

## **Global Dispersant Stockpile: Part of the Industry Solution to Worst Case Scenario Readiness**

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### **ABSTRACT 300652:**

Within the oil industry, the lessons learned from the Macondo incident, have prompted an in depth look into readiness for worst case scenarios in the future, giving rise to a number of Joint Industry Projects. One such project was the development of response-ready subsea well capping devices. Another initiative highlighted the need for an available stockpile of dispersant. The needs for this dispersant stock stems from the unprecedented amounts of dispersant called on during the Macondo incident, for use on the surface and through the new subsea injector systems. Dispersant suppliers need several weeks to begin production, and ongoing supply flagged up limitations in acquiring some of the raw materials for manufacture.

Oil Spill Response Ltd was given the responsibility of procuring and managing the stockpile for our member companies, as the project manager in charge of procurement and implementation. It made sense to utilize and expand on the logistics already in place for the dispersant stockpile. The dispersant purchased was 5000 cu.m. of the 3 dispersants with the widest global approval for use. The figure of 5000m<sup>3</sup> was based on what was needed 30 days of subsea and aerial dispersant use during the Macondo incident.

Unfortunately, following the incident, there were a number of 3<sup>rd</sup> party claims against the manufacturers of the dispersant. This prompted the dispersant suppliers to seek protection from the legal implications of dispersant use. Achieving this protection had to be practical for those purchasing dispersants, as well as robust enough that the dispersant suppliers were comfortable supplying their product. This resulted in a significant amount of months spent on legal negotiations. Once an agreement was reached on these issues were settled, and after the initial 30 days of dispersant for response is in place, the ongoing project will look at working with suppliers to establish stocks of raw materials and making production more reliable during an incident, as well as working with members of the industry on contingency planning and logistical considerations surrounding the stock.

Companies who subscribed to the stockpile will have 5,000 cu.m. of dispersant, split into various locations around the globe, available for both small and large incidents. Future scope for the stockpile includes tabletop and mobilization exercises to test the speed and logistics of response in preparation for an incident, which the hope is, will never happen.

### **INTRODUCTION:**

#### **Industry reactions to Macondo:**

After the Macondo incident in the Gulf of Mexico, the oil industry has spent significant amount of time analyzing the lessons to be learned from the event, and ensuring these lessons are communicated to the wider industry. The International Oil and Gas Producers (OGP) formed the Global Industry Response Group (GIRG) and tasked the group with identify learning opportunities both on the cause and in respect of the response to the

incident. Nineteen recommendations were identified and these are being addressed via a three year Join Industry Project (JIP) funded by oil industry members. The spill response specific portion of the JIP (OSR-JIP) has initiated discrete projects or provides support to projects initiated by other trade associations in related subject areas. The OSR-JIP is managed by IPIECA, a global oil and gas industry association for environmental and social issues, on behalf of OGP in recognition of this association's experience with Oil Spill Response matters.

These 19 recommendations within the JIP covered a range of topics. Some include a more in depth exploration of response strategies, such as the in-situ burning technique, aerial dispersant application platforms and the effectiveness of the use of volunteers /local workers during a spill. Several topics cover the tools used in command centres during the response, such as oil spill modelling, surveillance, and visualisation, as well as suggesting methods of streamlining all of these different inputs of information into one common operating picture as well as pre-response planning and building an understanding of what response equipment is available globally from different organizations.

There were a number of the JIP recommendations focused on the use of dispersant as a response tool. These included

- A report highlighting necessary steps required for dispersant education, ranging from communication with local government, to continuing studies and publications on dispersant toxicity and human health.
- The further study of dispersant use subsea was a specific topic, with focus on determining the most effective dispersant type as well as the most effective application procedure.
- Recommendations for improving the speed of dispersant logistics at the beginning of an incident and the ongoing supply.

The likely uses of dispersant during a subsea incident are two fold. The first is the traditional use of dispersant, which is applied to the surface of the water to break the oil into smaller droplets within the water column. This promotes the breakdown of oil over time by bacteria living in the water column. The second use of dispersant assists with the creation of a safe working environment on the surface above the sub-sea release. Dispersant injected at the subsea wellhead begins dispersing the oil within the water column, and thereby reduces the amount of volatile organic compounds within the crude oil from surfacing. This creates a safer working environment for ships to conduct operations on the surface above the loss of well control incident. This multifaceted use of dispersant means that a substantial ongoing supply is needed.

There were a number of issues related to dispersant supply for an ongoing spill that became apparent during the Macondo incident. The suppliers of dispersant, particularly the larger companies, do not have dispersant as their main product of manufacture. Most deal with other petrochemical by-products such as rubbers and other chemicals as their core business. It can take up to 8 weeks for a dispersant manufacturing company to change production lines, order raw materials and start producing dispersant for shipment for non emergency purposes. This can be shortened to 4-6 weeks if necessary, however it is still a substantial amount of time which could compromise the overall response. It also became apparent, that when an incident lasts for an extended, some of the raw materials used in the manufacture of dispersant become harder to source, and can affect how quickly dispersant

can be produced. This is of particular concern in an incident where dispersant is being applied in both surface and subsea elements of a response.

### **The Dispersant Stockpile**

Oil Spill Response Limited was given the responsibility of implementing main solution to the potential logistics supply issues in an emergency: easily mobilized and substantial stocks of dispersant, for use in the early portion of the spill. As part of spill response and preparedness OSRL also manages the Subsea Well Intervention service (SWIS) which provides a stock of subsea response equipment globally, so the experience and infrastructure necessary to acquire and manage a large stock of dispersant is already in place.

The storage locations for the stockpile were set to reflect the major areas of current exploration and Production: the Gulf of Mexico, Malaysia, South and West Africa, the eastern coast of Southern America. Most of the chosen locations are in proximity to an already established OSRL response base, to make use of the logistics network that is in place. The total amount of dispersant across the locations to be stocked was set to address the first 30 days of response in a subsea incident. According to the records from the Macondo incident, 160 m<sup>3</sup> per day of dispersant were used between subsea response and surface operations. 5000 m<sup>3</sup> is the initial stock of dispersant calculated to provide fast access stock for 30 days of response. This means that response operations can begin without a substantial delay while the manufacturers of dispersant begin production.



Fig.1 Global Dispersant Stockpile Locations

### **Project Scope:**

The decision of which dispersants were chosen for the Global Dispersant Stockpile took into account a number of factors. Research on subsea application of dispersant is currently being pioneered, but for the sake of establishing a stockpile quickly, OSRL looked at the historical effectiveness of the different dispersants for surface application. The second

factor in the decision was the speed of production available from the dispersant suppliers, alongside the size of their business and manufacturing capability.

However, the major consideration was the landscape of global governmental permissions for use of dispersant. A number of countries around the globe have a legislation surrounding the use of dispersant. For example, in the UK, dispersant use is allowed, but only if the location meets the parameters of minimum water depth and distance from the isobath. These limitations are put into place to minimise the potential environmental effects of dispersant. Within this legislation is a list of dispersants that are approved for use within UK waters. These dispersants are approved after a specific test of toxicity and effectiveness<sup>3</sup>. Many countries have their own tests and acceptable benchmarks for dispersant to be approved. The dispersant selected for the stockpile were the three most commonly approved among those countries with a testing regime and the location that each type of dispersant is stored in reflects this approval. As part of the project, a general log will be kept of country specific dispersant approvals; however, this is only ever a general advisory document. <sup>Appendix</sup>  
<sup>1</sup>. Dispersant approvals do have a tendency to change, either via public opinion after an incident, or the statutory expiration of a current approval. An prime example of this is Corexit9500A, whose approval in the United Kingdom lapsed, and was then re-approved in December 2013.<sup>12</sup> The countries outlined in Appendix 1 are those who have made some reference the use of dispersant in their national contingency plans. In many cases, this inclusion is driven by past or present industry campaigns within the region and there are a number of coastal states that have not created a clear policy on dispersant use in their waters. The absence of a policy can lead to discussions, disagreements and ultimately delays the application of this time-critical response<sup>1</sup>

### **Implementation:**

With the project planned and set, the next steps were to begin purchasing dispersant for those companies who contributed to the implementation of the stockpile. However, when it became time to place the order for dispersant, it became apparent that there was quite a large issue surrounding dispersant supply.

Following the Macondo incident in 2010, there were a number of claims brought against those parties involved in the spill for alleged damages to the environment, to livelihood and to health. NALCO, the manufacturer of the main dispersant used during response, Corexit EC9500A, found itself the focal point of part of the ongoing litigation. These claims were overturned on the 27<sup>th</sup> of November 2012, however, it became clear that parties such as dispersant manufacturers and response organizations were at risk of becoming involved in litigation.

Within the scope of that risk, the manufacturers of dispersant began to look to protect themselves from the potentially financially damaging legal situation that they might become involved in if their dispersant was used in another spill, and purchasing dispersant became a far more complicated process than it ever has been. This was a major issue for the project, and delayed the implementation of the stockpile for almost seven months. Within that timeframe, the major discussion was around the contracts to be signed between OSRL, the manufacturers and those 19 major oil companies who had invested in the project. A balance needed to be struck between the manufacturers' need to have sufficient legal protection, and creating a contract with terms and conditions that the members of the industry could commit to within the scope of their business. Over those seven months, a contract was agreed, under which those companies who use dispersant have indemnified the dispersant manufacturers against any litigation arising from the use of their product. It was on this basis that the first

purchases could be made for the Global Dispersant Stockpile.

### **Mobilization:**

Each location chosen for the stockpile has aspects to their import/ export regime that changes the expectation for initial response times within that region. Aspects such as availability of hauliers, customs procedures, and ease of vessel chartering change from country to country and need to be built into the logistics plan for moving dispersant out of the storage locations.

### UK

The UK has a well tested logistical pathway for the movement of response equipment due to a history of responding to incidents with equipment and personnel both in-country and abroad and there were minimal concerns over mobilizing the dispersant stored there. The only major consideration to be taken into account is the availability of hauliers during peak seasons e.g. the Christmas holidays. This was addressed through a retainer contract with a major UK logistics company, which ensures adequate drivers and trailers are always held, during weekends and major holidays.

### South Africa

South Africa has an abundance of hauliers, both country-wide and local to the site where the dispersant will be stored. There is only one minor potential issue with regards to an emergency mobilization, and that is exportation initiated outside of the working week. Working hours for export clearance are quite reduced on weekends and may result in some delays. A good dialogue with the customs authorities may assist with these timescales. Additionally, this kind of information is fed into the large scale mobilization plan, so that mobilization can begin with the most accessible stock, which may not necessarily be the closest.

### Singapore

Similar to the UK, the industry has had experience of moving response equipment out of Singapore. The logistics for both road movement and international charter are heavily scheduled with minimal scope for arranging transport in less than 24 hours. However, once scheduled, transport is traditionally reliable.

### France

Transport is readily available in France, with several major ports near the storage location, including the airports serving Paris and a dedicated cargo airport in Vatry. The main logistics considerations specific to France are restrictions on the movements heavy goods vehicles on Sundays, and public holidays. The storage location chosen for the stockpile is located within the airport complex of Vatry, and stored with a global logistics company, and transport can still be arranged during those times to airside at Vatry.

### USA

As with the UK and Singapore, the industry is well practised in moving response equipment into and out of the USA. Florida, where the dispersant will be stored, has been shown to have adequate resources for moving goods on the road, as well as a clear and established process for the import and exportation of goods. All necessary documentation and procedures for the US – based dispersant stock, can be based on those already in place for existing stock. An additional warehouse, separate to the OSRL response base has been leased

for the purposes of the stockpile, so thought has to be given to safety and movement specific to that warehouse.

Brazil:

An understanding of the intricacies of local legislation has taken some time, and is still an ongoing part of establishing response procedures in Brazil. A global logistics company, with several branches in Brazil, is being used to store and mobilize the dispersant so that OSRL can pull from their experience with importation and exportation. Local knowledge is also being captured from the capping stack response base in order to assist in building a clear picture of the processes in country and eventual timescales for mobilization. The project is now in the process of solidifying of knowledge surrounding taxation, necessary registrations, RADAR (import& export licensing), nota fiscals (tax accounting), and other aspects of conducting international business within Brazil.

In all of the storage locations, the key to a successful mobilisation of the stock in an emergency will be the industry supported exercising of response procedures. Each location, including the ones without logistics concerns, will be exercised to ensure smooth and ultimately safe mobilizations, ranging from loading within the warehouse, to international freight logistics.

#### **CONCLUSION:**

Once the stockpile is in place and response ready, there are a few ongoing services that need to be maintained to ensure that the stockpile is effective. The first service will be exercises and simulations. Despite the fully fleshed out logistics process set up for the Global Dispersant Stockpile, we can only truly know that what we have put in place is fully effective by testing the process. These tests range from paper only exercises, to the full mobilization and movement of the dispersant itself. As we move forward, we will be engaging with our members to test out the movement of dispersant to a number of areas around the globe so that any potential issues can be flagged and corrected before a real incident. Part of the exercises will be mobilizing the stockpile as part of a bigger response, involving personnel and other types of equipment, such as the Subsea Intervention Response Toolkit and capping stack.

Other services will require OSRL to maintain communication with those companies working on the other dispersant based JIP projects. Within the scope of the advocacy and education of dispersant use, the industry will need to maintain awareness of the changing landscape of permissions for dispersant use by governments globally as well as engaging where possible to promote the responsible use of dispersant as a viable strategy for response. The industry will also need to keep up to date with current research being conducted on dispersant effectiveness<sup>4,5</sup>, both surface and subsea, to make sure that the dispersant we have stocked is relevant and continues to be of use to the industry.

## Appendix 1

## Global Dispersant Approvals – updated February 2014

\*\*- Information supplied by manufacturer

Region	Country	Finasol OSR 52	Dasic Slickgone Ns	Corexit 9500	Approval Entity
Africa	Angola <sup>6</sup>	Application in Progress**		Approved <sup>6</sup>	Ministry of Petroleum of Angola
Australasia	Australia <sup>8</sup>	Beginning approval process **	Approved <sup>8</sup>	In the process of renewal	Australian Maritime Safety Authority
Middle East	Bahrain <sup>7</sup>	Approved by ROPME.	Approved by ROPME.	Approved by ROPME.	Marine Emergency Mutual Aid Centre
Europe	Belgium	Dispersant use is an accepted strategy but no set approval list. In an incident, guidance will be taken from approvals of other Bonn agreement countries			Management Unit of North Sea Mathematical models
Caribbean	Belize	Dispersant use is mentioned in the National Contingency plan, however no set approval list or process exists. During an incident approval may be applied for.			Department of the Environment
Africa	Benin <sup>6</sup>	Approved	Approved	Approved	National oil Spill Response Centre
South America	Brazil	In the process of renewal		Approved	IBAMA (Brazilian Environment and Natural and Renewable Resources Institute)
Africa	Cape Verde <sup>6</sup>	The National contingency plan stipulates that dispersant approval will follow the principle of authorizations set out in the Barcelona convention for dispersant use			
North	Canada			Approved**	Environment Canada

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America					
Africa	Cameroon <sup>6</sup>	No set list - during a spill will consider dispersant approved for use in the USA, UK and France - particular mention made of EC9500			
Africa	Congo - Democratic Republic of <sup>6</sup>	The Ministry of Environment is currently implementing an approval process that will require each operator to apply for use of dispersant in their area of activity. Until this process is in place, any large incident require dispersant will follow the approval standards of the US, France, Great Britain, Norway and Australia			Ministry of Environment
Africa	Congo <sup>6</sup>	Currently no set approval system for either before or during a spill. The expectation is for local oil terminals to conduct response.			
Africa	Egypt	According to the national contingency plan, each facility needs to apply for approval to use dispersant as part of its Pollution Emergency plan. Once it is established that dispersant response is a viable option, and will not affect the areas already banned for use e.g. water ways, bird breeding grounds, coral reefs, etc, then a standing approval for use of a named dispersant will be given. It is valid for 5 years.			Egyptian Environmental Affairs agency
Africa	Equatorial Guinea <sup>6</sup>	National contingency plan will follow the approval lists of Spain, France, England and the USA			
Europe	France <sup>12</sup>	Approved	Approved		CEDRE
Africa	Gabon <sup>6</sup>	Approved	Approved		Crisis Ministerial Committee
South America	Honduras	No set approval process, however, dispersant usage is described in the National contingency plan and usage is considered on a spill by spill basis.			Ministry of Natural Resources and Environment (SERNA)
Asia	Indonesia			Approved	Directorate of Oil and Gas (Migas)
Middle East	Israel	Approved**		Approved**	Ministry of the Environment
Middle East	Iran <sup>7</sup>	Approved by ROPME.	Approved by ROPME.	Approved by ROPME.	Marine Emergency Mutual Aid Centre



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Middle East	Iraq <sup>7</sup>	Approved by ROPME.	Approved by ROPME.	Approved by ROPME.	Marine Emergency Mutual Aid Centre
Middle East	Kuwait <sup>7</sup>	Approved by ROPME.	Approved by ROPME.	Approved by ROPME.	Marine Emergency Mutual Aid Centre
Asia	Malaysia		Approved**	In the process of applying**	Department of Environment
South America	Mexico	No set approval list or process, however it will be of assistance during an incident to already have documentation of toxicity testing to expedite approval. A National Spill contingency plan has been drafted but is still waiting on approval and circulation.			La SEMAR (Secretaría de Marina)
Australasia	New Zealand	Approval application in progress**	Approved	Approved	Maritime New Zealand
Africa	Nigeria <sup>6</sup>	Approved**			National Oil Spill Detection and Response Agency
Asia	North Korea	No prior approval system, will approve use during a spill based on IMO guidelines on toxicity, biodegradability, etc although dispersants are considered a last resort			Korean Coast Guard
Europe	Norway	No set approval list - Companies that have dispersant in their contingency plan, must have carried out toxicity and effectiveness testing. <a href="http://www.klif.no/artikkel___34957.aspx">http://www.klif.no/artikkel___34957.aspx</a>			Climate and Pollution Agency
Middle East	Oman <sup>7</sup>	Approved by ROPME.	Approved by ROPME.	Approved by ROPME.	Marine Emergency Mutual Aid Centre
Asia	Papua New Guinea	No official approval list, however a small stockpile of Dasic Slickgone NS is held by the local government			National Maritime Safety Authority
Asia	Philippines			To Be renewed**	Marine Environmental Protection Command (MEPCOM)

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Caribbean	Puerto Rico	Instead of approving specific dispersants, this country has adopted a zonation policy for its coastal waters. An incident in a green zone does not need prior approval for dispersant use. Yellow and red zones will require approval on a case by case basis.			US Coast Guard - Puerto Rico
Middle East	Qatar <sup>7</sup>	Approved by ROPME.	Approved by ROPME.	Approved by ROPME.	Marine Emergency Mutual Aid Centre
Europe	Russia			In the process of applying**	Ministry of Natural Resources
Middle East	Saudi Arabia <sup>7</sup>	Approved by ROPME.	Approved by ROPME.	Approved by ROPME.	Marine Emergency Mutual Aid Centre
Asia	Singapore <sup>9</sup>	Approved	Approved	Approved	The Maritime and Port Authority of Singapore
Africa	South Africa	Dispersant is accepted as a part of spill response, no specific approvals			Department of Environmental Affairs and Tourism
Asia	Sri Lanka		Approved**		Marine Pollution Prevention Authority
Africa	Togo <sup>6</sup>	Approved	Approved		Ministry of the Environment
Caribbean	Trinidad			approved	Ministry of Energy and Energy Affairs
Europe	UK <sup>10</sup>	Approved	Approved		Maritime and Coast Guard Agency
Middle East	United Arab Emirates <sup>7</sup>	Approved by ROPME(*).	Approved by ROPME(*).	Approved by ROPME(*).	Marine Emergency Mutual Aid Centre
North America	USA <sup>11</sup>	Approved	In progress	approved	Environmental Protection Agency
Caribbean	Virgin Islands (UK)	No set pre-approval system is in place. During an incident dispersant can be approved in line with criteria agreed in the Caribbean Islands OPRC plan.			Marine Pollution Action Group

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Caribbean	Virgin Islands (US)	Instead of approving specific dispersants, this country has adopted a zonation policy for its coastal waters. An incident in a green zone does not need prior approval for dispersant use. Yellow and red zones will require approval on a case by case basis.	US Coast Guard - Puerto Rico
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