INTERNATIONAL MARITIME ORGANIZATION

GIWACAF

IPIECA

REPORT

National workshop on Dispersants and in-situ Burning

Luanda, Angola
13 – 15 August 2014

Global Initiative for Western, Central and Southern Africa

Hosted by:

The Ministry of Petroleum

NOTE

This document has been prepared within the framework of the Global Initiative for West, Central and Southern Africa as a contribution to the implementation of the biennial action envisaged for this Initiative The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the IMO or IPIECA concerning the legal status of any State, Territory, city or area, or of its authorities, or concerning the delimitation if its frontiers or boundaries.

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IMO/IPIECA. 2014. Report of the National workshop on Dispersants and in-situ Burning. 24 Pages.

Executive summary

The workshop was hosted by the Ministry of Petroleum with organizational support from the following:

1) Association of Exploration and Production Companies in Angola (ACEPA)

ACEPA is a collaborative forum composed and driven by Angola's key Oil & Gas operators in conjunction with the Angolan regulatory authorities, in particular the Ministry of Petroleum. The association identifies common issues and shares best practices to achieve improvements in every aspect of health, safety, the environment, security, social responsibility, engineering and operations.

The backbone of ACEPA is a dynamic and collective network of committees, subcommittees, task forces and work groups which aim to:

- Improve industry performance, sharing knowledge and best practices
- Operate within regulatory frameworks
- Promote sustainable development

2) The Global Initiative for West, Central and Southern Africa (GI WACAF)

The Global Initiative for West, Central and Southern Africa (GI WACAF) is a partnership between the International Maritime Organization (IMO) and the global oil and gas industry association for environmental and social issues (IPIECA) to enhance the capacity of countries to prepare for and respond to marine oil spills.

A key innovative feature is emphasis on the promotion of public/private partnership for effective oil spill response making use of existing industry expertise and resources.

Workshop Objectives

- Share best practice on the topics of dispersants and in-situ burning
- Determine the priority actions to strengthen oil spill preparedness and response capability in Angola
- Create a draft Action Plan
- Ensure there is a broad understanding of 'next steps'

Workshop outcomes

75 participants attended the workshop.

In order to address the objectives of the workshop the participants were guided through three days of presentations and two working sessions followed by plenary discussions. The outcomes of this work can be found in the following sections. The results of the workshop can be summarised as:

- Identification of priority actions to strengthen oil spill preparedness and response capability in Angola
- Identification of responsible parties

Contents

1. Presentation of the GI WACAF Project

The Global Initiative for West, Central and Southern Africa (GI WACAF Project) is a partnership between the International Maritime Organization (IMO) and IPIECA, the global oil and gas industry association for environmental and social issues, to enhance the capacity of countries to prepare for and respond to marine oil spills. A key innovative feature is the emphasis on the promotion of public/private partnerships to ensure an effective oil spill response making use of existing industry expertise and resources.

The mission is to strengthen the national oil spill response capability in 22 West, Central and Southern African countries through the establishment of a local partnership between the oil industry and the authorities in charge of oil spill preparedness and response at national level.

This program is jointly funded by the IMO and 9 Oil Companies members (BP, Chevron, ConocoPhillips, ENI, ExxonMobil, Marathon, PERENCO, Shell and TOTAL) through IPIECA.

The scope is to organize workshops, training courses, seminars and deployment exercises with the national authorities in charge of oil spill response, in partnership with local oil industry business units.

The GI WACAF project is based on an effective management system comprising of six goals of preparedness and key performance indicators to enhance the capacity of countries to prepare for and respond to marine oil spills.

These goals cover the requirements of the OPRC 90 Convention:

Goal 1: Legislation: Promote the ratification of the relevant international Conventions;

Goal 2: Contingency plan: Develop National Contingency Plans for all the countries of the region;

Goal 3: Designation of authority: Obtain clarity on roles and responsibilities of all stakeholders;

Goal 4: Regional agreements: Promote the exchange of information and the provision of mutual assistance for oil spill incidents;

Goal 5: Training: Ensure that training and exercises are delivered in the participating countries on a regular basis; and

Goal 6: National capabilities: Support participating countries in developing their own national response system.

2. Introduction

A workshop dedicated to understanding the use of dispersants and in-situ burning was held in Luanda. BP played a leading role in this workshop which was promoted by the Ministry of Petroleum and organized by ACEPA (Angolan Association of Exploration and Production of Angola) and the Global Initiative for West, Central and Southern Africa (GI WACAF) from 13 to 15 August 2014.

Members of oil companies operating in Angola, members of the Angolan Air Force, the Navy, emergency services, the Ministry of Environment, Ministry of Petroleum, Ministry of Fisheries and other bodies attended the event.

As president of ACEPA, Martyn Morris delivered a speech thanking the Ministry of Petroleum for providing the foundation to build on the future of preparedness of the industry in Angola if an oil spill occurred. “ACEPA member companies have a long-term partnership with Angola and are committed to contribute for the growth and development of the Angolan economy by acting responsibly in HSE, emergencies and environmental protection,” he said. “Safety in operations and activities is always our number one priority. However, due to the nature of our operations, there is always a possibility for accidents to happen, for example an oil spill.”

The event is a follow-up of the workshop on use of dispersants and local contingency plans held in 2011, which took place following the 2010 Gulf of Mexico accident.

Given the need to raise awareness of best practices on the subject, hold a dialogue and cooperate with Angolan and international entities, three subject matter experts were invited to lecture on the subjects, most of which were directly involved in the Gulf of Mexico response.

The Minister of Petroleum, Jose Botelho de Vasconcelos thanked the participants and reiterated: “Angola is the second biggest producer of oil in southern Africa after Nigeria with a production registered in July of about 1.7 million mbd, aiming to reach 2 million mbd in 2015. Almost all our production is offshore, about two thirds in deep-water with water depths of more than two thousand meters. This represents big challenges and risks” he said. “Despite the cutting-edge technology and sophisticated safety systems involved with these operations, incidents happen and we have to be conscious of this and be ready to deal with them when necessary”.

The national plan for oil spill contingency approved in November 2008 is a tool that sets guidance and preparedness to respond to an oil spill in Angola deep-water, and its national committee to fight oil spills is coordinated by President Eduardo dos Santos.

The minister emphasized that these techniques although different from skimming, also remove oil from water and can prevent the oil from reaching environmentally sensitive coastlines: “We don’t want to take as the first option to respond to oil spills as either the use of dispersants or in-situ burning,” he said. “Our strategy should be a combination of options taking into account the priority to protect the environment. Oil operators are urged to replace their dispersants with more biodegradable and environmentally friendly ones whenever the new product is available in the market. There is a list of dispersants, but it is a temporary one and we need to create labs to have a national policy to use these resources in Angolan waters,” Mr. Vasconcelos concluded.

The Technical Committee presided over by the Minister of the Environment and Incident Command is coordinated by the Minister of Petroleum, aided by the Minister of Defense and other bodies. The

administration of the contingency plan has to do with the utilization of dispersants and in-situ burning considered as options to be used should the need arise.

Participants to the workshop discussed topics related to the use of dispersants in Angolan waters, future plans, advanced technologies in deep waters on a global scale, revision of oil spill response and the Deepwater Horizon in-situ burning operations.

Among other issues the workshop also discussed efficiency of dispersants, context and current status of the national contingency plan, policies and regulations in use of dispersants in other countries. There were two joint working sessions with exercises. In the first one the participants were given a hypothetical oil spill scenario off the coast of Luanda and were asked to decide which were their priority protection sites and response techniques. On the second exercise participants were asked to draft a list of priority actions for regulators, companies and other organizations that needed to be implemented in Angola regarding dispersants, in-situ burning and local communications/logistics. This priority list of actions will be used by the regulators to inform the update of the National Oil Spill Contingency Plan.

3. Objectives of the workshop

The objectives of the workshop were:

- to share best practice on the topics of dispersants and in-situ burning;
- to determine the priority actions to strengthen oil spill preparedness and response capability in Angola;
- to create a draft Action Plan;
- and to ensure there is a broad understanding of “next steps”.

4. Programme of the Workshop

The workshop was organized during three days. The programme is available in Annex 1.

5. Location, dates, and participants

The workshop was held at The Ministry of Petroleum, Luanda, Angola from 13 to 15 August 2014. 75 Participants from oil companies operating in Angola, members of the Angolan Air Force, the Navy, Emergency services, the Ministry of Environment, the Ministry of Petroleum, the Ministry of Fisheries and other bodies attended the event.

6. Activities and proceedings

6.1. Opening ceremony

The opening ceremony was introduced by Mr Martin Morris, President of ACEPA. His speech is attached as Annex 3.
Mr Anton Rhodes, GI WACAF Project Manager, delivered the IMO Opening Remarks (attached as Annex 4).

Finally, Jose Botelho de Vasconcelos, Hon. Minister of Petroleum, thanked the participants and emphasized the importance of preparedness in case of an incident.

6.2. Proceedings of the National Workshop

DAY 1 Wednesday, 13 August 2014

Session 1: The use of dispersants in Angola waters and prospects for the future

Mr. Manuel Xavier, MinPet/MinAmb

In opening the workshop, Mr. Manuel Xavier gave an overview of the approval of established National Oil Spill Contingency Plan and response strategy, followed by an overview of the concession sites across the country. He presented the National policy on dispersant use in Angola, pointing out that dispersant use was allowed under specific set requirements by law & additionally that the use must be justified by conducting a Net Environment Benefit Analysis which must be approved by the National Commission Combating Oil Spills.

The presentation also highlighted recommendations for dispersant use application techniques underlining the need for ensuring adequate personnel competency & use of internationally approved procedures and taking into consideration the time, cost, resource availability & work environment when operators opt to use dispersants.

An inventory list of all approved and available dispersants for use in the Petroleum industry was presented, followed by a brief overview of in situ burning. The overview included the context, risks, benefits & challenges related to in situ burning. The presentation was concluded with a highlight of identified gaps within the legal framework i.e. dispersant application in subsea at the wellhead and the list of approved dispersants that needs to be revised.

Session 2: Oil Spill Basics

Thomas Coolbaugh (ExxonMobil)

This presentation reviewed the basic properties of oil and how these are important to understanding how oil behaves during an oil spill at sea. Properties such evaporation, specific gravity, solubility in seawater dispersion, viscosity, chemical composition and emulsification were all discussed. An understanding of oil's behavior once released is the starting point for effective oil spill response.

Session 3: Advancing global Deepwater capabilities

Arden Ahnell (BP)

This presentation discussed the lessons learned by BP during the Deepwater Horizon Accident. This accident was unprecedented in the scale of the response with more resources, more people and a larger area was involved than ever before during an oil spill response. The presentation covered lessons learned in five areas, drilling safety, well capping and deep sea oil release containment, relief wells, oil spill response and crisis management.

Session 4: Review of oil spill response options

Thomas Coolbaugh (ExxonMobil)

The options available for oil spill response at sea were reviewed and compared. Operations included were recovery with booms and skimmers, in-situ controlled burning, surface dispersants and subsea dispersants. The concept of an oil spill response strategy using the most appropriate tool for the

situation was introduced as well the importance of a quick response and the encounter rate of various response methods.

Session 5: Understanding controlled In-situ burn operations and tactics

Neré Mabile (BP)

The presenter illustratively defined In-situ Burn (ISB) and outlined the requirements to ensure effective burns. Operations included boom deployment, oil containment, aerial & oil-water guidance, permission to burn and successful ignition. The presentation gave an overview on the application and ignition tactics used in ISB as well as surveillance and monitoring strategies and this included oil response monitoring as well as human and wildlife protection. The presenter gave a summarized anatomy of various oil spill response options involved in ISB which also included mechanical recovery and dispersant use. The presentation also covered the Net Environmental Benefit of using ISB.

Session 6: Understanding the role of dispersants (both surface and subsea injection) in spill response

Arden Ahnell (BP)

This session provided a deeper insight as to the important role dispersants can play during a significant offshore oil spill response. Building on the concepts of how quickly oil spreads on the sea surface and how quickly dispersants can be applied by air to the sea surface, the advantages of dispersants were explained due to the potential for quick application over large areas. The methods of surface dispersant application were reviewed. Subsea dispersant application was introduced with an explanation of how the technique is practiced and what equipment is required. For underwater releases the advantages of subsea application were explained to be 24 hour application and more effective use of dispersant by applying dispersant directly at the source.

Session 7: Deepwater Horizon ISB operations

Neré Mabile (BP)

Using the Deepwater Horizon as a case study of ISB application, the presentation gave an overview on the DWH Ops and application of ISB thereof. The presenter outlined that the decision was made after rescue ops completed. Application of ISB included assembling a team, identifying controlled burn locations and daily monitoring of burnt volumes. Additional tactics used involved dispersant application and mechanical skimming as well as aerial surveillance to guide the operations. Calculation methodologies to estimate burnt volumes, the types of equipment used, ignition methods used, their mode of use and impacts were also highlighted. The safety aspects to people, air and the marine environments during the various operations involved. The presentation was concluded by the successes identified using ISB.

Session 8: Deepwater Horizon surface and subsea dispersant use and monitoring

Arden Ahnell (BP)

A detailed use of dispersants during the Deepwater Horizon Accident response was presented. The specifics of both surface and subsurface application were reviewed to give the audience a sense of how these techniques worked in practice and some of the issues concerning public perception. Data were presented that showed dispersants were effective in dispersing much of the oil and that the concentration of the dispersed oil after treatment was quite low within hours of application.

Studies to assess the immediate effects of chemically dispersed oil in seawater were presented and showed no observed levels of concern present except immediately near the discharge.

Session 9: Lula exercise results/ supply of dispersant

Michel Cedric (TOTAL)

In the wake of the Macondo incident in the Gulf of Mexico, TOTAL participated in a worldwide joint Oil & Gas Industry effort to improve the response capability to a blowout situation.

Total E&P Angola was chosen by Total Group to organize and run a Full Scale Exercise (Tier 3) with objective to test the ability to define, implement and manage the response to a major oil spill resulting from a subsea blowout, including the actual mobilization from Norway and deployment in deep offshore Angola of a newly developed Subsea Dispersant Injection (SSDI) system.

Following a year preparation in liaison with Angola National authorities and oil industry partners, the "LULA" exercise took place in November 2013 and Total E&P Angola oil spill response strategy for the response to a 50 000 bopd blowout scenario in deep offshore Angola was implemented through the actual deployment and test of resources:

- Subsea dispersant injection using OSRL SSDI, using a newly designed and built Light Well Intervention Vessel
- Monitoring of oil slicks thanks to the authorized release of 5m3 of crude oil, using a combination of technologies (drifting buoys, oil spill modeling, satellite imagery, IR and UV equipped balloon, etc.)
- Surface response (dispersion, containment and recovery)
- Onshore through the simulated implementation of an onshore response plan, encompassing shoreline protection and cleanup, waste management and oiled wildlife response.

This presentation helped the workshop by detailing one aspect tested during the LULA Exercise: the procurement of dispersant and the associated logistics. The need of dispersant during the event was chronologically presented, focusing on the main milestones: SSDI request, identification of the worldwide dispersant stockpiles, the arrival of the SSDI in Angola, the installation of the capping stack, etc. The total amount of needed dispersant was estimated at approximately 4000 m3. This simulation was the opportunity to identify some ways of improvements, such as the authorization to perform subsea dispersant injection, the authorization to import and use the Finasol OSR 52 and the necessity to involve the national authorities for the dispersant logistics (aircrafts arrivals, etc.) LULA was a success and the sharing of lessons learned will benefit to the Oil & Gas producers in Angola and the National Authorities leading to an improvement of our best practices.

DAY 2 Thursday, 14 August 2014

Session 10: Dispersant efficacy, and screening

Arden Ahnell (BP)

This session described the concepts and testing of dispersant efficacy and went on to provide some examples of assessments from other regions. Laboratory methods to assess efficacy were reviewed and compared and the message that laboratory testing is appropriate for comparing differing dispersants but not for quantitative prediction of dispersant efficacy at sea was emphasized. The industry approach to dispersant stockpiles was also discussed and the emphasis of three dispersants, Corexit 9500, Finasol OSR 52, and Dasic Slickgone NS.

Session 11: Dispersant toxicity and biodegradation

Thomas Coolbaugh (ExxonMobil)

The basic concepts of toxic effects were reviewed including chronic and acute toxicity, species sensitivity curves and the limitations of predicting open ocean effects with static laboratory tests. Laboratory tests provide important basic toxicity information but must be used with caution when used to predict actual effects in the environment. Similar to laboratory efficacy testing, laboratory dispersant toxicity testing can be used to provide a relative comparison of the toxicity of different dispersants. The key issue to manage concerning toxicity in the water column is oil toxicity not dispersant toxicity since modern dispersants exhibit low toxicity.

The important concept of ocean oil biodegradation was also discussed. Large slicks of oil on the surface do not biodegrade well but very small droplets of dispersed oil in the water column biodegrade in days and weeks. The benefit of chemical dispersion was explained since dispersants create small dispersed oil droplets and greatly aid biodegradation. Data from studies concerning oil and dispersant biodegradation were provided to further the understanding of the important natural effect of ocean microbiology.

Session 12: Net Environmental Benefit Analysis (NEBA) introduction

Arden Ahnell (BP)

The history, logic and practical steps of NEBA were reviewed in the session. NEBA was developed as a consensus based evaluation by Coelho and Aurand at the request of the US Coast Guard and has been applied in several locations. The use of NEBA as an oil spill contingency planning tool was emphasized along with the need for a wide range of stakeholders and spill responders to be involved to ensure a complete understanding of all the important environmental and social factors is achieved. The basic steps of the NEBA process were outlined.

Session 13: Set-up and assignments for Participant NEBA exercise with breakout groups

Arden Ahnell (BP)

An table-top spill planning exercise was introduced to the attendees which used a scenario with an offshore oil well blowout about 100 kilometers offshore releasing oil with the potential of impacting Angolan shoreline within 18 days without any intervention. Oil spill trajectory modeling and shoreline sensitivity information were also presented and the audience was asked to apply the information provided in the two days of presentations to design a spill response plan and explain their choices when reporting the results of their exercise.

DAY 3 Friday, 15 August 2014

Session 14: GI WACAF overview and recommendations from previous Angola dispersant workshop (2011)

Anton Rhodes (GIWACAF)

Anton Rhodes opened his presentation by providing an overview of the Global Initiative, highlighting why the international program was established, what are its objectives, and how it is organized. He then gave an introduction to the Global initiative for West, Central and Southern Africa (GI WACAF), giving details of what the project had achieved since its launch in 2006 and its plans for future development.

The second part of the presentation focused upon the objectives for the final day sessions. Particular emphasis was placed upon the need to create a draft action plan focusing upon the following topics:

- Dispersants
- In-situ burning
- Local / sectoral planning

The presenter also outlined the methodology by which the above objectives would be achieved.
The third part of the presentation focused upon the main outcomes from the previous GI WACAF dispersant workshop that was held in Angola in 2011. The speaker explained that the intention was to use the outcomes from this previous activity as a foundation to build an updated action plan during the current workshop.
For the consideration of the audience, the final part of the presentation was used to highlight other oil spill related topics (in addition to dispersants and in-situ burning), which had been identified as "priority" by governments and industry members in the GI WACAF region. Topics included:

- Incident Management System (IMS)
- Transboundary movement of equipment
- Shoreline clean-up assessment (SCAT)
- Waste Management
- Wildlife
- Sensitivity Mapping

Session 15: Update on the National Contingency Plan
Manuel Xavier, MinPet/MinAmb
Mr. Manuel Xavier gave an overview of the approval of the developed National Oil Spill Contingency Plan and response strategy, followed by a synopsis of the concession sites along the Angolan coastline.
He presented the National policy on dispersant use in Angola, pointing out that dispersant use was allowed under specific set requirements by law & additionally that the use must be justified by conducting a Net Environment Benefit Analysis which must be approved by the National Commission Combating Oil Spills.
The presentation also highlighted recommendations for dispersant use application techniques underlining the need for ensuring adequate personnel competency & use of internationally approved procedures and taking into consideration the time, cost, resource availability & work environment when operators use dispersants.
An inventory list of all approved and available dispersants for use in the Petroleum industry was presented followed by a brief overview of in situ burning. The overview included the context, risks, benefits & challenges related to in situ burning.
The presentation was concluded with a highlight of identified gaps within the legal framework i.e. dispersant application in subsea and on wellhead.

Session 16: Summary of recommendations for strengthening Angolan response capability
Scott Smith, Chairman of the GI WACAF Project
This session included a summary of previous GI WACAF engagements in Angola which have primarily been focused on developing a National Oil Spill Contingency Plan in conjunction with the Angolan regulators and industry operators. An overview of the last planning workshop which included the objectives and recommendations made regarding dispersant use. The presenter also gave an

overview on the draft guidelines for the development of an approval process for Oil Spill Dispersants in Angola. A table-top exercise was conducted with workshop participants to test the response of Angola National capability, logistics procedures, identify gaps for future improvements and collectively make recommendations to improving the National Plan. The action plan for proposed improvements to be made to the GI WACAF work programme was presented.

6.3. Closing ceremony

Mr. Manuel Xavier (Ministry of Petroleum) chaired the closing ceremony in conjunction with Mr Scott Smith, (ConocoPhillips) and Shirley Oliveira (BP).
Mr. Xavier thanked the participants for their endeavours and hard work over an intense three day workshop. Mr Scott Smith thanked the Ministry of Petroleum on behalf of IMO/IPIECA for the organising and management of the workshop and thanked the participants for their contributions. Ms Oliveira also thanked the Ministry of Petroleum and congratulated participants for their hard work over the previous three days. Finally Mr Xavier gave the closing remarks, officially closed the workshop and wished all participants a safe return journey home.

7. Actions from Working groups and Recommendations

Exercise 1

Participants were divided into 3 groups and the key objectives of the exercise were to employ the principles of the Net Environmental Benefit Analysis by assessing a set scenario on two key areas of priority namely, Mussulo and the Port of Luanda to:

- Identify key areas to protect within the coast and intertidal and offshore zones;
- Select from given options the ideal mechanisms for offshore response considering;
  - Where the mechanism could be used
  - Justifications to the selected mechanism
  - Expectations on selected mechanism effectiveness

Summary of Exercise 1 Outcome

Areas to be Protected	Proposed Primary Steps to take	Application Strategies
Coastal Protection	Understand incident and evaluate risks to people and environmental	Prevention of oil from reaching the shoreline.
Protected areas	Shut down/ manage operational risks i.e. prevent fire risks, further spills to sea etc.	Application of dispersant: Aerial, Wellhead injection (subsea),
Areas with high economic activities i.e. Port	Understand meteorological conditions, marine dynamics i.e. currents and Oil properties	Application of mechanical recuperation of oil & In-Situ burning
Areas with high economic & biological resources i.e. Barra de Kwanza	Estimate time it will take for sheen to reach the coast	Monitoring using vessels and helicopters

	Monitor Oil sheens and direction	Activate logistics onshore response, I.e. ANG 2120 plan, GIWACAF/OSRL (Aerial & subsea)
	Notify authorities	Deploy booms 5km from incident location & prepare coastline.
	Manage social media & communication with affected stakeholders	Contact to mobilize clean-up/ waste management services, temporary waste storage areas & teams.
	Notify authorities	Ensure good simultaneous activities

Exercise 2

The key objectives of the second exercise were to:

- Highlight areas for improvement to developing a robust National Oil Spill Response Plan
- Make recommendations of priority actions required to realize the suggested objectives
- Identify responsible parties for the proposed actions.

Summary of Exercise 2 Outcomes:

Objectives	Priority Actions	Responsibilities
Update National Contingency	Include new dispersants and include MinPet/ MinAmb	MinPet/ MinAmb/ ACEPA
	Clarify acceptable tests to be conducted and substitute harmful dispersants with environmental friendly dispersants	
Develop a National Policy on the use of dispersants	Set selection and use criteria	MinPet/ MinAmb
	o Toxicity	
	o Biodegradability	
	o Efficacy test with manufacturer's instructions	
	Define areas where they can be used i.e. consider options taking into account proximity to shore and environmental sensitivities.	MinPet/Consultants/ MinAmb/ INIP/ ACEPA/ GIWACAF
	Indicate on the sensitivity maps locations of application and those where use is prohibited.	
	Create 3 primary centres for dispersant provision (North, South & Centre) or define location based on Petroleum or maritime activity in the region.	
Approval of dispersants used in other countries	Approve products from countries of origin that operate in Angola	MinPet/ MinAmb
	Define frequency of updating dispersant tests	MinPet/ MinAmb/ MinPes/ ACEPA
	Clarify disposal final, disposal location and authorized companies.	MinPet/ MinAmb/ ACEPA
Importation strategy	Whenever possible conduct public-private partnerships to keep strategy updated.	MinPet/ MinInt/ MinFin (Customs)
	Phased Plan of implementation of new regulations	
	Importation of extra quantities (Ensure clear protocol on how to import)	

Conduct NEBA Training and Drill Exercises	Conduct workshops NEBA Training and conduct drill exercises	MinPet/ Consultant/ MinAmb/INIP/
	Define clear responsibilities for a level 3 incident	CNPD/ MinPet/ ACEPA
	Define the type and frequency of conducting the necessary training including the trainer.	ACEPA
Define scenarios on use of dispersants	Clarify critical factors i.e. sensitive areas	Specialists/ MinPet/ MinAmb/ MinPes/ MinTrans
	Spills/ leaks on the platforms, vessel collisions or sinking – near to coastline	
	Economic Factors (costs and benefits)	
Share dispersant information	Create documents /share basic or key facts about dispersant use with the public/local communities	MinPet/ MinAmb/ ACEPA/ MinComun/Press
People Safety: Training, Communication & simulation	Develop a Plan for training people before, during and after an incident if necessary	Operators (ACEPA)/ MinPet/ MinInt/ MinDef/ MinTrans
Identify applicable scenarios in Angola for in-situ burning considering climatic conditions	Identify possible scenarios on using in situ burning (staging areas / monitoring Plan)	Specialists/ MinPet/ MinAmb/ MinPes/ MinTran
	Monitoring air quality	
	Update Legislation	
	Additional Communications not envisioned in the Plan.	
	Identify preapproved zones (Create case by case approval process)	
Increase response capacity in Angola (Tier 2, local)	Analyse the strategy to have capacity in Angola or use GIWACAF/OSRL	ACEPA/ MinAmb /MinPet/ Sonangol
Entry of specialized personnel and equipment	Communication and facilitation for steps or processes to acquire emergency visas.	MinInt/ MinPet /MinFin
Develop a provincial plan for each applicable Province	Clarify communication protocol to the governor, governmental and Provincial authorities and contact personnel	CNPD
	Define a clear standard or plan	MinPet/ National Commission/ GIWACAF/ Province with help of National Plan/ ACEPA/ MinAmb
	Test the plan	ACEPA/ MinAmb/ MinPet/ Provincial government
	Integration of the Industry Plans	GIWACAF/ MinPet/ ACEPA
	Build capacity in each Port	ACEPA/ MinAmb/ MinPet/ Provincial government

Annex 1 – Programme

Day 1 - Wednesday, 13th of August 2014		
08.00 – 09.00	Participant Registration & Breakfast	
09.00 – 09.05	Safety Moment	
09.05 – 09.10	ACEPA President Speech	*Mr. Martyn Morris*
09.10 – 09.15	GI WACAF Representative speech	*Mr. Anton Rhodes*
09.15 – 09.20	Opening of Workshop	*His. Ex. Mr. Ministry of Petroleum*
09.20 – 09.50	The use of dispersants in Angola waters and prospects for the future	*MinPet/MinAmb*
09.50 – 10.20	Oil Spill Basics	*Thomas Coolbaugh (ExxonMobil)*
10.20 – 10.50	Advancing global deepwater capabilities	*Arden Ahnell (BP)*
10.50 – 11.15	Discussion	
11.15 – 11.30	Coffee Break	
11.30 – 12.00	Review of oil spill response options	*Thomas Coolbaugh (ExxonMobil)*
12.00 – 12.30	Understanding controlled In-situ burn operations and tactics	*Neré Mabile (BP)*
12.30 – 13.00	Understanding the role of dispersants (both surface and subsea injection) in spill response	*Arden Ahnell (BP)*
13.00 – 13.45	Lunch	
13.45 – 14.15	Discussion	
14.15 – 14.45	Deepwater Horizon ISB operations	*Neré Mabile (BP)*
14.45 – 15.15	Deepwater Horizon surface and subsea dispersant use and monitoring	*Arden Ahnell (BP)*
15.15 – 15.45	Lula exercise results/ supply of dispersant	*Cedric Michel (TOTAL)*
15.45 – 16.15	Discussion and closing of day 1	*MinPet/ACEPA*

Day 2 - Thursday, 14th of August2014		
07.30 – 08.30	Arrival of Participants & Breakfast	
08.30 – 08.40	Day 1 revision	*MinPet/ACEPA*
08.40 – 09.20	Dispersant efficacy, and screening	*Arden Ahnell (BP)*
09.20 – 09.50	Dispersant toxicity and biodegradation	*Thomas Coolbaugh (ExxonMobil)*
09.50 – 10.35	Net Environmental Benefit Analysis (NEBA) introduction	*Arden Ahnell (BP)*
10.35 – 11.00	Discussion	
11.00 – 11.15	Coffee break	
11.15 – 11.45	Set-up and assignments for Participant NEBA exercise with breakout groups	*Neré Mabile(BP)*
11.45 – 12.45	Participant NEBA exercise with breakout groups	*All Participants*
12.45 – 13.30	Lunch	
13.30 – 14.30	Participant NEBA exercise with breakout groups	*All Participants*
14.30 – 15.30	Resume break out group discussion	*All Participants*
15.30 – 16.00	Discussion and closing of Day 2	

Day 3 - Friday, 15th of August 2014		
07.30 – 08.30	Arrival of Participants & Breakfast	
08.30 – 08.45	Day 2 revision	*MinPet/ACEPA*
08.45 – 08.55	Day 3 objectives	*Anton Rhodes (GIWACAF)*
08.55 – 09.25	GI WACAF overview / Recommendations from previous Angola dispersant workshop (2011)	*Anton Rhodes (GIWACAF)*
09.25 – 09.55	Update on the National Contingency Plan	*MinPet/MinAmb*
09.55 – 10.25	National attitudes, policies and regulations about dispersants around the world	*Scott Smith (GIWACAF)*
10.25 – 10.55	Discussion	
10.55 – 11.10	Coffe break	
11.10 – 12.20	Discussion: Priority issues and actions to develop/improve readiness	*All Participants*
12.20 – 13.30	Lunch	
13.30 – 15.00	The Way Forward – Development Plan of Action between Regulatory bodies and ACEPA	*MinPet/ MinAmb/ ACEPA*
15.00 – 15.30	Closing remarks	*MinPet/ MinAmb/ ACEPA*

Annex 2 – List of participants

NAME	INSTITUTION
Alberto Daniel	DNOP
Aldina Joao	IMPA-Mintras
Albino Ferreira	DNC
Arnaldo Andrade	IMPA-Mintras
Ana Rosa	SNL E.P
Antonio Veiga	SNA
Antonio Carlos	KINAMAKIESE
Angela Santo	SNPCB
Antowy Jardim	CoconoPhillips
Anton Rhodes	IPIECA
Arden Ahnell	BP
Benvindo Mococa	TPA
Bomba Sangolay	INIP
Bernardette Rodrigues	DNFA
Carlos Mendes	IMPA
Carlos Vlazquez	Repsol
Carmo	MinPet
Cedric Michel	TOTAL
Claudia Simões	Minamb
Claudeth Yamba	IMPA-Mintras
Dagoberto Hernandes	MinAmb
Daniela Bastos	Sonangol E.P.
Dilson Mota	MinPet
Domingas Dum	MinPet
Elyvaldo Agostinho	SNLEP
Estanislau Gaspar	MinPet
Estefânia Almeida	MinPet
Eunice Andrade	ExxonMobil
Faustino Almeida	Cobalt
Francisco Santos	Minamb
Firmino Gomes	MGA
Helder Francisco	IHSMA
Jean-Yves Huet	TOTAL
Joana Manuel	MinPet
Joao Amaro	GRH
Joao Filipe	Pluspetrol
Jose Avelino	DNOP
Joao Carvalho	Min Pescas

NAME	INSTITUTION
Jose Cuela	MinPet
Jose Fonseca	MinPet
Jose Joao	Journal de Angola
Jones Marques	FAN
Jose Emiliano	MGA
Jose Pongo	INAVIC
Lia Sousa	Min Pescas
Luís Cardoso	AREA
Luísa Campos	MinPet
Lumena Paka	MinPet
Martin Morris	BP
Maria Nolembo	SNL E.P
Manuela Coelho	DNFA
Manuel Pinto	MinPet
Manuel Xavier	MinPet
Miguel Conceicao	MinPet
Margarida Peliganga	Chevron
Márcio Dias	Statoil
Mesquita Jose	Miamb
Mtevo Ndombele	MinPet
Nara Cardoso	Miamb
Noe Magalhães	MGA
Nere Mabile	BP
Nsimba Kupassa	MinPet
Nzora Miranda	Sonils
Palmiro Marcolino	MinAmb
Paulo Coelho	INIP
Rafael Lumba	MinPet
Rosa Silva	…….
Ricardo Cruz	MinPet
Roberto Leite	Minamb
Scott Smith	ConocoPhillips
Sebastião Albino	MGA
Sergio Martins	Sonangol P&P
Tavares da Conceicao	IMPA-Mintras
Tavares Rodrigues	Chevron
Telma Neto	ConocoPhillips
Tom Coolbaugh	ExxonMobil

Annex 3 – Opening speech from the ACEPA President

Your Excellency the Minister of Petroleum, Eng. José Maria Botelho de Vasconcelos,
Dear President and representative of GI WACAF,
Distinguished guests from the Ministry of Environment, Ministry of Fisheries, Ministry of Defence, Ministry of Finance, Sonangol, other governmental and civil society organizations, and colleagues of the Association of Exploration and Production Companies in Angola (ACEPA),
Dear participants and lecturers,

It is a great honor to be here today on behalf of ACEPA, to participate in the presentation of the Dispersants and In-Situ Burning workshop organized the in partnership between the Ministry of Petroleum, BP Angola, Chevron, ConocoPhillips, ExxonMobil*, TOTAL and GI-WACAF.*
Your Excellency Mr. Minister, please accept my thanks for the hospitality and collaboration in organizing this significant event.
ACEPA member companies have a long-term partnership with Angola and are committed to contribute for the growth and development of the Angolan economy by acting responsibly in HSE, emergencies and environmental protection.
Safety in operations and activities is always our number one priority. However, due to the nature of our operations, there is always a possibility for accidents to happen, for example an oil spill.
This seminar is organized following the 'Seminar on Use of Dispersants and Local Contingency Plans' held in 2011 that was held after the events in the Gulf of Mexico in April 2010.
Conscious of the need to disseminate best practices in this area and the need for dialogue and cooperation with Angolan and international institutions, we invited renowned experts in this area, many of whom were directly involved in responding to the incident in the Gulf of Mexico.

- *During the next three days we will have the opportunity to share: The latest scientific and technical developments in the area of spill response, highlighting the use of chemical dispersants and in situ burning*
- *Participate in a simulation of an incident and conduct a Net Environmental Benefits Analysis, and;*
- *Contribute to the discussion on the issues and priority actions to improve the timeliness of responsiveness to emergencies.*

ACEPA members believes that should an event similar to the Gulf of Mexico happen:
First: Being important to have flexibility in the choice of means to combat the most effective oil spills to ensure an adequate response to the situation. It is in this context that the use of dispersants and in-situ burning demonstrated their effectiveness. As operators, we believe response should be standardized taking into account the net environmental benefits and priorities of national protection, which are being established through the Mapping Project of Sensitive Coastal Areas conducted jointly by ACEPA, MinPet and MinAmb.
Second: Discuss what activities and necessary legislation are required to allow companies to respond effectively to spills for example clear definition of the scope of use of various techniques and technologies, pre-approval for use of these techniques and establish the points of contact of the various regulators.

Third: Develop an action plan for the activities necessary to support prompt and effective response as well as ensure a rapid granting of visas to experts who will participate in the response effort, efficient import and rapid clearance of specialized equipment and materials and have pre- agreed response plans for animals affected by the spill.
These are just some aspects that I hope we will have the opportunity to share and debate constructively and to continue the development of best practices for the petroleum sector in Angola.
To conclude I would like to reiterate on behalf of ACEPA, we are always open to collaborate in partnerships with regulatory entities and develop closer relationships with all our partners in a way that is mutually beneficial.

Thank you.

Annex 4 – Opening remarks from the IMO/IPIECA representative

Your Excellencies, Distinguished delegates, Ladies and gentlemen,

It is an honor for me to deliver this opening speech as representative of the International Maritime Organization (IMO) and IPIECA, the global oil and gas association for environmental and social issues, at this National workshop on dispersant use and in-situ burning.
I would like to briefly remind delegates of the roles of these organizations. IPIECA is the global oil and gas industry association for environmental and social issues. It was formed in 1974 following the launch of the United Nations Environment Program (UNEP). IPIECA is involving both the upstream and downstream oil and gas industry on environmental and social issues and its membership covers over half of the world's oil production. The work of IPIECA is supported by a number of specialized working groups of industry members that address the following areas: biodiversity; climate change; health; oil spill preparedness; operations and fuels; reporting; and social responsibility.

The International Maritime Organization (IMO) is a specialized agency of the United Nations with a global mandate. The mission of IMO is to promote safe, secure, efficient, environmentally sound and sustainable shipping. This is pursued by adopting the highest practicable standards of maritime safety and security, of efficiency of navigation, and of prevention and control of pollution from ships.
After the event of the ExxonMobil Valdez near the Alaskan coast, in 1989, the IMO member states elaborated the International Convention on Oil Pollution Preparedness, Response and Co-operation.
The OPRC Convention, as it became known, was adopted in 1990. The OPRC Convention provided for the first time a truly global framework to facilitate international co-operation and mutual assistance in preparing for and responding to major pollution incidents. It encourages States to develop and maintain an adequate preparedness and response capability of their own while simultaneously recognizing the importance of co-operation with the oil and shipping industries to deal with major oil or HNS pollution emergencies. It was then complemented in 1992 by the CLC 92 and the Fund 92 Conventions which provide compensation for oil pollution damage resulting from spills of persistent oil from tankers.
To support the implementation of these international conventions IMO and IPIECA launched in 1996 the Global Initiative with objective to support countries in strengthening their oil spill response capability and ensure the full implementation of these above mentioned international convention. The Global Initiative is active at various degrees in four regions of the world: Caspian and Black sea, the Mediterranean Sea, the Caribbean and West and Central Africa.

The Global Initiative for West and Central Africa, known as GI WACAF, was launched in April 2006, it is considered as the flagship program of the various GI regional initiatives. The project is jointly funded by IMO and eight oil company members through IPIECA. Today, it covers 22 countries in West and Central Africa. Since its creation significant progress in improving oil spill response capability has been achieved.
When considering the response to large oil spills, either from a maritime shipping accident or a loss of well control such as was witnessed in the Gulf of Mexico, then dispersants and in-situ burning can be a most effective means to mitigate the worst environmental consequences of pollution, but perhaps more than other response strategies, the need to have pre-planned for their use in advance of the accident is of critical importance.

This week we have an opportunity to consider both the implications of using dispersants and in-situ burning but, just as importantly, the implications of not using them in respect of the prevailing circumstances.
I have no doubt that the next few days will prove successful in providing each of you with the opportunity to gain an increased understanding of dispersants and in-situ-burning, especially with respect to their use and effects along with environmental considerations and how they may be viewed in relation to other oil spill response options.
In concluding, I have the pleasure in conveying to all of you the very best wishes of the IMO Secretary-General, Mr. Koji Sekimizu who is looking forward to a fruitful outcome of your deliberations this week. I wish to express sincerest thanks to all those involved in the organization of this event and especially to the Ministry of Petroleum, as our hosts.

Your Excellencies, Distinguished delegates, Ladies and gentlemen,
Thank you for your kind attention.

Annex 5 – Presenters Biographies

Mr. Anton Rhodes

Mr. Anton holds a BA Honors in International Relations from the University of Aberdeen, and in 2009 graduated with a Masters degree in International Relations from the University of Cape Town, South Africa. Anton spent four years with IPIECA - the global oil and gas industry association for environmental and social issues, where his duties included managing the IPIECA Oil Spill Working Group and coordinating Global Initiative activities. Anton joined Oil Spill Response Limited (OSRL) in 2013 and is currently Project Manager of the Global Initiative for West, Central, and Southern Africa (GI WACAF).

Mr. Arden Ahnell

Mr. Arden is a University of Illinois graduate with a Masters in Environmental Engineering. Although presently retired, he recently directed technology and learning for BP's upstream environmental community and has been involved in all aspects of the upstream environmental agenda from exploration to production over many regions in the world reporting the BP's Upstream' s Vice President for Environment and was BP's global expert for oil spill dispersants This assignment came after two years supporting the Deep Water Horizon Spill Response and Gulf Coast Restoration efforts, first as BP's senior science response advisor and then as Deputy Natural Resource Damage Assessment Director managing a BP science program charged with understanding many key aspects of the spill's environmental impact. During the DWH incident he answered EPA challenges regarding dispersant choice and use, coordinated environmental efforts across the operation for BP.

Previous roles include Director of Product Stewardship, providing policy, product regulatory and product safety communication expertise and support across the BP Group; various roles involving contaminated land cleanup management nationally and internationally and External Affairs where he was active on climate change issues.

Other assignments included Manager of the Health, Safety, and Environmental (HSE) international team providing support across BP world-wide and managing HSE divestment/acquisition issues. Early in his career he was a division manager in BP Research and prior to joining BP, he held various positions in US state government.

Mr. Cedric Michel

Mr. Cedric Michel is the Head of the service Environment Operations within the Direction HSE of Total E&P Angola. The objectives of the service is to provide support to sites and entities on environmental issues, such as the chemical management, the waste management, the ISO 14001 certification, the oil spill response, the internal and external environment reporting, etc.

Cedric has obtained a degree in "Material and Processes" from the engineering school ENSIACET in Toulouse in 2008. After that, he worked 2 years for Total E&P Cameroon in Douala for the implementation of the Environmental standardization ISO 14001 and the development of the Industrial Hygiene within the affiliate.

In February 2011, Cedric joined the "Environment Operations" Team at the Head Quarter in Pau and worked on the assessment of environmental impacts, the realization of environmental modeling, the organization and realization of environmental monitoring campaigns, etc.

From October 2013, Cedric arrived in Angola as Head of Environment Operations.

Mr. Neré Mabile

With more than 30 years of experience in the petroleum industry, Neré has a unique set of technical competencies involving oil spill response (OSR), integrity management, corrosion engineering, operations, and project management. Currently, Neré is in the "prevention business" preventing spills, with a role as the Integrity Management Engineer on the Deep Water Atlantis facility in the Gulf of Mexico. Previously Neré served as the Technology Theme Leader for in-situ burning (ISB), mechanical recovery, and booming as a part of BP's Oil Spill Response Technology Team in Crisis & Continuity Management (C&CM Central). Neré was the ISB technical lead and he trained and managed the ISB Air Operations team during the Deepwater Horizon response and, in those capacities, led an enormously successful ISB operation that removed more than 300,000 bbl of oil from the Gulf of Mexico waters.

Neré has skill sets in both offshore upstream oil production and onshore downstream process plant facilities. Offshore, he developed a broad experience with construction and maintenance of fixed platform facilities and supervised subsea diving activities. He worked in onshore chemical plant facilities for 9 years designing spill prevention systems and leading teams in the area of integrity management.

For 4 years, Neré served as the initial incident commander for oil spill response in Prudhoe Bay, Alaska, where he responded to more than 100 hydrocarbon spills. During that time, Neré was involved with ISB testing and helped develop new equipment designs for mechanical recovery response in the arctic environment, including innovative equipment designs for tundra and for fast-moving rivers. He also successfully interfaced with state and government agencies regarding oil spill response plans post-OPA 90 regulations. In compliance with stringent environmental response plans, Neré has trained responders in a variety of environments.

With his unique mixture of oil spill response, operations and engineering skill sets, Neré is helping to fill an existing technical gap in the emergency oil spill response industry.

Dr. Thomas Coolbaugh

Dr. Thomas S. Coolbaugh is a Distinguished Scientific Associate in the Oil Spill Response Technology Group at ExxonMobil Research and Engineering in Fairfax, Virginia. As the leader of the Oil Spill Response Technology group, he provides technical guidance and training on the full suite of oil spill response strategies in support of global operations. In this position, his focus includes dispersants, in-situ burn, and remote sensing. He has held a number of positions at ExxonMobil. He is the author of various publications covering a range of subject matter including oil spill response technology. Dr. Coolbaugh received his Ph.D. in Chemistry from the California Institute of Technology. He also has an M.S. degree in the Management of Technology. He is Chair of IPIECA's Oil Spill Working Group, a member of the American Petroleum Industry (API) Spills Advisory Group and the Marine Preservation Association Dispersant Advisory Committee. Most recently, he was on the National Research Council Committee on Oil Spill Response in US Arctic Marine Environments.

Annex 6 – Pictures