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## **PART 1 - CONTROL AND PREVENTION OF OIL SPILLS: SOME OUTLINES OF A REACTION IN LATIN AMERICA ON THE DWH INCIDENT**

Two years and a half from the “campaign of the Deepwater Horizon (DWH)”, as Admiral Thad Allen called it, the oil-industry and state sector of Latin America have had a slow reaction and the adjustments to their procedures and response capabilities are in line with their circumstances, which implies the disasters to come.

It has been a disgrace for the US, but the DWH spill incident should be an opportunity for Latin American countries, and especially for those with similar prospecting offshore activities, that is to say in deep waters, the inexorable trend in the 21<sup>st</sup> Century.

Of course there was not any capacity of autonomous response for anything of this magnitude, not only in Latin America but also worldwide. Nobody was prepared for something so exceptional. There was no equipment or sufficient human resources, not even the expertise. Not only did the responsible company, but also all US and worldwide levels involved have to appeal to their best technology, all of their resources and reserves, in order to solve this major problem of specialized oil engineering and its massive environmental consequences. The first big result of DWH is that the myth that nothing could be done in waters of such depths, directly inaccessible to man, has fallen. The rest of the world now has to bear a heavy burden (and added costs). This includes the nearby Latin America, at a time of opening towards offshore, in what there is surely interest from the multinational oil companies, forced to diversify by the reinforcement of controls and new regulatory requirements in prevention in the Gulf of Mexico. It is clear that in this natural derivation towards exploration and exploitation in Latin America’s oil and gas offshore, the multinational and national companies shall implement the best of their state-of-the art oil and gas engineering, which includes the best international standards on terms of security and prevention for industry emergencies. Not doing this, betting on the endemic lags in Latin America in terms of updating prevention procedures and controls by the traditional national authorities concerned in the oil industry in each country (that includes the more recently arrived environmental authorities) would be a great strategic mistake from the concessionary companies, both multinational and national. This latter case is aggravated by the lack of systematic access to the essential know-how required for the sustainable management of these types of activities.

With National Contingency Plans (NCP) little used and generally outdated, with almost no reference to offshore, roles and decisions are in risk of being ineffective. Needless to say, the regional Clean Caribbean and Americas (CCA)<sup>1</sup> will be present in the operations within the frame of international cooperation in Latin America, although it remains to be seen how they are outlining their response strategy for this type of incident in deep water platforms, away from the coast and with logistic requirements much greater than usual. Perhaps that was one of the principal reasons why the CCA merged with Oil Spill Response Limited (OSRL) early this year<sup>2</sup> The expansion of upstream activities in Latin America and especially the offshore in deep waters, made the merger almost inevitable.

The CCA was actively present during the response operations of DWH, through the provision of equipment for the use of aerial dispersants and expertise on Net Environmental Benefit Analysis (NEBA), so their accumulated contribution and recent experience should be very useful. The massive use of dispersants should be a priority strategy to consider, as its efficiency was proven in the DWH incident, although its acceptance will vary in the different countries according to the implementation policy of each one of them, and according to their degree of environmental sensitivity. Latin America has a long history of massive use of dispersants in the past decades, not always applied in the most adequate situations for the sensitive resources placed at risk, i.e., outside of the efficient temporal windows that the strategy requires, which is always closely attached to limited logistics in those times of opportunity.

We should also consider in situ burning, whose successful application in the DWH has marked a before and after in this response technique, so far barely referenced in the NCP of Latin America. With the aggregate value of being the most effective offshore response strategy in its cost-benefit relationship, DWH proved that in situ burning has to be rewritten in its procedures and standards, because its existing application schemes and even logistical and safety schemes are obsolete. The issue is justified further in this paper under the heading of response strategies, but being practically a military operation in its application, at least for the imaginary of the operational responsible parties in Latin America, in situ burning has become, after the DWH incident, a feasible response strategy with exclusively operational civil human and logistical resources, which will facilitate an effective response in offshore emergencies in the future.

Regarding prevention, there should also be strategic synergies with ARPEL (Regional Association of Oil, Gas and Biofuels Sector Companies in Latin America and the Caribbean)<sup>3</sup> the priority articulator of the requirements when it comes to security and prevention in the Latin American oil industry. In any event, upon analysing the publications and recent training courses, it should be noted that ARPEL has not prioritized offshore topics, at least specifically, three years and a half after the DWH incident. This is a pending task for

this regional oil organization in Latin America and there will surely be news in the next year, at the request of their own national oil partners

With this scenario, it should be necessary to think regionally. For example, in the area of Central America, PEMEX itself should have a supporting role from their experience in handling these situations. But this is pure theory: in practice the agreements Mexico's national oil company with some countries in Central America has not left the paper. Meanwhile, in South America, PETROBRAS should play a supportive role in those latitudes, which can be expected especially with the loan of equipment and considering the replacement investments that it has made in the big multinationals in the oil industries, traditionally present in that region. Moreover, the governments of most Latin American countries face a paradox. On the one hand, they are ultimately the ones responsible for the environmental control and security of industrial activities and on the other hand, they are owners of partially or totally monopolistic oil companies that explore, produce and distribute the oil that they have in their sea beds and sub-soils. It must be noted that the former MMS<sup>4</sup> was questioned in the US for its effectiveness in its dual role of technique controller regulator and collector of revenues from concessions of oil, gas and other mineral resources in the continental shelf. This caused its closure and the creation of an initial new controller agency in record time and in full emergency, such as BOEMRE<sup>5</sup>. Therefore, it is not difficult to understand that similar events occur in Latin America with national companies and complacent State organisms that affect the security and prevention of this and other types of major incidents. However, nowadays and after the DWH incident, there are signs in Latin America that indicate a higher pressure of the civil environmental authorities over oil companies, not only multinationals, but also over the hegemonic national oil companies. This is reflected in the public requirements of information; committees and multidisciplinary national agencies, which are independent from the direct interests of the oil companies; investigations that transcend the media; fines growing steadily worse; requests for changes in procedures; etc. This transparency culture grows little by little; it had never been seen before and it deserves to be highlighted, mainly in Mexico, which has been a pioneer for years, even with its endemic security situations in the national oil industry. It is also true that this is not the case in other countries in Latin America, such as Venezuela, as we shall see below, whose only release at the moment is the web.

With the DWH, a first lesson learned for Latin America should be one regarding the NCP and the direct responsible parties for their execution. They must be efficient and updated, with realistic risk assessments that contemplate the catastrophic scenarios, something we regard as deficient in the region. The DWH case should mark a before and after in that regard: the traditional NCP should have an exclusive paragraph for emergency situations in offshore platforms, adequately coordinated with the emergency plans of the platforms.

#### Footnotes

<sup>1</sup>Clean Caribbean and Americas (CCA). [www.cleancaribbean.org](http://www.cleancaribbean.org)

<sup>2</sup><http://www.oilspillresponse.com/about-us/2011-12-21-08-34-02/featured-reports/345-integration-of-clean-caribbean-a-americas-cca>

<sup>3</sup> ARPEL. *Events, Courses and Workshops 2013*. Its list of current projects includes some about Oil Spill Management, in particular the application of the RETOS tool– a systematic effort by ARPEL-, without mention to the offshore incidents. <https://arpel.org/courses-workshops/>

<sup>4</sup> MMS. *Minerals Management Service*. This former agency was within the United States Department of the Interior (DOI) and was in charge of regulating oil, gas and other mineral resources of the outer continental shelf (OCS). 1982-2010.

<sup>5</sup> BOEMRE. *Bureau of Ocean Energy Management, Regulation and Enforcement*. [www.boemre.gov](http://www.boemre.gov) It was created on October 1, 2010, and finished its tasks at the end of 2011. The new agency was responsible for issuing lease permits for offshore drilling operations, enforcing safety and environmental regulations and managing natural resources revenues. From 2012 the BOEMRE was divided into two agencies: the BOEM (Bureau of Ocean Energy Management - <http://www.boem.gov/>) and the BSEE (Bureau of Safety and Environmental Enforcement - <http://www.bsee.gov/>). The other function coming from the former MMS was the MRM (Mineral Revenue Management) and it was transferred to the Office of Natural Resources Revenue (ONRR - [www.onrr.gov](http://www.onrr.gov/)).

## PART 2 - CONTROL AND PREVENTION OF OIL SPILLS: SOME OUTLINES OF A REACTION IN LATIN AMERICA ON THE DWH INCIDENT

Nowadays, all Latin American countries have valid contingency plans, following ARPEL guidelines in varying degrees<sup>6</sup> Its regular update is arguable, but to a greater or lesser degree organizations and procedures are described, adapted to their realities and normally centred on the leader organizations, which are Coast Guards (Argentina, Chile), National Guard (Venezuela, Cuba), Navy (Mexico, Brazil, Ecuador, Guatemala, Peru, Uruguay) or Maritime and Port Authorities (Panama, Costa Rica, Nicaragua, Honduras, Caribbean countries). ARPEL, following the IPIECA framework, has made good efforts in this regard; from the 90s, it has sought some homogenization and coherence, and their guides are the benchmark in the region.<sup>7</sup> The problem is that most of the cases are in deficit with the offshore emergency situations in those countries that follow the required guidelines. Brazil and Mexico, for its particular offshore development, have progressed in that regard; the case of PETROBRAS is more remarkable than PEMEX due to the recent investment made in equipment, which does not yet mean enough efficiency in operative responses. Nonetheless, it is clear that there are emerging efforts with the presence of specialized vessels and massive purchases of equipment, which must be sustainable over time with procedures, as well as specialized and qualified human resources. Confirming it, from 2013 PETROBRAS is member of the Subsea Well Incident Preparedness and Response Project<sup>8</sup> and, according to the OSRL, they will play

an important role with its branch in Brazil<sup>9</sup>

The previous assertion introduces us into another lesson learnt after the DWH incident, the one referred to the interrelation model with the contractor. It is clear that the bond transcends economy in its consequences, and the mastery of the sophisticated technology demanded for the exploitation in deep waters is a cause of dependence to take into account. Latin American countries depend on the technology from abroad. This is one of the main reasons why many countries from Latin America, historically reluctant to opening their oil exploitation to foreign countries, have now opened their block concessions partially or totally to the foreign multinational oil companies. Brazil, Peru, Argentina, Trinidad and Tobago, Colombia, Guyana, Surinam, Bahamas, Jamaica, Uruguay, even Ecuador, Nicaragua, Venezuela and Cuba, have followed that path, seeking a gradual access to a know-how that is integrated to their national companies. It is easy: there is no other way.

PEMEX itself, once an advocate of the oil autarky in Latin America and between the political electoral ups and downs of the year 2012, has already announced that it will seek that technology among third parties, after announcements regarding findings of crude oil in deep waters of the Gulf of Mexico. Indeed, evidence of sands impregnated with light crude oil with a thickness of 100 meters has been found in the well Trion-1, located in the cross-border of Cinturón Plegado de Perdido in front of the coast of Tamaulipas state. The depth of the finding is no minor detail: 2,550 meters, which will imply an immeasurable technological leap for Mexico<sup>10</sup>. To achieve that step, Mexico will have to modify its legal framework, which will open the door to foreign capital and the technology associated with it. This is the only way to access its promising offshore reserves in deepwaters<sup>11</sup>. It was interesting to note that this announcement became effective one year and a half before a timely agreement between Mexico and the US, regarding joint exploitation of reserves located in the maritime border between both countries in the Gulf of Mexico. This exploitation will necessarily involve this oilfield and eventually other cross-border in the same geologic area as Perdido. The agreement, signed in February 2012, sets out the conditions for the American oil companies and PEMEX to explore the possible crude oil reserves that may exist in cross-border oilfields in the Gulf of Mexico<sup>12</sup>. In general, the document establishes the commitment to share the information of the oilfields that may be discovered in the seabed and subsoils that both countries share. There is a possibility to carry out joint explorations and the country that has the bigger oil reserve will be the one in charge of its exploitation. The other country shall take the corresponding proportional part of the oilfield. This avoids the so-called "Straw effect" by which with the installation of platforms and pipelines close to the cross-border, a country could "suck" the crude oil from the other without previous authorization<sup>13</sup>. In any case, there were concrete signs of advances of the companies from the US side, which already had three wells closer than 10 km from the maritime boundary. The agreement also has a very interesting potential regarding prevention of accidents and spills, since it requires that PEMEX accept and apply the international standards in health, industrial security and the environment. Preventive measures, procedures and resources to be used must be presented and be available for both sides. In brief, this agreement has achieved a significant change in the Mexican oil system that allows the potential entry of the necessary know-how regarding security, in this particular case for the offshore exploitations in deep waters.

It will not be surprising that in the future, similar agreements apply between these countries with other neighbours with potential offshore reserves such as Belize, Cuba or Jamaica or even Nicaragua. The model could be exported outside the sub-region to the South: Argentina-Uruguay or Brazil-Uruguay, Venezuela-Colombia, Venezuela- Trinidad and Tobago, Colombia-Ecuador, Peru-Ecuador, Brazil-French Guiana or Suriname-Guyana, as examples of adjacent countries with shared maritime spaces, regarding the offshore or even in potential onshore exploitations in borderlands between other Latin American countries. It should be noted that this type of agreement between neighbouring countries, in this case between Mexico and the US, triggers internal decisions that enable the improvement of control efficiency. In México, after the bilateral agreement in terms of offshore with the US, the Dumping in Mexican Maritime Zones Act was created. This act empowers the Navy Secretariat (SEMAR) to prevent and combat pollution in seas and national coasts<sup>14</sup>. The change of powers is no minor question, since the activity of control had been assigned to PROFEPA (Procuraduría Federal de Protección Ambiental), which had difficulties in its application due to the lack of qualified teams. With this new act, SEMAR can make verification visits to and surveillance of the oil platforms (it is even talked about penetrating, as in "sneaking in", if necessary); apply sanctions; fix the amount that should be covered to guarantee the damage repair or pursue legal action in the issue. In an extreme case it can even sink or destroy the polluting facility. Please note the implications for oil platforms in these times of exploitation in deep waters, far from the coast. It will be necessary here to create protocols of intervention with oil state company PEMEX, which somehow sees its hegemony challenged in terms of security with the extension of the offshore exploitation in deep waters. As a result of the above, President Peña Nieto's new government has approved the worldwide state-of-the-art environmental act (Ley Federal de Responsabilidad Ambiental). This act establishes that the environment shall be subject to autonomous protection and it has decentralized its application to individuals and interested organizations (such as NGOs), regardless of their ownership of the damaged asset<sup>15</sup>. It will be interesting to see how this act is applied in Mexico upon future oil spills, although it is clear that costs will rise considerably.

#### Footnotes

6 ARPEL 1998: *Guía Ambiental ARPEL N°17. "Pauta para el desarrollo de planes de contingencia para derrames de petróleo en la industria petrolera". ARPEL, 2005. "Cómo elaborar un plan nacional de contingencias ante derrames de hidrocarburos". Guía Ambiental ARPEL N°39. ARPEL. Montevideo, Uruguay.*

7 Moyano, Miguel.- *The Role of ARPEL in Contingency Planning Cooperation: The Petroleum Industry Operating in Latin America. IOSC 1997, Fort Lauderdale, Florida. USA.*

8 <http://subseawellresponse.com/>

9 <http://www.oilspillresponse.com/about-us/2011-12-21-08-34-02/news/387-oil-industry-unveils-new-containment-concept>

10 *El Universal*, Ed. 29.08.12. "Halla PEMEX mega yacimiento en el Golfo de México".

Web: <http://www.eluniversal.com.mx/notas/867070.html>

11 [http://www.nytimes.com/2013/08/13/world/americas/mexican-president-invites-foreign-investment-in-energy.html?\\_r=0](http://www.nytimes.com/2013/08/13/world/americas/mexican-president-invites-foreign-investment-in-energy.html?_r=0)

12 *Agreement for the Exploration and Exploitation of the Transboundary Oilfields*. Signed by the Secretary of State Hillary Clinton (US) and Chancellor Patricia Espinosa (Mexico) on 02.20.2012 in Los Cabos, Baja California Sur, Mexico.

13 <http://www.eluniversal.com.mx/finanzas/62759.html>

14 <http://eleconomista.com.mx/sociedad/2012/10/25/ejecutivo-presenta-reforma-combatir-contaminacion-mares>

15 <http://www.eluniversalmas.com.mx/editoriales/2013/07/65485.php>

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### **PART 3 - CONTROL AND PREVENTION OF OIL SPILLS: SOME OUTLINES OF A REACTION IN LATIN AMERICA ON THE DWH INCIDENT**

In the case of Venezuela, with the monopolistic PDVSA as flagship, it has serious problems regarding industrial security and oil spill prevention. We mainly discuss onshore, with problems in terrestrial and lacustrine areas (Maracaibo Lake), as well as offshore, although the latter is not a priority for the government while its terrestrial reserves are still formidable<sup>16</sup>. This reality did not prevent an offshore incident in Venezuelan waters less than a month after the DWH incident. The Aban Pearl offshore oil rig, the first oil platform operated by PDVSA for offshore natural-gas exploitation, sank two and a half miles away from the coast, sailing from Trinidad and Tobago towards Venezuela<sup>17</sup>. There were no spills and its 100 crewmembers were rescued alive; however, the importance of the incident cannot be ignored. In this 21st century, this is not the first sinking of an oil rig in Latin America: the serious disasters of the Usumacinta oil rig and the Kab-121 well in Mexico in the year 2007 and the sinking of the oil rig P-36 in Brazil in 2001 - both with dozens of dead workers and ecological consequences in the Mexican case- remind us of the weaknesses of the procedures and the offshore oil infrastructure in Latin America. In the Venezuelan case, the Aban Pearl oil rig, property of a Hindu company, was submersible and able to operate at the rated water depth of 1,250 feet (380 m) and a drilling depth of 25,000 feet. Even with the lack of transparency in the investigations carry out by the Venezuelan authorities, we cannot ignore the fact that the rig was 23 years old, which raises questions about the state of oil rigs and technologies to which Latin American companies have access. The recent incident of the explosion of a gas tank and later burning of other oil tanks in the Amuay refinery (August 2012), with an outcome of about 50 dead individuals and hundreds of millions of dollars in infrastructure losses, as well as the combustion of nearly 700,000 bbl. of fuel and its market costs, was a sign<sup>18</sup>. This is by no means an isolated event, as can be verified in an independent specialized report leaked on the web which talks about 222 incidents during 2011 at the Paraguaná Refining Centres, including Amuay and Cardón. The report was commissioned by PDVSA itself, upon request of a reinsurance company, and it has not been disproved<sup>19</sup>. Of those incidents, the report indicated that 100 were fires and there was also a general recognition of one-to-two- year delays in large maintenance tasks and, since 2009, in routine maintenance. Moreover, at the moment of completing the report, almost 80% of the incidents had not passed the investigation stage, and they remain in their corresponding committees. The same document also reports that the relationship between the corrective and preventive maintenance is 69 to 31%, reflecting an inversion of alarming proportions.

Regarding the subject, in September 2013 PDVSA submitted a summary of its research. The summary described the incident: a sabotage due to broken stud bolts that held a casing-landing flange, which opened and caused a gas leak. The summary indicated that bolts were loosened intentionally, although it did not mention any possible responsible parties or the way in which the incident occurred. Conclusions were positive regarding all of the company's levels during the incident, which totalled more than 50 deaths and more than one billion U.S. dollars in losses. Only internal members of the company took part in the aforementioned research, and there was no participation from international experts<sup>20</sup>.

Even with the ideological component integrated, according to our criterion and in the short term, Venezuela will have no option but to open its essential national oil company to at least an outsourcing process increasing its activities, including certain maintenance levels, audits of their processes and, in general, to a necessary functional reorganization in the pursuit of better effectiveness. It is only a question of timing.

These are only a few examples of emblematic cases that may be considered, with their nuances, in other countries of Latin America. To sum up, in the post DWH era the relationship between the State and the oil companies, be they nationalized or foreign, will be reviewed and there will be increasing environmental demands, which shall not be overlooked, as they have been in the past. As was the case in the US after the Exxon Valdez incident, now, as a consequence of the DWH incident, it has become clear for Latin America that the companies that cause these disasters shall be deemed socially responsible. This is no minor subject in many of these countries that mainly have state-owned, monopolistic companies for the production, distribution and commercialization of oil and its derivatives in its different forms. Experts also recognize, albeit internally, that these same state-owned companies have lower levels of security than the corresponding multinationals, which, to a greater or lesser extent, import their standards and procedures, implementing them in a regulated way in each reality. Within this context, this should be the time for significant improvements in the risk-management practices; that will require that authorities be more efficient. For this purpose, greater cooperation among the companies

of the sector will be demanded, so as to implement new methods for handling these risks and reducing future incidents.

This Latin American reality has its particular problems, the least of which is not the lack of transparency among the diverse agencies involved, which usually obstructs effective decision-making, especially within the first hours of the incident. DWH also left other lessons learnt, such as organization and communication issues, which should be taken into account. The use of the Incident Command System (ICS) method, adapted from the manual of the US Coast Guard, is virtually unanimous and accepted, even if at times the integration of unified commands is not homogenous or coherent; at least, such is the case of Latin America.

Understandable, although not justifiable, fear to situations that are initially out of control, and even doubts towards assuming the responsibilities assigned by contingency plans, hide the insecurities of many of the responsible parties appointed. Contingency plans are very often filled with unnecessary people who only hinder the decision-making process. The only rational solution to this issue would be to narrow this presence to the strictly essential individuals who will attend to the emergency and give staggered access to other representatives in further stages. It should also be noted that there is a mismatch between the massive use of human resources available in the US ICS model and the Latin American reality. The latter involves few qualified personnel with operative and supervision levels for occupying significant positions in case of emergencies, especially at the management level. An adaptation of the US Coast Guard manual to the realities of each country or region in Latin America, both for public and oil company management, would be extremely useful at the time of the incident to select the specialized human resources required. As a starting point, we need to retranslate and readapt the manual for a Latin American audience. The challenge of drafting the manual in technical Spanish that may be understood and assimilated by all Latin American countries is no small task. Lastly, reinterpreting the manual and eliminating unnecessary positions and resources would be an achievement that would enable it to be used effectively<sup>21</sup>.

#### **Footnotes**

16 Although this was the trend until 2012, at the moment this article was written the author read that President Maduro's new government was beginning to arrange some offshore deals with Trinidad and Tobago and the support of the know-how of Chevron, a multinational company that is very active in South America in 2013. <http://guardian.co.tt/business/2013-09-12/tt-signs-gas-deal-venezuela>

17 [http://www.huffingtonpost.com/2010/05/13/aban-pearl-offshore-oil-d\\_n\\_575810.html](http://www.huffingtonpost.com/2010/05/13/aban-pearl-offshore-oil-d_n_575810.html)

18 <http://www.eluniversal.com/economia/120826/incendio-en-amuay-incidira-en-exportaciones-de-combustible>

19 <http://vzleaks.net/wp-content/uploads/2012/08/REPORTE-AMUAY.pdf>

20 <http://www.pdvsa.com/>

21 This year some multinational oil companies are making efforts to carry out a reinterpretation of the ICS Manual that suits consensual Spanish language terminology across Latin American realities. According to our sources at the last CCA-OSRL meeting in Fort Lauderdale (September 2013), they have considered the ICS Manual and its projection for the region.