



Safety benchmarking in the oil and gas industry in Latin America and the Caribbean

2013 Statistics for ARPEL Member Companies



REGIONAL ASSOCIATION OF OIL, GAS AND BIOFUELS SECTOR COMPANIES IN
LATIN AMERICA AND THE CARIBBEAN



ARPEL REPORT

Safety benchmarking in the oil and gas industry in Latin America and the Caribbean

2013 Statistics for ARPEL Member Companies

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ARPEL

Report on Safety Benchmarking in the Oil and Industry for Latin America and the Caribbean - 2013 Statistics for ARPEL Member Companies

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1. EXECUTIVE SUMMARY

This report is a compilation of safety statistics of ARPEL Member Companies. It analyzes four reactive indicators (total incidents, gravity, frequency of incidents with lost workdays and fatalities) and two proactive indicators (safety training intensity and task planned observations), broken down by business line (E&P, refining, pipelines, distribution and others) and by category (company and contractors), and also including historical data since 2001.

Scope:

The eighteen companies detailed below shared their data for 2013, with a total coverage of 943 thousands employees and 2,116 million hours worked.

ANCAP – CHEVRON – ECOPETROL – ENAP – EP PETROECUADOR – EQUIÓN – OCENSA – PCJ – PEMEX – PETROAMAZONAS EP – PETROBRAS – PETROPERU – PETROTRIN – PLUSPETROL – RECOPE – REPSOL – STAATSOLIE – TECPETROL

Reactive indicators:

In 2013, it was recorded a significant decrease in all reactive indicators, with the particularity that the four indicators reached the lowest level since it began compiling statistics in 1997.

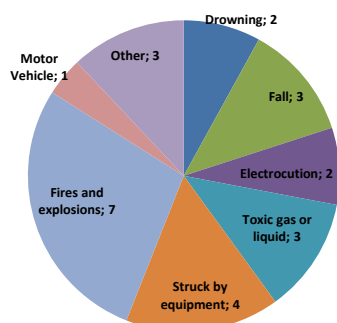
Indicator	2012	2013	variation
Total incident rate	2.149	1.895	● -12%
Gravity rate	64.434	42.983	● -33%
Incidents w/LWD rate	0.907	0.760	● -16%
Fatalities rate	0.031	0.012	● -63%

Proactive indicators:

Both proactive indicators continue to show a growing trend, Task planned observations per employee increased from 4,95 in 2012 to 4,98 in 2013, representing a 8% growth, while safety training hours, which represents the total number of hours devoted to safety training, to total man hours worked were increased from 0,42% in 2012 to 0,57% in 2013,

Indicator	2012	2013	variation
Task planned observations (per employee)	4.59	4.98	8%
Safety training hours (% total man hours worked)	0.42%	0.57%	35%

Fatalities:



During 2013, twenty-five fatalities were registered representing a rate of 0,012 fatalities per million man-hours worked.

The main cause of fatalities in the year was "fires and explosions" with 28% of the total, Fires and explosions is also the main historical cause of mortality since ARPEL began to keep records in 2001.



2. INDICATORS (methodological note)

This report collects four reactive indicators and two proactive indicators, which are detailed below:

2.1. Reactive

1. **Total incidents' rate** =
$$\frac{\text{Total recordable cases (injuries+illnesses+fatalities)}}{\text{Hours worked (in millions)}}$$
2. **Incidents gravity rate** =
$$\frac{\text{Number of days away from work}}{\text{Hours worked (in millions)}}$$
3. **Incidents' frequency rate with lost workdays** =
$$\frac{\text{cases with lost workdays}}{\text{Hours worked (in millions)}}$$
4. **Fatalities' rate** =
$$\frac{\text{Number of fatalities}}{\text{Hours worked (in millions)}}$$

2.2. Proactive

5. **TPO Indicator** =
$$\frac{\text{Number of Task Planned Observations (TPO) recorded}}{\text{Average number of workers}}$$
6. **Safety Training Intensity** =
$$\frac{\text{Total number of safety training hours}}{\text{Hours worked (in millions)}} * 100$$

For further information on the indicators or definitions, please refer to the User Manual (6th edition 2012) or the glossary provided at the end of this Report.

Not all companies report data for the calculation of all the rates, either because they do not have the information in the required breakdown, or simply because the requested information does not apply to the company in question. The indicators are calculated with the data reported for each particular indicator, so the basis of calculation vary depending on the number of companies that have reported their data correctly for each particular indicator.

Overall data of the companies is shown, broken down by category (company/contractors), for all the controlled operations of the companies in Latin America and the Caribbean. Proactive indicators are calculated only for company employees.

In all cases, an analysis by business line and comparisons between companies is made.



3. SCOPE OF THE INFORMATION

As shown in the following table, 18 ARPEL member companies shared their 2013 safety data for this report.

Companies			
ANCAP	EQUIÓN	PETROBRAS	REPSOL
CHEVRON	OCENSA	PETROPERÚ	STAATSOLIE
ECOPETROL	PCJ	PETROTRIN	TECPETROL
ENAP	PEMEX	PLUSPETROL	
EP PETROECUADOR	PETROAMAZONAS EP	RECOPE	

The following table shows the total number of employees and man-hours reported this year for this report.

As can be seen, 943 thousands employees and 2,166 million hours were considered in this report, achieving a high representativeness of the oil and gas industry in Latin America and the Caribbean.

Function	# Companies	Company		Contractors		Totals	
		Employees	MH	Employees	MH	Employees	MH
E&P	12	106,960	231,078	268,839	723,553	375,799	954,631
Refining	12	72,898	170,205	48,815	103,529	121,713	273,734
Pipelines	8	21,259	41,614	33,717	87,024	54,976	128,638
Transp. - maritime	3	10,918	18,261	2,037	1,859	12,955	20,120
Distribution	7	21,910	47,628	23,228	54,119	45,138	101,747
Other	10	64,872	138,378	268,096	548,767	332,968	687,145
Total	18	298,817	647,164	644,732	1,518,851	943,549	2,166,015

MH: Man Hours worked

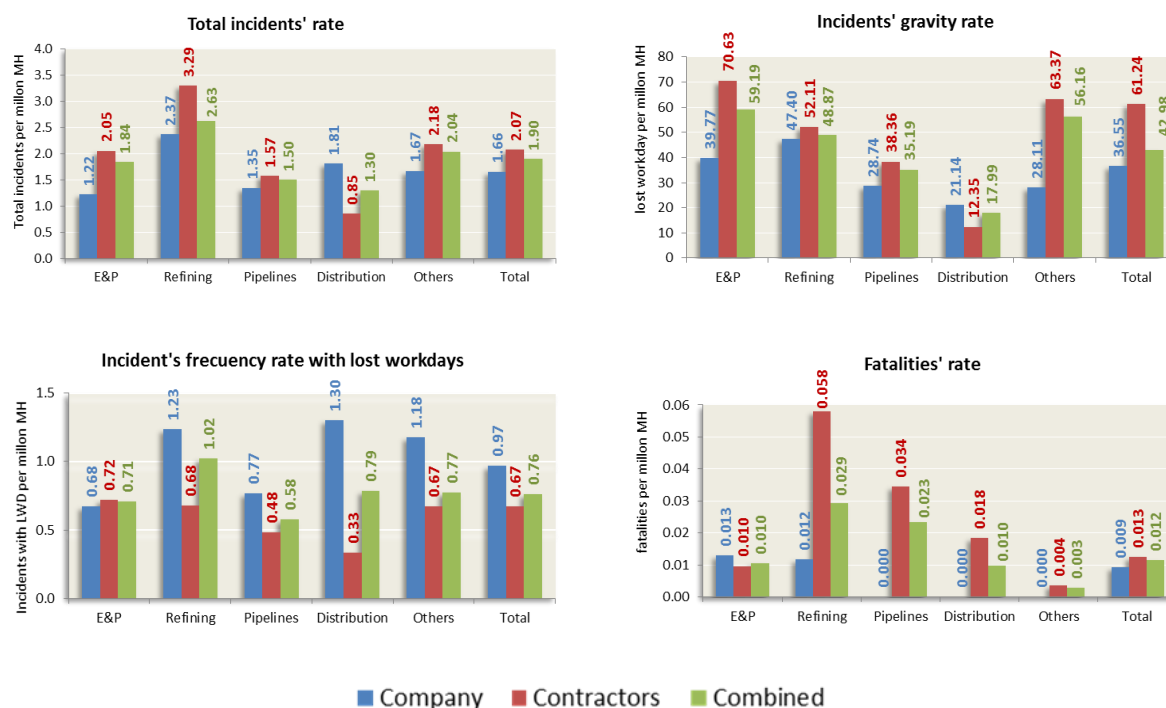
Chapter 4 includes a global analysis of the reactive indicators (total incidents, gravity, incidents with lost work days and fatalities) and the proactive indicators (task planned observations and safety training intensity), with a section for each business line of the industry under consideration (E&P, refining, pipelines, distribution). The data on maritime transportation are considered only in the total as there are not enough companies for an exclusive benchmarking of this business line. The data on the business line "others" is considered in the global data but a particular analysis is not made due to the heterogeneity of the activities included in that line.



4. RESULTS

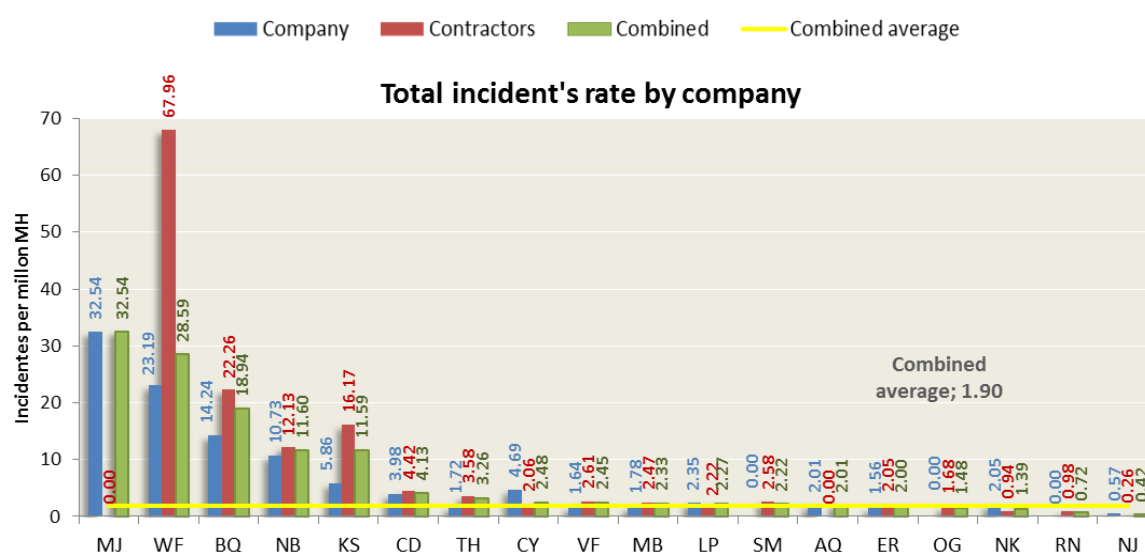
4.1. Overall results

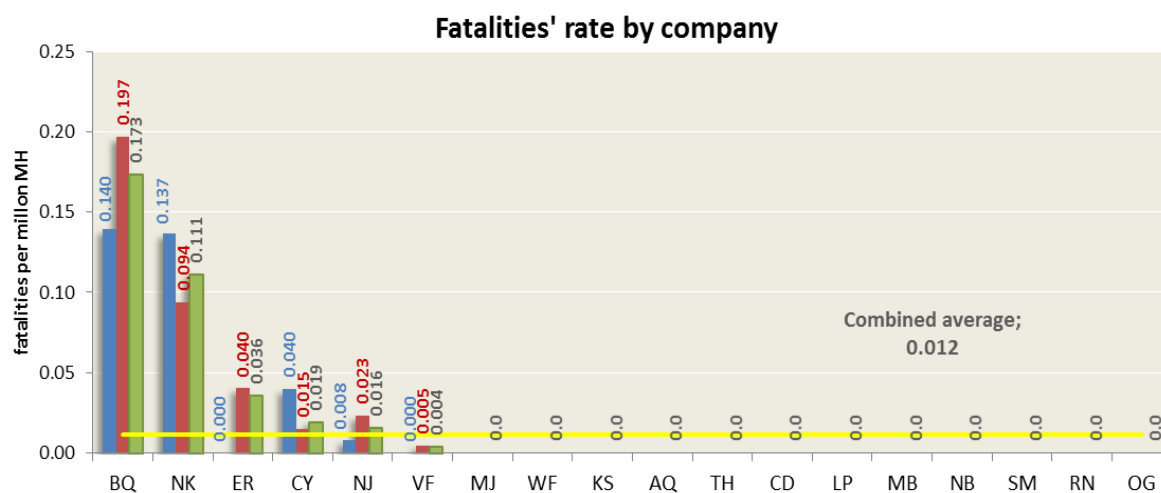
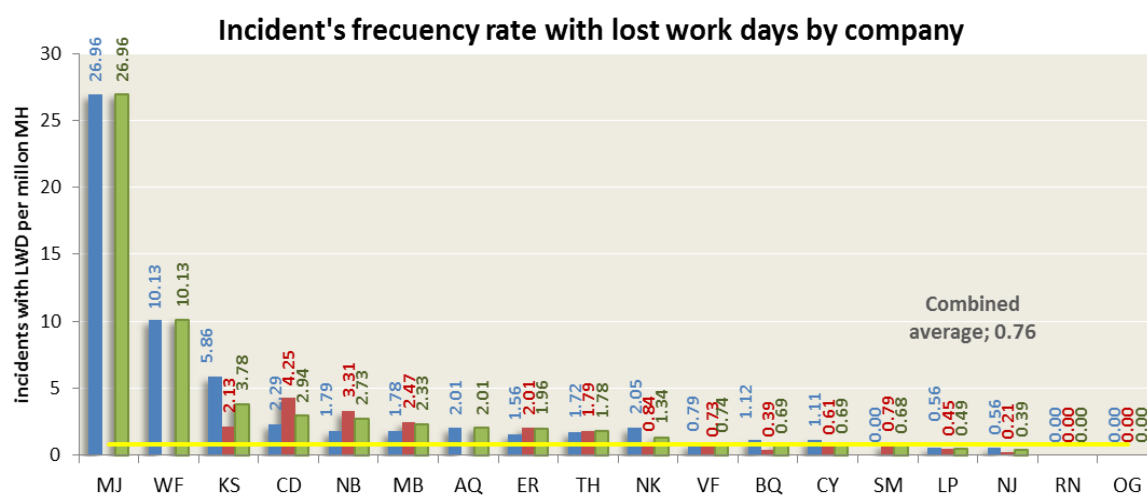
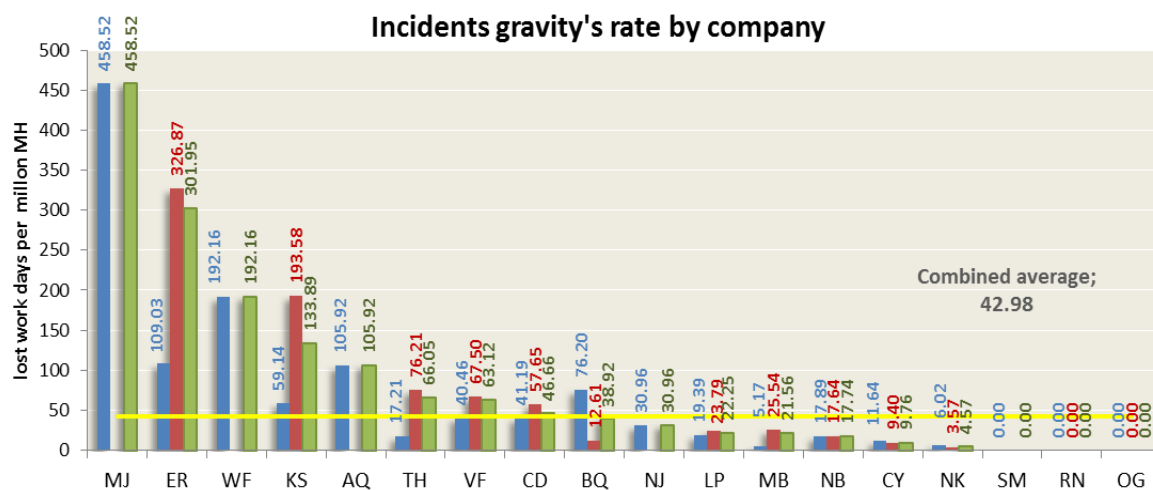
Below are the 2013 overall results for the four reactive indicators by business line and then by company.



Refining was the activity with more incidents per million hours worked (2.63) and the biggest fatalities rate (0.029) while E&P was the one with the highest number of days lost -gravity - (59.19).

Following there is a breakdown by business line of the reactive indicators, sorted by descending order according to the combined average of each company (company + contractors).

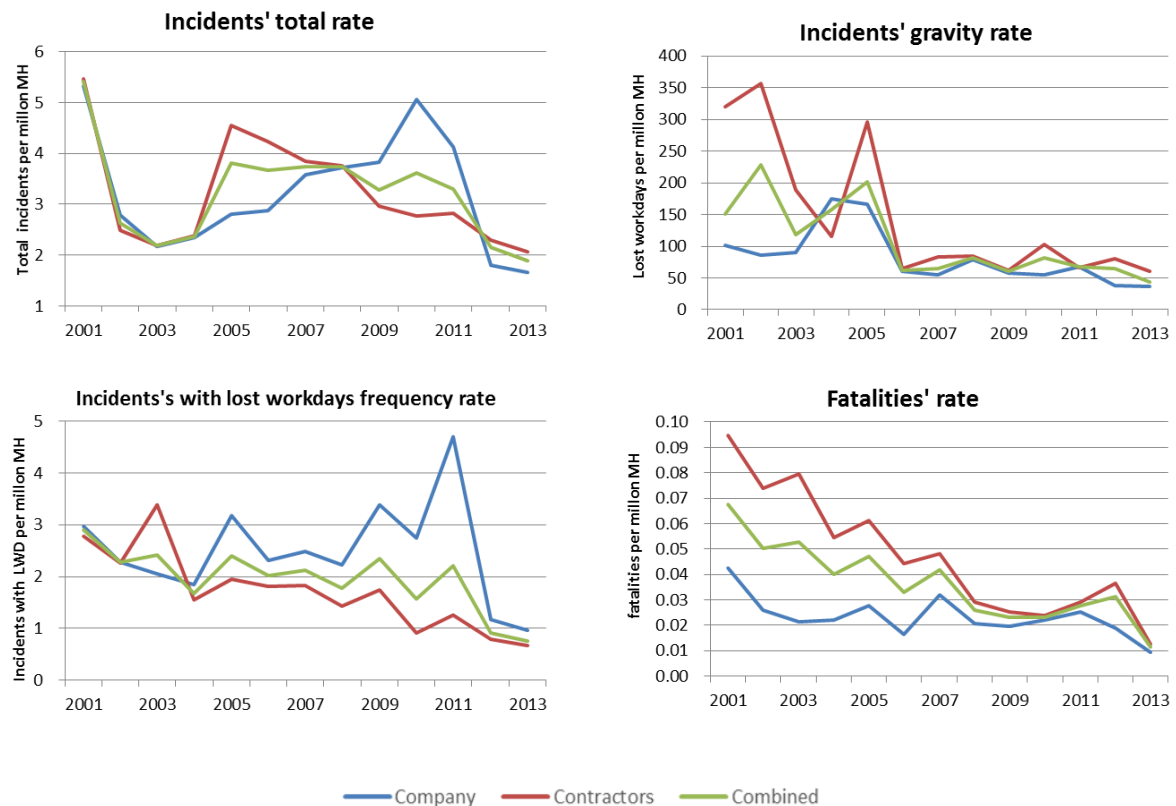






4.1.1. Evolution of reactive indicators

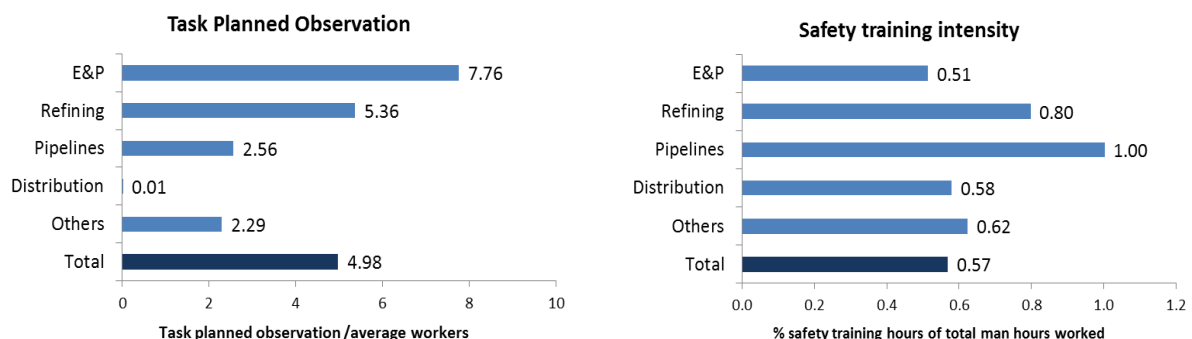
The following four graphs show the evolution of reactive indicators since 2001.



4.1.2. Proactive indicators

Finally, the proactive indicators are shown by business line (4.1.2), their global evolution since 2005 (4.1.2.1) and a comparison between companies for 2013 (4.1.2.2).

Both indicators recorded an increasing trend, which is desirable since it shows a growth in preventive measures such as training and task observation actions.

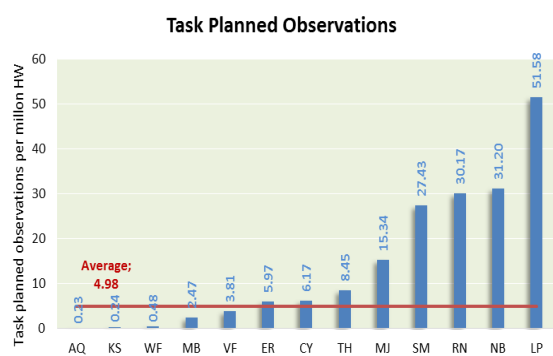




4.1.2.1. Evolution of proactive indicators



4.1.2.2. Proactive indicators by company



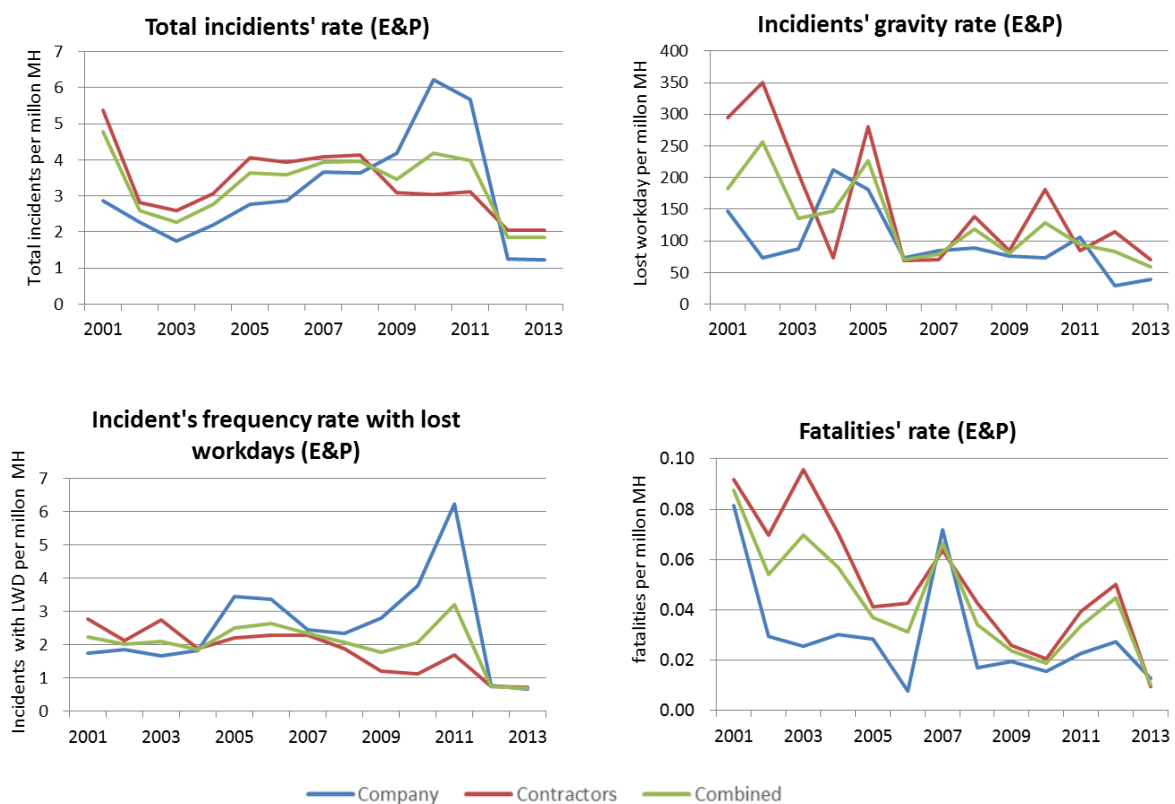


4.2. Exploration and Production

Below is the evolution of the reactive indicators (4.2.1), a comparison between companies for the year 2013 (4.2.2), as well as a comparison of the indicator and the causes of fatalities of ARPEL with international references (IOGP). Finally, in section 4.2.3, a historical evolution of proactive indicators for the business line Exploration and Production is presented.

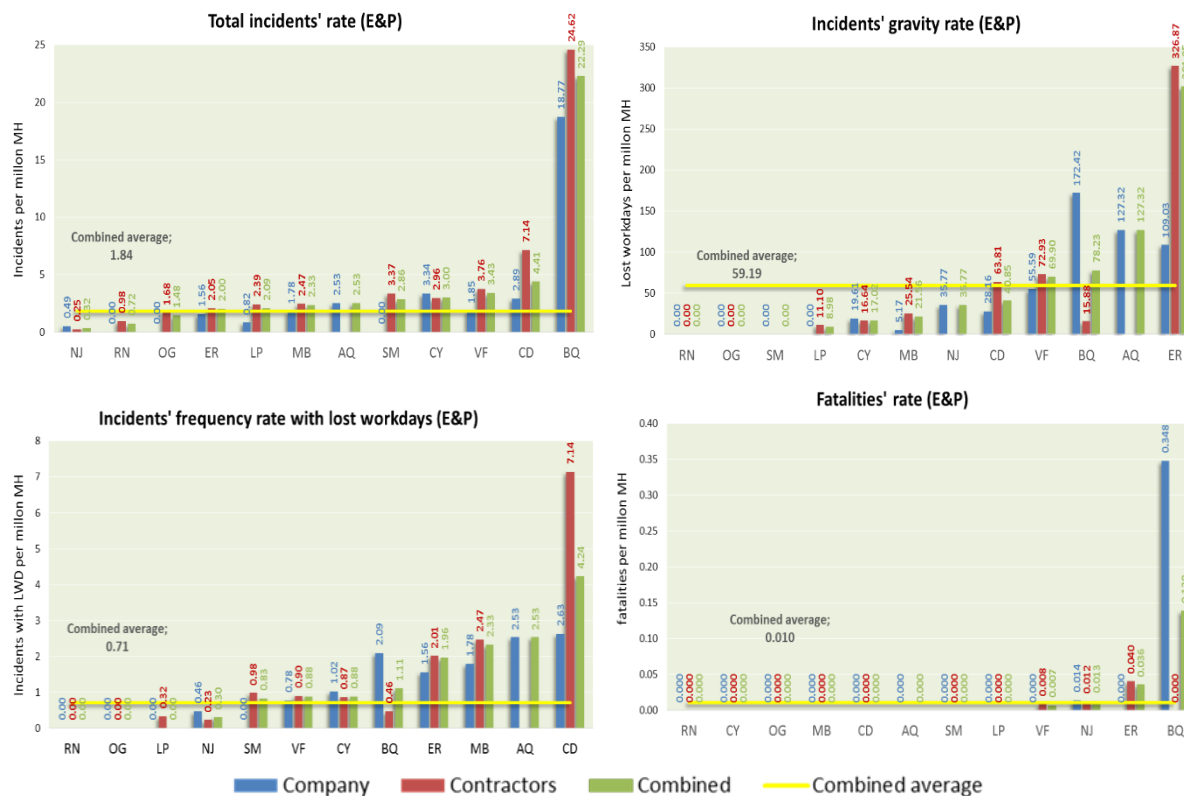
E&P total data includes offshore operations, in sections 4.2.4 and 4.2.5 there is an analysis of the historical evolution and comparisons between companies of the reactive indicators only for E&P offshore.

4.2.1. Evolution of proactive indicators (E&P total)





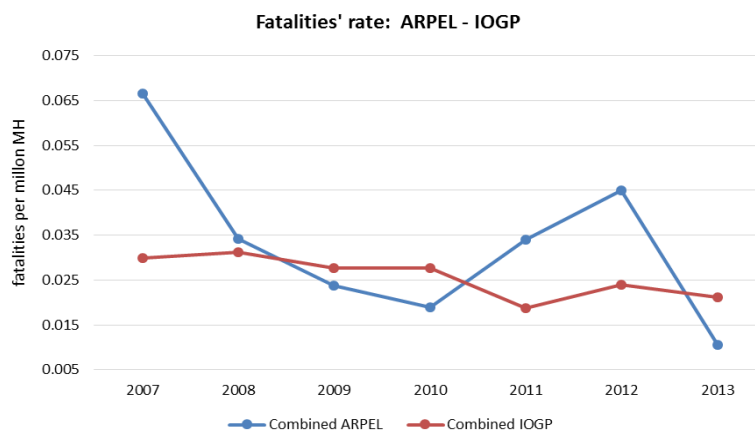
4.2.2. Reactive indicators by company



4.2.3. Comparison with international references

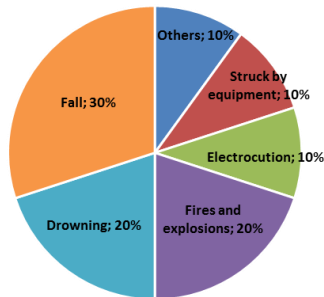
In 2013, the overall fatalities' rate for ARPEL companies in E&P was 0.0105 fatalities per million hours worked, which is less than the value submitted by IOGP companies for the same period (0.0212). The fatalities' rate recorded by ARPEL companies was also lower than the recorded by IOGP companies for both categories considered in the report (company employees: ARPEL 0.0130 / IOGP 0.0183 --- contractors: ARPEL 0.0097 / IOGP 0.0220).

Below is shown the historical evolution of the combined fatalities' rate for ARPEL and IOGP since 2007.



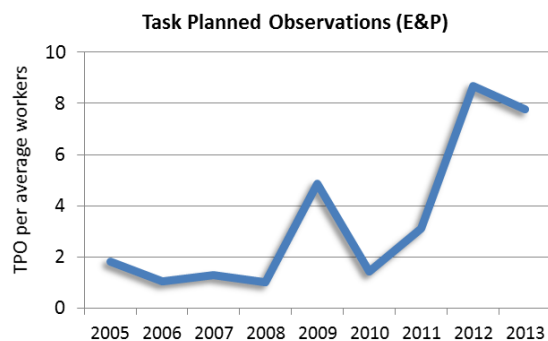


A graph showing the causes of fatalities for ARPEL's member companies for the business line E&P in 2013 is presented below.



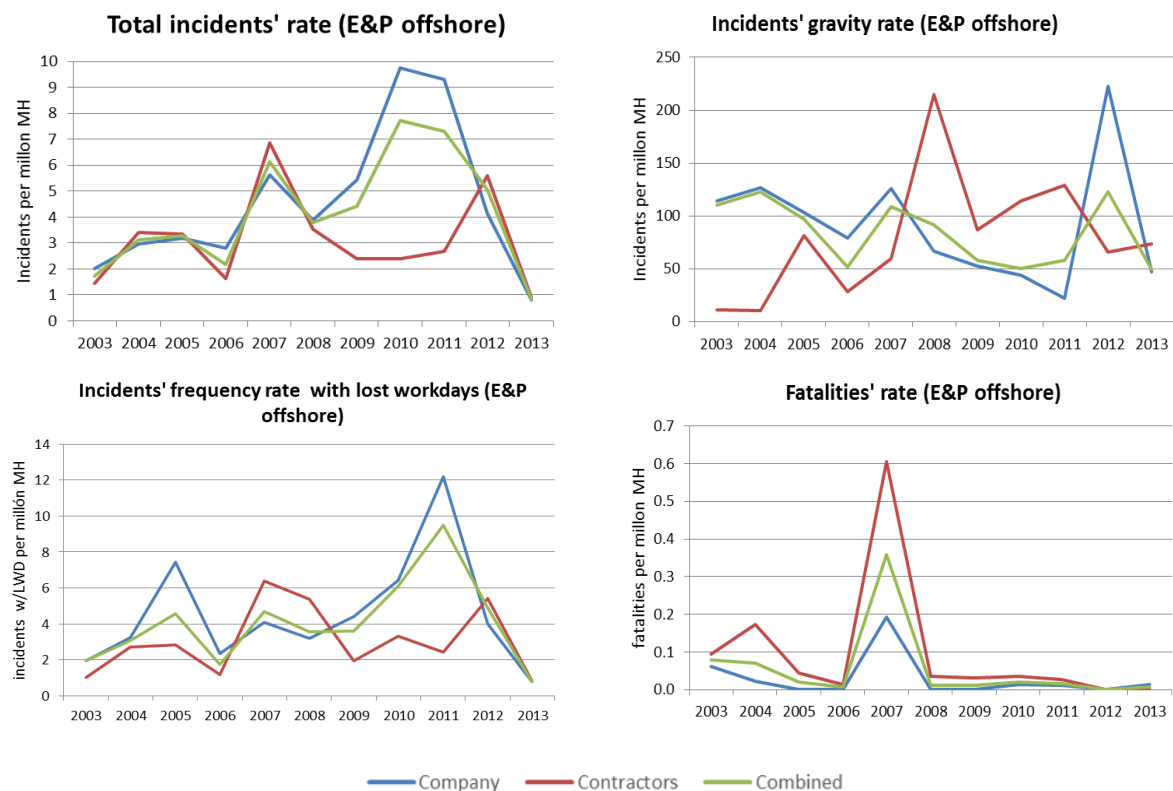
The main cause of fatalities presented by ARPEL companies in E&P was "Fall" with 30% of total fatalities recorded for that business line, followed by "Drowning" and "Fires and Explosions" both with 20%. To IOGP companies the main cause was "Others" with 26% followed by "Drowning" with 21% and "Struck by" with 12.5%. "Drowning" was a common cause of fatalities for companies of both associations.

4.2.4. Proactive Indicators (E&P total)

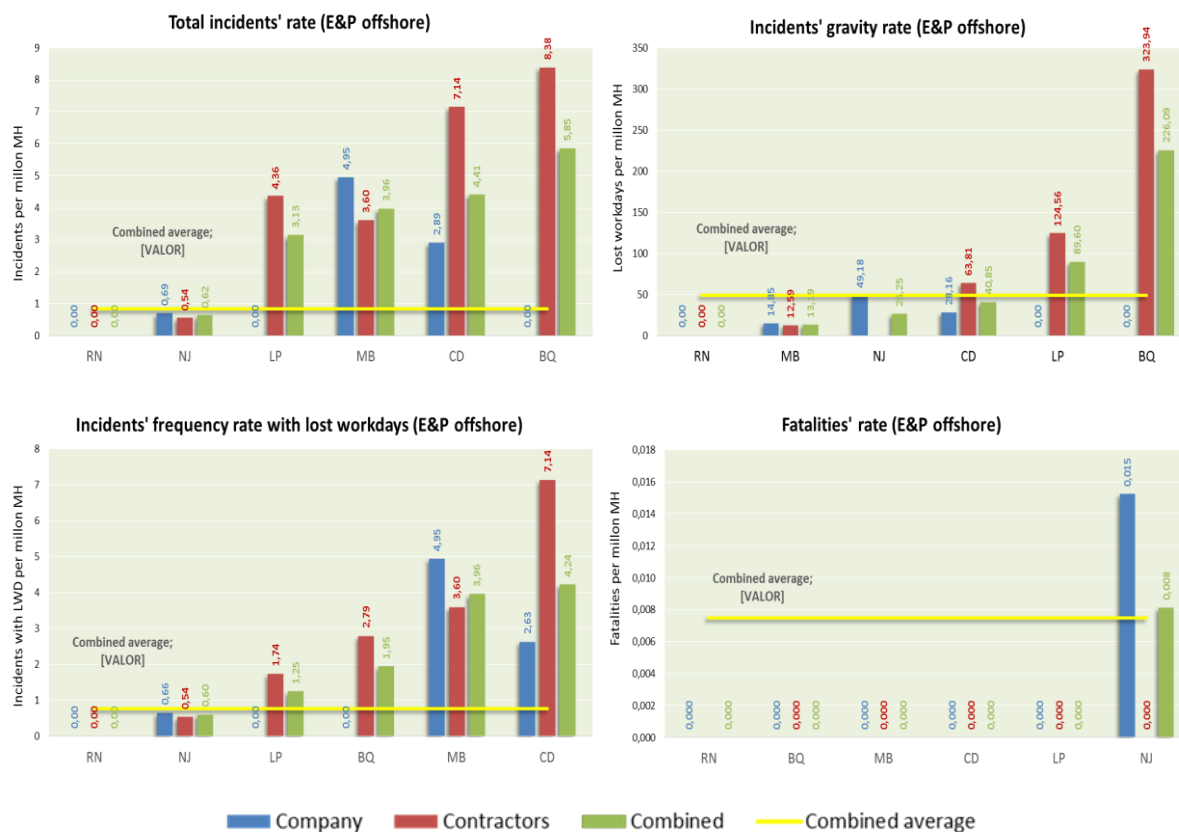




4.2.5. Reactive indicators E&P (offshore)



4.2.6. Reactive indicators (E&P offshore)

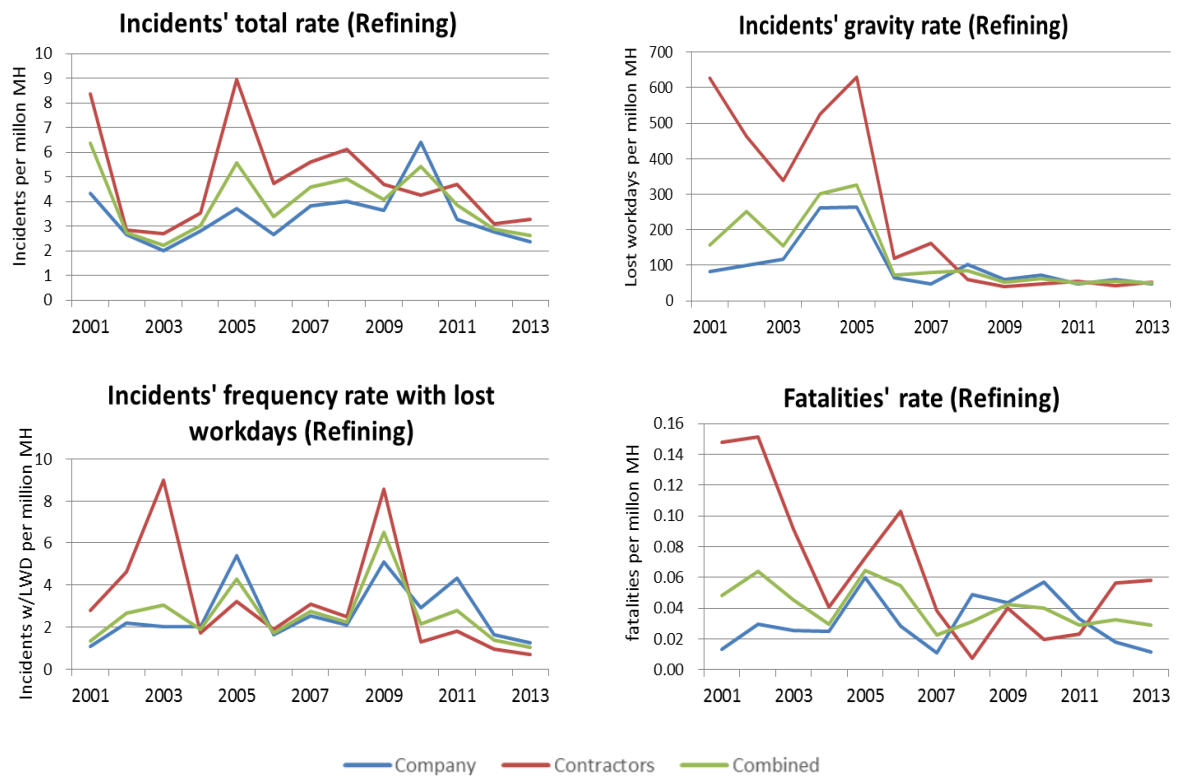




4.3. Refining

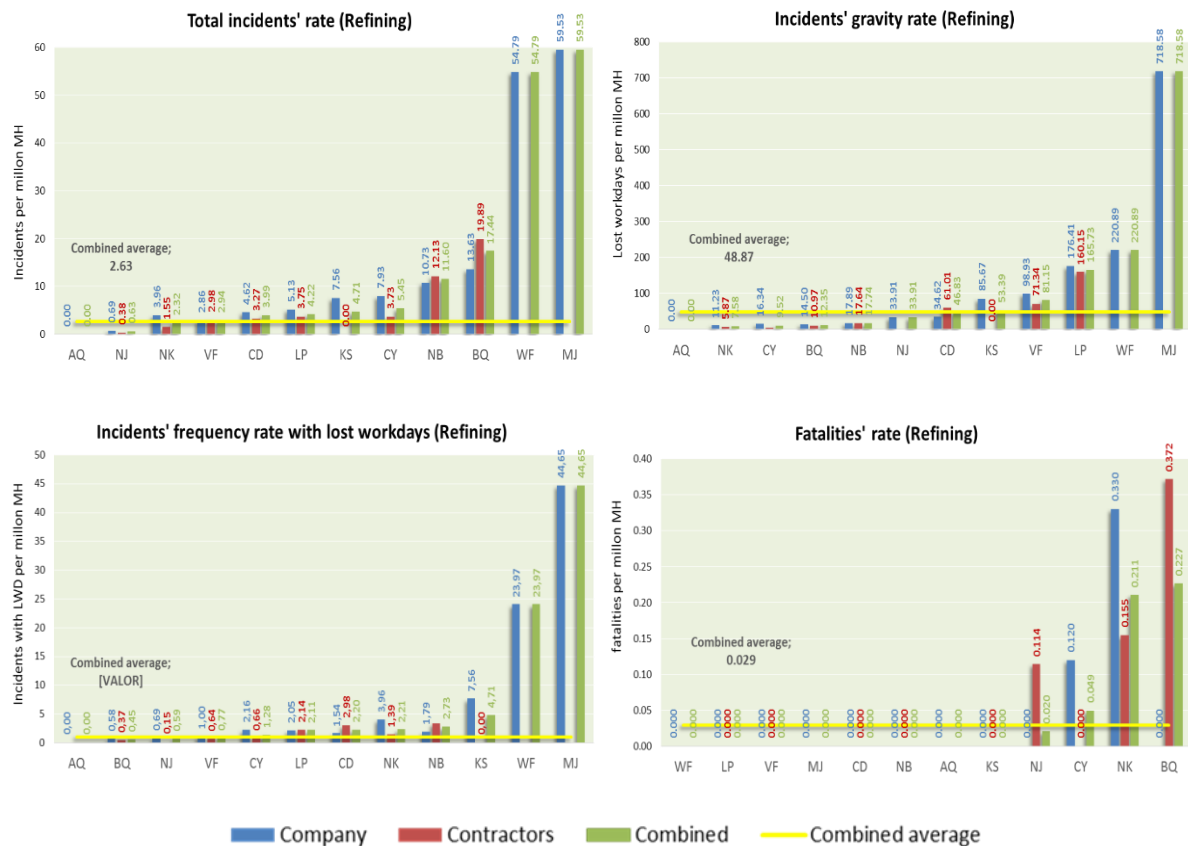
Below is the historical evolution of the reactive indicators (4.3.1), a comparison between companies for the year 2013 (4.3.2) and a historical evolution of proactive indicators (4.3.3) for the business line Refining.

4.3.1. Evolution of reactive indicators

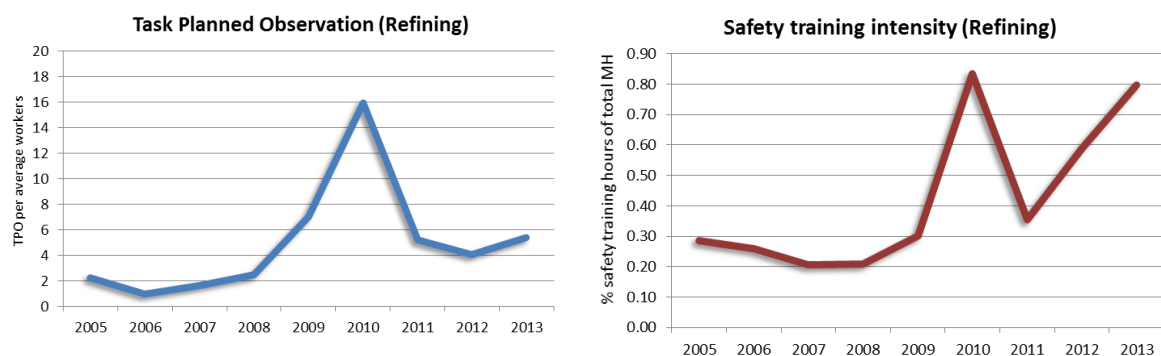




4.3.2. Indicadores reactivos por compañía



4.3.3. Proactive indicators



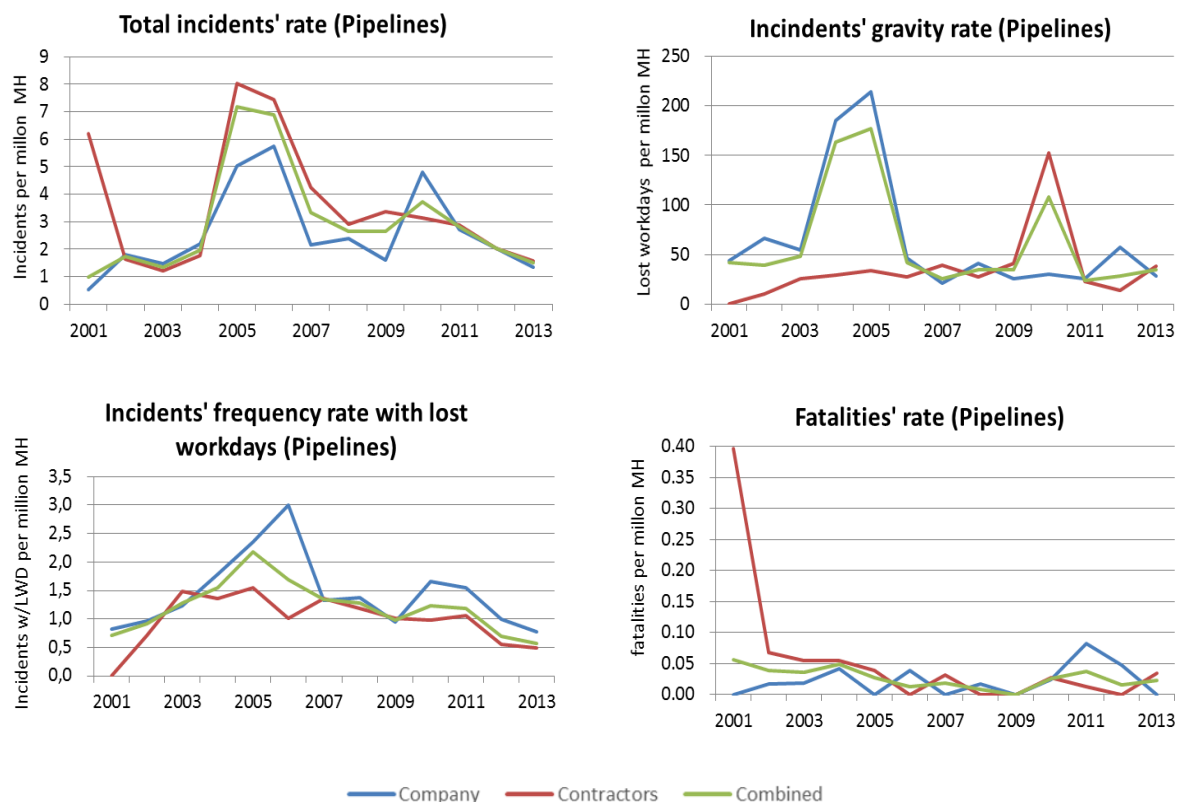


4.4. Pipelines

Below is the historical evolution of the reactive indicators (4.4.1), a comparison between companies for the year 2013 (4.4.2) and the historical evolution of proactive indicators (4.4.3) for the business line Pipelines.

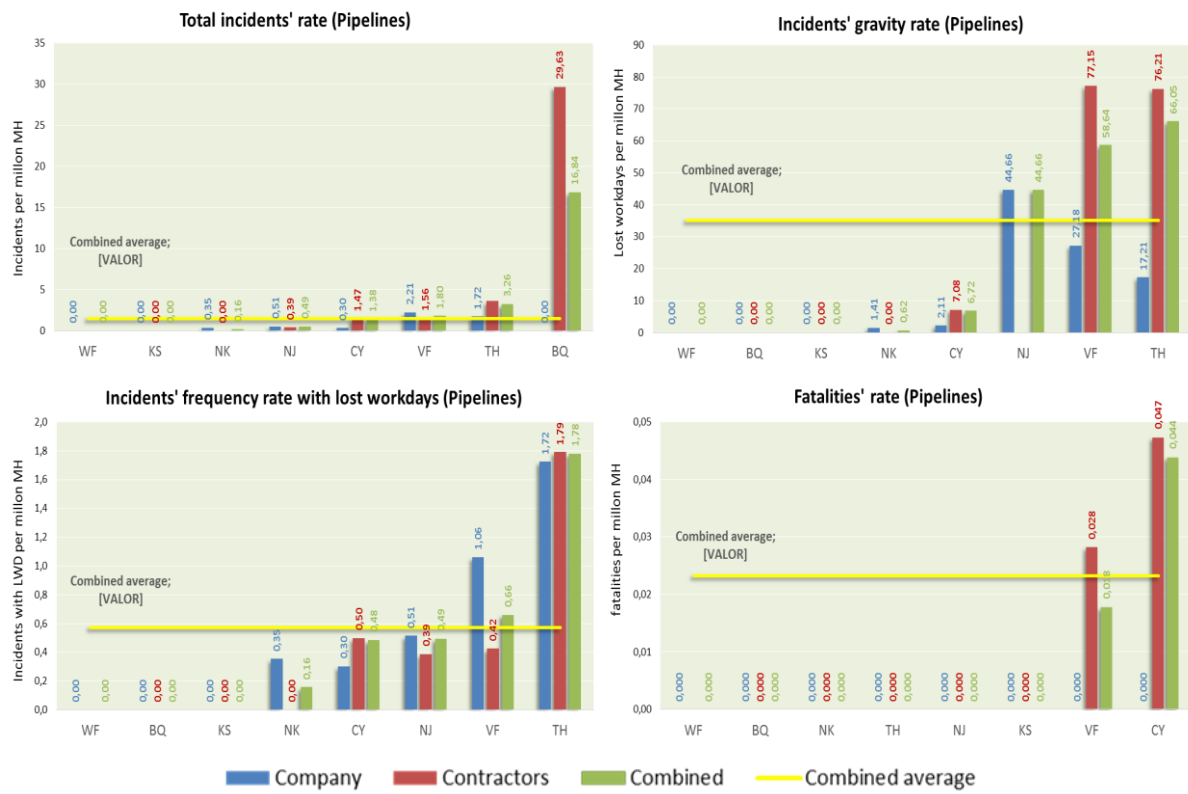
The data includes the information reported in "transport – pipelines for liquids", "transport – pipelines for gases" and "transport – pipelines not separated". The data prior to 2009 correspond only to "transport - pipelines for liquids."

4.4.1. Reactive indicators

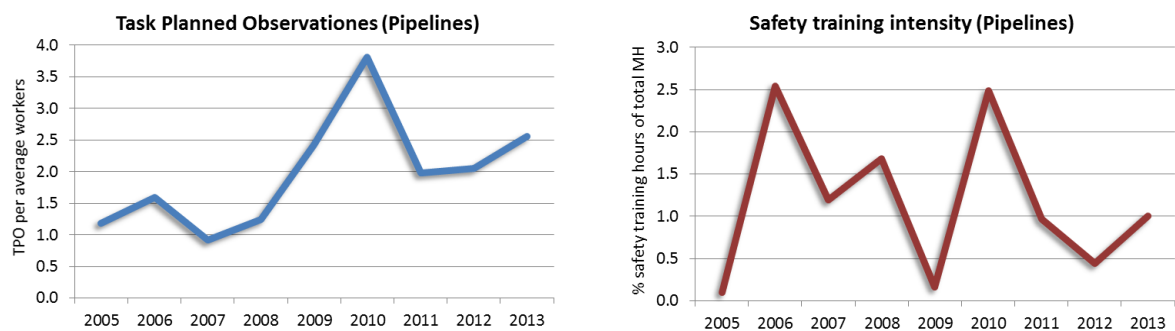




4.4.2. Reactive indicators by company



4.4.3. Proactive indicators

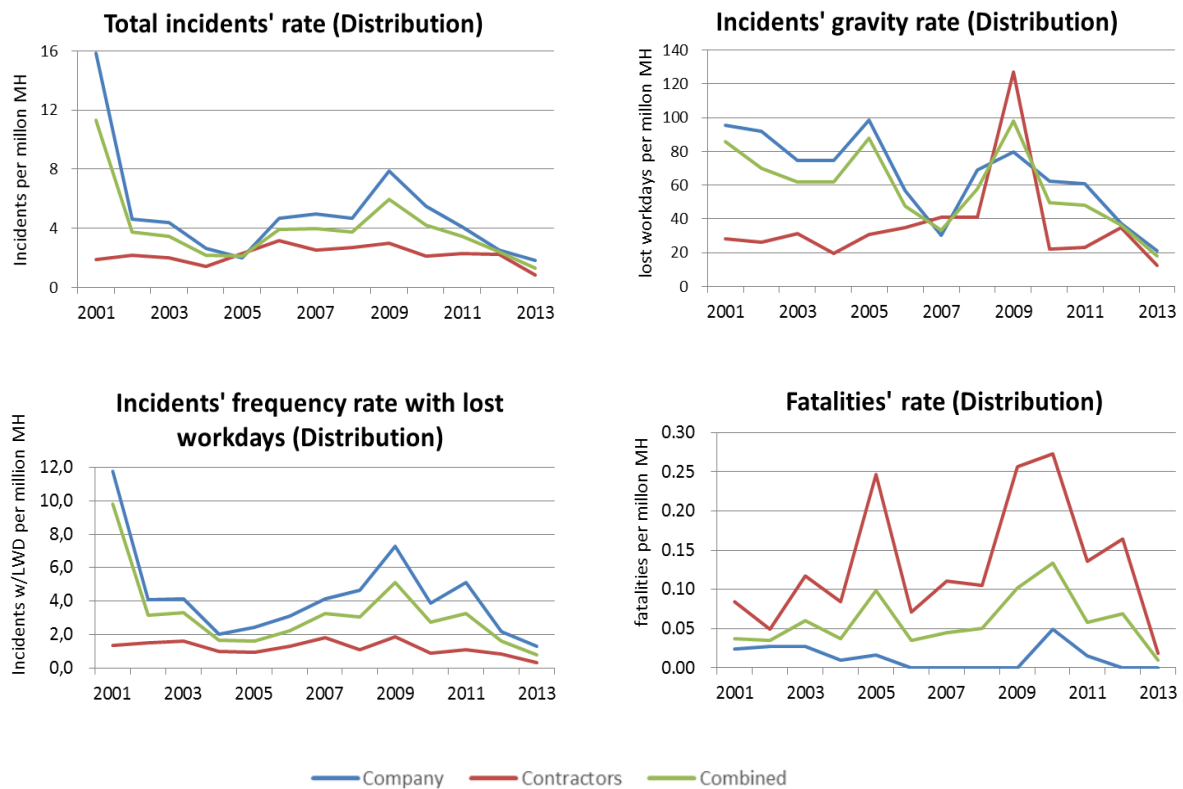




4.5. Distribution

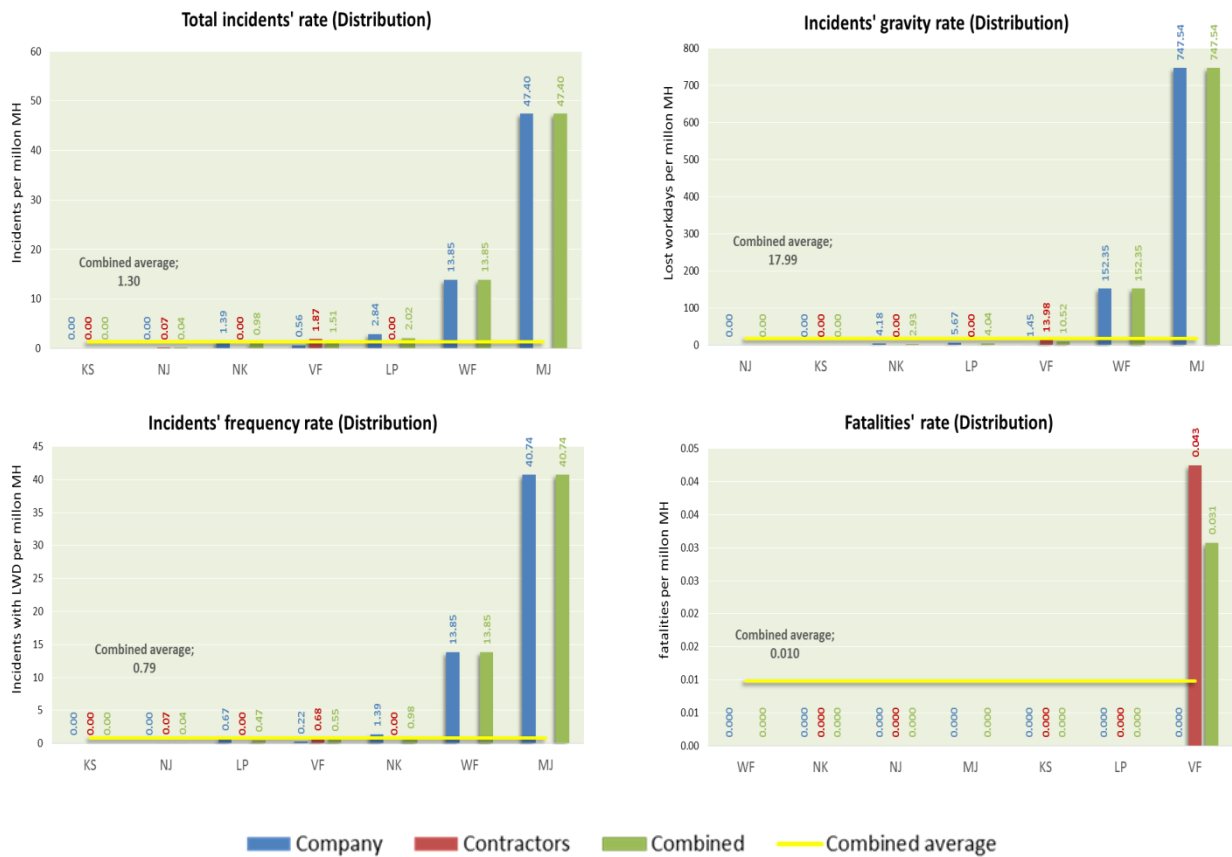
Below is the historical evolution of the reactive indicators (4.5.1), a comparison between companies for the year 2013 (4.5.2) and a historical evolution of proactive indicators (4.5.3) for the business line Distribution.

4.5.1. Reactive indicators

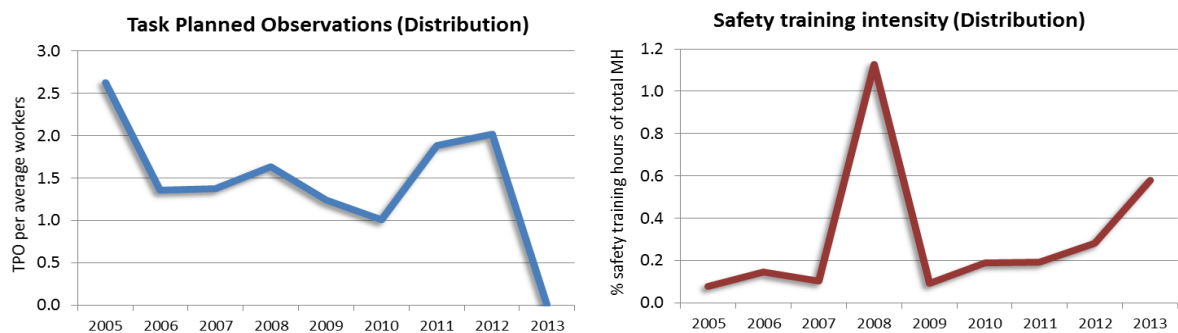




4.5.2. Reactive indicators by company



4.5.3. Proactive indicators





5. CAUSE OF FATALITIES

This chapter presents an analysis of the fatalities reported in 2013 by companies and contractors, providing a breakdown by cause, type of activity and function. In turn, it presents a historical comparative analysis of the causes of fatalities reported from 2001 to date.

In 2013, a total of 25 fatalities were reported, representing a decline of 62% compared to the last year. The main cause of fatalities in 2013 was fires and explosions, which is also the main historical cause of fatalities since data has been collected (2001).

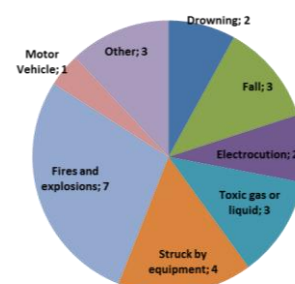
5.1. Fatalities by cause

On the right, a pie chart with the causes of fatalities reported for 2013 is shown.

As it can be seen the main cause of fatalities was “fires and explosions” with 7 cases, which represents 28% of the incidents. The second cause was “struck by equipment” with 4 incidents and 16% of the total.

The table below shows the causes of fatalities registered from 2001 to 2013.

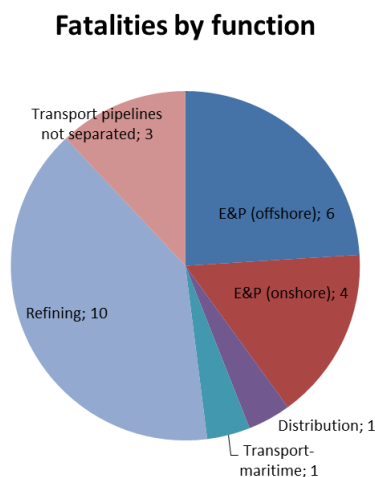
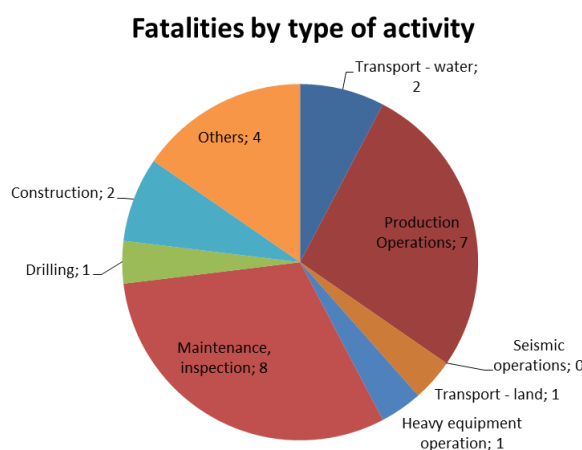
As it can be appreciated, 704 fatalities have been registered during the last 13 years. The 20% of them corresponds to fires and explosions, followed by motor vehicles accidents and struck by equipment, both with 15% of the total fatal incidents.



Cause	# Fat.	%
Fires and explosions	143	20%
Motor vehicle accident	106	15%
Struck by equipment	104	15%
Fall	71	10%
Caught in or between	58	8%
Drowning	57	8%
Electrocution	52	7%
Toxic gas or liquid	39	6%
Other transportation	36	5%
Others	37	5%
No data available	1	0%
Total	704	100%

5.2. Fatalities by type of activity and business line

In 2013, Inspection and Maintenance was the activity that recorded more fatalities (8 cases), while E&P and Refining were the most affected business lines with 10 fatalities each of them.





6. GLOSSARY OF TERMS

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.

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.

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.

Company worker

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

Contractor

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

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.

This definition has to be distinguished from 'cases with lost work days' which include those incidents that generated lost work days –the number of incidents, not the number of days- and which is used to calculate the 'frequency of incidents with lost work days'

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.

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.

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.

Recordable cases - total

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



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.

Worked hours

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

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.



7. ANNEXES

7.1. 2013 data

2013 Company Data									Indicators			
Function	Average # of employees	Hours worked (thousands)	Injuries	Illnesses	Fatalities	Total	Cases of Lost Workdays	Number of days away from work	Total	Gravity	Cases of Lost Workdays	Tasa de fatalidades
E&P offshore	10,404	70,389	56	0	1	57	54	3,334	0.810	47.365	0.767	0.014
E&P total	106,960	231,078	271	8	3	282	156	9,191	1.220	39.774	0.675	0.013
Refining	72,898	170,205	376	25	2	403	210	8,068	2.368	47.402	1.234	0.012
Pipelines	21,259	41,614	56	0	0	56	32	1,196	1.346	28.740	0.769	0.000
Transport-Maritime	10,918	18,261	14	0	1	15	4	299	0.821	16.374	0.219	0.055
Distribution	21,910	47,628	86	0	0	86	62	1,007	1.806	21.143	1.302	0.000
Others	64,872	138,378	207	24	0	231	163	3,890	1.669	28.111	1.178	0.000
Total	298,817	647,164	1,010	57	6	1,073	627	23,651	1.658	36.546	0.969	0.009

2013 Contractors Data									Indicators			
Function	Average # of employees	Hours worked (thousands)	Injuries	Illnesses	Fatalities	Total	Cases of Lost Workdays	Number of days away from work	Total	Gravity	Cases of Lost Workdays	Tasa de fatalidades
E&P offshore	10,235	62,726	56	0	0	56	51	400	0.893	73.474	0.813	0.000
E&P total	268,839	723,553	1,477	2	7	1,484	521	27,713	2.051	70.629	0.720	0.010
Refining	48,815	103,529	335	0	6	341	70	4,024	3.294	52.112	0.676	0.058
Pipelines	33,717	87,024	134	3	3	137	42	3,239	1.574	38.364	0.483	0.034
Transport-Maritime	2,037	1,859	0	0	0	0	0	0	0.000	0.000	0.000	0.000
Distribution	23,228	54,119	45	1	1	46	18	329	0.850	12.347	0.333	0.018
Others	268,096	548,767	1,192	2	2	1,194	368	34,123	2.176	63.372	0.671	0.004
Total	644,732	1,518,851	3,183	8	19	3,146	1,019	69,428	2.071	61.238	0.671	0.013

* Gravity indicator is calculated with the following values of man hours worked (in thousands): E&P offshore - 5,444 / E&P total - 392,375 / Refining - 77,218 / Pipelines - 84,429 / Distribution - 26,646 / Others - 538,453 // Total - 1,119,121

** Cases of Lost Workdays Indicator is calculated with the following values of man hours worked (in thousands): Others - 548,252 // Total - 1,518,336

2013 Combined Data									Indicators			
Function	Average # of employees	Hours worked (thousands)	Injuries	Illnesses	Fatalities	Total	Cases of Lost Workdays	Number of days away from work	Total	Gravity	Cases of Lost Workdays	Tasa de fatalidades
E&P offshore	20,639	133,115	112	0	1	113	105	3,734	0.849	49.240	0.789	0.008
E&P total	375,799	954,631	1,748	10	10	1,758	677	36,904	1.842	59.193	0.709	0.010
Refining	121,713	273,734	711	25	8	719	280	12,092	2.627	48.872	1.023	0.029
Pipelines	54,976	128,638	190	3	3	193	74	4,435	1.500	35.186	0.575	0.023
Transport-Maritime	12,955	20,120	14	0	1	15	4	299	0.746	14.861	0.199	0.050
Distribution	45,138	101,747	131	1	1	132	80	1,336	1.297	17.987	0.786	0.010
Others	332,968	687,145	1,399	26	2	1,401	531	38,013	2.039	56.163	0.773	0.003
Total	943,549	2,166,015	4,193	65	25	4,105	1,646	93,079	1.895	42.983	0.760	0.012

* Gravity indicator is calculated with the following values of man hours worked (in thousands):

E&P offshore - 75833 / E&P total - 623,453 / Refining - 247,423 / Pipelines - 126,043 / Distribution - 74,274 / Others - 676,831 // Total - 1,766,285

** Cases of Lost Workdays Indicator is calculated with the following values of man hours worked (in thousands): Others - 687,130 // Total - 1,766,285

7.2. Proactive indicators

Function	Average # of employees	Hours worked (thousands)	OPT	HFS	Indicators	
					Task Planned Observations	Safety Training
E&P Total	36,914	32,114	286,617	165,151	7.76	0.51
Refining	17,424	18,115	93,423	144,456	5.36	0.80
Pipelines	11,959	6,938	30,634	69,547	2.56	1.00
Transport-Maritime	98	196	1	1,136	0.01	0.58
Distribution	5,303	4,100	12,119	25,561	2.29	0.62
Others	33,063	17,750	98,646	44,557	2.98	0.25
Total	104,761	79,214	521,440	450,408	4.98	0.57



7.3. Historical data

7.3.1. Reactive indicators

Function	Indicator	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
E&P															
E&P	Total	1.167	2.875	2.266	1.742	2.202	2.779	2.865	3.663	3.648	4.184	6.234	5.680	1.254	1.220
E&P	Total	3.989	5.379	2.818	2.597	3.070	4.060	3.946	4.092	4.134	3.083	3.038	3.127	2.050	2.051
E&P	Total	2.231	4.770	2.602	2.281	2.780	3.626	3.592	3.947	3.971	3.467	4.179	3.978	1.860	1.842
E&P	Gravity	208.443	146.415	73.670	87.668	212.756	180.887	72.838	85.257	88.789	76.137	73.580	105.415	29.288	39.774
E&P	Gravity	61.042	293.985	349.365	206.421	73.007	280.109	69.254	70.599	138.690	84.558	181.485	84.949	114.791	70.629
E&P	Gravity	152.856	182.395	256.546	135.954	147.310	226.574	70.764	78.978	117.956	80.649	129.142	94.096	83.200	59.193
E&P	Lost Workdays	1.937	1.754	1.858	1.674	1.829	3.447	3.385	2.446	2.355	2.813	3.775	6.234	0.776	0.675
E&P	Lost Workdays	3.654	2.779	2.133	2.746	1.893	2.210	2.289	2.289	1.878	1.224	1.131	1.705	0.760	0.720
E&P	Lost Workdays	2.585	2.238	2.009	2.094	1.872	2.497	2.650	2.354	2.076	1.777	2.082	3.217	0.764	0.709
E&P	Fatalities	0.073	0.081	0.030	0.026	0.030	0.029	0.008	0.072	0.017	0.019	0.016	0.023	0.028	0.013
E&P	Fatalities	0.067	0.092	0.070	0.096	0.070	0.041	0.043	0.064	0.043	0.026	0.021	0.040	0.050	0.010
E&P	Fatalities	0.071	0.088	0.054	0.070	0.057	0.037	0.031	0.067	0.034	0.024	0.019	0.034	0.045	0.010
Refining															
Refining	Total	10.543	4.337	2.667	1.999	2.815	3.719	2.660	3.822	4.000	3.642	6.398	3.294	2.752	2.368
Refining	Total	4.872	8.356	2.832	2.699	3.523	8.967	4.741	5.613	6.118	4.706	4.272	4.699	3.080	3.294
Refining	Total	9.748	6.368	2.713	2.209	3.036	5.585	3.402	4.568	4.904	4.080	5.434	3.876	2.879	2.627
Refining	Gravity	87.293	81.486	99.711	118.139	262.201	263.005	64.077	47.367	101.506	60.388	73.248	48.707	61.117	47.402
Refining	Gravity	31.669	626.472	463.375	339.274	525.086	630.935	118.871	160.858	60.941	40.412	46.484	55.182	41.469	52.112
Refining	Gravity	79.491	156.027	252.275	153.953	301.468	325.390	72.034	78.747	85.394	52.660	61.542	51.075	54.945	48.872
Refining	Lost Workdays	2.447	1.092	2.186	2.029	2.001	5.394	1.654	2.518	2.095	5.110	2.909	4.345	1.623	1.234
Refining	Lost Workdays	3.057	2.788	4.638	8.981	1.707	3.206	1.897	3.085	2.497	8.543	1.299	1.789	0.967	0.676
Refining	Lost Workdays	2.532	1.333	2.682	3.038	1.906	4.292	1.738	2.743	2.255	6.523	2.170	2.786	1.369	1.023
Refining	Fatalities	0.016	0.013	0.030	0.026	0.025	0.060	0.028	0.011	0.049	0.044	0.057	0.033	0.018	0.012
Refining	Fatalities	0.096	0.148	0.151	0.091	0.041	0.073	0.103	0.038	0.007	0.040	0.020	0.023	0.056	0.058
Refining	Fatalities	0.027	0.048	0.064	0.045	0.030	0.064	0.055	0.022	0.031	0.042	0.040	0.029	0.033	0.029
Pipelines															
Pipelines	Total	1.319	0.529	1.786	1.475	2.192	5.042	5.744	2.143	2.380	1.590	4.811	2.716	2.036	1.346
Pipelines	Total	1.093	6.215	1.631	1.225	1.754	8.042	7.431	4.261	2.893	3.351	3.123	2.891	2.043	1.574
Pipelines	Total	1.265	0.975	1.719	1.353	1.956	7.169	6.877	3.321	2.635	2.632	3.730	2.827	2.041	1.500
Pipelines	Gravity	92.626	44.051	66.453	54.432	185.335	214.104	46.918	21.505	41.120	25.910	29.977	25.393	57.342	28.740
Pipelines	Gravity	8.153	0.000	10.192	26.136	29.478	33.931	27.681	38.982	27.730	40.909	152.685	22.808	14.090	38.364
Pipelines	Gravity	72.450	41.816	39.440	48.044	163.410	177.237	42.433	26.016	34.572	34.787	108.580	23.778	28.623	35.186
Pipelines	Lost Workdays	1.451	0.815	0.967	1.239	1.782	2.348	3.000	1.330	1.381	0.941	1.656	1.541	0.994	0.769
Pipelines	Lost Workdays	1.093	0.000	0.718	1.480	1.356	1.550	1.008	1.353	1.182	1.004	0.978	1.051	0.552	0.483
Pipelines	Lost Workdays	1.365	0.707	0.920	1.276	1.549	2.185	1.694	1.343	1.284	0.978	1.237	1.191	0.699	0.575
Pipelines	Fatalities	0.026	0.000	0.017	0.018	0.042	0.000	0.039	0.000	0.017	0.000	0.024	0.082	0.047	0.000
Pipelines	Fatalities	0.336	0.396	0.067	0.055	0.054	0.038	0.000	0.032	0.000	0.000	0.026	0.012	0.000	0.034
Pipelines	Fatalities	0.100	0.056	0.038	0.036	0.049	0.027	0.013	0.018	0.008	0.000	0.025	0.038	0.016	0.023
Distribution															
Distribution	Total	10.013	15.857	4.642	4.364	2.617	2.024	4.662	4.985	4.700	7.881	5.485	4.081	2.540	1.806
Distribution	Total	2.483	1.867	2.203	1.991	1.439	2.266	3.162	2.530	2.691	2.970	2.104	2.289	2.234	0.850
Distribution	Total	7.268	11.296	3.773	3.467	2.189	2.110	3.917	3.987	3.771	5.934	4.211	3.446	2.412	1.297
Distribution	Gravity	78.701	95.350	92.071	74.798	74.511	98.448	56.815	30.489	69.055	79.820	62.334	60.666	37.623	21.143
Distribution	Gravity	33.557	28.241	26.401	31.468	19.532	30.793	34.618	40.859	40.878	127.176	22.337	23.255	34.973	12.347
Distribution	Gravity	62.248	85.829	70.102	61.742	62.087	87.951	47.456	33.278	57.873	97.948	49.745	48.087	36.606	17.987
Distribution	Lost Workdays	7.640	11.789	4.089	4.117	2.006	2.420	3.119	4.149	4.664	7.287	3.882	5.115	2.187	1.302
Distribution	Lost Workdays	1.572	1.339	1.497	1.601	1.004	0.946	1.314	1.811	1.093	1.880	0.881	1.092	0.821	0.333
Distribution	Lost Workdays	5.429	9.830	3.184	3.292	1.642	1.634	2.223	3.246	3.066	5.143	2.750	3.252	1.617	0.786
Distribution	Fatalities	0.024	0.024	0.027	0.027	0.010	0.016	0.000	0.000	0.000	0.000	0.050	0.015	0.000	0.000
Distribution	Fatalities	0.000	0.084	0.049	0.117	0.084	0.247	0.071	0.111	0.105	0.257	0.273	0.136	0.164	0.018
Distribution	Fatalities	0.015	0.037	0.035	0.060	0.036	0.098	0.035	0.045	0.050	0.101	0.134	0.058	0.069	0.010
Others															
Others	Total	1.030	6.879	3.441	2.011	1.784	1.880	2.235	2.903	3.701	2.403	2.350	2.180	1.402	1.669
Others	Total	0.046	2.775	1.877	1.573	1.050	3.425	3.959	2.767	2.530	2.323	2.217	2.033	2.501	2.176
Others	Total	0.559	4.318	2.441	1.718	1.320	2.933	3.368	2.807	2.846	2.340	2.253	2.066	2.277	2.039
Others	Gravity	30.757	59.755	80.054	62.328	70.119	58.436	28.131	29.100	48.379	17.594	16.696	26.965	21.655	28.111
Others	Gravity	0.000	40.308	749.648	206.377	13.799	83.378	84.504	19.148	42.262	48.340	57.390	62.079	73.495	63.372
Others	Gravity	16.039	84.015	406.346	80.217	67.041	59.707	31.010	28.035	44.011	41.326	46.015	53.944	62.411	56.163
Others	Lost Workdays	1.724	2.755	2.652	1.756	1.499	1.648	1.013	2.100	1.525	1.384	0.871	2.213	1.091	1.178
Others	Lost Workdays	2.428	3.521	1.619	5.919	1.050	0.852	0.907	0.769	0.601	0.546	0.583	0.803	0.840	0.671
Others	Lost Workdays	2.061	3.144	2.262	2.071	1.212	1.241	0.943	1.195	0.865	0.728	0.660	1.022	0.891	0.773
Others	Fatalities	0.000	0.035	0.014	0.000	0.009	0.000	0.009	0.008	0.000	0.007	0.005	0.013	0.000	0.000
Others	Fatalities	0.046	0.051	0.054	0.041	0.020	0.045	0.019	0.020	0.011	0.004	0.011	0.013	0.014	0.004
Others	Fatalities	0.022	0.044	0.040	0.028	0.016	0.031	0.015	0.016	0.008	0.005	0.010	0.013	0.012	0.003
Total															
Total	Total	5.320	5.319	2.784	2.167	2.351	2.811	2.869	3.579	3.723	3.835	5.061	4.130	1.805	1.658
Total	Total	2.709	5.462	2.484	2.196	2.381	4.542	4.232	3.842	3.748	2.967	2.772	2.828	2.297	2.071
Total	Total	4.494	5.415	2.632	2.183	2.368	3.808	3.671	3.738	3.738	3.287	3.609	3.291	2.149	1.895
Total	Gravity	119.188	101.406	85.615	89.572	174.093	166.014	60.290	54.950	78.952	57.608	54.537	68.018	38.087	36.546
Total	Gravity	34.963	320.162	356.408	188.257	115.214	295.429	65.242	83.563	84.600	62.625	102.874	66.155	79.891	61.238
Total	Gravity	92.562	150.936	228.874	118.290	157.413	202.007	62.330	64.096	82.174	60.496	82.393	66.925	64.434	42.983
Total	Lost Workdays	2.668	2.973	2.276	2.054	1.838	3.183	2.313	2.479	2.226	3.387	2.738	4.696	1.167	0.969
Total	Lost Workdays														



7.3.2. Reactive indicators (E&P Offshore)

Indicator	Category	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Total	Company	2.03	2.98	3.20	2.79	5.64	3.90	5.43	9.75	9.31	4.123	0.810
Total	Contractors	1.46	3.40	3.35	1.62	6.86	3.55	2.39	2.38	2.68	5.586	0.893
Total	Combined	1.73	3.11	3.27	2.17	6.13	3.77	4.43	7.72	7.29	5.053	0.849
Gravity	Company	114.22	126.48	103.24	79.26	125.55	66.57	52.69	43.74	22.06	223.027	47.365
Gravity	Contractors	11.29	10.58	81.04	28.58	59.84	215.16	87.12	113.89	129.24	65.938	73.474
Gravity	Combined	110.27	122.46	97.37	52.12	108.88	91.38	57.73	50.36	58.06	123.142	49.240
Lost Workdays	Company	1.97	3.25	7.44	2.36	4.10	3.18	4.41	6.41	12.19	4.022	0.767
Lost Workdays	Contractors	1.03	2.71	2.85	1.20	6.39	5.36	1.95	3.32	2.44	5.413	0.813
Lost Workdays	Combined	1.93	3.07	4.58	1.74	4.68	3.55	3.60	6.12	9.49	4.907	0.789
Fatalities	Company	0.06	0.02	0.00	0.00	0.19	0.00	0.00	0.01	0.01	0.000	0.014
Fatalities	Contractors	0.09	0.17	0.04	0.01	0.61	0.03	0.03	0.04	0.03	0.000	0.000
Fatalities	Combined	0.08	0.07	0.02	0.01	0.36	0.01	0.01	0.02	0.02	0.000	0.008

7.3.3. Proactive indicators

Task Planned Observations Indicator (Company)									
Function	2005	2006	2007	2008	2009	2010	2011	2012	2013
E&P	1,83	1,07	1,28	1,01	4,87	1,45	3,12	8,69	7,76
Refining	2,21	0,99	1,60	2,51	7,05	15,93	5,22	4,06	5,36
Pipelines	1,18	1,59	0,92	1,25	2,42	3,81	1,98	2,05	2,56
Distribution	2,63	1,36	1,38	1,64	1,24	1,01	1,88	2,02	0,01
Others	0,28	1,44	0,57	1,41	3,23	1,29	2,19	2,56	2,29
Global	1,96	1,15	1,12	1,35	3,93	3,70	3,27	4,59	4,98

Safety Training Intensity (Company)									
Function	2005	2006	2007	2008	2009	2010	2011	2012	2013
E&P	0,62	0,21	0,22	0,14	0,10	0,32	0,30	0,29	0,51
Refining	0,29	0,26	0,21	0,21	0,30	0,83	0,35	0,59	0,80
Pipelines	0,10	2,54	1,19	1,68	0,16	2,49	0,97	0,45	1,00
Distribution	0,08	0,15	0,10	1,13	0,10	0,19	0,19	0,28	0,58
Others	0,19	0,11	0,02	0,10	0,26	0,32	0,18	0,44	0,62
Global	0,36	0,24	0,18	0,20	0,17	0,45	0,30	0,42	0,57

8. REFERENCES

1. ARPEL User's Manual – Safety benchmarking in the oil and gas industry in Latin America and the Caribbean.
2. "OGP Safety Performance Indicators – 2012 data". Informe No. 2012s. Mayo, 2013. Disponible en la página web de OGP (<http://www.ogp.org.uk/publications/safety-committee/safety-performance-indicators1/3021/>)
3. ARPEL's members companies' safety statistics.

ARPEL is a non-profit association gathering oil, gas and biofuels sector companies and institutions in Latin America and the Caribbean. It was founded in 1965 as a vehicle of cooperation and reciprocal assistance between sector companies, with the main purpose of actively contribute to industry integration and competitive growth, and to sustainable energy development in the region.

Mission

To promote the integration, growth, operational excellence and effective socio-environmental performance of the industry in the region, facilitating the dialogue, cooperation, development of synergies among players as well as the shared creation of value among members through the exchange and extension of collective knowledge.

Vision

To be a referent in the consolidation of the industry as a provider of reliable and safe energy, meeting the growing energy demand in a sustainable manner.

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