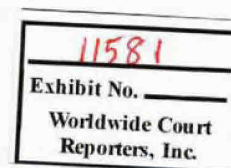


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**From:** Birnbaum, Liz  
**Sent:** Friday, April 30, 2010 5:29 PM  
**To:** Good, Keith  
**Subject:** Fw: Deepwater Horizon Incident - Reply from Apache Corporation to Secretary Salazar's request

**Importance:** High  
**Sensitivity:** Confidential

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**From:** O'Brien, Obie <Obie.O'Brien@usa.apachecorp.com>  
**To:** Birnbaum, Liz  
**Cc:** Hayes, David; Rivera, Ray; Brander, Graham <Graham.Brande@apachecorp.com>; Brown, Naomi <Naomi.Brown@usa.apachecorp.com>  
**Sent:** Fri Apr 30 15:26:59 2010  
**Subject:** FW: Deepwater Horizon Incident - Reply from Apache Corporation to Secretary Salazar's request

Director,

In response to Secretary Salazar's request for support and suggestions relating to the Deepwater Horizon incident we have compiled the following items as a response from Apache Corporation. There are three sections covering the following topics

1. Immediate recovery options.
2. Recommendations with regard to testing, and
3. Other items relevant to the Deepwater Horizon incident.

1. Immediate recovery options:

We believe the following list of three items are worth consideration for recovery operations. They are off the wall, fairly non conventional and require further engineering but we believe they have merit and are worth consideration by the teams at BP.

- a) In order to help recover hydrocarbons from the leaks on the riser and drillpipe, considerations could be given to using a riserless drilling subsea pump system. This has been used in other parts of the world to recover oil based drilling muds, while drilling exploration wells. The pump would be lowered to just above the leak and used to recover crude from the source of the discharge, pumped to a test separator on a DP vessel prior to being pumped onto a tanker. (A conical capture device would need to be fabricated. All of these technologies are currently used in other parts of the world. AGR have the subsea pumps. Fugro have a DP vessel capable of running the pump and a flexible riser for recovering the fluids. We understand that they successfully used the pump in 5000ft WD last year. Contact at AGR is John H. Cohen, AGR Subsea, Inc. P: 281-616-0407 Cell: 832-202-3241.
- b) Alternatively, a vacuum type system could be used to recover crude from the leaks. Similar to the above suggestion crude would be pumped to a DP work vessel similar to below and then pumped to a tanker alongside. The vacuum system would use a 9 5/8" casing run as a riser with a fluid injection point run at some depth to create a venturi thereby sucking crude into the casing and up to the DP vessel. Fugro have a couple of vessels capable of this operation. (One of them on contract with BP at Mad Dog). A contact for this idea would be Steve Jeffrey, Technical Director, Fugro Well Services. (Cell +44 78 7022 4602). The vessel in the GOM is called the Fugro Explorer). Both Fugro vessels could be deployed with very short mobilization times.

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