

Preparedness of Total E&P in West Africa

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1- Total E&P in the Gulf of Guinea

With an operated production figure of 960,000 boe/day (2004), Total currently ranks #1 oil & gas producer in Africa, chiefly due to its Gulf of Guinea Exploration Production affiliates in Nigeria, Cameroon, Gabon, Congo and Angola. The region represents roughly a third of the Group's production and the same proportion of its reserves.

Total's presence here is by no means new; its first exploration work in this area dates back to 1928 and its first production in Gabon to 1958.

This situation is assuming new proportions thanks to several major projects being developed in the Gulf of Guinea:

- AKPO et USAN in Nigeria,
- Moho Bilondo in the Congo,
- Dalia, Rosa, and the recent discoveries on Block 32 in Angola.

The main features of the above projects are:

- an increasing water depth (between 1 000 and 2 000m),
- with installations consequently more and more complicated, and
- with increasingly large volumes (on Girassol in Angola for example: 1×10^6 barrels stored on the FPSO and a daily production rate of almost 240,000 boe/day).

In addition to this present and future Exploration Production activity, Total is also present in Refining Marketing:

- participations in refineries in the Ivory Coast, Cameroon, Gabon and Angola
- distribution networks (around 750 service stations).

Not forgetting substantial activity in maritime Transport in the Gulf of Guinea, to export the production and supply the distribution network.

Total is therefore considerably involved, and considerably exposed, in West Africa and although prevention is a constant concern in all our operations, an HC spill cannot – and must not – be excluded.

2. Specificities of the Gulf of Guinea

Where oil spill combat is concerned, the Gulf of Guinea has several distinguishing features:

1- Few countries in the zone possess a "National Oil Spill Contingency Plan". There is consequently no defined frame for intervention and while this leaves extensive freedom of choice, the lack of defined framework sometimes also poses problems,

2- Few countries have ratified the International Conventions (CLC and Fund 92, and OPRC)

3- Little or no trans-frontier cooperation,

4- Alongside this, there are seldom any solid oil spill response organisation / skills to be counted on to act, or at the very least, on which to draw support,

5- Stocks of oil spill response equipment for use in the event of Tier 2 pollution are, likewise, few and far between,

6- The region is a long way away from the existing Tier 3 Centres. For an intervention from OSRL in Southampton, it would be 35 to 40 hours, at best, before the equipment arrived on site.

This situation is rapidly changing and, with the creation of the GI WACAF work group, we may hope to see a far better framework defined in the near future.

In the face of those specificities, and of our own exposure to the risk of pollution, what organisation have we deployed to reduce as far as possible the consequences of an HC spill in the Gulf of Guinea?

3- Oil spill response organisation

However obvious, it will never be reiterated too often that preparedness is the basis of everything and there is no room for improvisation here.

Preparedness is based on 6 main points:

- each site is covered in an Oil Spill Contingency Plan,
- pragmatism and coherence,
- a progressive response,
- training and exercises,
- regular audits, and
- the use of new technologies.

3.1 Each site is covered by an OSCP

This is point 5 of the Total Group's "*Health, Safety, Environment*" charter, conjugated throughout all its E&P affiliates, including those in the Gulf of Guinea. All our sites are addressed in an OSCP, which may be site-specific or part of an Asset level (in Angola for instance, where there is one OSCP for Block 17, one for Block 3 and one for the Onshore Division) or affiliate level OSCP (the Congo for example).

3.2 Pragmatism and coherence

Pragmatism:

We want operational Oil Spill Contingency Plans, in line with reality, and not Plans "*2 inches thick*" designed purely to meet administrative demands. Our plans are based on the requirements of the operational staff who will be "*in the front line*" if pollution occurs.

To stick close to the realities of oil spill response in the field, most of our OSCP are drawn up with the help of OSRL, which would go into action in the event of substantial pollution. We consider this a major advantage, one which renders our documents far more credible both for our operational personnel and for local administrations.

Coherence:

Our Oil Spill Contingency Plans have to be coherent across the affiliates because:

- the operations staff, like the managers on our sites, are called on to change post and/or country every 3 years on average, and it is important for us that they should find there the same organisation and principles rather than having to learn all over again from scratch
- facility of assistance between neighbouring affiliates in case of need is an added advantage. If our Congo affiliate needs the assistance of the Angolan or Gabonese affiliate's means and skills, it is better all round that the alert and mobilisation systems and the equipment be compatible
- the efficiency of an external intervention will be all the easier that the same principles and ways of working apply.

How do we arrive at that coherence?

We achieve it by defining and deploying the same type of Oil Spill Contingency Plan, which has been devised on the basis of:

- discussions with the potential users on the sites who have described their needs to us,

- discussions with the external actors, like OSRL or the CEDRE for instance, who put at our disposal their vast experience in contexts highly varied, geographically and culturally,
 - “*Guide Lines*” of the profession, mainly those of the IPIECA.
- That proforma Plan still has sufficient versatility to be adaptable to each specific context, be it shallow water, deep offshore, onshore, swamp, etc.

To bring that proforma Plan progressively into use by all our 21 producing affiliates, we integrated it into our Company core reference base.

It provides for Oil Spill Contingency Plans structured in two volumes:

- the first, called the Action Plan, is a brief operational document, designed to help the Crisis Cell through the first hours of its response mission,
- the second, the Handbook, is a support document containing all the basic information.

The detailed content of the 2 documents is as follows:

1. Action Plan

Initial procedures: alert scheme, checklist of first actions, alert and follow-up forms,

Accident scenarios: all the accidents that may give rise to pollution are investigated and characterised in terms of product type, quantity and potential consequences;

Strategies and Response Scenario: for each of the above accident scenarios, a strategy is defined and a response scenario is developed;

Organisation: the affiliate’s basic crisis organisation is completed with the appropriate custom components to meet its pollution response specificities (the crucial logistics aspect, whether external intervention is possible, etc.); the issue of the interfaces of the affiliate OSCP with the other Plans (those of other operators, national plans, those of other Total affiliates in the region...) is the subject of particular investigation focus;

Specialised equipment: the equipment available to combat Tier 1, Tier 2 and Tier 3 pollution is described, together with its location, with particular emphasis on logistics issues such as mobilisation and transport time from their storage site, for instance.

2. Hand Book

Data, including basic data and ageing tests on the different products that may be spilt, metocean data, and so on

Regulations: details on the regulatory context, such as local laws, regional or international conventions that apply,

Know How

Waste Management

Health and Safety

.....

For each affiliate, these contents are then customised to meet the specific site features and help the affiliate manage the pollution for the first 24 to 36 hours, when it is facing the crisis alone. Beyond that, in-house specialists (such as myself) or external ones (chiefly CEDRE and OSRL) have arrived on the spot to help take the technical decisions and the affiliate’s role then becomes essentially one of logistics management.

What is important is to help the affiliate take the right decisions in the initial hours.

This proforma Plan, it should be noted, has been adopted by the whole of the Total Group, with the appropriate adaptations, of course, for the specificities of each activity.

The plans are regularly updated to factor in modifications made to the installations and the organisation, and feedback.

3.3 Progressive response

We have adapted the conventional progressive response, using the 3 usual categories:

- **Tier 1:** minor pollution that the site (a platform, a terminal, etc.) can deal with on its own, with the human and material resources available on the spot. It is impossible to indicate any one constant volume value to this Tier 1 response, as even within the same country, the notion spans a range of highly different contexts. For instance, a 1-m³ spill is not the same problem at all in an extremely eco-sensitive lagoon and on an offshore installation 200 km from the coast. **The Tier 1 capacities of our sites are, generally speaking, consequent, to compensate for the weakness of the local Tier 2.** Most of our offshore sites, for example, have supply vessels fitted with spray ramps and carrying stocks of appropriate dispersants.

- **Tier 2:** this category includes spills that exceed the site's own response capacity and therefore require local assistance. As there are no national pollution combat resources in most of the countries concerned, we have signed agreements with the other petroleum operators in the country, via local interprofessional organisations such as the AOPC in the Congo, under the terms of which the member companies pool their response equipment.

We also rely on the assistance the neighbouring affiliates can provide. In case of need, Total E&P Congo can count on Total E&P Gabon – and this is written into both affiliates' OSCP – providing response equipment.

To be sure we have efficient aerial observation and dispersant spraying means at our disposal too, we have subscribed (with 8 other operators in the region) to the OSRL's WACAF Service. This comprises a plane based in Sao Tomé that can be quickly fitted with spray ramps and a 2-m³ tank of dispersant. In addition to the supplies held by the companies, further stocks of chemicals are pre-positioned in Abidjan (Ivory Coast), Douala (Cameroon), Malabo, Port Gentil (Gabon) and Luanda (Angola). The call-out times are very short: 4 hours' mobilisation for an aerial observation operation, 6 hours for dispersion, over and beyond the flight time (0h 45 for Port Gentil, 1h 30 for Port Harcourt, 3h 30 for Luanda).

Besides this, in the 1990s, we set up an oil spill response equipment centre in the immediate vicinity of Marseille-Provence airport, in the south of France, with the goal of bridging the 'gaps' in the Gulf of Guinea Tier 2. Called the Fast Oil Spill Team (FOST), the centre holds the equipment and material (2500 m of booms, 20 skimmers, 60 m³ of dispersants...) necessary to cope with pollution to the extent of 3000 tonnes. It is all stacked on airfreight pallets ready for ultra fast loading and export. By way of indication, the FOST equipment was effectively deployed on an offshore site in Cameroon around 35 hours after the alert was given.

The specially qualified and trained personnel are provided via an agreement with the Marseille Marine Fire Brigade.

- **Tier 3:** For major cases of pollution, besides the Tier 1 and Tier 2 resources already deployed by then, we can call, like most oil companies, on the OSRL under the terms of our "*Participants agreement*". It is here that the advantage of having developed most of our OSCP with this company assumes its real value, as OSRL is therefore familiar with nearly all our sites, our procedures and our means and can readily integrate our crisis management.

In addition to this, we have our own internal organisation (called CORAPOL, acronym of the French for Coordination of oil spill response resources) for speedily mobilizing all the Total Group's expertise in the Legal, Insurance, Chemicals, Metocean, Maritime and other useful fields.

3.4 Training and exercises

In the OSCP's of the Gulf of Guinea countries, we do not want to hand out recipes to be applied "eyes closed"; what we seek is to "channel initiative". To do that, our action is directed at three 3 levels:

1- Site Managers (RSES): a text in our Company core reference documents stipulates that they must have taken IMO Level 3 training courses. To make sure the training accurately

targets this “key” population in oil spill combat, we have defined with the OSRL and the CEDRE a specific content to be gradually introduced and disseminated to train our 600 potential Site Managers.

2- Whenever we develop an OSCP, or undertake one of its regular updates, we systematically organise a training course combined with an full scale exercise which proceeds in 3 stages:

- with the affiliate’s Top management, a Workshop of 2 or 3 hours, to present the OSCP, and the main points likely to pose difficulties;
- with the members of the Crisis Cell: theoretical training (½ day) and Tabletop exercise (½ day, on one of the scenarios in the Plan),
- with the operators called on to deploy the equipment on site: ½ day of theory; ½ day of familiarisation with the equipment (operation, maintenance, organisation), and 1 day of deployment of the equipment in real life conditions.

3- The affiliates organise regular exercises, ranging from the simple alert to mobilisation of the local and the Total E&P, France Crisis cells.

3.5 Regular audits

We have developed a formal “*Oil Spill Response Audit Manual*” compliant with ISO 14001 requirements for reviewing 320 points divided into 4 main areas:

- organisation of the affiliate and the sites,
- the Oil Spill Contingency Plan,
- competence of persons, including training and exercises,
- the specialist equipment and material.

These regular audits, planned every 3 years on average (but depending on the size of the affiliate), represent an opportunity for:

- an objective evaluation of the affiliate and each of the sites. The system is an evolutive one and can cater for all the parameters we may choose
- making recommendations and drawing up an Action Plan,
- a tool that monitors performances over time,
- an instrument for comparing affiliates.

3.6 Use of new technologies

One of the major difficulties we all face with the “paper” Oil Spill Response Plans in isolated, far off affiliates like those in the Gulf of Guinea is that of updating documents that are spread over the sites, the affiliate offices, the Crisis cells in head offices, etc. It is nevertheless fundamental to have the most up-to-date maps, the exact contact details and so on.

To solve that difficulty, we have developed with OSRL an interactive OSCP, on the affiliate’s Intranet; the advantage here is to have just one, electronic document, and therefore only one to be updated, that can be consulted simultaneously by everybody concerned, on the Total internal network.

In this way, in the Congo for example, if we have a problem on site X, the crisis cell in the base at Pointe Noire, the Crisis Cell in Paris, and I in my office in Pau, can all work together on the same version of the same document.

The main benefits of making the oil spill contingency plan available on the organisation’s intranet are:

- Fast and interactive means of reporting oil spills,
- Oil spill notifications and progress reports automatically update the incident status screen
- On-line access to action checklists, notification procedures, report forms and oil spill response strategy guidelines.
- Incident reporting and oil spill response procedures are standardised across the organisation
- Quick and easy to find the information needed.

- Changes or amendments to the OSCP are immediately available to everyone who has access to the intranet.
- Links to reliable external sources of data does away with the need to develop and maintain local data sources.
- Easy to control and to maintain by non-IT specialists.

In a very near future, the i-OSCP will be integrated into the organisation's electronic emergency management system. Links will be developed to other oil spill response tools and associated software, for example tide prediction software, digital marine charts, and oil spill modelling systems. The i-OSCP will also incorporate digital video photography, and oil spill response teams should be able to connect to the intranet when they are at the site of a spill, using a hand-held computer. This will allow the on-site team to send real time information and requests to the management team in the incident command centre, e.g. assessments of beach impacts, orders for equipment, status reports on the movement of the oil spill and response actions.

4- Conclusion: what next?

To broach what has to be done in the future to reduce the consequences of a hydrocarbon spill, we wish to draw a distinction between two levels:

- the affiliates and their sites, which are close to the field, and
- the Central services (in headquarters) whose job is to look at the situation objectively with a broader perspective.

4.1 For the affiliates and their sites

We must go on working at Prevention, which will always be preferable to intervention, irrespective of the organisation and the means available. This involves the design of our installations and the organisation of our operations, but above all raising the awareness of the personnel at every level.

This, however, will not suffice to definitively rule out accidents and consequently the risk of pollution. We must therefore work still more to provide the means of reducing the consequences of a spill to the minimum.

We must continue training, and training still more, all the personnel, in the theory and in regular exercises, exactly as we do for Safety.

4.2 At Corporate level

The analysis of the situation shows that in the Gulf of Guinea area, just as in other petroleum regions (Caspian Sea, Persian Gulf, etc.):

- there are, and always will be, risks of pollution,
- the local resources, in both expertise and equipment, are not sufficient at present,
- the companies cannot afford to each have their own internal experts and requisite equipment to efficiently address major Tier 2 pollution.
- Multiplying Tier 2 Centres is not an economically viable solution.

Faced with that situation, we have two proposals to make, one concerning equipment and the other expertise.

Where equipment is concerned: the only practical solution is increased cooperation between the oil companies to optimise the use of the existing equipment. We would therefore like to see some thought given, country by country, with the other oil companies and with operators like OSRL, to:

- Draw up a precise inventory in each country of the resources available with each operator and, where appropriate with the authorities
- Compare that inventory against needs
- Identify any shortfalls, and
- Bridge those gaps, possibly by joint purchases.

The above can only be undertaken via a group of operators in each country or in the frame of the GI WACAF Project.

Where expertise is concerned: one possibility would be to have on hand, in the immediate vicinity of the areas of operations, 1 or 2 specialists perhaps released by the OSRL and based in Port Gentil in the Gabon.

In periods of “calm”, these specialists could ensure training, organise exercises or help update the OSCPs, for both the Companies and for the local administrations. This fundamental work would give them a clear knowledge of the way the people they meet work and enable them, in the event of an accident, to integrate an affiliate’s Crisis Cell all the more easily, and quickly contribute the appropriate expertise to the early hours of crisis management.
