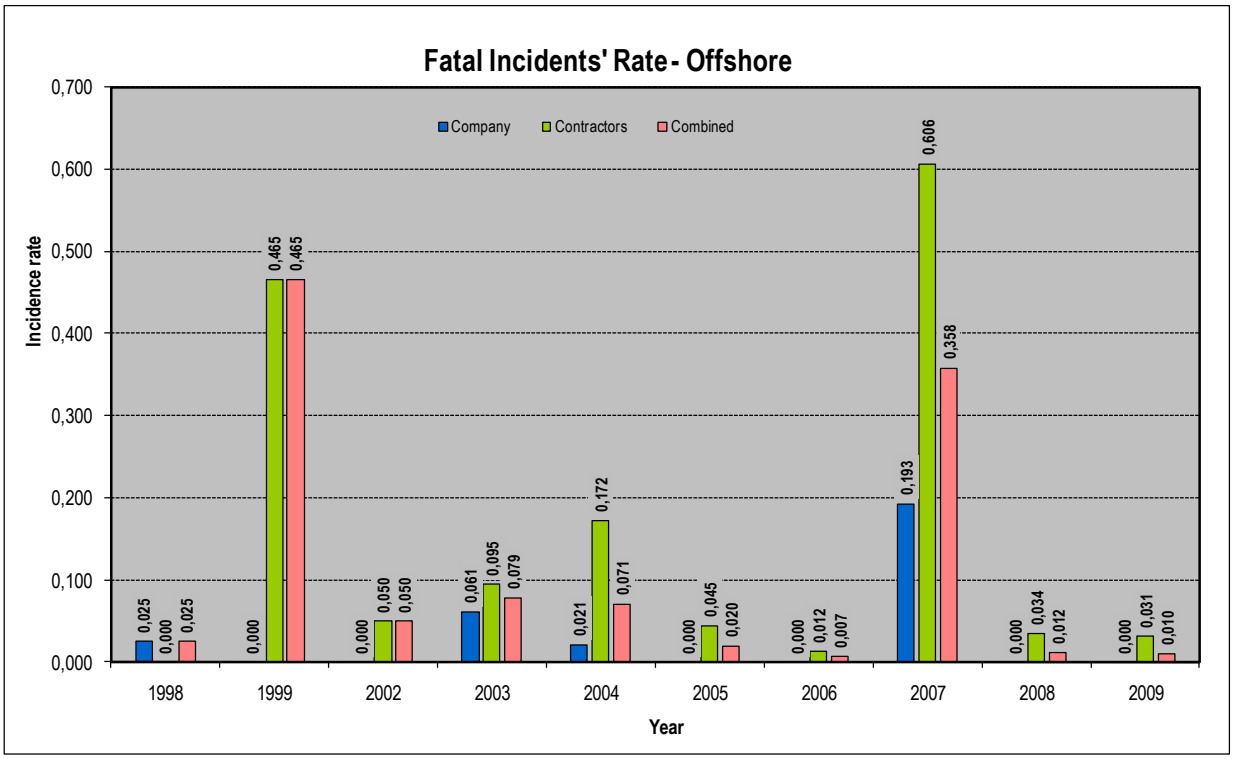

Figure 3.4

Comparing with the statistics in OGP Report Nº 439 on safety performance indicators, the fatal incidents' rate for offshore activities in 2009, for company workers and contractors combined was 0.028[3], whereas the same rate in ARPEL was 0.010 fatalities per 1,000,000 worked hours.

[3] *As the original unit under which OGP reports this rate is "number of fatalities per 100 million hours worked, for comparative reasons, in this report it was converted to "number of fatalities per 1,000,000 hours worked"(ARPEL units).*

4.0 FATALITY CAUSES

This chapter reports the several fatality causes in the oil industry corresponding to the companies included in this report for 2009. For comparative reasons, the results corresponding to the period 2001 – 2008 are presented as well.

All fatal incidents with a reported cause were taken into account to develop the graphs shown below, either of company workers or contractors, both for onshore and offshore activities. The different causes are presented according to the (absolute and percentage) number of fatalities they caused.

4.1 Fatality causes – year 2009

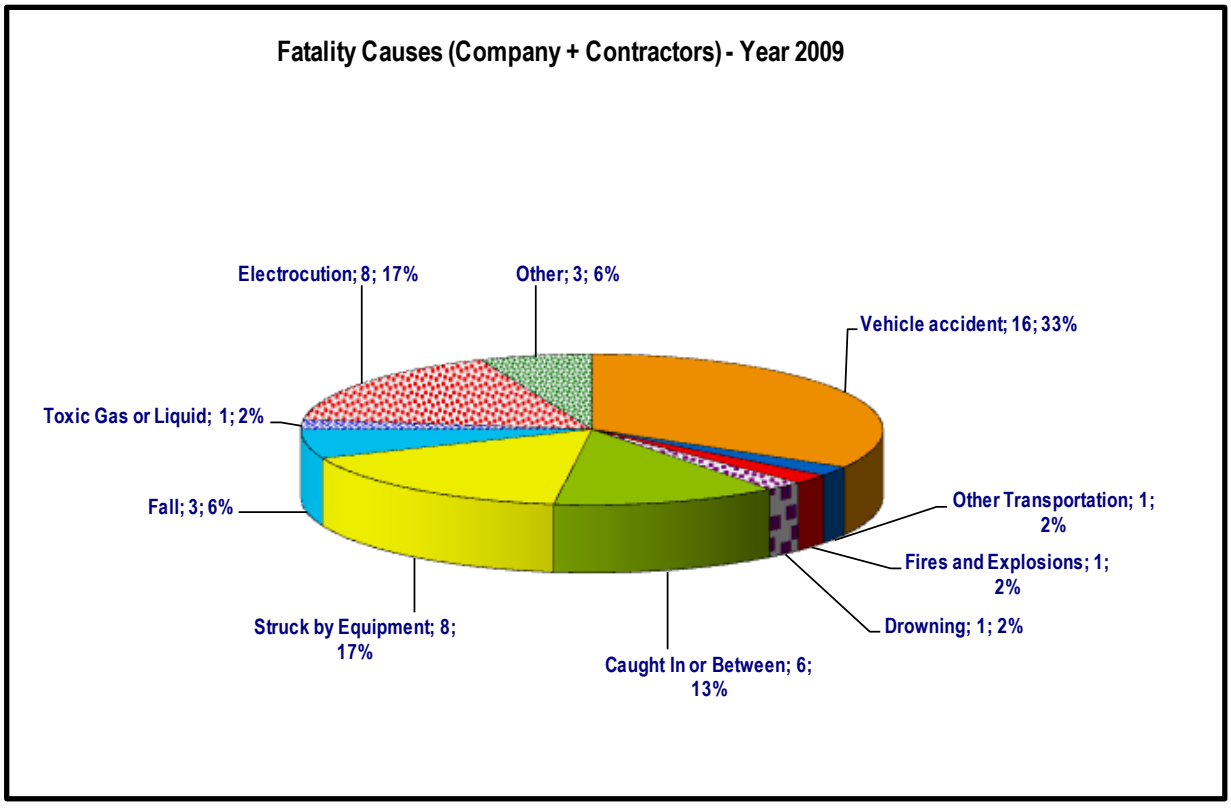

Figure 4.1

4.2 Comparative – fatality causes

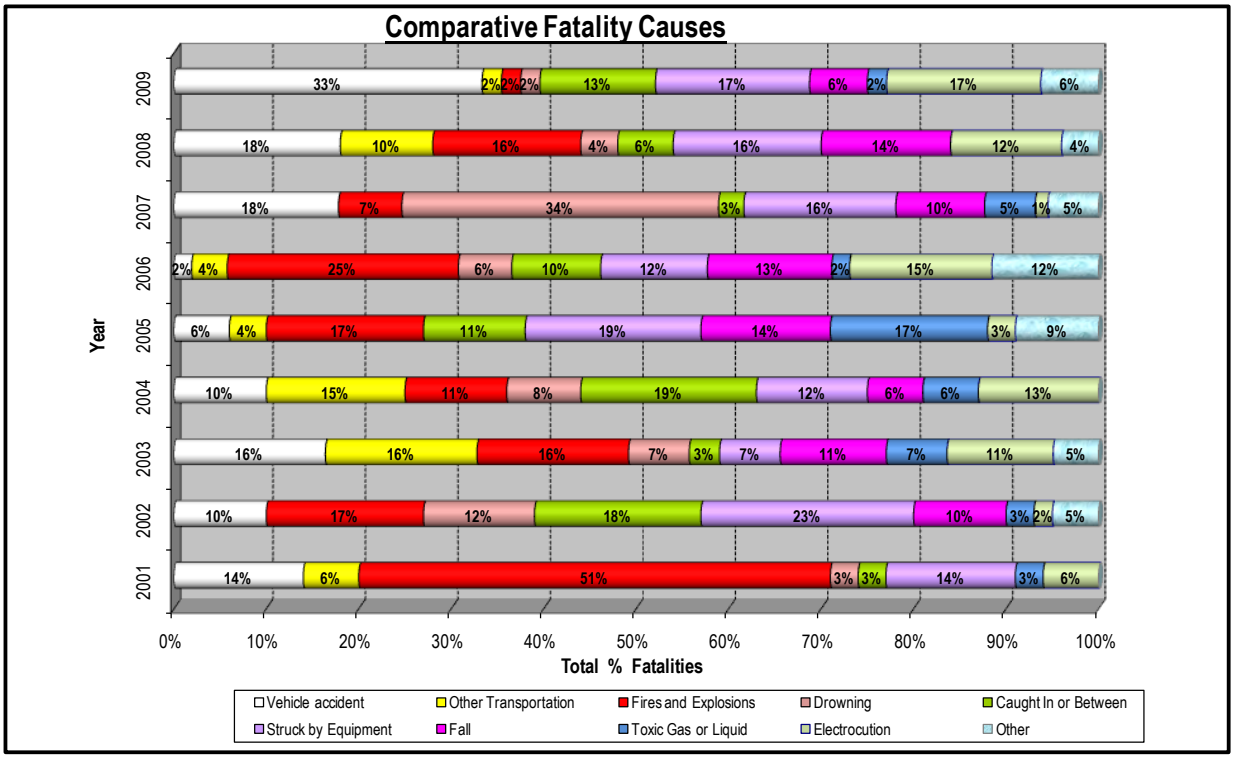

Figure 4.2

Figure 4.1 graphically represents fatality causes according to the absolute and percentage number of fatalities they caused in 2009.

Figure 4.2 compares the relative influence (as a percentage of the total number of fatalities considered each year) of the different fatality causes for the period 2001 – 2009. The table below shows the total number of fatalities with a reported cause per year.

Year	Total fatalities with reported cause
2001	35
2002	58
2003	61
2004	52
2005	70
2006	52
2007	73
2008	50
2009	48

Figure 4.2 shows that the three causes representing -in average- the largest percentage of fatal incidents in the last nine years were “Fires and Explosions" in the first place, “Struck by equipment” in the second place, and "Car accidents" in the third place. The average values in the period 2001 – 2009 weighted according to the total number of fatalities considered for each year are: 16.5%, 15.2% and 13.8% respectively. The tabulated results corresponding to this chapter's graphs are presented in APPENDIX A.

The table below shows the fatality causes reported by OGP[4] in its safety performance indicators Report Nº 439 for 2009, and they are compared to those corresponding to ARPEL:

	Function "Exploration & Production" – Combined result – onshore and offshore			
	Total fatalities	Fatality # 1	Fatality # 2	Fatality # 3
ARPEL 2009	21	"Struck by equipment" (28.6%)	"Car accidents" (23.8%)	Electrocution (19.0%)
OGP 2009	99	"Others" (27%)	"Struck by" (23%)	"Caught in, under, or between" (14%)

[4] OGP only comprises "Exploration and Production", so this is the only function considered when comparing results with ARPEL Statistics.

5.0 SAFETY PROACTIVE INDICATORS

5.1 Tasks planned observations' rate

The tasks planned observations Rate (TPO) is defined by the following formulae:

TPO Rate = Number of tasks planned observations cumulative of the year
Average number of workers in the period

(Please refer to chapters 6.0 and 10.0 of the User's Manual)

Year 2009			
Function	Number of companies that reported data to this indicator	Average reported number of total workers (company)	Average number of workers used to calculate this rate (company)
E&P	5	161,763	45,784
Refining	8	89,615	22,987
Transport – pipelines for liquids	3	8,423	2,489
Transport – pipelines for gases	2	3,248	57
Transport – pipelines not separated	4	11,053	11,053
Transport - Maritime	4	10,385	28
Distribution	7	35,513	16,648
Others	6	64,745	32,436
Total	**12**	**384,745**	**138,393**

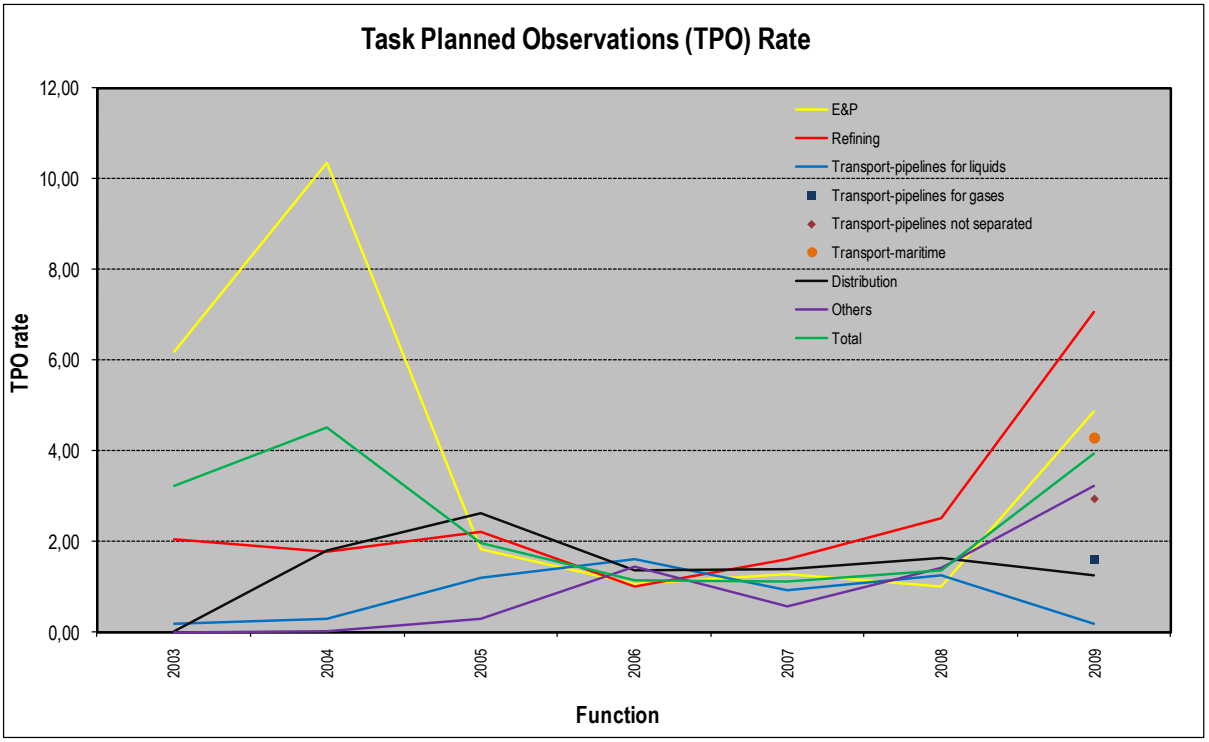

Figure 5.1

5.2 Safety training intensity rate

The safety training intensity rate (STI) is defined by the following formulae:

STI Rate = Nº of cumulative hours of safety training of the year x 100
Hours worked in the same period

(Please refer to chapters 6.0 and 10.0 of the User's Manual)

Year 2009			
Function	Number of companies that reported data to this indicator	Average reported number of total workers (company)	Average number of workers used to calculate this rate (company)
E&P	5	354,954	66,623
Refining	8	194,738	34,235
Transport – pipelines for liquids	3	18,446	5,078
Transport – pipelines for gases	2	6,227	115
Transport – pipelines not separated	3	23,273	3,027
Transport - Maritime	4	25,533	49
Distribution	5	77,165	26,098
Others	6	138,896	19,334
Total	**10**	**839,233**	**157,148**

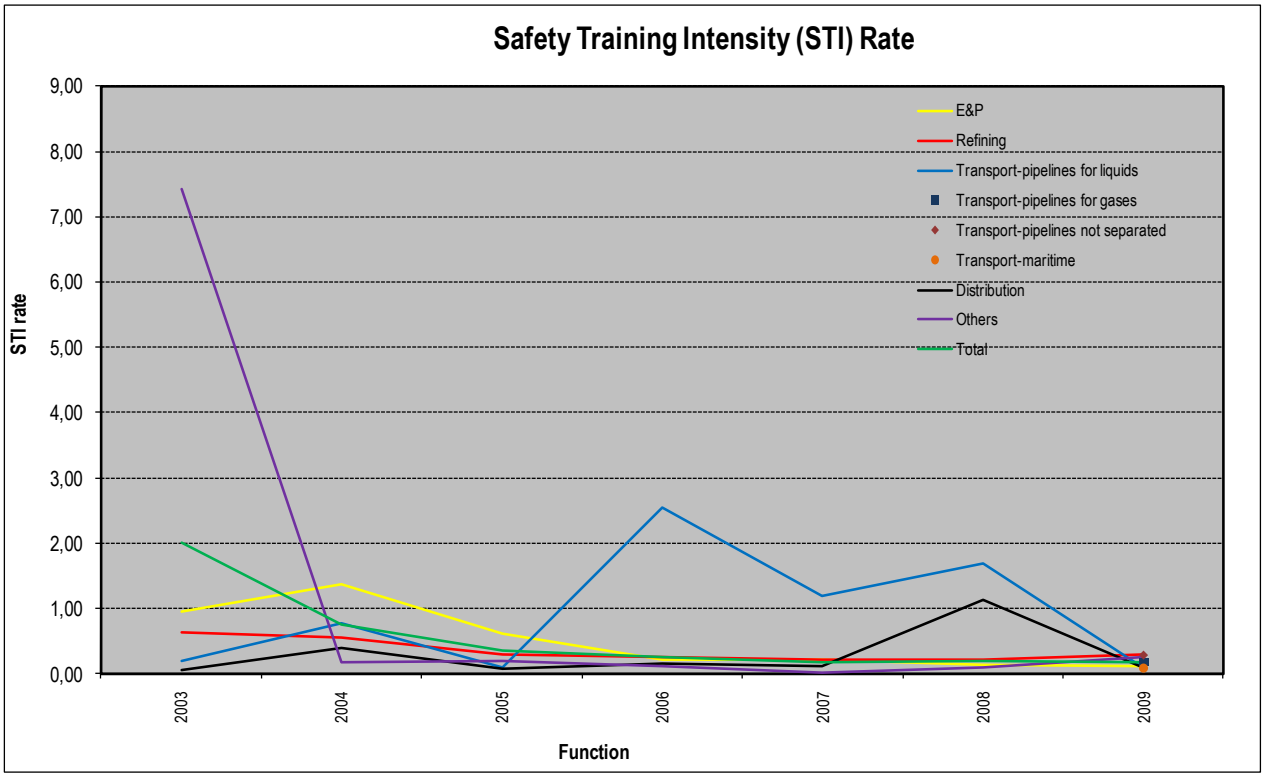

Figure 5.2

Figures 5.1 and 5.2 represent the tasks planned observations rate and safety training intensity rate respectively for years 2003 to 2009, solely for company workers[5]. The corresponding tabulated results are shown in APPENDIX A.

[5] *One company reported data for the calculation of the safety proactive indicators for the combined result (company and contractors) during years 2003 and 2004. Since 2005, it could start reporting data only referred to the company's workers.*

6.0 GLOSSARY OF TERMS ACCORDING TO ARPEL CRITERIA

a) Case involving lost workdays

All non fatal cases that result in the worker being away from work at least one business day after the day of the injury or disease. The day on which the worker goes home before the end of his workday is not considered in this item. Fatalities, as well as restricted labor activity days are excluded, since they are recorded separately.

b) Case involving medical treatment

All treatment cases of injuries / diseases administered by doctors, registered professionals or non-medical personnel. The medical treatment does not include first aids (one single treatment and the following observation of scratches, cuts, burns, splinters, and other episodes without gravity that generally do not require medical attention) even if a doctor or a registered professional provides them.

c) Case involving restricted workdays

All non-fatal cases implying days of restricted activity of the usual tasks after the day of the injury or disease. Fatalities must be excluded.

d) Company worker

Any person employed by the reporting company or included in its payroll.

e) Contractor

Any person directly involved in the execution of an assigned work for the reporting company, according to a contract.

f) Fatal incidents' rate

Total fatalities per 1,000,000 worked hours (see formulae 4 in APPENDIX C).

g) Incidents' frequency rate with lost workdays

The number of lost workday cases per 1,000,000 worked hours. Cases of restricted workdays and cases of medical treatment are not included. (See Formulae 3 in APPENDIX C).

h) Incidents' gravity rate

The number of lost workdays per 1,000,000 worked hours. (See Formulae 2 in APPENDIX C). Note that ARPEL definition of lost workdays includes all calendar days (including weekends and holidays). Also see "number of days away from work" on item i.

i) Number of days away from work

The total number of days (consecutive or not) after the day when the injury or disease occurred, on which the workers involved (according to the definition of *case involving lost workdays)* should have worked but did not, as a result of the occupational injury or disease, until the day they get back to work. The day the person starts to work is excluded. **Weekends and holidays are included, even if the employee was not scheduled to work.**

j) Recordable case - disease

Any occupational incident resulting from a disease (according to the provided classification by the legislation/regulation [if applicable] of the country where the company reports its activities). Occupational diseases resulting in fatalities are included.

k) Recordable case - fatality

A fatality resulting from an occupational injury or disease. The fatality should be loaded to the year in which the injury occurred or the occupational disease was recorded.

l) Recordable case - injury

Any occupational incident resulting in an injury (according to the provided classification by the legislation/regulation [if applicable] of the country where the company reports its activities). Occupational injuries resulting in fatalities are included.

m) Recordable cases - total

The sum of Recordable cases – Injury, Recordable cases – Disease and Recordable cases – Fatalities.

n) Safety training intensity (STI)

The proportion of the total hours worked in a period dedicated to safety training.

o) Safety training intensity rate

The percentage of cumulative safety training hours in the year, over the total hours worked in the same period. (See Formulae 6 in APPENDIX C).

p) Tasks planned observations (TPO)

"Tasks planned observations" (TPO) are safety observations performed according to a systematic method. They constitute a recorded visual analysis in which the sequence of tasks, maneuvers and operations required to obtain a certain result of the service which is pre-established within the company, is studied by well trained and qualified personnel. The referred study includes hazard identification and risk management during normal task performance and comprises observations of immediate and basic aspects as well as systematic ones. Observations are recorded in a pre-established form according to a given procedure to determine all deviations that result in an increased probability of any human resources or material loss.

q) Tasks planned observations' rate

The quotient between the number of tasks planned observations accrued during the year and the average number of workers in the same period. (See Formulae 5 in APPENDIX C).

r) Total incidents' rate

The total rate (Recordable cases) of injuries, occupational diseases or fatalities per 1,000,000 worked hours. (See Formulae 1 in APPENDIX C).

s) Work relatedness

An injury or disease is to be considered to be work-related if an event or exposure in the work environment caused or contributed to the resulting condition or significantly aggravated a pre-existing injury or disease. Work-relatedness is defined for injuries and diseases resulting from events or exposures occurred in the work environment, defining the work environment as the physical place where one or more employees work or are present due to work reasons. The work environment includes not only physical locations, but also the equipment or materials used by the employee during the course of his/her work.

t) Worked hours

Hours worked by both the company workers and contractors' workers (separately recorded).

7.0 REFERENCES AND BIBLIOGRAPHY

The following material was used to develop the present report:

1. "European Downstream Oil Industry Safety Performance - statistical summary of reported incidents - 1996". CONCAWE Safety Management. RA 1250, Report Nº 4/97. Brussels. December, 1997. 16 pages.

2. "Summary of U.S. Occupational Injuries, Illnesses, and Fatalities in the Petroleum Industry - 1996". American Petroleum Industry. API Publication 2375. Washington, FD, September, 1997. 46 pages.

3. ARPEL User's Manual – Incidents' statistics in the Oil and Gas Industry in Latin America and the Caribbean - 5th edition, 2010. ARPEL. Montevideo. 29 pages.

4. "Occupational Safety and Health Administration – Regulations (Standards – 29CFR) - Determination of work relatedness -1904.5" - http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9636

5. "OGP Safety Performance Indicators – 2009 data". Report Nº 439. May, 2010. 132 pages.

8.0 APPENDIX A

8.1 Tabulated results: totals for companies, contractors and combined

Data used to develop the associated graph for each rate analyzed in chapter 2.0 is presented in the tables below, for the period 1997/2009.

Table 8.1.1: Total incidents' rate per functional unit (ARPEL 1997-2009)

Function	Data Category	1997	1998	1999	*Weighted average (1997-1999)*	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
E&P	Company	19,829	7,772	1,454	*3,920*	1,167	2,875	2,266	1,742	2,202	2,779	2,865	3,663	3,648	4,184
	Contractors	28,523	24,390	10,863	*18,723*	3,989	5,379	2,818	2,597	3,070	4,060	3,946	4,092	4,134	3,083
	Combined	25,289	13,503	3,475	*7,895*	2,231	4,770	2,602	2,281	2,780	3,626	3,592	3,947	3,971	3,467
Refining	Company	19,812	5,007	2,293	*3,948*	10,543	4,337	2,667	1,999	2,815	3,719	2,660	3,822	4,000	3,642
	Contractors	27,571	22,038	15,193	*19,867*	4,872	8,356	2,832	2,699	3,523	8,967	4,741	5,613	6,118	4,706
	Combined	23,225	7,794	3,788	*6,567*	9,748	6,368	2,713	2,209	3,036	5,585	3,402	4,568	4,904	4,080
Transport-pipelines for liquids	Company	17,399	10,921	2,162	*4,947*	1,319	0,529	1,786	1,475	2,192	5,042	5,744	2,143	2,380	2,177
	Contractors	21,057	11,480	7,395	*11,454*	1,093	6,215	1,631	1,225	1,754	8,042	7,431	4,261	2,893	2,162
	Combined	18,885	11,035	2,586	*6,113*	1,265	0,975	1,719	1,353	1,956	7,169	6,877	3,321	2,635	2,173
Transport-pipelines for gases	Company														1,606
	Contractors														8,229
	Combined														5,065
Transport-pipelines not separated	Company														1,203
	Contractors														2,862
	Combined														2,342
Transport-maritime	Company														2,177
	Contractors														4,790
	Combined														2,446
Distribution	Company	18,987	5,493	0,682	*2,827*	10,013	15,857	4,642	4,364	2,617	2,024	4,662	4,985	4,700	7,881
	Contractors	n/a	8,904	2,192	*81,183*	2,483	1,867	2,203	1,991	1,439	2,266	3,162	2,530	2,691	2,970
	Combined	18,987	5,999	0,875	*3,791*	7,268	11,296	3,773	3,467	2,189	2,110	3,917	3,987	3,771	5,934
Others	Company	6,513	4,632	0,472	*1,721*	1,030	6,879	3,441	2,011	1,784	1,880	2,235	2,903	3,701	2,403
	Contractors	32,296	21,355	10,316	*99,334*	0,046	2,775	1,877	1,573	1,050	3,425	3,959	2,767	2,530	2,323
	Combined	21,048	12,544	1,740	*6,105*	0,559	4,318	2,441	1,718	1,320	2,933	3,368	2,807	2,846	2,340
Total	Company	17,193	6,442	1,325	*3,383*	5,320	5,319	2,784	2,167	2,351	2,811	2,869	3,579	3,723	3,835
	Contractors	28,755	21,677	11,000	*57,270*	2,709	5,462	2,484	2,196	2,381	4,542	4,232	3,842	3,748	2,967
	Combined	22,944	11,230	2,890	*6,746*	4,494	5,415	2,632	2,183	2,368	3,808	3,671	3,738	3,738	3,287

Notes:

1. For the year 2006, one of the companies reported the former function "Transport" and the function "Distribution" included within "Exploration and Production" and "Refining". Therefore, for the calculation of 2006 rates, the data of this company corresponding to Transport and Distribution had to be considered as Exploration and Production and Refining instead of separately as for the rest of the companies.
2. Until 2008 inclusively, cells corresponding to the function "Transport – pipelines for liquids" represent the former function "Transport".

Table 8.1.2: Incidents' gravity rate per functional unit (ARPEL 1997-2009)

Function	Data Category	1997	1998	1999	*Weighted average (1997-1999)*	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
E&P	Company	219,88	533,26	67,21	*174,69*	208,44	146,42	73,67	87,67	212,76	180,89	72,84	85,26	88,79	76,14
	Contractors	481,73	175,80	239,52	*268,34*	61,04	293,98	349,37	206,42	73,01	280,11	69,25	70,60	138,69	84,56
	Combined	384,32	410,00	104,22	*202,58*	152,86	182,40	256,55	135,95	147,31	226,57	70,76	78,98	117,96	80,65
Refining	Company	145,82	237,77	120,63	*146,83*	87,29	81,49	99,71	118,14	262,20	263,00	64,08	47,37	101,51	60,39
	Contractors	316,59	950,69	329,18	*523,57*	31,67	626,47	463,38	339,27	525,09	630,93	118,87	160,86	60,94	40,41
	Combined	220,95	409,28	144,80	*214,17*	79,49	156,03	252,28	153,95	301,47	325,39	72,03	78,75	85,39	52,66
Transport-pipelines for liquids	Company	699,28	350,95	67,10	*165,92*	92,63	44,05	66,45	54,43	185,34	214,10	46,92	21,50	41,12	11,88
	Contractors	875,16	1644,29	1201,02	*1275,53*	8,15	0,00	10,19	26,14	29,48	33,93	27,68	38,98	27,73	159,98
	Combined	770,75	613,79	159,07	*323,79*	72,45	41,82	39,44	48,04	163,41	177,24	42,43	26,02	34,57	51,74
Transport-pipelines for gases	Company														54,604
	Contractors														164,624
	Combined														106,040
Transport-pipelines not separated	Company														27,371
	Contractors														16,781
	Combined														41,326
Transport-maritime	Company														11,877
	Contractors														28,369
	Combined														28,179
Distribution	Company	218,69	348,21	74,96	*141,33*	78,70	95,35	92,07	74,80	74,51	98,45	56,82	30,49	69,06	79,820
	Contractors	n/a	66,60	6,30	*30,26*	33,56	28,24	26,40	31,47	19,53	30,79	34,62	40,86	40,88	127,176
	Combined	218,69	306,47	66,19	*137,09*	62,25	85,83	70,10	61,74	62,09	87,95	47,46	33,28	57,87	97,948
Others	Company	60,78	82,63	7,26	*26,42*	30,76	59,75	80,05	62,33	70,12	58,44	28,13	29,10	48,38	17,594
	Contractors	717,60	882,16	660,20	*742,15*	0,00	40,31	749,65	206,38	13,80	83,38	84,50	19,15	42,26	48,340
	Combined	431,07	460,94	91,39	*210,37*	16,04	84,01	406,35	80,22	67,04	59,71	31,01	28,03	44,01	41,326
Total	Company	208,51	330,66	58,46	*125,00*	119,19	101,41	85,61	89,57	174,09	166,01	60,29	54,95	78,95	57,608
	Contractors	518,70	641,55	374,56	*488,33*	34,96	320,16	356,41	188,26	115,21	295,43	65,24	83,56	84,60	62,625
	Combined	362,79	428,38	109,60	*208,47*	92,56	150,94	228,87	118,29	157,41	202,01	62,33	64,10	82,17	60,496

Notes:

1. ARPEL includes weekends and holidays in the definition of the number of days away from work.
2. For the year 2006, one of the companies reported the former function "Transport" and the function "Distribution" included within "Exploration and Production" and "Refining". Therefore, for the calculation of 2006 rates, the data of this company corresponding to Transport and Distribution had to be considered as Exploration and Production and Refining instead of separately as for the rest of the companies.
3. Until 2008 inclusively, cells corresponding to the function "Transport – pipelines for liquids" represent the former function "Transport".

Table 8.1.3: Incidents' frequency rate with lost workdays per functional unit (ARPEL 1997-2009)

Function	Data Category	1997	1998	1999	*Weighted average (1997-1999)*	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
E&P	Compañías	3,431	4,245	0,714	*1,625*	1,937	1,754	1,858	1,674	1,829	3,447	3,385	2,446	2,355	2,813
	Contratistas	7,873	6,988	4,071	*5,765*	3,654	2,779	2,133	2,746	1,893	2,210	2,289	2,289	1,878	1,224
	Combinadas	6,220	5,191	1,435	*2,770*	2,585	2,238	2,009	2,094	1,872	2,497	2,650	2,354	2,076	1,777
Refining	Compañías	4,527	1,792	0,869	*1,290*	2,447	1,092	2,186	2,029	2,001	5,394	1,654	2,518	2,095	5,110
	Contratistas	8,408	6,828	3,425	*5,512*	3,057	2,788	4,638	8,981	1,707	3,206	1,897	3,085	2,497	8,543
	Combinadas	6,234	3,004	1,165	*2,076*	2,532	1,333	2,682	3,038	1,906	4,292	1,738	2,743	2,255	6,523
Transport-pipelines for liquids	Compañías	8,614	7,010	1,272	*2,933*	1,451	0,815	0,967	1,239	1,782	2,348	3,000	1,330	1,381	4,091
	Contratistas	11,089	4,022	n/a	*6,776*	1,093	0,000	0,718	1,480	1,356	1,550	1,008	1,353	1,182	8,503
	Combinadas	9,620	6,403	1,272	*3,267*	1,365	0,707	0,920	1,276	1,549	2,185	1,694	1,343	1,284	5,477
Transport-pipelines for gases	Company														0,964
	Contractors														2,351
	Combined														1,688
Transport-pipelines not separated	Company														0,687
	Contractors														0,667
	Combined														0,728
Transport-maritime	Company														4,091
	Contractors														3,832
	Combined														2,343
Distribution	Compañías	6,038	2,737	0,582	*1,372*	7,640	11,789	4,089	4,117	2,006	2,420	3,119	4,149	4,664	7,287
	Contratistas	n/a	4,625	1,096	*2,498*	1,572	1,339	1,497	1,601	1,004	0,946	1,314	1,811	1,093	1,880
	Combinadas	6,038	3,017	0,647	*1,714*	5,429	9,830	3,184	3,292	1,642	1,634	2,223	3,246	3,066	5,143
Others	Compañías	2,081	2,094	0,223	*0,732*	1,724	2,755	2,652	1,756	1,499	1,648	1,013	2,100	1,525	1,384
	Contratistas	8,708	7,324	2,791	*5,424*	2,428	3,521	1,619	5,919	1,050	0,852	0,907	0,769	0,601	0,546
	Combinadas	5,817	4,569	0,554	*1,995*	2,061	3,144	2,262	2,071	1,212	1,241	0,943	1,195	0,865	0,728
Total	Compañías	4,370	3,214	0,620	*1,398*	2,668	2,973	2,276	2,054	1,838	3,183	2,313	2,479	2,226	3,387
	Contratistas	8,355	6,818	3,594	*5,579*	2,817	2,783	2,260	3,390	1,555	1,952	1,817	1,834	1,431	1,733
	Combinadas	6,352	4,347	1,101	*2,360*	2,715	2,907	2,269	2,410	1,679	2,402	2,023	2,120	1,771	2,343

Notes:

1. For the year 2006, one of the companies reported the former function "Transport" and the function "Distribution" included within "Exploration and Production" and "Refining". Therefore, for the calculation of 2006 rates, the data of this company corresponding to Transport and Distribution had to be considered as Exploration and Production and Refining instead of separately as for the rest of the companies.
2. Until 2008 inclusively, cells corresponding to the function "Transport – pipelines for liquids" represent the former function "Transport".

Table 8.1.4: Fatal incidents' rate per functional unit (ARPEL 1997-2009)

Function	Data Category	1997	1998	1999	*Weighted average (1997-1999)*	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
E&P	Company	0,046	0,078	0,005	*0,023*	0,073	0,081	0,030	0,026	0,030	0,029	0,008	0,072	0,017	0,019
	Contractors	0,136	0,103	0,253	*0,182*	0,067	0,092	0,070	0,096	0,070	0,041	0,043	0,064	0,043	0,026
	Combined	0,102	0,087	0,058	*0,069*	0,071	0,088	0,054	0,070	0,057	0,037	0,031	0,067	0,034	0,024
Refining	Company	0,000	0,043	0,026	*0,028*	0,016	0,013	0,030	0,026	0,025	0,060	0,028	0,011	0,049	0,044
	Contractors	0,030	0,230	0,066	*0,111*	0,096	0,148	0,151	0,091	0,041	0,073	0,103	0,038	0,007	0,040
	Combined	0,013	0,088	0,031	*0,042*	0,027	0,048	0,064	0,045	0,030	0,064	0,055	0,022	0,031	0,042
Transport-pipelines for liquids	Company	0,085	0,085	0,000	*0,023*	0,026	0,000	0,017	0,018	0,042	0,000	0,039	0,000	0,017	0,000
	Contractors	0,125	0,251	0,288	*0,243*	0,336	0,396	0,067	0,055	0,054	0,038	0,000	0,032	0,000	0,000
	Combined	0,101	0,119	0,023	*0,053*	0,100	0,056	0,038	0,036	0,049	0,027	0,013	0,018	0,008	0,000
Transport-pipelines for gases	Company														0,000
	Contractors														0,000
	Combined														0,000
Transport-pipelines not separated	Company														0,000
	Contractors														0,000
	Combined														0,000
Transport-maritime	Company														0,000
	Contractors														0,000
	Combined														0,000
Distribution	Company	0,000	0,121	0,000	*0,025*	0,024	0,024	0,027	0,027	0,010	0,016	0,000	0,000	0,000	0,000
	Contractors	n/a	0,925	0,411	*0,615*	0,000	0,084	0,049	0,117	0,084	0,247	0,071	0,111	0,105	0,257
	Combined	0,000	0,240	0,052	*0,092*	0,015	0,037	0,035	0,060	0,036	0,098	0,035	0,045	0,050	0,101
Others	Company	0,000	0,012	0,000	*0,003*	0,000	0,035	0,014	0,000	0,009	0,000	0,009	0,008	0,000	0,007
	Contractors	0,119	0,123	0,103	*0,113*	0,046	0,051	0,054	0,041	0,020	0,045	0,019	0,020	0,011	0,004
	Combined	0,067	0,065	0,013	*0,031*	0,022	0,044	0,040	0,028	0,016	0,031	0,015	0,016	0,008	0,005
Total	Company	0,020	0,061	0,007	*0,019*	0,034	0,043	0,026	0,021	0,022	0,028	0,017	0,032	0,021	0,020
	Contractors	0,107	0,176	0,198	*0,173*	0,074	0,095	0,074	0,080	0,055	0,061	0,044	0,048	0,029	0,025
	Combined	0,063	0,097	0,038	*0,054*	0,047	0,067	0,050	0,053	0,040	0,047	0,033	0,042	0,026	0,023

Notes:

1. For the year 2006, one of the companies reported the former function "Transport" and the function "Distribution" included within "Exploration and Production" and "Refining". Therefore, for the calculation of 2006 rates, the data of this company corresponding to Transport and Distribution had to be considered as Exploration and Production and Refining instead of separately as for the rest of the companies.
2. Until 2008 inclusively, cells corresponding to the function "Transport – pipelines for liquids" represent the former function "Transport".

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8.2 Tabulated results: Offshore activities for companies, contractors and combined

Data used to develop the associated graph for each rate analyzed in chapter 3.0 is presented in the tables below, for the period 1997/2009.

Table 8.2.1: Incidents' rate per functional unit – offshore activities (ARPEL 1997-2009)

Function	Data Category	1 Total Incidents' Rate										2 Incidents' Gravity Rate									
		1998	1999	2002	2003	2004	2005	2006	2007	2008	2009	1998	1999	2002	2003	2004	2005	2006	2007	2008	2009
E&P	Company	5,980	2,795	2,04	2,027	2,976	3,200	2,793	5,642	3,898	5,431	269,80	76,75	112,4	114,22	126,48	103,24	79,26	125,55	66,57	52,69
	Contractors	46,205	5,685	2,36	1,456	3,395	3,352	1,623	6,856	3,548	2,389	n/a	69,50	50,9	11,29	10,58	81,04	28,58	59,84	215,16	87,12
	Combined	6,260	4,105	2,22	1,730	3,114	3,267	2,167	6,126	3,774	4,430	269,80	73,45	85,8	110,27	122,46	97,37	52,12	108,88	91,38	57,73
Total	Company	5,980	2,795	2,04	2,027	2,976	3,200	2,793	5,642	3,898	5,431	269,80	76,75	112,4	114,22	126,48	103,24	79,26	125,55	66,57	52,69
	Contractors	46,205	5,685	2,36	1,456	3,395	3,352	1,623	6,856	3,548	2,389	n/a	69,50	50,9	11,29	10,58	81,04	28,58	59,84	215,16	87,12
	Combined	6,260	4,105	2,22	1,730	3,114	3,267	2,167	6,126	3,774	4,430	269,80	73,45	85,8	110,27	122,46	97,37	52,12	108,88	91,38	57,73

Function	Data Category	3 Incidents' Frequency Rate with Lost Workdays										4 Fatal Incidents' Rate									
		1998	1999	2002	2003	2004	2005	2006	2007	2008	2009	1998	1999	2002	2003	2004	2005	2006	2007	2008	2009
E&P	Company	5,930	1,865	1,740	1,966	3,250	7,443	2,361	4,100	3,182	4,412	0,025	n/a	n/a	0,061	0,021	0,000	0,000	0,193	0,000	0,000
	Contractors	46,205	3,370	2,010	1,026	2,708	2,854	1,199	6,392	5,356	1,955	0,000	0,465	0,050	0,095	0,172	0,045	0,012	0,606	0,034	0,031
	Combined	6,215	2,545	1,895	1,930	3,072	4,578	1,739	4,681	3,545	3,603	0,025	0,465	0,050	0,079	0,071	0,020	0,007	0,358	0,012	0,010
Total	Company	5,930	1,865	1,740	1,966	3,250	7,443	2,361	4,100	3,182	4,412	0,025	n/a	n/a	0,061	0,021	0,000	0,000	0,193	0,000	0,000
	Contractors	46,205	3,370	2,010	1,026	2,708	2,854	1,199	6,392	5,356	1,955	0,000	0,465	0,050	0,095	0,172	0,045	0,012	0,606	0,034	0,031
	Combined	6,215	2,545	1,895	1,930	3,072	4,578	1,739	4,681	3,545	3,603	0,025	0,465	0,050	0,079	0,071	0,020	0,007	0,358	0,012	0,010

Notes:

1. Item 2: ARPEL includes weekends and holidays in the definition of the number of days away from work.

8.3 Tabulated results – Safety proactive indicators

Data used to develop the associated graph for each rate analyzed in chapter 5.0 is presented in the tables below, for the period 2003/2009.

Table 8.3.1: Tasks planned observations per functional unit - company data (ARPEL 2003-2009)

Functions	2003	2004	2005	2006	2007	2008	2009
E&P	6,19	10,36	1,83	1,07	1,28	1,01	4,87
Refining	2,04	1,78	2,21	0,99	1,60	2,51	7,05
Transport-pipelines for liquids	0,17	0,28	1,18	1,59	0,92	1,25	0,18
Transport-pipelines for gases							1,60
Transport-pipelines not separated							2,93
Transport-maritime							4,29
Distribution	0,01	1,80	2,63	1,36	1,38	1,64	1,24
Others	0,00	0,01	0,28	1,44	0,57	1,41	3,23
Total	3,22	4,51	1,96	1,15	1,12	1,35	3,93

Table 8.3.2: Safety training intensity rate per functional unit - company data (ARPEL 2003-2009)

Functions	2003	2004	2005	2006	2007	2008	2009
E&P	0,95	1,36	0,62	0,21	0,22	0,14	0,10
Refining	0,62	0,56	0,29	0,26	0,21	0,21	0,30
Transport-pipelines for liquids	0,20	0,78	0,10	2,54	1,19	1,68	0,09
Transport-pipelines for gases							0,17
Transport-pipelines not separated							0,29
Transport-maritime							0,08
Distribution	0,06	0,39	0,08	0,15	0,10	1,13	0,10
Others	7,43	0,17	0,19	0,11	0,02	0,10	0,26
Total	2,00	0,76	0,36	0,24	0,18	0,20	0,17

Notes:

1. For the period 2006 to 2008, one of the companies reported the former function “Transport” and the function “Distribution” included within “Exploration and Production” and “Refining”. Therefore, for the calculation of that period’s proactive rates, data of that company corresponding to Transport and Distribution had to be considered as Exploration and Production and Refining instead of separately as for the rest of the companies.
2. One company reported the data for the calculation of the safety proactive indicators for the combined result (company and contractors) during 2003 and 2004. Since 2005, it could start reporting data only referred to the company’s workers.

8.4 Tabulated results – fatality causes – ARPEL 2001-2009

Table 8.4.1: Fatality causes – totals for ARPEL Member Companies and their contractors – term 2001/2009

Fatality Causes	Percentage of fatalities								
	2001	2002	2003	2004	2005	2006	2007	2008	2009
Vehicle accident	14%	10%	16%	10%	6%	2%	18%	18%	33%
Other Transportation	6%	0%	16%	15%	4%	4%	0%	10%	2%
Fires and Explosions	51%	17%	16%	11%	17%	25%	7%	16%	2%
Drowning	3%	12%	7%	8%	0%	6%	34%	4%	2%
Caught In or Between	3%	18%	3%	19%	11%	10%	3%	6%	13%
Struck by Equipment	14%	23%	7%	12%	19%	12%	16%	16%	17%
Fall	0%	10%	11%	6%	14%	13%	10%	14%	6%
Toxic Gas or Liquid	3%	3%	7%	6%	17%	2%	5%	0%	2%
Electrocution	6%	2%	11%	13%	3%	15%	1%	12%	17%
Other	0%	5%	5%	0%	9%	12%	5%	4%	6%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%

9.0 APPENDIX B

9.1 ARPEL Member Companies data: totals for companies – year 2009

This table gathers all data of ARPEL Member Companies that reported for 2009. The incidents' rates' indicators used are calculated.

Table 9.1: ARPEL Member Companies data – totals for companies (including offshore activities); 2009 data

1	2	3	4				5				6			
			Recordable cases				Extent and outcome of injuries and illnesses				Incidence Rates			
			a	b	c	d	e	f	g	h	i	j	k	l
							Cases of:							
Function	Average number of employees	Hours worked (in thousands)	Injuries	Illnesses	Fatalities	Total	Restricted workdays	Lost workdays	Medical Treatment	Number of days away from work	Total	Gravity	Frequency with lost workdays	Fatalities
E&P	143.691	309.969	1.200	91	6	1.297	5	872	357	23.600	4,184	76,14	2,813	0,019
Refining	85.356	184.296	643	19	8	670	290	940	406	11.109	3,642	60,39	5,110	0,044
Transport-pipelines for liquids	6.847	15.155	32	1	0	33	45	62	15	180	2,177	11,88	4,091	0,000
Transport-pipelines for gases	3.248	6.227	9	1	0	10	0	6	3	340	7,881	79,82	7,287	0,000
Transport-pipelines not separated	11.053	23.273	27	1	0	28	1	16	0	637	2,403	17,59	1,384	0,007
Transport-maritime	10.385	25.533	60	0	0	60	0	37	20	718	3,835	57,61	3,387	0,020
Distribution	29.907	65.817	517	0	0	517	332	478	360	5.236	7,881	79,82	7,287	0,000
Others	63.665	137.616	328	1	1	330	85	190	127	2.416	2,403	17,59	1,384	0,007
Total	354.152	767.885	2.816	114	15	2.945	758	2.601	1.288	44.236	3,835	57,61	3,387	0,020

Notes:

1. Item 5(h) (number of days away from work) includes all calendar days (including weekends and holidays).
2. Since some companies reported incomplete data, the calculation of each rate is performed only with the worked hours corresponding to such rate and which do not necessarily coincide with the value in column 3 (total reported). Therefore, it is not possible to obtain each rate's value by directly applying the calculation formulae from the data in tables 9.1 to 9.4. For example, suppose company "A" reported 10,000 total worked hours (which are added in column 3 of tables 9.1 to 9.4), but it did not report data to calculate the incidents' gravity rate; then the 10,000 hours cannot be used for the calculation of this rate (this company could not be considered to calculate the incidents' gravity rate and the worked hours this company reported were not considered to calculate the rate).
3. Recordable cases (column 4): The total does not necessarily match the sums of "Injuries" + "Diseases" + "Fatalities" since there were companies that reported the total recordable cases without the corresponding splitting between Injuries, Diseases and Fatalities. Therefore, in these cases the value for the "Total" may be greater than the sum of "Injuries" + "Diseases" + "Fatalities".

9.2 ARPEL Member Companies' contractors data: totals for contractors – year 2009

This table gathers all data of ARPEL Member Companies' contractors that reported data for 2009. The incidents' rates' indicators used are calculated.

Table 9.2: ARPEL Member Companies' contractor's data – totals for contractors (including offshore activities); 2009 data

1	2	3	4				5				6			
			Recordable cases				Extent and outcome of injuries and illnesses				Incidence rates			
			a	b	c	d	e	f	g	h	i	j	k	l
							Cases of:							
Function	Average number of employees	Hours worked (in thousands)	Injuries	Illnesses	Fatalities	Total	Restricted workdays	Lost workdays	Medical Treatment	Number of days away from work	Total	Gravity	Frequency with lost workdays	Fatalities
E&P	251.546	580.261	1.774	0	15	1.789	78	710	393	30.251	3,083	84,56	1,224	0,026
Refining	61.078	129.542	601	0	5	606	46	1.100	288	4.691	4,706	40,41	8,543	0,040
Transport-pipelines for liquids	2.998	6.939	15	0	0	15	38	59	11	893	2,162	159,98	8,503	0,000
Transport-pipelines for gases	3.415	6.805	56	0	0	56	0	16	40	900	2,970	127,18	1,880	0,257
Transport-pipelines not separated	24.539	51.010	146	0	0	146	32	34	0	856	2,323	48,34	0,546	0,004
Transport-maritime	514	1.044	5	0	0	5	0	4	2	16	2,967	62,63	1,733	0,025
Distribution	21.371	43.094	117	0	11	128	2	81	27	5.174	2,970	127,18	1,880	0,257
Others	243.820	494.621	1.147	0	2	1.149	19	270	15	22.460	2,323	48,34	0,546	0,004
Total	609.280	1.313.315	3.861	0	33	3.894	215	2.274	776	65.241	2,967	62,63	1,733	0,025

Notes:

1. Item 5(h) (number of days away from work) includes all calendar days (including weekends and holidays).
2. Since some companies reported incomplete data, the calculation of each rate is performed only with the worked hours corresponding to such rate and which do not necessarily coincide with the value in column 3 (total reported). Therefore, it is not possible to obtain each rate's value by directly applying the calculation formulae from the data in tables 9.1 to 9.4. For example, suppose company "A" reported 10,000 total worked hours (which are added in column 3 of tables 9.1 to 9.4), but it did not report data to calculate the incidents' gravity rate; then the 10,000 hours cannot be used for the calculation of this rate (this company could not be considered to calculate the incidents' gravity rate and the worked hours this company reported were not considered to calculate the rate).
3. Recordable cases (column 4): The total does not necessarily match the sums of "Injuries" + "Diseases" + "Fatalities" since there were companies that reported the total recordable cases without the corresponding splitting between Injuries, Diseases and Fatalities. Therefore, in these cases the value for the "Total" may be greater than the sum of "Injuries" + "Diseases" + "Fatalities".

9.3 ARPEL Member Companies data: offshore activities - year 2009

This table gathers all data on offshore activities of ARPEL Member Companies that reported data for 2009. The incidents' rates' indicators used are calculated.

Table 9.3: ARPEL Member Companies' data – offshore activities; 2009 data

1	2	3	4				5				6			
			Recordable cases				Extent and outcome of injuries and illnesses				Incidence Rates			
			a	b	c	d	e	f	g	h	i	j	k	l
							Cases of:							
Function	Average number of employees	Hours worked (in thousands)	Injuries	Illnesses	Fatalities	Total	Restricted workdays	Lost workdays	Medical Treatment	Number of days away from work	Total	Gravity	Frequency with lost workdays	Fatalities
E&P	28.134	65.737	357	0	0	357	0	290	83	3.464	5,431	52,69	4,412	0,000
Total	28.134	65.737	357	0	0	357	0	290	83	3.464	5,431	52,69	4,412	0,000

Notes:

1. Item 5(h) (number of days away from work) includes all calendar days (including weekends and holidays).
2. Since some companies reported incomplete data, the calculation of each rate is performed only with the worked hours corresponding to such rate and which do not necessarily coincide with the value in column 3 (total reported). Therefore, it is not possible to obtain each rate's value by directly applying the calculation formulae from the data in tables 9.1 to 9.4. For example, suppose company "A" reported 10,000 total worked hours (which are added in column 3 of tables 9.1 to 9.4), but it did not report data to calculate the incidents' gravity rate; then the 10,000 hours cannot be used for the calculation of this rate (this company could not be considered to calculate the incidents' gravity rate and the worked hours this company reported were not considered to calculate the rate).
3. Recordable cases (column 4): The total does not necessarily match the sums of "Injuries" + "Diseases" + "Fatalities" since there were companies that reported the total recordable cases without the corresponding splitting between Injuries, Diseases and Fatalities. Therefore, in these cases the value for the "Total" may be greater than the sum of "Injuries" + "Diseases" + "Fatalities".

9.4 ARPEL Member Companies' contractors data: offshore activities - year 2009

This table gathers all data on offshore activities of ARPEL Member Companies' contractors that reported data for 2009. The incidents rates' indicators used are calculated.

Table 9.4: ARPEL Member Companies' contractors' data – offshore activities; 2009 data

1	2	3	4				5				6			
			Recordable cases				Extent and outcome of injuries and illnesses				Incidence Rates			
			a	b	c	d	e	f	g	h	i	j	k	l
							Cases of:							
Function	Average number of employees	Hours worked (in thousands)	Injuries	Illnesses	Fatalities	Total	Restricted workdays	Lost workdays	Medical Treatment	Number of days away from work	Total	Gravity	Frequency with lost workdays	Fatalities
E&P	15.026	32.231	76	0	1	77	0	63	20	982	2,389	87,12	1,955	0,031
Total	15.026	32.231	76	0	1	77	0	63	20	982	2,389	87,12	1,955	0,031

Notes:

1. Item 5(h) (number of days away from work) includes all calendar days (including weekends and holidays).
2. Since some companies reported incomplete data, the calculation of each rate is performed only with the worked hours corresponding to such rate and which do not necessarily coincide with the value in column 3 (total reported). Therefore, it is not possible to obtain each rate's value by directly applying the calculation formulae from the data in tables 9.1 to 9.4. For example, suppose company "A" reported 10,000 total worked hours (which are added in column 3 of tables 9.1 to 9.4), but it did not report data to calculate the incidents' gravity rate; then the 10,000 hours cannot be used for the calculation of this rate (this company could not be considered to calculate the incidents' gravity rate and the worked hours this company reported were not considered to calculate the rate).
3. Recordable cases (column 4): The total does not necessarily match the sums of "Injuries" + "Diseases" + "Fatalities" since there were companies that reported the total recordable cases without the corresponding splitting between Injuries, Diseases and Fatalities. Therefore, in these cases the value for the "Total" may be greater than the sum of "Injuries" + "Diseases" + "Fatalities".

10.0 APPENDIX C

10.1 Formula to calculate incidence rates

Formula utilized to calculate each one of the incidence rates' indicators are shown below:

1. Total incidents' rate

$$= \frac{Column4(d) * 1{,}000}{Column3}$$

Where:
Column 4(d) = Total recordable cases
Column 3 = Worked hours (in thousands)

2. Incidents' gravity rate

$$= \frac{Column5(h) * 1{,}000}{Column3}$$

Where:
Column 5(h) = number of days away from work
Column 3 = Worked hours (in thousands)

Note: ARPEL's definition of Column 5(h) includes all calendar days (including weekends and holidays).
API's definition of Column 5(h) excludes weekends and holidays, unless the employee had to work.

3. Incidents' frequency rate with lost workdays

$$= \frac{Column5(f) * 1{,}000}{Column3}$$

Where:
Column 5(h) = Cases of lost workdays.
Column 3 = Worked hours (in thousands)

4. Fatal incidents' rate

$$= \frac{Column4(c) * 1{,}000}{Column3}$$

Where:
Column 4(c) = number of fatalities
Column 3 = Worked hours (in thousands)

5. Tasks planned observations' rate

$$= \frac{Column2(a)}{Column2(b)}$$

Where:
Column 2(a) = tasks planned observations' number (cumulative)
Column 2 (b) = average number of workers

6. Safety training intensity rate

$$= \left[\frac{Column3(d)}{Column3(e) * 1000} \right] * 100$$

Where:
Column 3(d) = safety training hours (cumulative)
Column 3(e) = Worked hours (in thousands)