IMPROVEMENT FOR ESTABLISHMENT OF THE TIER 2 OIL SPILL PREPAREDNESS AND RESPONSE CENTRE FOR THE INDONESIA UPSTREAM OIL AND GAS ACTIVIEIS

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Overview

In the era of environmental management issues, each business activity is forces to safeguard the environment and its resources in the most possible way. Despite the growing attempt to do more protection on environment, the majority of business are still need to improve their approach to handle various environmental problems. One of the most important aspect that all under commitment of environmental management system in the Indonesian upstream oil and gas activities is oil spill preparedness and response action.

BPMIGAS, Government Agency of the Upstream Oil and Gas Activities, is the lead any oil spill preparedness and response process, Tier 1 and Tier 2, allowing by almost 270 Production Sharing Contractors (known as PSCs) operating in Indonesia today. Within the framework of the action, BPMIGAS has to sets the guideline or operational procedures for the oil spill preparedness and response and forced to safeguard PSCs activities in the most possible way to manage better oil spill handling.

Being the largest archipelagic state in the world – consisting of about 17.000 island- the Indonesian marine coastall zone in Indonesia is endowed with diverse natural resources, ranging from non-renewable resources such as oil, gas, or mineral and renewable resources like fish, seaweed, mangorve, etc. The biological richness and diversity of coastal and marine resources have been a major food supply as well as state income to support national economical development. Furthermore, the areas have also many other functions, including transportation and harbours, tourism, agribusiness and industrial development. Oil spilled on the shore is aesthetically offensive, disrupts recretional and commercial uses of the polluted area, and damages organisms and habitats. This may, however, take months to year depending on the amount and kind of oil spilled, the site of the area polluted and types of habitat and organisms affected. Therefore, a large effort usuallly is made to remove or disperse strended oil as quickly as possible. Although often not explicity stated, the traditional rationale for most cleanup activities has been political and economic.

The oil spill from petroleum activities potentially causing an oil spill at marine coastal result from several sources such as pipeline rupture, loading activity, well blowout from drilling activity, FSO or FPSO collison, marine terminal operation, etc. Some recent event that oil spill accident generally caused conflict among a number of different parties, including oil company, local government, tourism industry and conservation authority, fishermen, coast residence, NGO, etc. Most of the ensuring conservation focused on pinpointing who was most responsible for the catastrophe and determining how much they should pay to resolve the

situation. BPMIGAS ensures that the appropriate level of preparedness for individual operational oil and gas field in Indonesia is available on appropriate structures and resources to respond oil spill or pollution for tier 1 and tier 2 accident. The preparedness is focus on built on the principle of cascading resources, which mean that in the event of a spill, the resources of a specific area can be supplemented by individual oil company for tier 1 accident or supplemented with those from other regions (geographic areas) for tier 2, or from our both national and international partners, as needed.

In general, the oil spill tier 1 or tier 2 accident in the Indonesia offshore petroleum operation is thought to have extensive negatives impact on variety of ecosystem in the marine coastal and its surrounding environment. Usually, the effect is thought to have had a level of contamination in the form of residual oil plumes and tar ball which may reaching the ocean water surface, water column, the sea floor or may effect to the nearest coast. These general problem may only anticipating by appropriate oil spill preparedness and response. Pollution or contamination accident could be minimized or prevented over both short and long term.

Problem and Solution

BPMIGAS and PSCs are presently looking better way of making the oil spill preparedness and response for upstream oil and gas in Indonesia. They are forced to safeguard business activities in the most possible way to manage better environment protection and conservation from oil spill accident. Despite the growing attempt to do more practising of the environmental management, the majority of PSCs still have unappriopriate approach to handle various spill accident. In many cases, the oil spill handling is somewhat negleted which tends to create problem in oil spill preparedness and response ways. The specific challenges in keeping respon capabilities such as follows :

- Each industry player (upstream and downstream oil and gas, shipping and sea port) provides their Tier-1 OSR equipment but still lack in personnel competency and equipment maintenance
- Engagement among industry players is low and not easy when needed to support any spill response in the real event
- National Oil Spill Contingency Plan is not up todate and invisible which creates unclear roles and responsibilities on “who is in charge” when the spill escalates to Tier-2 and even Tier-3
- Many of Tier-1 Oil Spill Contingency Plans have limited information on environmental sensitivity areas as well as spill trajectory modeling which gives significant efforts in providing response strategies
- There are uptream oil and gas business activities offshore located remotely and close to the country borderlines that require rapid response for equipment deployment. Mutual aids among the industry players in the area may not be able to deal with the escalated scale in the response actions due to commitment for resources realease is low

Indeed, most PSCs now realize that they have to provide greater understanding of the role and function of response team with open communication internally and externally, improve their oil spill preparedness and response ways and approach in different organizational settings,

enhance their capability and competencies by a wide ranges of diverse training and exercises, and complete the spill equipment and facilities which is makes PSCs more credible and accountable in responding the spill accident. Driving this improvement efforts, from PSCs management prespective, the oil spill tier 1 and tier 2 preparedness and response action are moving forward and reach much better approach and implementation of oil spill handling and meld these improvement together to solve complex problems in the environmental management efforts on marine and costal zones.

At this time, PSCs exploration and production which are operating on marine coastal have prepared the oil spill preparedness and response system. Readiness of the PSCs are merely the ability to control the oil spill in own operation area based on risk analysis and oil spill scenarios that might occur from the facility itself is called Tier-1. When oil spill exceeded the equipment capability and personel owned, currently has established 8 (eight) different region of cooperation for some PSCs to prepare the oil spill response through BPMIGAS coordination. However, every PSC in the region will bring exposure to the risk of PSC itself if its Tier -1 equipment required to be mobilized to spill areas in other PSC. That is, that PSC will have less of ability to handle the oil spill in its operation area when the oil occur at the same time. This will be a constraint if the oil spill location that need to be assisted are located quite far from the location of the PSCs operation itself. Therefore, we need a strategic and effective effort to design a method of spills prevention which exceed the ability of PSC to include Regional Response Team organization, equipment and facilities, communicatiion and information system, etc. However, the tier-2 oil spill response capabilities in each area of coordination to determine whether or not an additional support is needed for responding the oil spill after initial response carried out by the incident PSC is uncontrollable.

The response capability assessments were performed to each PSC covering their stockpiles and readiness, manpower/labor resources, oil spill contigency plan completed with the trajectory or stochastic modeling including the environmental sensitivity areas. Analysis was done on each PSC based on upon the probability of oil spill due to operation failure/malfunction with the estimated volume discharge to the open sea/water or land at the onshore activities. Considering the supports that can be provided on each area of coordination, a simulation was done based on response time, percentage of stockpiles that can be released from other adjacent PSC's to determine whether the support are sufficient to protect the environmental sensitivity areas as well as shoreline clean up.

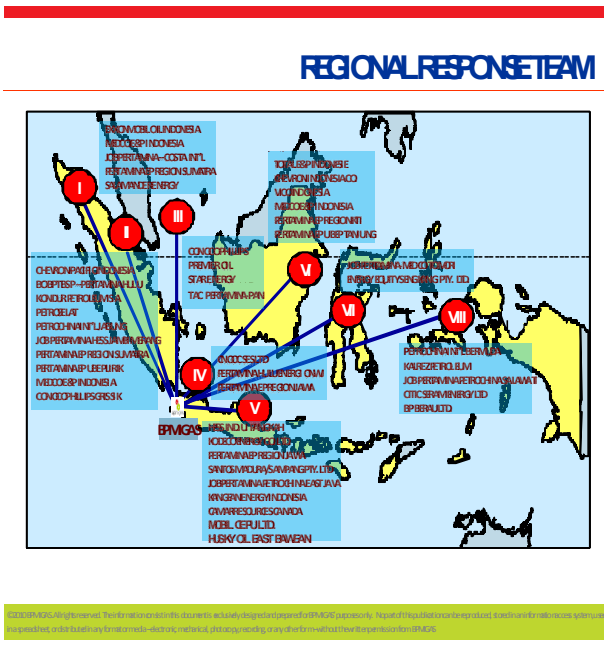
Roles and Responsibilites

In executive order stipulated in the President instruction of Indonesia no 169/2006, delegated certain functions and responsibilities to a number of authorities. General concepts of role and responsibilites each authority in oil spill preparadeness and response such as follows :

- BPMIGAS has develop procedures for addressing oil discharges and releases of hazardous substans, pollutants, or contaminants and coordinate with the PSC : their planning, preparedness, and activating for a response action. PSC responsible to make available

facilities and resources that may be useful in a response situation, responds operations at the scene of a discharge or release, and notification and communications with related authorities. For tier 2 accident, Regional Response Team responsible for regional planning and preparedness activities before response actions and for providing advice and support to the on-scene commander.

- Directorate General of Oil and Gas- Ministry of Energy and Mineral Resources responsible for publishing guidence document for oil spill in coming report and monitoring response – related with the spill response actions – and enhancing the coordination among responsible government agency, when necessary.
- Ministry of Environment provides regulation and policy for environmental pollution control and its remedial action as well as damage claim. In emergency situation, the Ministry of Environment can identify, control and abate pollution in the spilled areas and advice and assist in their respective areas of expertise. Environmental Bereau in the regional level provides guidance and assistance in operation of shoreline impact management and cleanup operation.
- Ministry of Transportation have duties to evaluate and monitore in coming spill report, and establish national planning and coordination throuhg the national response team. The team consists of representatives from the realted agencies which each agency shall designate a member to the team and sufficient alternates. The chair of national response team is Ministry of Transportation.
- Support agency means the agency or agencies that provide assistant to furnish necessary data or information required by BPMIGAS/PSC as well as others related authorities for response action. Basically on scene coordinators or remedial project managers directs communication and coordination with support agencies in the region level. As part of the preparedness and response action of the spill, support agency shall be at the scene of a discharge or release.



Regional Response Team.

General

Regional planning and coordination of preparedness and response actions for tier 2 accident is accomplished through Regional Response Team (RRT). The RRT provides the appropriate regional mechanism for development and coordination of prepared ness activities before a response action is taken and advice to the on scene coordinator during such response actions. The important principals of the RRT mechanism are a standing team which consists of designated representatives from each PSC as figure out in the following picture, and incident specific teams formed from the standing team when the RRT is activated for a spill response.

Technically, the RRT should :

- Provide response resources to major spill tier 2, conduct the dru=y and wet exercise needed, and report letter to BPMIGAS and others related agency.
- Review and command on local emergency response plans or other issues related to the preparation, implementation or exercise of the spill response, and ensure the oil scpill contingency plan is effective
- Evalute and conduct advance planning for activate the on scene commander, regional and local response capabilities, and use of dispersants, biological additives or others simialr type of spill chemical agents in accordance with the regulation
- Conduct annually review of the preparedness and response actions carried out during preceding period and consider changes of not effective the contingency plan to combat the spill

General Analysis

In addition, the RRT has made detail analysis for each region to establish better engineering design of the RRT concept as well as preparation for oil spill required equipment. The analysis of each Region/Area could be figure out such as follows.

√ **Area-1**. Due to the number of PSCs activities in the area are not significant and mostly onshore facilities, it has been decided that the tier-2 preparedness and response to be combined with Area-2.

√ **Area-2.** Most of PSC's are operate onshore facilities, except one PSC that just operates offshore facilities with spill scenario from loading activity which is at Oil Wharves that could move to open water. In this event, other PSC will not be able to share their equipment in the event of tier-2 spill occured. In addition, the amount of their equipment that can be shared is not adequate to support the tier-2 spill scenario. An independent tier-2 oil spill response canter is needed in this area in order to have higher stage of readiness of the equipment and faster response time, especially in the initial response requirement.

√ **Area-3.** All PSC's are operate offshore facilities and most equipment is for offshore spill. Although all operations are on offshore, all PSC's could not share their equipment due to the distance and limited equipment available at each PSC location. It was identified that some PSC'sare located very close to country boundary and it requires a quick deployment if the spill goes beyond tier-1 capability to avoid the oil fate crossing border line and potential to hit sensitivity areas in other country. It is recommended to station an independent tier-2 oil spill center offshore at the close proximity to these PSC's.

√ **Area-4**. This area dominated by Pertamina and one other PSC who operate mostly offshore. Pertamina prepared their contigency by having mutual agreement with Pertamina Terminal that stock some in-shore booms and can be used to protect the shoreline. However, the releasability of the equipment is potentially low and reponse time for booms deployment is also critical since no dedicated vessels are available to pick up the booms. Under this circumstance, an independent tier-2 oill spill response is still needed in this area.

√ **Area-5**. Most PSC's operate offshore facilities and there are PSC's who can fully share their equipment if the tier-2 spill occured on the open sea(offshore). However there are still some PSC's

who will not share their equipment and this condition will limit the reponse capability because the amount of equipment if not sufficeint. In addition, ther is no dedicated vessel that can be used to pick up equipment from other PSC's. Therefore, an independent tier-2 oil spill response center with dedicated vessel is needed in this area.

√ **Area-6**. There are two operating PSC's that operate offshore facilities with spill scenarios occur on open water while other PSC's operate onshore. Only this two PSC's can share their equipment each other with offshore set of oil spill reponse equipment. However, the distance between the two PSC's are quite far which will take longer reponse time. In addition, the amount of their equipment that can be shared is not adequate to support one's tier-2 spill scenario. One dedicated vessel is available by one PSC but cannot be shared to others. Therefore, an independent tier-2 oil spill reponse center is needed in this area complete with dedicated vessel for booms deployment and dispersant spraying.

√ **Area-7**. This area consist of only 2 (two) PSC's with one offshore operations and the other one is onshore operations. Reponse time in providing the support to either one in the event of oil spill will not provide enough response time considering the distance between the two locations. In addition, the stockpiles for each locations are uniquely designed for onshore (Energy Equity) and for offshore (Medco). The recommendation for this area is for each PSC to increase their own capabilities to handle the tier-2 scenarios (self sufficient).

√ **Area-8**. Some PSC's in this area operate offshore facilities and only a few operate onshore. There will one PSc with spill scenario i. E. Loading line leaking and trunk lineleaking at Oil Wharves that could lead an oil spill onto open water. Only two PSC's that can share their offshore type oil spill response equipment while PSC's who operate onshore facilities have no offshore type equipment. This will limit capability in responding tier-2 incident. However, the onshore operating PSC's could have supports for onshore type equipment from the offshore operating PSC's. No dedicated deployment vessels/boats ara available in this area except JOB Pertamina-Petrochina Salawati but very low probability to mobilize other PSC's.

Scope

The concept that will be developed for preparedness of tier 2 spill response is to form a joint facility use for tier 2 spill prevention, specifically prepared for 24 hours. This facility will be prepared by a third party with the scope of provision of boats, equipment, personnel and facilities to support oil spill response operations. Plans related to the provision of tier 2 spill response service will be formed at least in 3 (three) locations with a representation of the western, central and eatern Indonesia. This facility will be managed by BPMIGAS and the cost of procurement and operation facilities will be shared (cost sharing) by the PSC that exist in each area.

Facilities to be provided in this service includes vessels, oil spill response equipment, management systems, personnel and other information systems to support oil spill response operations. If necessary, the facility can also support the Tier 3 oil spill response operations which is national scale. In this activity plan, will develop the ability of national services for the

Tier 2 oil spill response operations in offshore as part of national capacity building program. Here is a view of mechanism for zoning the Tier 2 oil spill response and could change according to the result of the study team. This division is based on the geographical map of Indonesia and also will be based on demographics of the mines working area that scattered at this moment either already producing or still in the exploration stage.

In preparation of the mechanism concept for tier 2 oil spill prevention will be realized based on the results of Tier 2 risk assessment in each region by using the competent consultants also input from sources both within and outside the country who have special expertise in the management of marine oil spill response.

Work Phase

The phase of realization for formation control centre Tier 2 as a whole are as follows :

1. Formation of teams and organizations for accelerate the realization of the use of shared facilities Tier 2 oil spill response.
2. Planning of work the use of shared facilities spill response Tier 2 on three areas or suggentions of the review team.
3. Implementation of risk assessment (risk assessment) in each area to determine the mitigation scenario and the required minimum equipment.
4. The preparation of procedures for oil spill response Tier 2 on marine coastal.
5. The preparation of the budget related to the procurement and operation of the use of facilities spill response Tier 2 in 3 (three) areas established.
6. The processes of tendering and procurement the use of shared facilities Tier 2 spill response in accordance with the procurement procedure prepared by BPMIGAS
7. Realization for use of shared facilities Tier 2 spill response.
8. Monitoring and reporting the implementation of the use of joint facilities Tier 2 response.

Organization Structure

To obtain maximum results and achievement of objectives above, it is necessary forming a team consisting of representatives of BPMIGAS, and PSCs. Coordinating team consisting of experts in the field of Safety Management Employment and Environmental Protection, espesially in the case of oil spill response and all coordinator of area for oil spill response on BPMIGAS – PSC area. In order to the teams can work effectively and efficiently and well coordinated, then the following are the duties and responsibilities of each function.

Sponsor

a. Responsible for the acceleration of the establishment operations facilities of oil spill response Tier 2 category in marine.
b. Establish policies and guidelines required in accelerating formation operations oil spill response Tier 2 category.
c. Giving full suport to the team organizer in order to work in a professional, right on target and on time in accordance with applicable law corridor in Indonesia
d. Fully committed to the implementation of a good teamwork and continuous resulting in useful recommendations, especially for Oil and Gas environment and for country in general.

Advisor

a. Giving input and guidance to the team both in the form of techical knowledge, operational and legal policies relating to mitigation oil spill in waters.
b. Giving input and advice to the team about the mechanism of teamwork, coordination.

Members

a. Responsible to the head executive organizing in implement the tasks given by the team.
b. Prepare materials needed by the team of inventory data oil spill response capability in the waters of Tier 1 category for each areas.
c. Giving evaluation and identification of problems areas in case of oil spill scale that exceeds the ability of the equipment operator.
d. Attending meetings of the discussion relating to technical issues, operational, legal and financial and procurement.
e. Coordinating with operators who are in the area if there are important things required of these operators to support the process of preparation the framework formation of oil spill response centre Tier 2 category in waters.
f. Assisting to do the socialization of the work of team to operators in the area.
g. Coordinating implementation of the procurement plan for the formation of Tier 2 facilities in accordance with the schedule will be determined by the coordinating team.

ERC BPMIGAS

The Emergency Response Centre of BPMIGAS is the national communication centre and handling activity related to spill response actions. The ERC acts as the first point of contact for all kind of spill accident reporting and notification by PSCs. Notice of discharges must be notified a free call number and the ERC will continue to notify the spill report to other related authorities for further coordination after evalute incoming information. Immediate advice is also directed by the ERC as necessary, in particularly in response oil spill in greater amount. As part of the planning and preparation for response, the ERC collect pertinent facts about the spill, such as its sources and cause, the identification of potentially responsible parties, the nature, amount, and location of discharges, the potential impact on public health, safety, and

the environment as well as residence properties and appropriate cost documentations. The ERC efforts shall be coordinated with PSC and other related authorities to consult and ask their assistance to perform the spill response as needed.

Conclusion

A strategic and effective effort to develop the oil spill preparedness and response action is needed. The RRT provides the appropriate regional mechanism for development and coordination of preparedness activities before a response action is taken. The principle component of RRT mechanism are a standing regional/area team, which consists of deisgnated representatives from each PSCs. The role of each team member is determined by the operational requirements of response to a specific discharge or release. Review and comment, to the extent practicable, on local emergency plan or other issues related to the preparation, implementation or exercise of such plans upon request by PSCs.

The benefits of having dedicated through this regional planning and coordination of preparedness and response such as follows :

- Learn many cases related with the commitment, communication way, technology application, infrastructure availability, people competencies, audit process, and continous improvement
- Through Regional mechanism and coordination, not only to response the tier 2 but also Tier 1 oil spill, is taken easily and clear response structure, both during preparedness coordination and response actions
- Communication and notification process of the spill incident could be designed and performed in appropriate way based on the regional/area contingency plan
- Preparedness and response the spill much easy , considering available legal remedies, arrive at the scene, equipment readiness, and coordination among responsible government agencies and public or private organization
- Perform training and exercise more comprehensive, cheaper, and reduces multiple outsourcing continuous to making more qualified professional responders for correct responses
- Have one Tier-2 OSCP for the regional area with Quick response/deployment, reduces coordination efforts, higher equipment and resources readiness and ready for shoreline clean up
- More supports for Tier-3 response nationwide
- Cost efficiency in term of self provision for Tier-2 equipment
- Added values for new exploration activities in the conditions of location remoteness and new players in exploration