From: Timmons, Shana
Sent: Mon Sep 13 20:08:18 2010
To: Smith, Trevor (GOM DWD); Devers, Kevin J; Al Monthiry, Wissam
Subject: Draft - Subsea Containment Section of Oil Spill Response Plan
Importance: Normal
Attachments: Oil Spill Response Plan-Subsea Containment Sections_09-13-2010.doc

Trevor, Kevin, and Wissam:
In order to prepare for the two-day workshop being held this Thursday-Friday, I wrote the first draft of the subsea containment section of the Oil Spill Response Plan. The task was to generate a few page high-level summary describing the methods, strategy, and approach for subsea containment in the event of an oil spill; this write-up will be added to Section 6 of the Oil Spill Response Plan. In order to ensure that the content is accurate and in line with our direction, please review the attached document and provide any comments via track changes. We have committed to turning in the subsea containment draft by Wednesday at noon (and I will be out of the office at the Texas A&M Career Fair on Wednesday) so please provide me with comments within the next day so that the appropriate changes can be made. Thanks.
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Best Regards,
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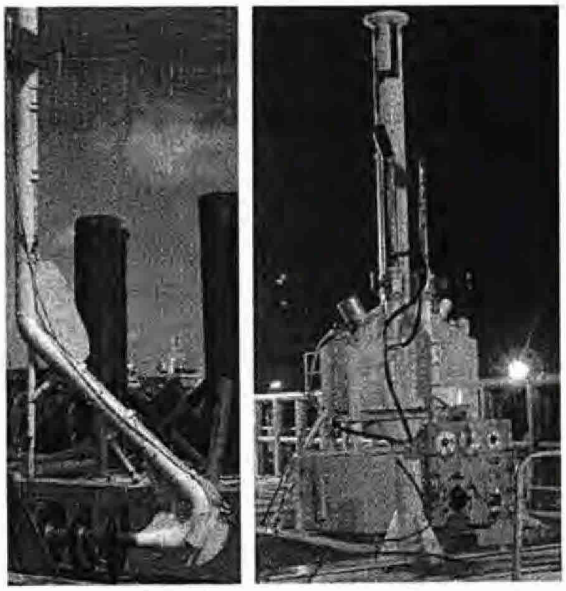
Oil Spill Response Plan
Section 6

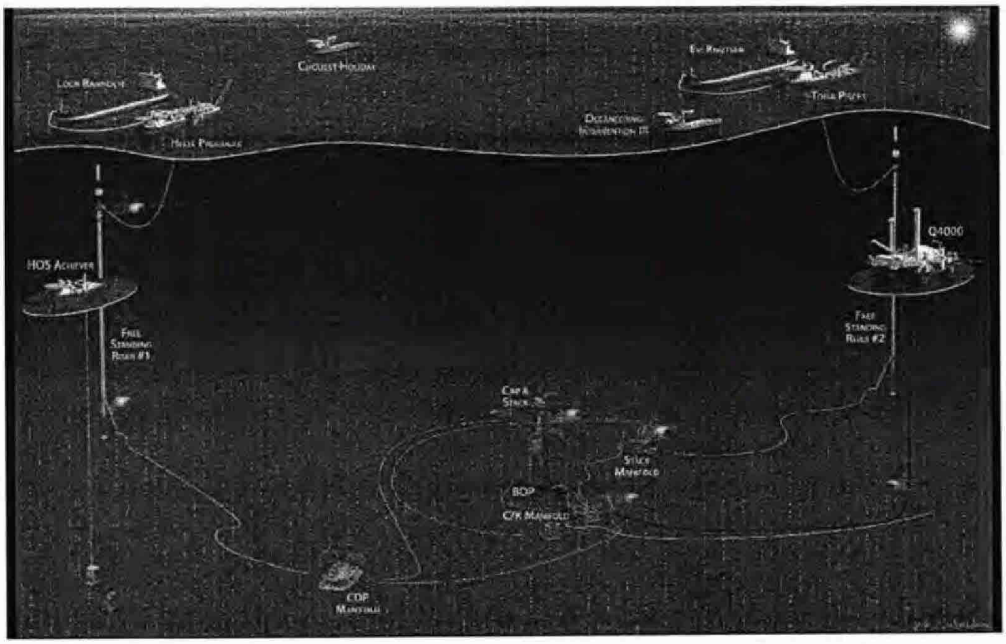
In the event that a well blowout cannot be contained and hydrocarbons are leaking into the sea, the appropriate personnel, vessels, and equipment should be mobilized immediately. The equipment, procedures, and experts catalog that was created after the Deepwater Horizon incident should be referenced to determine subsea containment experts, suitable subsea kit, available vessels, and relevant procedures, drawings, and other documents. The response team should also reference the Deepwater Horizon lessons learned register and capabilities documents. Critical contractors, such as Wild Well Control, Oceaneering, and Cameron, should be engaged in the effort immediately.

In order to contain hydrocarbons at the source as part of an early response plan, a vessel with surface processing capabilities, such as the drill ship Discoverer Enterprise or one of its equivalents, is essential. The selected vessel should be mobilized to the source site immediately upon notification of a well blowout and leaking hydrocarbons; this vessel can be used to collect hydrocarbons via a drill pipe using an open subsea containment device. If there is a leak at the end of a riser or piece of pipe, a riser insertion tube tool (RITT) can be used to siphon hydrocarbons from the source to the surface vessel. On the other hand, if there are hydrocarbons leaking from the top of the blowout preventer (BOP) stack and there are no debris blocking access to the BOP, an appropriate size top hat should be used for subsea containment. RITTs and top hats, which are open collection systems, should be used as early containment solutions while a more permanent solution is mobilized, deployed, and installed. If the riser system remains attached to the BOP stack, it will need to be cut using saws or shears before a top hat or capping stack can be placed on top of the BOP stack. The saws or shears should also be used to remove any debris that interferes with the subsea containment system.



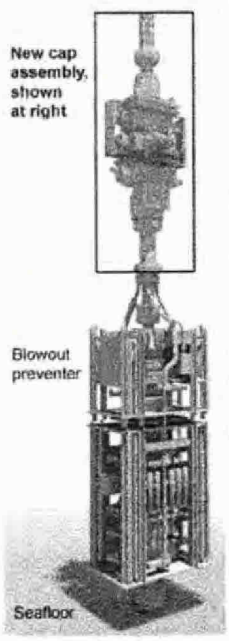
A typical RITT (shown on left) and top hat (shown on right) are depicted. The oil spill response inventory is not limited to these two models.

While the top hats and RITTs are open subsea containment devices that can be used as part of an early response plan, the mobilization and installation of a closed and more permanent subsea containment system should begin immediately. Two manifolds should be placed on the sea floor, and flexible hoses should be used to connect each manifold to a free standing riser. One free standing riser will convey hydrocarbons to the Helix Producer, or an equivalent, while the other free standing riser will transport hydrocarbons to the Toisa Pisces, or an equivalent, for surface processing. In addition, hydrocarbons will be diverted from the BOP stack to the Enterprise, or an equivalent, via drill pipe for flaring and surface processing. Finally, hydrocarbons will be transported from the BOP stack to the Q4000, or an equivalent, for flaring. The total capacity of this subsea containment system is approximately 80 MBOPD. The manifolds, flexible hose, free standing risers, and other necessary equipment should be deployed and installed at the onset of an oil spill. While this subsea containment system is being set up and all the necessary vessels are being mobilized, a top hat or RITT can be used to capture hydrocarbons and send them via drill pipe to the Enterprise, or an equivalent.



The illustration shows an example subsea containment system from the Deepwater Horizon response, including surface vessels, shuttle tankers, free standing risers, manifolds, flexible hose, and the capping stack.

Once the riser and all debris are removed from the BOP stack area, a new BOP, or capping stack, should be installed. The capping stack will allow for closed hydrocarbon collection via off-take points to surface vessels if well integrity is not proved, or it can be used to shut the well in. If the lower marine riser package (LMRP) remains in place as it did after the Deepwater Horizon incident, a capping stack should be installed on top of the existing LMRP and BOP. In the event that the LMRP is pulled, the capping stack should be installed on top of the existing BOP via a connector. Furthermore, the existing BOP could be unlatched and removed, and a new BOP could be landed directly on top of the wellhead. Once the subsea containment has been set up and the capping stack has been landed, hydrocarbons should be diverted from the capping stack to the surface vessels. Hydrocarbon collection will continue unless well integrity has been proven. If the well integrity is deemed acceptable after the appropriate testing and monitoring has been completed, then the capping stack can be used to shut the well in. Once the well has been shut in, the need for subsea containment is eliminated.



The illustration on the left shows an example configuration of the capping stack installed on top of the existing LMRP and BOP. The capping stack used in the Deepwater Horizon response is shown on the right.