Jeff Duncan Notes – E+E closed-door Briefing.
May 4, 2010

EJM Qs –

Q What is the worst case scenario? What is the max. potential that could come out

A – Rainey = 10 – 60,000 Barrels per day, if the blowout preventer completely fails, 40,000 BPD;

Q – What are the risks associated w/ the Dones?

A – Rainey → largest risk of them associated w/ installing the plugs; don't see significant risks re/ buildup of N-gas

Q — 2004 study

A — Rainey — not familiar with the 2004 MMS study

Rose — don't have details, but the rooms tested to cut pipe at this depth.

Q → Australian spill, delays of 2 months?

A → Nagel — ref to Rainey,

Rainey — lessons learned from Aus. event, lent mud on planet assembly

Burgess Qs –

Q – Who is in charge?

A) > confed command

Q > When did petroleum leak begin

A) Rainey: most likely time when leak began is when the rig sank to the sea floor (it was not anticipated that the rig would sink.

Rose – we planned the worst but we certainly did not expect the rig to sink; ~~[illegible]~~

Q > Is there contingency plans?

A > Rainey: yes it's talked

Account.
- D.K. all about causes of incident, will need to investigate

Q = Done + relief well, what else is on the shelf?

A - Rarely - ~~trying~~ to actually BOP, regain BOP, up to replacing BOP

Q - Burning oil on the water, what do we start to try

Q - Nancy, not aware of the assets, what Burn operators, expect will report Burn ASAP

Q ⇒ MMS Study; hope ESM
has them.

Clarification — Q = drill platform
M. Rigg;
A ⇒ /

EJM - what % of the oil will the domes capture while you are drilling the relief wells?

A - No Reason it won't capture all of the oil if it works properly. Currently constructing 4 Domes, 1st one mobilized by end of the week. Also hope to shut flow from drillpipe by today. Cut off the

end, put a valve over it.
& the valve is now being
tightened now. OK
how much flow they
measure will cut off.
Q - ROVs don't give you enough
info.
A - NO, all we have is
visual ROV data & there's
not enough info
Scarlese - prior to Sunday,
people who were trying to implement
action plans were getting trouble

Barton – hits BP on safety;

E&M – loop around

Nagle → DK answers own Q.

Nagle – DK perf. as of actual on 9/ part of a master contract

Duncan, Jeff

From: Fuchs, Meredith
Sent: Tuesday, May 11, 2010 11:49 PM
To: Goo, Michael; Leviss, David; Gray, Morgan
Subject: RE: Some docs from the BP production

Categories: Red Category

Michael-

I don't know about the slide deck – we also heard about something like that but never saw it. We have this other document, which I think is the one you are referring to. I am attaching it, but ask that it not be released before the hearing. Mr. Waxman will refer to it in his opening and we have designed some question lines that relate to this document. It has a lot of interesting stuff in it. Also, Morgan, Ali is going to check with you, but if you plan to refer to any documents in Mr. Markey's opening, please let us know soon so we can get them ready for the hearing.

BP-What We Know.pdf

Meredith

From: Goo, Michael
Sent: Tuesday, May 11, 2010 7:46 PM
To: Fuchs, Meredith; Leviss, David; Gray, Morgan
Subject: Some docs from the BP production

I know you guys are really busy, but there are a couple of docs that I think Mr. Markey would like to see before the hearing tomorrow.

First was there a slide deck that was used to make a presentation to Secretary Salazar? That would be great to see.

Then also are there any documents that discuss possible scenarios for the accident? In particular is there any simplified version of such a document that specifies likely scenarios for the accident?

If you guys can put your fingers on such documents quickly I would really appreciate it.

I know you guys have discussed with Morgan possible lines of questions and we are working on our assigned role, so I think things should go well tomorrow.

Thanks for all the good work you are doing.

What We Know

- Before, during or after the cement job, an undetected influx of hydrocarbons entered the wellbore;
- The 9 7/8" casing was tested; the 9 7/8" casing hanger packoff was set and tested; and the entire system was tested;
- After 16.5 hours waiting on cement, a test was performed on the wellbore below the Blowout Preventer (BOP);
- During this test, 1,400 psi was observed on the drill pipe while 0 psi was observed on the kill and the choke lines;
- Following the test, hydrocarbons were unknowingly circulated to surface while displacing the riser with seawater;
- As hydrocarbons rose to the surface, they expanded, further reducing the hydrostatic pressure. The well flowed and witness account suggest that the Annular Preventer in the BOP and the Diverter were activated;
- An explosion occurred, followed by a power failure;
- Witness accounts suggest that the Emergency Disconnect System was activated;
- The rig was evacuated;
- The BOP system failed to work as intended. Flow was not contained and the Lower Marine Riser Package did not disconnect;
- Modifications have been discovered in the BOP system;
- Leaks have been discovered in the BOP hydraulics system;
- BP launched an investigation which is ongoing.

Investigation Themes

- Cementing – design and execution;
- Casing – design and installation;
- Casing Hanger – design and installation
- BOP – configuration, maintenance and operation;
- Well Control Practices.

Duncan, Jeff

From: eigwdxerox@mail.house.gov
Sent: Friday, May 14, 2010 11:52 AM
To: Chenault, Jacqueline; Goo, Michael
Subject: Scan from a Xerox WorkCentre
Attachments: Scan001.PDF

Categories: Yellow Category

Please open the attached document. It was scanned and sent to you using a Xerox WorkCentre.

Attachment File Type: PDF

WorkCentre Location: machine location not set Device Name: Global-Warming

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ONE HUNDRED ELEVENTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON ENERGY AND COMMERCE

2125 RAYBURN HOUSE OFFICE BUILDING

WASHINGTON, DC 20515–6115

MAJORITY (202) 225–2927
FACSIMILE (202) 225–2525
MINORITY (202) 225–3641

energycommerce.house.gov

Mr. Lamar McKay
President and CEO
BP America, Inc.
501 WestLake Park Boulevard
Houston, Texas 77079

Dear Mr. McKay:

BP's current estimate for the amount of oil flowing into the Gulf of Mexico from the Deepwater Horizon spill is 5,000 barrels per day. BP's initial estimate for the amount of oil flowing into the gulf was 1,000 barrels per day. At a briefing provided to members of the Energy and Environment Subcommittee of the Energy and Commerce Committee, Mr. Dave Rainey of BP indicated that a maximum flow from the well, if uncontrolled, would be approximately 60,000 barrels per day, with a midrange estimate of 40,000 barrels per day from an uncontrolled release. At the hearing of the Subcommittee on Oversight and Investigations, on May 11, you reaffirmed the 5,000 barrels per day estimate.

Recent news reports indicate that the actual amount of oil being released into the Gulf of Mexico could be upwards of 70,000 barrels per day. As reported by National Public Radio, an independent scientific analysis concluded that, with a plus or minus 20 percent accuracy rate, the flow could range from 56,000 barrels per day, up to 84,000 barrels per day. Other estimates reported in the media also indicate that the well could be releasing 4 to 5 times as much oil as is currently being reported.

The public needs to know the answers to very basic questions: how much oil is leaking into the Gulf and how much oil can be expected to end up on our shores and our ocean environment? I am concerned that an underestimation of the flow may be impeding the ability to solve the leak and handle management of the disaster. We have already had

one estimate that grossly underestimated the amount of oil being released and we cannot afford to have another.

I would therefore ask that you answer the following questions and provide any requested documents within the next 24 hours. You are requested to update your response or provide additional documents at such time as such information becomes available.

1) Prior to the incident, did BP already have an estimate of the maximum amount of oil that could be expected to flow from this well under normal conditions?

2) What was the basis for this estimate?

3) Please provide all documents that relate to the amount of oil that could be expected to flow from this well, including any estimates of profits that this well was projected to generate.

4) What is the BP method and scientific basis for the estimate of 5,000 barrels per day? Was this estimate based solely on surface monitoring of the size of the spill?

5) Were all or any of the latest methods that are available today for estimating the amount of such a spill employed?

6) Please provide all documents created since the incident occurred that bear on, or relate to, in any way, estimates of the amount of oil being released.

7) What is the basis, if any, for the worst case estimate of approximately 60,000 barrels per day provided to the Energy and Commerce Committee during a May 4th briefing?

8) Was BP, as has been reported in the press, offered an opportunity to use the latest technology for estimating the volume of oil flowing from the pipe?

9) Did BP accept or refuse any such offers and has BP used the latest technology to estimate the volume of oil flowing from the well?

10) Has BP used any subsurface technology to estimate the amount of oil flowing from the well? If so, please provide the results of any such efforts.

11) Is it accurate to suggest as BP Vice President Kent Wells did recently that "There's just no way to measure it?" If so, then does BP stand behind the current estimates of the amount of oil flowing or not?

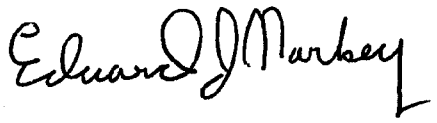
12) Could an increased flow from the riser pipe affect proposed or attempted efforts to stop the flow of oil, such as the failed containment dome strategy, the so called "junk shot strategy", attempts to place an additional pipe into the riser, and the drilling of relief wells for plugging the well bore?

13) Please indicate for the record BP's current estimate of the amount of oil flowing from the well and provide the basis and methodology for that estimate, along with any uncertainty or error ranges for the estimate.

14) BP has suggested in press reports that it is focused on closing the leak, rather than in measuring it. Are efforts to close the leak inconsistent with efforts to measure its volume? Why wouldn't such efforts actually be complementary?

15) Using estimates of 5,000 barrels per day, 40,000 barrels per day and 70,000 barrels per day, and further assuming that the leak continues for another 60 days, what is the projected extent of the spill in square miles and the amount of Gulf coastline in miles that would potentially be affected by such a spill?

Sincerely



Edward J. Markey
Chairman
Subcommittee on Energy and Environment
Committee on Energy and Commerce

CC: Chairman Henry Waxman
Ranking Member Joe Barton
Ranking Member Fred Upton

Duncan, Jeff

From: eigwdxerox@mail.house.gov
Sent: Friday, May 14, 2010 12:19 PM
To: jaccqueline.chenault@mail.house.gov ; Goo, Michael; Duncan, Jeff; Gray, Morgan
Subject: Scan from a Xerox WorkCentre
Attachments: Scan001.PDF

Categories: Yellow Category

bpletterfinal

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energycommerce.house.gov

May 14, 2010

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President and CEO
BP America, Inc.
501 WestLake Park Boulevard
Houston, Texas 77079

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2) What was the basis for this estimate?

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5) Were all or any of the latest methods that are available today for estimating the amount of such a spill employed?

6) Please provide all documents created since the incident occurred that bear on, or relate to, in any way, estimates of the amount of oil being released.

7) What is the basis, if any, for the worst case estimate of approximately 60,000 barrels per day provided to the Energy and Commerce Committee during a May 4th briefing?

8) Was BP, as has been reported in the press, offered an opportunity to use the latest technology for estimating the volume of oil flowing from the pipe?

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If you have any questions please contact Morgan Gray of my staff at 202-225-4012.

Sincerely

Edward J. Markey

Edward J. Markey
Chairman
Subcommittee on Energy and Environment
Committee on Energy and Commerce

CC: Chairman Henry Waxman
Ranking Member Joe Barton
Ranking Member Fred Upton

Duncan, Jeff

From: Reicherts, Elizabeth A [Liz.Reicherts@bp.com]
Sent: Friday, May 14, 2010 5:53 PM
Subject: FW: BP Gulf of Mexico Update: May 14th
Attachments: Slide Pack 5-14-10.pdf

Categories: Red Category

In addition to today's update (below) you will find attached a slide deck which highlights the subsurface options currently being considered and deployed.

Please let us know if you have questions.

Gulf of Mexico Oil Spill Response Update
05/14/2010 – 3:00pm EDT

BP is working as part of the Unified Command to accomplish three main objectives in the Gulf of Mexico:

1. On the Sea Floor to stop the flow of oil through various strategies;
2. On the Surface to minimize impacts of the spill; and
3. Onshore to protect the shoreline and keep the public informed.

Highlights

- 17,444 personnel responding as part of the Command, plus volunteers.
- Training expanded, more than 10,000 volunteers trained this week.
- Riser insertion tool ready for placement into the end of the leaking riser pipe.
- Relief well at 9,000 feet – running riser to continue drilling.
- 2 new claims offices open in Florida and 1 in Louisiana.

Offshore – Sea Floor

BP's priority is to reduce and stop the flow of oil subsea and minimize environmental impacts. 4 vessels and 9 Remote-Operated Vehicles continue subsea work on the following operations:

1. **Riser Insertion Tube** – A tool has been fabricated and lowered to the sea floor. One end will be attached to the riser and drill pipe which run to the Transocean *Enterprise*, on the surface. The other end will be inserted into the ruptured riser pipe that is the primary source of the leak. All necessary equipment is on location and engineers plan to move them into place Friday night.

2. **Containment Recovery System**
   - A containment dome, called a "top hat," has been deployed to the sea floor and is being readied to be placed over the main leak, if needed. It is designed with injection ports that can accommodate "anti-freeze" in order to mitigate the formation of frozen hydrates.
   - It is important to note that this technology has never been done at this water depth. Significant technical and operational challenges must be overcome for it to be successful.

3. **"Top Kill" Activities** – Equipment has been fabricated and moved to location near the blowout preventer in order to work on killing the well from the top. Manifold and bypass lines are in place to provide access to valves on the BOP. A "junk shot" of shredded fibrous material will be injected into the BOP through these lines. The objective is for the material to travel up the BOP and clog the flow of the well at the pinch point. Once the pressure is controlled, heavy fluids and cement will be pumped down the well to kill it. This procedure is ongoing.

4. **Drilling relief wells** – Transocean *Development Driller III* "spudded" the first relief well on Sunday, May 2 in a water depth of roughly 5,000 feet. This relief well is one-half mile from the Macondo well and will attempt to intercept the existing wellbore at approximately 18,000 feet below sea level. As of today, the well has been drilled to 9,000 feet below sea level. Casing was run and cemented to that depth. The BOP is tested and riser is being run so drilling can continue, sometime this weekend. It is estimated the total drilling process will take at least 90 days. Once that is accomplished, heavy fluids and cement can be pumped downhole to kill the well. A second

relief well has been permitted and the Transocean *Development Driller II* is on location with drilling expected to begin on May 16.

5. **Dispersant injection at the sea floor** – BP has conducted a third round of injecting dispersant directly at the leak site on the sea floor using Remote Operated Vehicles (ROVs). Dispersant acts by separating the oil into small droplets that can break down more easily through natural processes before it reaches the surface. Sonar testing and aerial photographs show encouraging results. The Environmental Protection Agency and other state and federal agencies, operating as part of the National Response Team, have approved additional subsea application subject to ongoing protocols.

Offshore – Surface Spill Response

- **Cleanup Vessels** – 559 specialty response vessels are deployed, including tugs, barges and recovery boats. 30 of the boats are Oil Spill Response Vessels that are designed to separate the oil from water. Approximately 151,391 barrels of oil-water mix (6.35 million gallons) have been recovered and treated, a reported increase of nearly 50,000 barrels since Wednesday.

- **Surface Dispersant** – 517,577 gallons of dispersant have been applied on the surface by aircraft. The dispersant is a biodegradable chemical that works like soap by separating the oil into small droplets that can be more easily broken down by natural processes. An additional 258,000 gallons are available for deployment. The Unified Command has three teams of vessels in place to apply dispersant on the surface, weather permitting.

- **In-Situ Burning** – The Unified Command has teams in place prepared to continue in-situ burning, depending on the weather. The in-situ burning is conducted on the surface using special fire-boom that collects surface hydrocarbons which are then burned off.

Onshore - Shoreline Protection and Community Outreach

- **$25 Million Block Grants to 4 States** – Louisiana, Florida, Mississippi and Alabama have each received a $25 million block grant. The grants were offered by BP to help local agencies upfront to implement the States' approved Area Contingency Plans. The Contingency Plans address removal of a worst case spill and are designed to mitigate or prevent a substantial threat to sensitive areas. The money will enable local businesses to immediately support clean-up and recovery efforts. The grant is supplemental to BP's private claims process, which remains unchanged.

- **Oil Containment and Shoreline Protection** – More than 1,600,000 feet of both sorbent and barrier boom have been deployed or staged to protect sensitive coastal areas. BP is working to procure an additional 3,500,000 feet of boom. Boom is now in place to protect nearly all "Tier 1" shoreline in each of the four states, and teams are now working on "Tier 2" areas.

- **"Vessels of Opportunity" Program** – Nearly 3,200 applications have been approved and approximately 1,150 vessels are active – an increase of 450 since Wednesday. Participating vessels are being organized into 25-boat task force teams to help with a variety of clean-up activities, including transporting supplies, performing wildlife rescue, and towing and deploying booms. To qualify for the program, operators need to meet several key requirements, including attending a four-hour hazardous waste training session, passing a dockside examination by the U.S. Coast Guard, and meeting crewing requirements based on the size of the vessel provided. The contact number for people interested in registering for the program is (281) 366-5511. Information about training can be found on the incident website at www.deepwaterhorizonresponse.com under "volunteers." For additional information about training call (866) 905-4492.

- **Volunteers and Training** – BP has opened 22 Community Outreach Centers across the Gulf where people can go for more information, to find out about the spill, and to connect with volunteer opportunities. Training ramped up significantly this week, with sessions held at multiple locations across the Gulf. As of today, more than 15,000 volunteers have been trained in five different training modules that range from safety for beach clean-up, to wildlife monitoring, handling of hazardous materials and vessel operation for laying boom. This is an increase of more than 10,000 for the week. Information about training can be found on the incident website at www.deepwaterhorizonresponse.com under "volunteers."

- **Informing Community Leaders** – The Unified Command is currently holding twice-daily teleconferences with mayors and community leaders across Mississippi, Alabama and Florida to ensure that elected officials have an opportunity to be updated on Command activities and to ask questions. Additionally, BP has deployed local government affairs specialists to respond directly to local governments.

- **Wildlife Activities** – 2 additional reports of impacted wildlife. Wildlife rehabilitation sites are located in Venice, LA and Mobile, AL.

- **Claims for Damages** - BP has opened 12 claims offices to help claimants through the process. Vietnamese and Spanish translators are in some offices. 10,500 claims have been filed and 2,200 of them have been paid--doubling the amount of claims paid since Wednesday. The contact number for claims is (800) 440-0858. Claims office locations are listed below.

Summary of Regional Operations and Outreach	
Louisiana Sites:	Robert – Unified Area Command
	Houma – Incident Command Post
	Pointe A La Hache – Community Outreach Center
	Venice – Community Outreach Center, Staging Area
	Grand Isle – Staging Area
	Port Fourchon – Staging Area
	Cocodrie – Staging Area
	Shell Beach – Staging Area
	Slidell – Staging Area
	Amelia – Staging Area
	Belle Chasse – Claims Office 2766 Belle Chasse Hwy Belle Chasse, LA 70037
	Grand Isle – Claims Office 3811 LA 1 Grand Isle, LA 70358
	Hammond – Claims Office Worley Operations Center 303 Timber Creek Hammond, LA 70404
	Pointe A La Hache – Claims Office 1553 Hwy 15 Pointe A La Hache, LA
	St. Bernard – Claims Office 1345 Bayou Rd Saint Bernard, LA 70085
	Venice – Claims Office 41093 Hwy LA 23 Boothville, LA 70038

- Bringing in additional adjusters to help process claims and working with translators to ensure that Vietnamese and Spanish speaking communities are served.
- Continued work with parish presidents and opening new community outreach centers. Helping communities deal with increased traffic due to media and governmental interest.
- Working with Catholic Charities to assist with immediate community needs of food and clothing.

Mississippi Sites:	Pascagoula – Community Outreach Center, Staging Area
	Biloxi – Community Outreach Center, Staging Area
	Waveland – Community Outreach Center
	Pass Christian – Staging Area
	Biloxi – Claims Office 920 Cedar Lake Rd, Suite K Biloxi, MS 39532
	Pascagoula – Claims Office 5912 Old Mobile Hwy Suite 4 Pascagoula, MS 39563

- Community outreach centers are now in all three coastal counties.
- Continuing to coordinate training for vessel operators and working through Vessels of Opportunity contracts.
- No oil has been reported in Mississippi state waters.

Alabama Sites:	Mobile – Incident Command Post, Community Outreach Center
	Theodore – Staging Area
	Orange Beach – Staging Area
	Dauphin – Staging Area
	Bayou LaBatre – Claims Office 290 N. Wintzell Avenue Bayou LaBatre, AL 36509
	Foley – Claims Office (Orange Beach/Gulf Shores/Bon Secour) 1506 North McKenzie Street (HWY 59), Suite 104 Foley, AL 36535

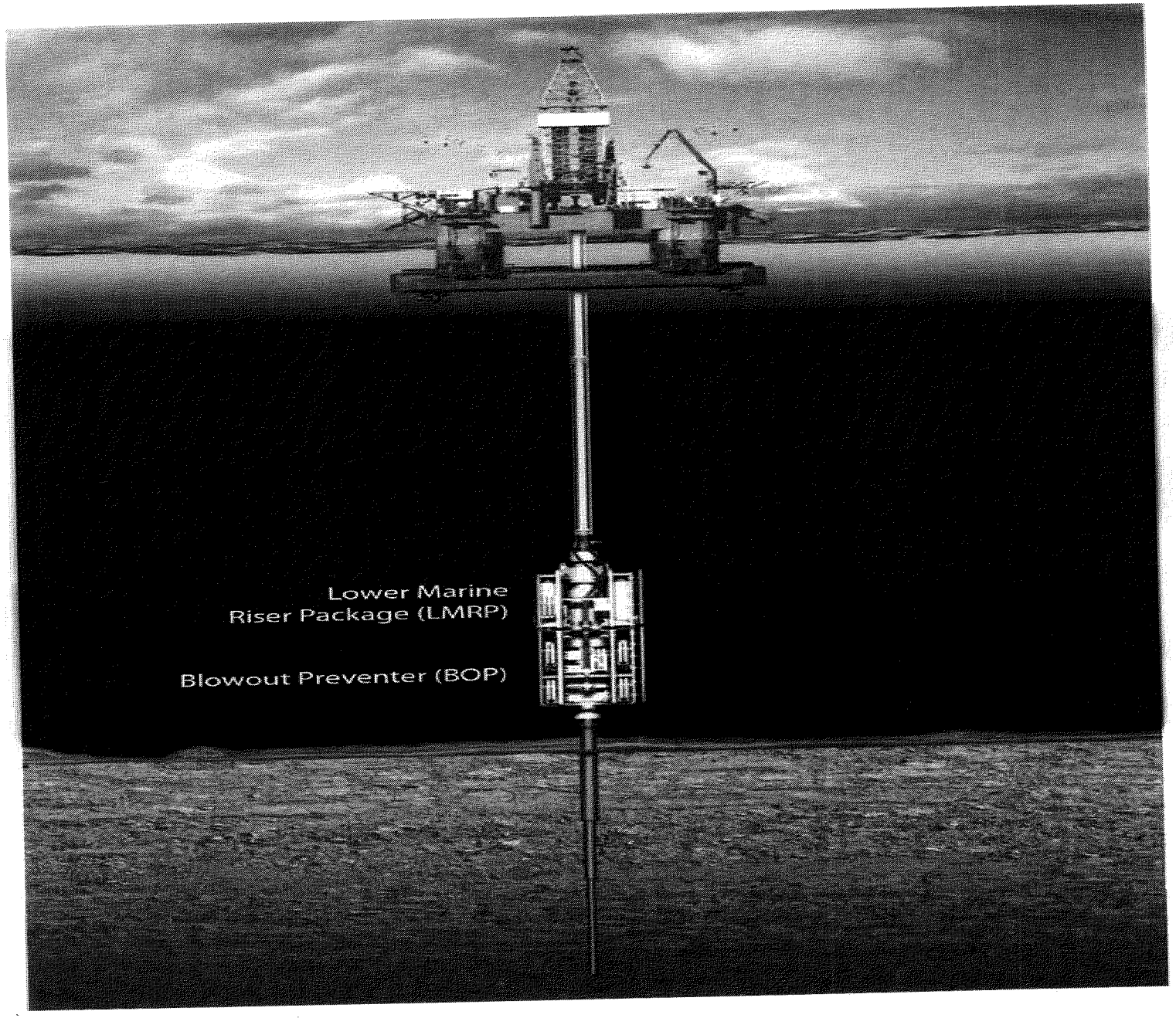
- Staffing claims centers with adjusters to process claims.
- Working with Governor's office and non profit organizations to coordinate volunteers and identify volunteer opportunities.
- Collected tarballs on Dauphin Island -- analyzing source.

Florida Sites:	St. Petersburg – Incident Command Post
	Pensacola – Community Outreach Center, Staging Area
	Panama City – Staging Area
	Gulf Breeze – Claims Office 5668 Gulf Breeze Pkwy Unit B-9 Gulf Breeze, FL 32563
	Pensacola – Claims Office 3960 Navy Boulevard Suite 16-17 Pensacola, FL 32507

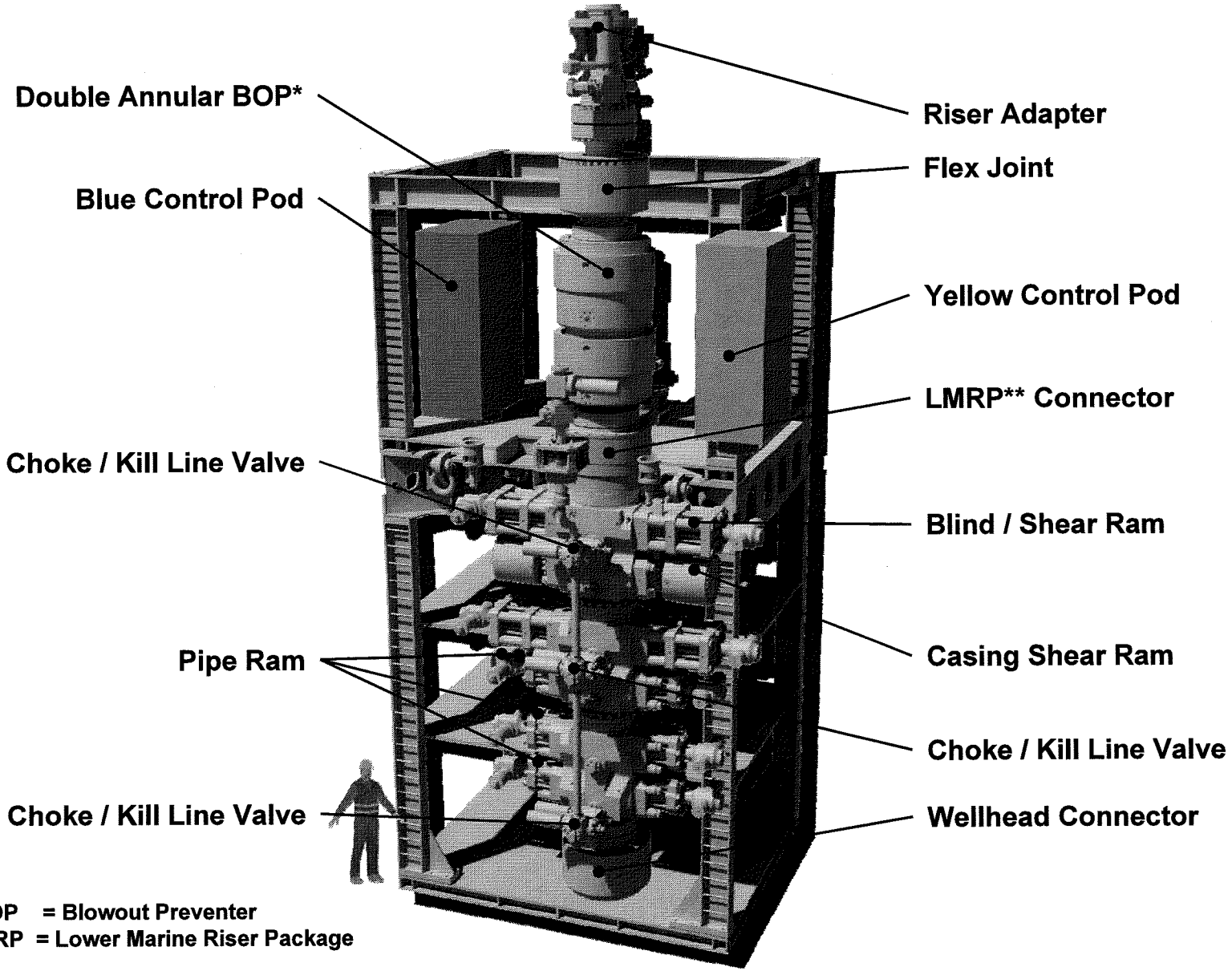
- Holding townhall meetings with vessel owners and coordinating training for Vessels of Opportunity volunteers.
- Working with counties to engage volunteers in additional beach clean ups.
- Engaged eight Gulf coast counties with outreach coordinators, government affairs specialists, and training providers.

Contact Information	
Environment / Community Hotline – to report oil on the beach or shoreline or other environment or community impacts and access the Rapid Response Team	(866) 448-5816
Wildlife – to report and access care for impacted, i.e. oil wildlife	(866) 557-1401
Volunteers – to request volunteer information	(866) 448-5816
Services – to register as consultant, contractor, vendor, or submit information on alternative response technology, services, products or suggestions	(281) 366-5511
Vessels of Opportunity – to report and register boats available to assist with response	(281) 366-5511
Training – for questions about training requirements, times and locations, and to sign up\	(866) 905-4492 or (866) 647-2338
Ideas to Submit – email suggestions to horizonresponse@piersystem.com	
Investor Relations	(281) 366-3123
Claims	(800) 440-0858
Joint Information Center – Media and governmental inquiries	(985) 902-5231 or (985) 902-5240
Transocean Hotline	(832) 587-8554
MI Swaco Hotline	(888) 318-6765

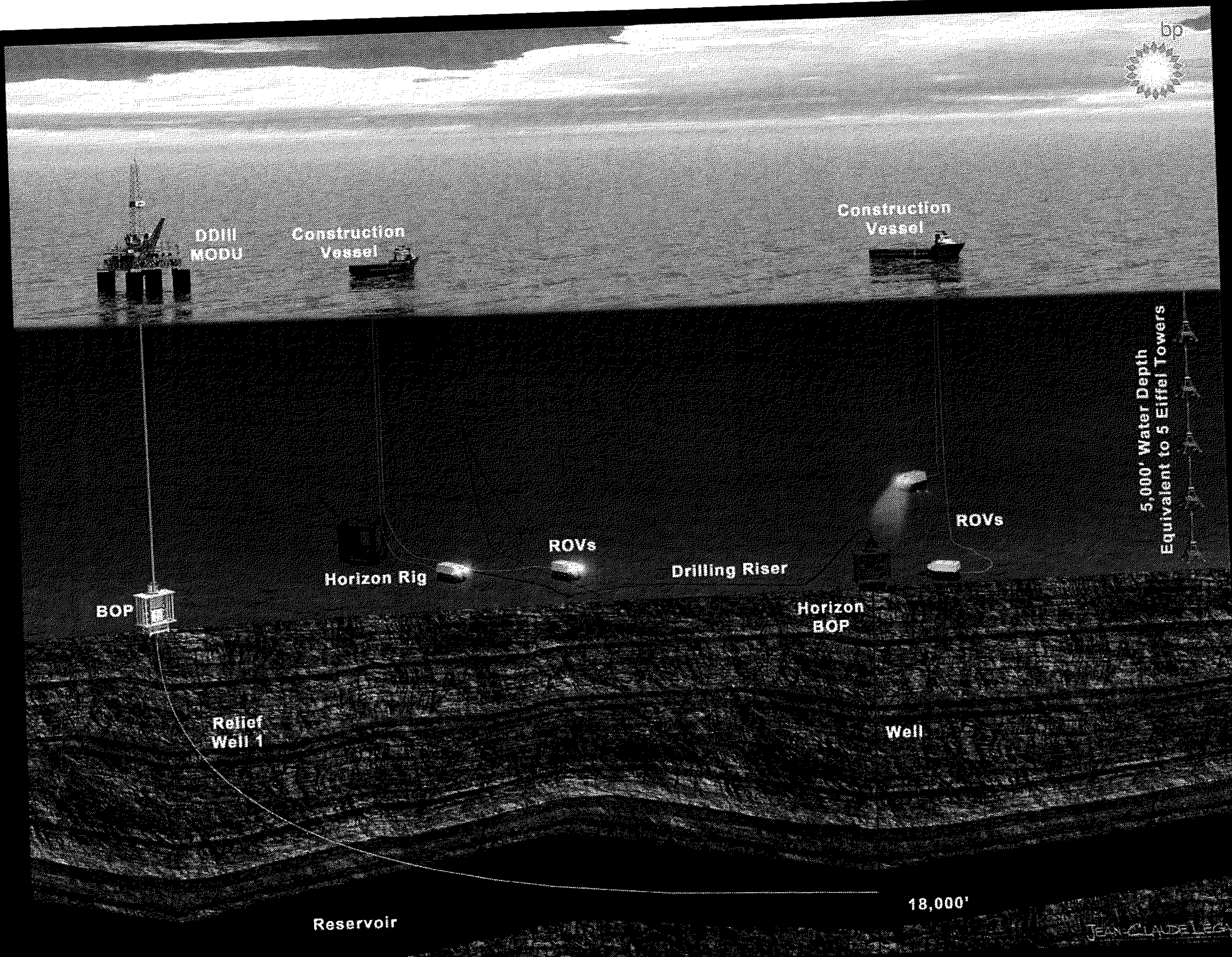
BP Family – and third-party contractor hotline	(281) 366-5578
Twitter: Oil_Spill_2010	
Facebook: Deepwater Horizon Response	
Joint Incident Command website: www.deepwaterhorizonresponse.com	


Lower Marine
Riser Package (LMRP)
Blowout Preventer (BOP)

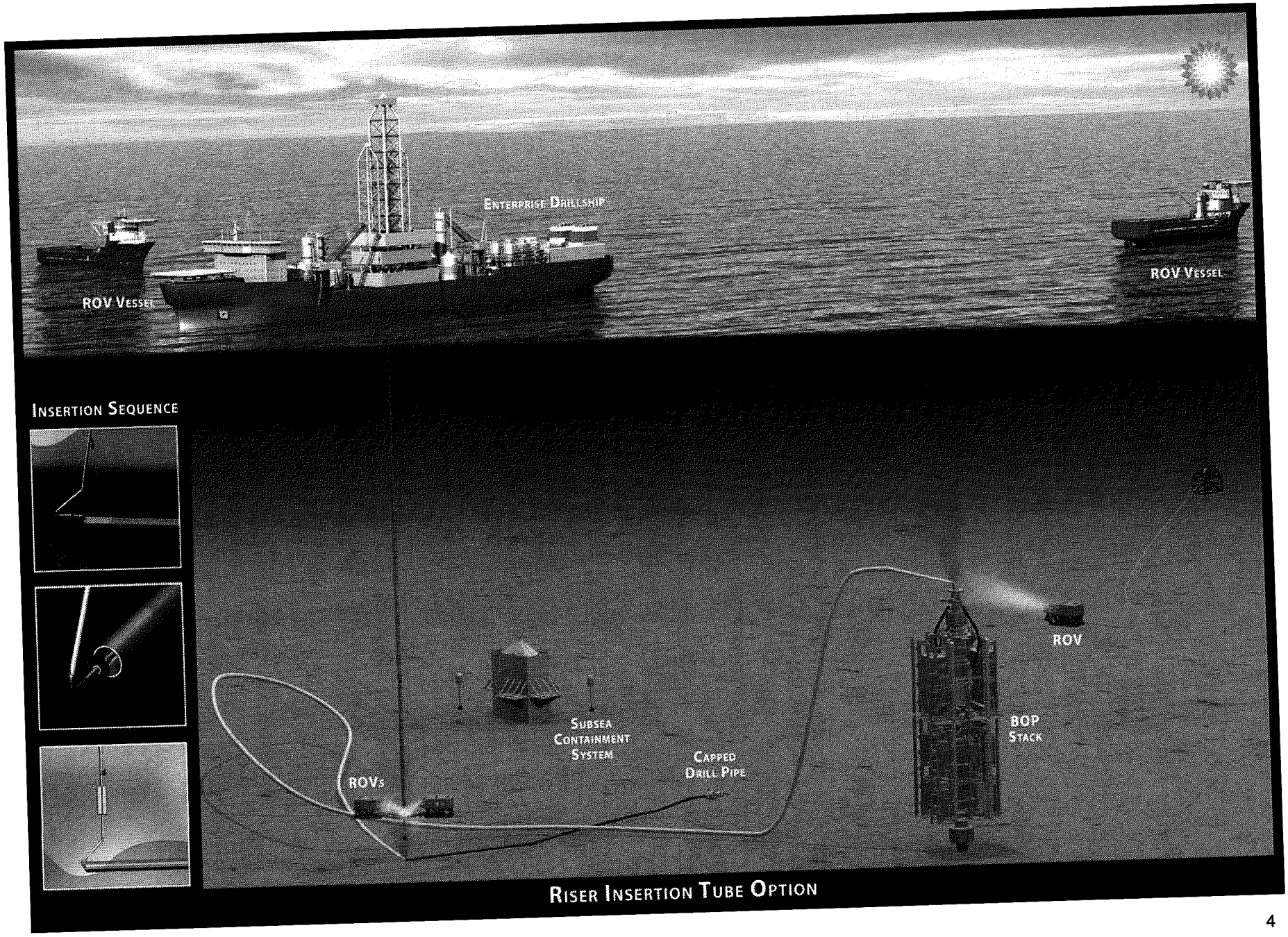
Example Subsea BOP Stack

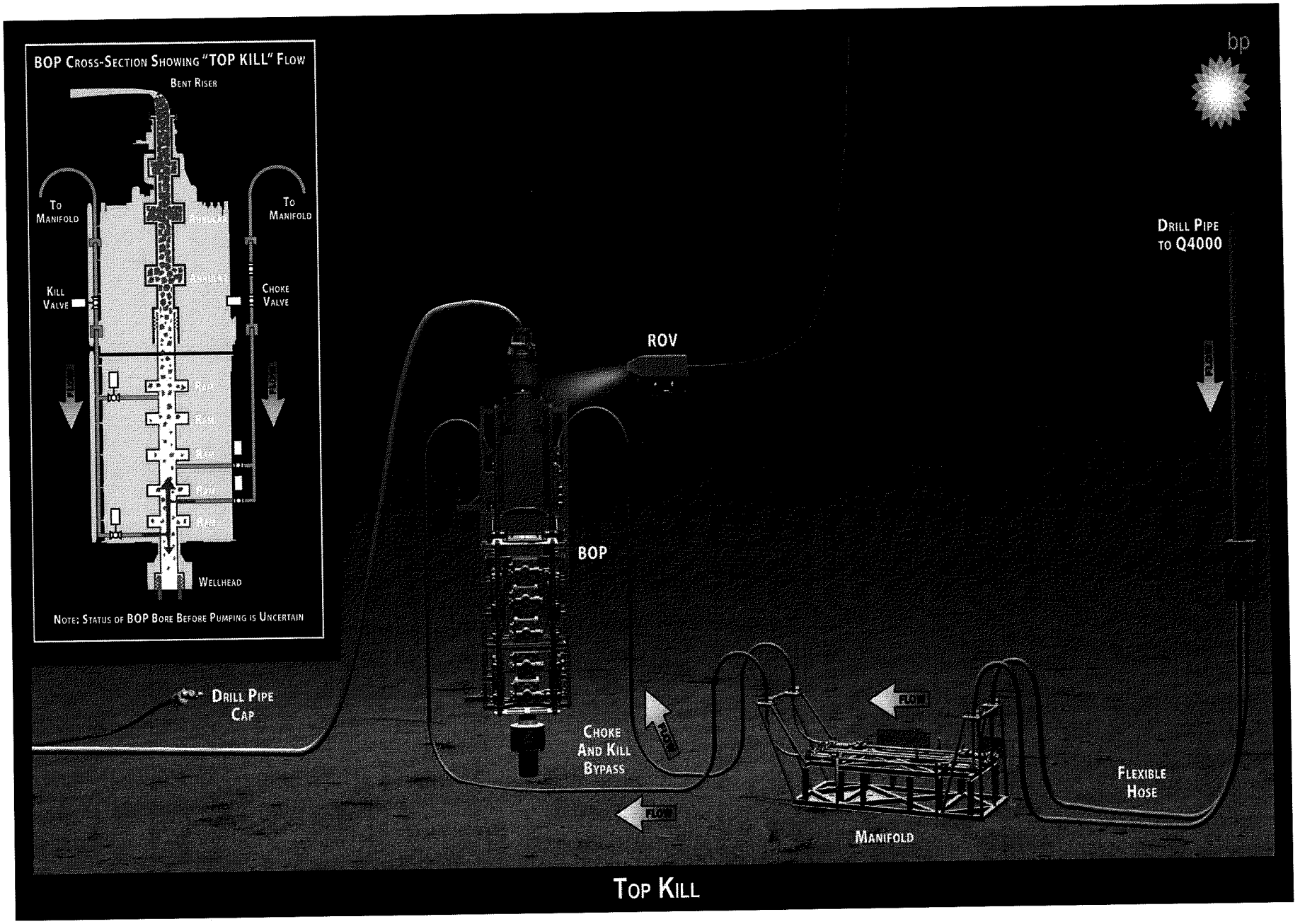


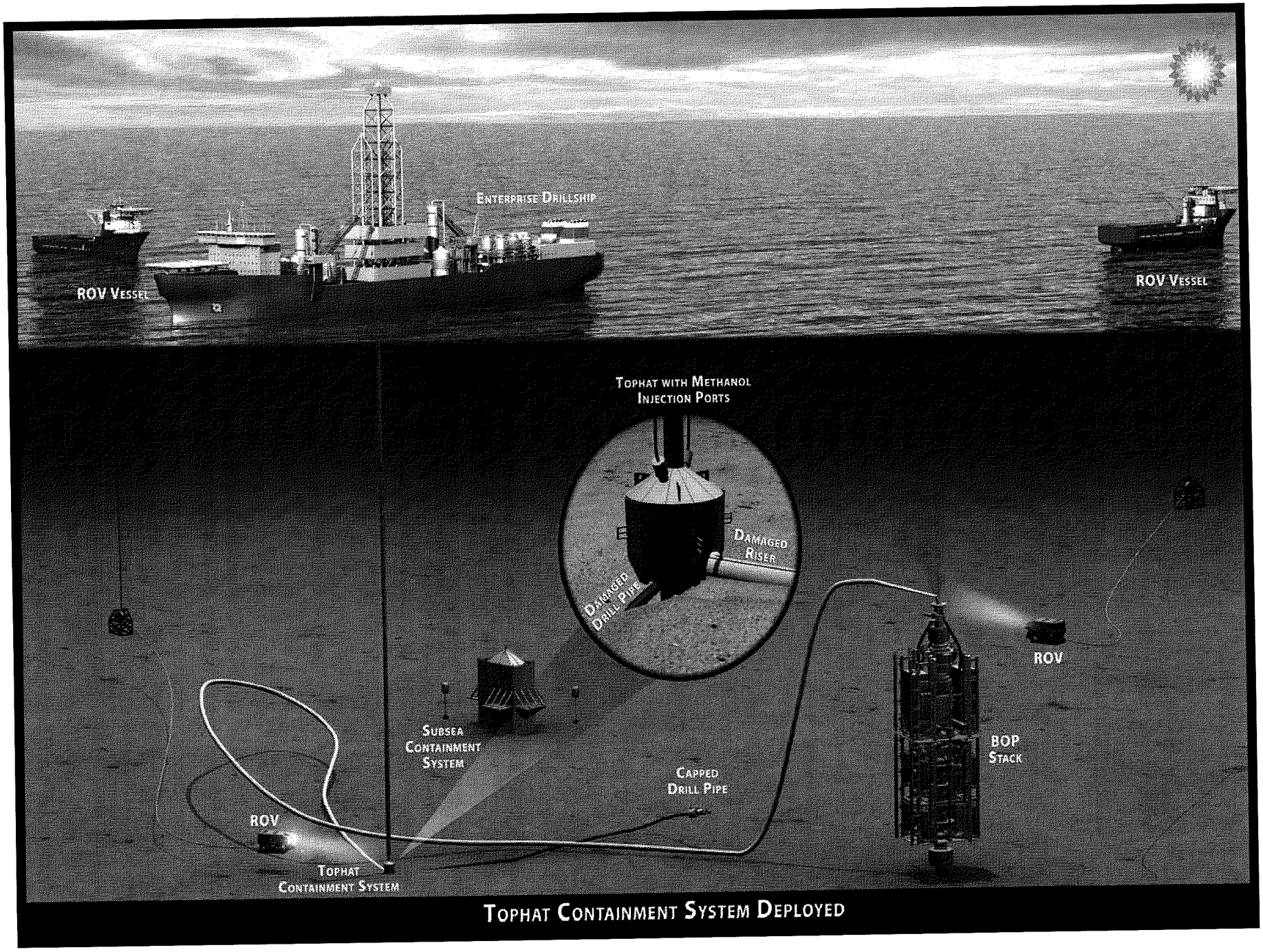
* BOP = Blowout Preventer
** LMRP = Lower Marine Riser Package



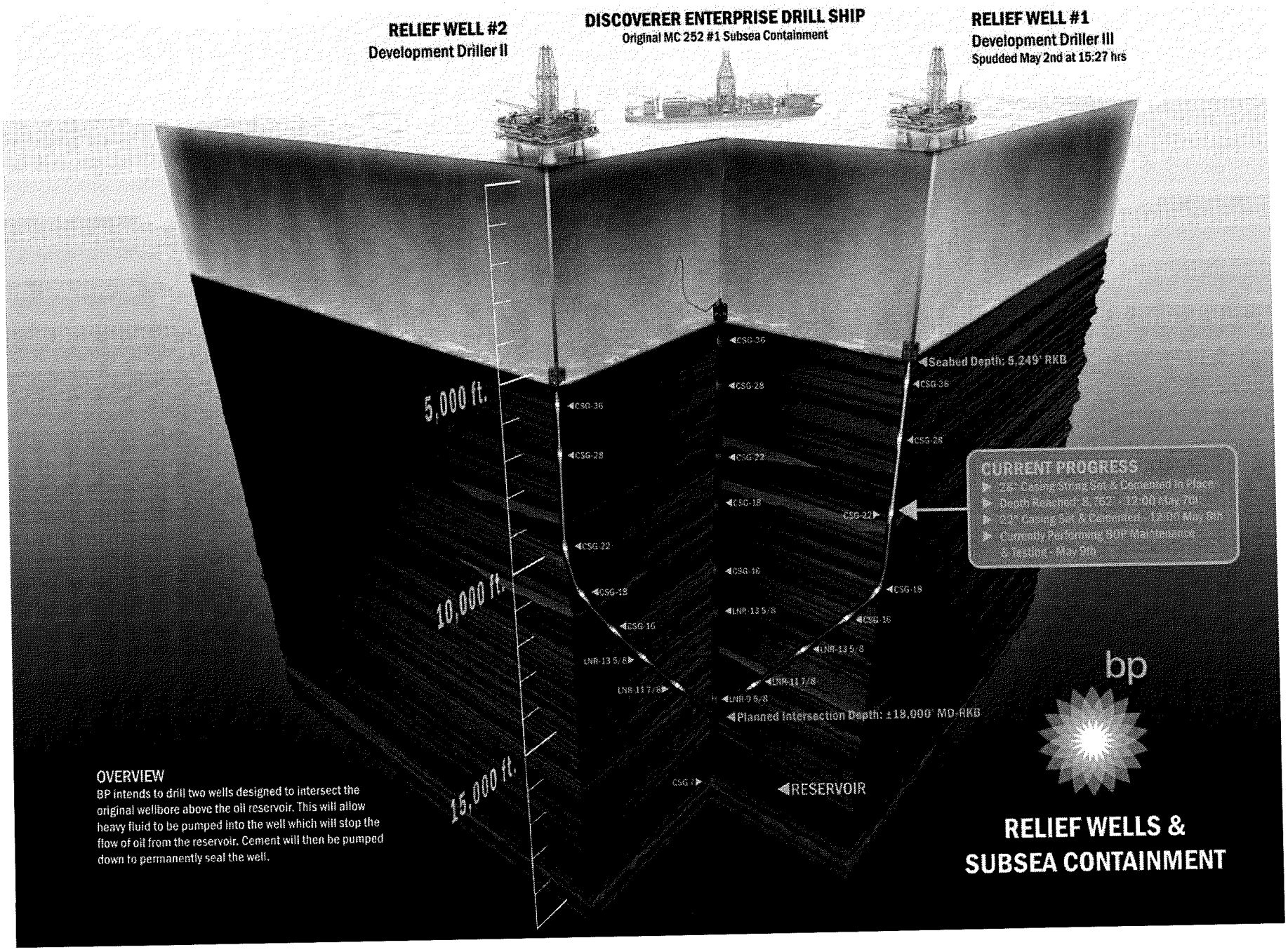
Horizon Response Current State

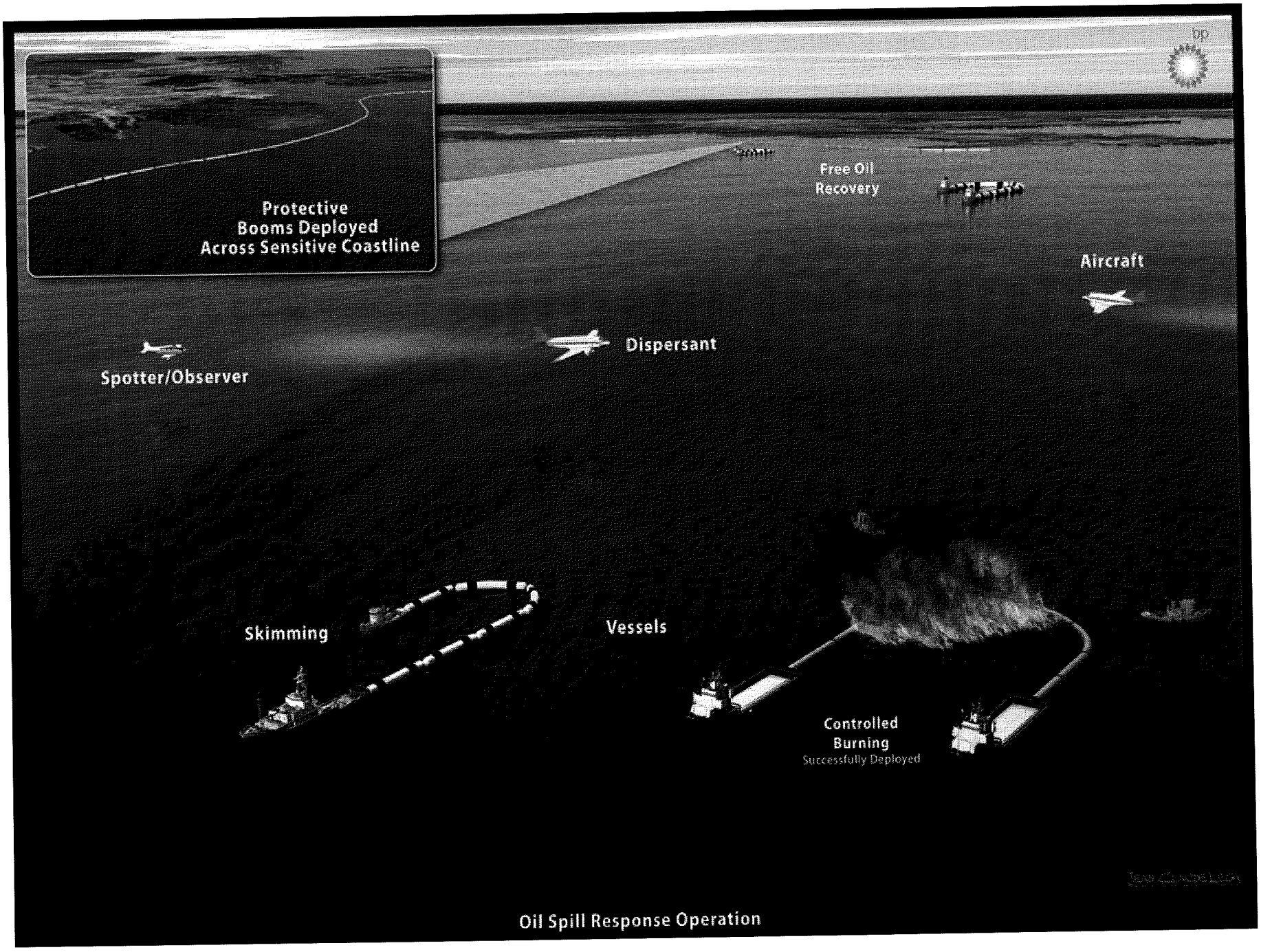

ENTERPRISE DRILLSHIP
ROV VESSEL
ROV VESSEL
INSERTION SEQUENCE
ROVS
SUBSEA CONTAINMENT SYSTEM
CAPPED DRILL PIPE
ROV
BOP STACK
RISER INSERTION TUBE OPTION


BOP Cross-Section Showing "TOP KILL" Flow
Bent Riser
To Manifold
To Manifold
Kill Valve
Choke Valve
Wellhead
Note: Status of BOP Bore Before Pumping is Uncertain
bp
Drill Pipe to Q4000
ROV
BOP
Drill Pipe Cap
Choke And Kill Bypass
Flow
Flow
Flow
Manifold
Flexible Hose
Top Kill


ROV Vessel
Enterprise Drillship
ROV Vessel
Tophat with Methanol Injection Ports
Damaged Riser
Damaged Drill Pipe
ROV
Subsea Containment System
Capped Drill Pipe
BOP Stack
ROV
Tophat Containment System
Tophat Containment System Deployed

JD - 0030


RELIEF WELL #2
Development Driller II
DISCOVERER ENTERPRISE DRILL SHIP
Original MC 252 #1 Subsea Containment
RELIEF WELL #1
Development Driller III
Spudded May 2nd at 15:27 hrs
5,000 ft.
10,000 ft.
15,000 ft.
CSG-36
CSG-28
CSG-22
CSG-18
CSG-16
LNR-13 5/8
LNR-11 7/8
LNR-9 5/8
CSG 7
Seabed Depth: 5,249' RKB
Planned Intersection Depth: ±18,000' MD-RKB
RESERVOIR
CURRENT PROGRESS
28" Casing String Set & Cemented In Place
Depth Reached: 9,762' - 12:00 May 7th
9 7/8" Casing Set & Cemented - 12:00 May 8th
Currently Performing BOP Maintenance & Testing - May 9th
OVERVIEW
BP intends to drill two wells designed to intersect the original wellbore above the oil reservoir. This will allow heavy fluid to be pumped into the well which will stop the flow of oil from the reservoir. Cement will then be pumped down to permanently seal the well.
bp
RELIEF WELLS &
SUBSEA CONTAINMENT


Protective
Booms Deployed
Across Sensitive Coastline
Free Oil
Recovery
Aircraft
Spotter/Observer
Dispersant
Skimming
Vessels
Controlled
Burning
Successfully Deployed
Oil Spill Response Operation

Duncan, Jeff

From: Reicherts, Elizabeth A [Liz.Reicherts@bp.com]
Sent: Saturday, May 15, 2010 6:28 PM
To: Goo, Michael
Subject: BP America response letter
Attachments: BP America response letter to Chairman Markey.pdf

Categories: Red Category

<<BP America response letter to Chairman Markey.pdf>>

Liz Reicherts
Sr. Director, US Government & International Affairs
BP America Inc.
1101 New York Avenue, NW, Suite 700
Washington, DC 20005
202.457.6585 direct
202.669.9892 cell

bp

David C. Nagel
Executive Vice President
BP America Inc.

BP America Inc.
1101 New York Avenue, NW
Suite 700
Washington, DC 20005

Direct (202) 457-6581
Main (202) 785-4888
Fax (202) 457-6597

May 15, 2010

BY HAND DELIVERY

The Honorable Edward J. Markey
Subcommittee on Energy and Environment
Committee on Energy and Commerce
United States House of Representatives
2125 Rayburn House Office Building
Washington, D.C. 20515-6115

Re: Response to Chairman Markey's Correspondence to BP America, Inc. Dated May 14, 2010

Dear Chairman Markey:

I am writing on behalf of BP America, Inc. ("BPA") in response to your May 14, 2010 letter to Mr. Lamar McKay. We want to be fully cooperative with the Subcommittee. We are working as diligently and expeditiously as possible, concurrently with our response efforts, to respond to yesterday's request for information and documents. We will respond to your request on a rolling basis as expeditiously as possible.

We appreciate the Subcommittee's consideration of the unique and urgent circumstances in which we are operating at the present time. If you have any questions, please feel free to contact me or have your staff contact Liz Reicherts at (202) 457-6585.

Sincerely,

David C. Nagel

Duncan, Jeff

From: Reicherts, Elizabeth A [Liz.Reicherts@bp.com]
Sent: Monday, May 17, 2010 11:46 PM
To: Reicherts, Elizabeth A
Subject: BP Gulf of Mexico Update: May 17, 2010
Attachments: BP Tourism Grants.pdf

Categories: Red Category

In addition to the daily update (below), attached you will find a copy of BP's Press Release related to Tourism Grants to Gulf Coast States.

Please let us know if you have questions.

Gulf of Mexico Oil Spill Response Update
05/17/2010 – 9:00pm EDT

BP is working as part of the Unified Command to accomplish three main objectives in the Gulf of Mexico:

1. On the Sea Floor to stop the flow of oil through various strategies;
2. On the Surface to minimize impacts of the spill; and
3. Onshore to protect the shoreline and keep the public informed.

Highlights

- 17,159 personnel responding as part of the Command, plus volunteers.
- Riser Insertion Tube successfully deployed to collect oil at the primary leak.
- Drilling begins on second relief well.
- BP makes additional $70 million available to states to support tourism.
- Subsea dispersant application resumed, 7,500 gallons injected on Sunday.
- 80 additional specialty response vessels at work today.
- Four new claims centers open – More than $11 million in claims paid.

Offshore – Sea Floor

BP's priority is to reduce and stop the flow of oil subsea and minimize environmental impacts. 8 Remote-Operated Vehicles continue subsea work on the following operations:

1. **Riser Insertion Tube** – The riser insertion tool was successfully placed into the leaking riser and the tube is capturing some of the oil and gas. This remains a new technology and both its continued operation and its effectiveness in capturing the oil and gas remain uncertain.

2. **"Top Kill" Activities**
   - Equipment has been fabricated and moved to location near the blowout preventer in order to work on killing the well from the top. Manifold and bypass lines are in place to provide access to valves on the BOP. Through these valves, engineers will attempt first to pump heavy fluids and cement directly downhole to kill the well.
   - An additional option to control pressure is to inject a "junk shot" of shredded fibrous material into the BOP through these lines. The material will travel up the BOP and clog the flow of the well. Once the pressure is controlled, heavy fluids and cement can then be pumped down the well to kill it.
   - Diagnostics are ongoing. Surveys have been conducted to determine the status of internal components and pressures inside the blowout preventer.

3. **Dispersant injection at the sea floor** – Application of dispersant directly at the leak site on the sea floor resumed on Sunday. 7,500 gallons were applied using Remote Operated Vehicles (ROVs). The dispersant acts by separating the oil into small droplets that can break down more easily through natural processes before it

reaches the surface. Sonar testing and aerial photographs show encouraging results. The additional subsea application is subject to ongoing testing protocols developed with the Environmental Protection Agency and other federal and state agencies.

4. **Drilling relief wells** – On Sunday, Transocean's drillship, *Development Driller II,* began drilling the second relief well. Like the first relief well, this one is approximately one-half mile from the Macondo well and will attempt to intercept the existing wellbore at approximately 18,000 feet below seal level. The first relief well was "spudded" by Transocean *Development Driller III* on Sunday, May 2, in a water depth of roughly 5,000 feet. This well has been drilled to 9,000 feet below sea level. It has been cased and cemented to that depth. Testing of the BOP is continuing and drilling should resume again within a couple of days. It is estimated the total drilling process will take at least 90 days. Once that is accomplished, and the original well has been penetrated, heavy fluids and cement can be pumped downhole to kill the well.

5. **Containment Recovery System**
   - A containment dome, called a "top hat," has been deployed to the sea floor and is ready to be placed over the main leak, if needed. It is designed with injection ports that can accommodate "anti-freeze" in order to mitigate the formation of large volumes of frozen hydrates.
   - It is important to note that this technology has never been used at this water depth. Significant technical and operational challenges must be overcome for it to be successful.

Offshore – Surface Spill Response

- **Cleanup Vessels** – 720 specialty response vessels are now deployed, including tugs, barges and recovery boats. 32 of the boats are Oil Spill Response Vessels that are designed to separate the oil from water. Approximately 158,370 barrels of oil-water mix (6.65 million gallons) have been recovered and treated.

- **Surface Dispersant** – 582,608 gallons of dispersant have been applied on the surface by aircraft, including an additional 20,000 applied on Sunday. The dispersant is a biodegradable chemical that works like soap by separating the oil into small droplets that can be more easily broken down by natural processes. An additional 390,000 gallons are available for deployment.

- **In-Situ Burning** – The Unified Command has teams in place prepared to continue in-situ burning, depending on the weather. The in-situ burning is conducted on the surface using special fire-boom that collects surface hydrocarbons which are then burned off.

Onshore - Shoreline Protection and Community Outreach

- **BP Announces $70 million in Tourism Grants to States** – On Monday, BP CEO Tony Hayward announced the company will make an additional $70 million available to Gulf Coast states to promote tourism. The company will give $25 million to Florida and $15 million each to Alabama, Mississippi and Louisiana. The grants are in response to governors' concerns that the tourism industry is being impacted. It will be used to promote area tourism and to provide accurate information about beach impacts. This money is in addition to the $100 million block grants for accelerated implementation of Area Contingency Plans announced on May 4. It is also supplemental to BP's private claims process, which remains unchanged.

- **$25 Million Block Grants to 4 States** – On May 4, BP announced it would provide Louisiana, Florida, Mississippi and Alabama $25 million each to accelerate implementation of the States' approved Area Contingency Plans. The Contingency Plans address removal of a worst case spill and are designed to mitigate or prevent a substantial threat to sensitive areas. The money will enable local businesses to immediately support clean-up and recovery efforts. The grant is supplemental to BP's private claims process, which remains unchanged.

- **Oil Containment and Shoreline Protection** – More than 1,700,000 feet of both sorbent and barrier boom have been deployed or staged to protect sensitive coastal areas. BP is working to procure an additional 3,500,000 feet of boom. Boom is now in place or staged to protect nearly all "Tier 1" shoreline in each of the four states. Some teams are starting to work on "Tier 2" areas.

- **"Vessels of Opportunity" Program** – 3,962 applications have been approved and approximately 1,330 vessels are active and being paid. Participating vessels are being organized into 25-boat task force teams to help with a variety of clean-up activities, including transporting supplies, performing wildlife rescue, and towing and deploying booms. To qualify for the program, operators need to meet several key requirements, including attending a four-hour hazardous waste training session, passing a dockside examination by the U.S. Coast Guard, and meeting crewing requirements based on the size of the vessel provided. The contact number for people interested in registering for the program is

(281) 366-5511. Information about training can be found on the incident website at www.deepwaterhorizonresponse.com under "volunteers." For additional information about training call (866) 905-4492.

- **Volunteers and Training** – BP has opened 22 Community Outreach Centers across the Gulf where people can go for more information, to find out about the spill, and to connect with volunteer opportunities. Training ramped up significantly this week, with sessions held at multiple locations across the Gulf. As of today, more than 15,000 volunteers have been trained in five different training modules that range from safety for beach clean-up, to wildlife monitoring, handling of hazardous materials and vessel operation for laying boom. Information about training can be found on the incident website at www.deepwaterhorizonresponse.com under "volunteers."

- **Informing Community Leaders** – The Unified Command continues to hold twice-daily teleconferences with mayors and community leaders across Mississippi, Alabama and Florida to ensure that elected officials have an opportunity to be updated on Command activities and to ask questions.

- **Wildlife Activities** – 3 additional reports of impacted wildlife were received, bringing the total to 35. Wildlife rehabilitation sites are located in Venice, LA and Mobile, AL.

- **Claims for Damages** - BP has opened 14 claims offices to help claimants through the process. Vietnamese and Spanish translators are in some offices. 15,600 claims have been filed and approximately 2,700 of them have been paid. More than $11 million has been paid out – an increase of $2 million since Saturday – most of which is for loss of income or wages in commercial fishing. The contact number for claims is (800) 440-0858. Claims office locations are listed below.

Summary of Regional Operations and Outreach	
Louisiana Sites:	Robert – Unified Area Command
	Houma – Incident Command Post
	Pointe A La Hache – Community Outreach Center
	Venice – Community Outreach Center, Staging Area
	Grand Isle – Staging Area
	Port Fourchon – Staging Area
	Cocodrie – Staging Area
	Shell Beach – Staging Area
	Slidell – Staging Area
	St. Mary – Staging Area
	Amelia – Staging Area
	Belle Chasse – **Claims Office** 2766 Belle Chasse Hwy Belle Chasse, LA 70037
	Cut Off – **Claims Office** Tarpon Heights Shopping Center Unit 2 16263 E. Main Street Cut Off, LA 70345
	Grand Isle – **Claims Office** 3811 LA 1 Grand Isle, LA 70358
	Hammond – **Claims Office** Worley Operations Center 303 Timber Creek Hammond, LA 70404
	Pointe A La Hache – **Claims Office** 1553 Hwy 15 Pointe A La Hache, LA
	St. Bernard – **Claims Office** 1345 Bayou Rd Saint Bernard, LA 70085
	Venice – **Claims Office** 41093 Hwy LA 23

	Boothville, LA 70038

- Community Outreach Centers now open in 8 parishes.
- New Staging Area opened at St. Mary.
- New Claims Office for Lafourche Parish opened at Cut Off.
- Bringing in additional adjusters to help process claims and working with translators to ensure that Vietnamese and Spanish speaking communities are served.
- Town hall meeting in Belle Chasse.
- Working with Catholic Charities to deliver immediate community needs of food and clothing.

Mississippi Sites:	Pascagoula – Community Outreach Center, Staging Area
	Biloxi – Community Outreach Center, Staging Area
	Waveland – Community Outreach Center
	Pass Christian – Staging Area
	Biloxi – **Claims Office** 920 Cedar Lake Rd, Suite K Biloxi, MS 39532
	Pascagoula – **Claims Office** 5912 Old Mobile Hwy Suite 4 Pascagoula, MS 39563

- Community outreach centers are now open in all three coastal counties.
- Continuing to coordinate training for vessel operators and working on Vessels of Opportunity deployment.

Alabama Sites:	Mobile – Incident Command Post, Community Outreach Center
	Theodore – Staging Area
	Orange Beach – Staging Area
	Dauphin – Staging Area
	Bayou LaBatre – Claims Office 290 N. Wintzell Avenue Bayou LaBatre, AL 36509
	Foley – **Claims Office** (Orange Beach/Gulf Shores/Bon Secour) 1506 North McKenzie Street (HWY 59), Suite 104 Foley, AL 36535
	Gulf Shores / Orange Beach – **Claims Office** 24039 Perdido Beach Blvd Suite 1 Orange Beach, AL 36561

- Community Outreach Centers now open in 2 counties.
- New Claims Office for Baldwin County opened at Orange Beach.
- Staffing claims centers with adjusters to process claims, looking at opening additional claims offices.

Florida Sites:	St. Petersburg – Incident Command Post
	Pensacola – Community Outreach Center, Staging Area
	Panama City – Staging Area
	St. Joe – Staging Area
	St. Marks – Staging Area
	Ft. Walton – **Claims Office** (open Saturday) 348 SW Miracle Strip Pkwy Suite 13 Fort Walton Beach, FL 32548
	Gulf Breeze – **Claims Office**

	5668 Gulf Breeze Pkwy Unit B-9 Gulf Breeze, FL 32563
	Panama City – **Claims Office** 7938 Front Beach Road Panama City Beach, FL 32408
	Pensacola – **Claims Office** 3960 Navy Boulevard Suite 16-17 Pensacola, FL 32507

- Community Outreach Centers are now open in 7 counties.
- New Staging Areas at St. Joe and St. Marks.
- New Claims Office for Bay County opened at Panama City Beach.
- Holding town hall meetings with vessel owners and coordinating training for Vessels of Opportunity volunteers.
- Working with counties to review Area Contingency Plans and identify booming and beach clean up priorities.

Contact Information	
Environment / Community Hotline – to report oil on the beach or shoreline or other environment or community impacts and access the Rapid Response Team	(866) 448-5816
Wildlife – to report and access care for impacted, i.e. oil wildlife	(866) 557-1401
Volunteers – to request volunteer information	(866) 448-5816
Services – to register as consultant, contractor, vendor, or submit information on alternative response technology, services, products or suggestions	(281) 366-5511
Vessels of Opportunity – to report and register boats available to assist with response	(281) 366-5511
Training – for questions about training requirements, times and locations, and to sign up\	(866) 905-4492 or (866) 647-2338
Ideas to Submit – email suggestions to horizonresponse@piersystem.com	
Investor Relations	(281) 366-3123
Claims	(800) 440-0858
Joint Information Center – Robert, LA – Media and information center	(985) 902-5231 or (985) 902-5240
Joint Information Center – Mobile, AL – Media and information center	(251) 445-8965
Transocean Hotline	(832) 587-8554
MI Swaco Hotline	(888) 318-6765
BP Family – and third-party contractor hotline	(281) 366-5578
Twitter: Oil_Spill_2010	
Facebook: Deepwater Horizon Response	
Joint Incident Command website: www.deepwaterhorizonresponse.com	

BP Announces Tourism Grants To Four Gulf States

Release date: 17 May 2010

BP is today announcing grants to each of the states of Florida, Alabama, Mississippi and Louisiana to help their Governors promote tourism around the shores of the Gulf of Mexico over the coming months.

This is part of our ongoing commitment to help mitigate the economic impact of the oil spill.

BP is providing $25 milllion to Florida and $15 million each to Alabama, Mississippi and Louisiana.

"The Gulf Coast is our home too. We are doing everything we can to plug the leak, contain the spill offshore and protect the shoreline. With the deployment of the riser insertion tool yesterday, we made important progress in containing the spill, and that will further strengthen our ability to keep oil off the shore," said Tony Hayward, BP's Group Chief Executive.

"We understand the Governors' concerns for the impact on the tourism industry, and are making funds available so that they can support the industry's efforts to provide accurate information about the state of the beaches across the region."

These grants are in addition to the $25 million grants BP announced May 5 to help each of the four states accelerate the implementation of Area Contingency Plans. The grants announced today are for the Governors to distribute as they see fit to promote tourism.

The grants BP has made to the four states do not affect BP's response to the Deepwater Horizon incident or existing claims process, but are supplemental to them.

Press enquiries:
BP Press Office London +44 20 7496 4076
BP Press office, US: +1 281 366 0265
www.bp.com/gulfofmexicoresponse

Duncan, Jeff

From: PerezQuinn, Susie (Bill Nelson) [Susie_PerezQuinn@billnelson.senate.gov]
Sent: Tuesday, May 18, 2010 6:58 PM
To: Goo, Michael
Subject: FW: Letter to Senators Boxer and Nelson
Attachments: Document.pdf

-----Original Message-----
From: Reicherts, Elizabeth A [mailto:Liz.Reicherts@bp.com]
Sent: Tuesday, May 18, 2010 12:23 PM
To: Poirier, Bettina (EPW); PerezQuinn, Susie (Bill Nelson)
Subject: Letter to Senators Boxer and Nelson

Here is the scanned DVD. Susie I didn't realize you needed it for another hearing at the same time. I'll get another one up to you as soon as possible. What room are you in? Should be able to do it in the next 30 minutes. What is the other hearing?

Liz Reicherts
Sr. Director, US Government & International Affairs BP America Inc.
1101 New York Avenue, NW, Suite 700
Washington, DC 20005
202.457.6585 direct
202.669.9892 cell

bp

May 18, 2010

The Honorable Bill Nelson
United States Senate
716 Hart Senate Office Building
Washington, DC 20510

The Honorable Barbara Boxer
United States Senate
112 Hart Senate Office Building
Washington, DC 20510

Dear Senators Nelson and Boxer:

Mr. Lamar McKay, Chairman and President of BP America, Inc. (BPA), has asked me to respond to your letters of May 14 and May 17, requesting subsea video footage related to the Deepwater Horizon incident. Consistent with the Unified Command process, BPA is committed to providing the government and the public with as much information as possible regarding the ongoing efforts to contain the oil spill in the Gulf of Mexico. In that spirit, we are working hard to accommodate your request.

There have been up to 14 ROVs shooting subsea footage, and in order to provide you with subsea views today, we have worked to assemble four video clips: (1) a video clip from May 8, 2010 of the plume at the end of the riser with no intervention or dispersant; (2) a video clip from May 10, 2010 of the same plume being monitored before insertion of the Riser Insertion Tubing Tool (RITT) with a dispersant boom inserted inside the pipe injecting dispersant; (3) a video clip from May 17, 2010 of the same plume showing the RITT and dispersant tools in operation; (4) a video clip of the plume from the riser kink, spliced together from 2 clips, one showing an overview of the plume as a whole and then a close up of the plume.

In addition, and as you may know, some additional footage has been made available by the Unified Command at http://www.deepwaterhorizonresponse.com/go/site/2931/.

We anticipate being able to provide additional footage tomorrow and will continue to work with your staff. If you have any questions, please feel free to contact me or have your staff contact Liz Reicherts at (202) 457-6585.

Sincerely,

David C. Nagel

Duncan, Jeff

From: eigwdxerox@mail.house.gov
Sent: Wednesday, May 19, 2010 2:22 PM
To: Goo, Michael
Subject: Scan from a Xerox WorkCentre
Attachments: Scan001.PDF

Categories: Yellow Category

Please open the attached document. It was scanned and sent to you using a Xerox WorkCentre.

Attachment File Type: PDF

WorkCentre Location: machine location not set Device Name: Global-Warming

For more information on Xerox products and solutions, please visit http://www.xerox.com

ONE HUNDRED ELEVENTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON ENERGY AND COMMERCE

2125 RAYBURN HOUSE OFFICE BUILDING

WASHINGTON, DC 20515–6115

MAJORITY (202) 225–2927
FACSIMILE (202) 225–2525
MINORITY (202) 225–3641

energycommerce.house.gov

May 19, 2010

Mr. Lamar McKay
President and CEO
BP America, Inc.,
501 Westlake Park Boulevard
Houston, Texas, 77079

Dear Mr. McKay:

Recent news reports and congressional testimony indicate that BP's efforts to stop the flow of oil 5,000 feet beneath the ocean surface are being monitored in real time by ongoing video feeds from the numerous robots and other submarine vessels that are being deployed around the area of the blowout preventer and the broken riser pipe. Although the accident occurred nearly a month ago, and remotely operated vehicles arrived soon thereafter, BP did not release any video until 23 days after the accident. To date only a small fraction of the video has been released to the public, primarily in response to requests from Congress.

I am writing to ask that you make these ongoing live feeds publicly available. Although BP argues that these video feeds belong to BP, the American public has a right to the information that they contain and to be able to see for themselves BP's progress in containing this ongoing environmental disaster. Allowing the public to view this video could provide our best scientists and engineers with information that could be helpful in developing much needed solutions to the ongoing oil spill, both in terms of subsea operations and surface spill response.

For instance, Dr. Steve Wereley of Purdue University has used a video-based method for calculating the rate of flow from the broken riser pipe and additional video would assist him in developing a more precise estimate of the rate of oil flowing from that pipe. Dr. Wereley estimates that approximately 70,000 barrels of oil a day are flowing out of the

pipe, however his estimate is based on only a very short video sample. Other scientists have conducted similar video-based efforts. An ongoing live feed would provide him with ample opportunity to obtain representative video samples and to then provide an updated estimate.

There are many other first class scientists and engineers who could apply their talent and expertise toward solving this disaster if they were able to view the ongoing efforts in real time and/or review and analyze large segments of the video as it is collected.

Congress and the American public has a right to know what is happening in real time, so that they can understand and react to the situation as it develops. Accordingly, I am asking that you allow relevant Congressional Committees to link to the live video feeds coming from the ocean floor. We will be happy to host such live feeds on our websites, and stream it free of charge to the world. I believe it is in all our interests, including BP's, for there to be transparency in all aspects of the response to this unfolding catastrophe. That way, we will see BP's spill response efforts and activities as they actually happen, and we will be able to judge for ourselves their efficacy, wisdom and ultimate environmental impact.

Sincerely,

Edward J. Markey
Chairman

Subcommitee on Energy and Environment
Committee on Energy and Commerce

Cc: Honorable Henry Waxman, Chairman,
Committee on Energy and Commerce

Honorable Joe Barton, Ranking Member
Committee on Energy and Commerce

Honorable Fred Upton, Ranking Member, Subcommittee on Energy and Environment

Duncan, Jeff

From: eigwdxerox@mail.house.gov
Sent: Wednesday, May 19, 2010 2:22 PM
To: Goo, Michael
Subject: Scan from a Xerox WorkCentre
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Categories: Yellow Category

Please open the attached document. It was scanned and sent to you using a Xerox WorkCentre.

Attachment File Type: PDF

WorkCentre Location: machine location not set Device Name: Global-Warming

For more information on Xerox products and solutions, please visit http://www.xerox.com

ONE HUNDRED ELEVENTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON ENERGY AND COMMERCE
2125 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515–6115

MAJORITY (202) 225-2927
FACSIMILE (202) 225-2525
MINORITY (202) 225-3641

energycommerce.house.gov

May 19, 2010

Admiral Thad W. Allen
Commandant
United States Coast Guard
2100 Second Street, SW Stop 7101
Washington, DC 20593-7101

Dear Admiral Allen:

Recent news reports and congressional testimony indicate that efforts to stop the BP oil spill, which is occurring 5,000 feet beneath the ocean surface, are being monitored in real time by ongoing video feeds from the numerous robots and other submarine vessels that are being deployed around the area of the blowout preventer and the broken riser pipe. Although the accident occurred nearly a month ago, and remotely operated vehicles arrived soon thereafter, BP did not release any video until 23 days after the accident. To date only a small fraction of the video has been released to the public, primarily in response to requests from Congress.

I am writing to ask that you make these ongoing live feeds publicly available. Although BP argues that these video feeds belong to BP, the American public has a right to the information that they contain and to be able to see for themselves BP's progress in containing this ongoing environmental disaster. I understand you have access to this feed. Allowing the public to view this video could provide our best scientists and engineers with information that could be helpful in developing much needed solutions to the ongoing oil spill, both in terms of subsea operations and surface spill response.

For instance, Dr. Steve Wereley of Purdue University has used a video-based method for calculating the rate of flow from the broken riser pipe and additional video would assist him in developing a more precise estimate of the rate of oil flowing from that pipe. Dr. Wereley estimates that approximately 70,000 barrels of oil a day are flowing out of the pipe, however his estimate is based on only a very short video sample. Other scientists have conducted similar video-based efforts. An ongoing live feed would provide him

with ample opportunity to obtain representative video samples and to then provide an updated estimate.

There are many other first class scientists and engineers who could apply their talent and expertise toward solving this disaster if they were able to view the ongoing efforts in real time and/or review and analyze large segments of the video as it is collected.

Congress and the American public has a right to know what is happening in real time, so that they can understand and react to the situation as it develops. Accordingly, I am asking that you allow relevant Congressional Committees to link to the live video feeds coming from the ocean floor. We will be happy to host such live feeds on our websites, and stream it free of charge to the world. I believe it is in all our interests, including BP's, for there to be transparency in all aspects of the response to this unfolding catastrophe. That way, we will see BP's spill response efforts and activities as they actually happen, and we will be able to judge for ourselves their efficacy, wisdom and ultimate environmental impact.

Sincerely,

Edward J. Markey
Chairman

Subcommitee on Energy and
Environment
Committee on Energy and
Commerce

Cc: Honorable Henry Waxman, Chairman,
Committee on Energy and Commerce

Honorable Joe Barton, Ranking Member
Committee on Energy and Commerce

Honorable Fred Upton, Ranking Member, Subcommittee on Energy and Environment

Duncan, Jeff

From: Mark Stevens [MStevens@oceaneering.com]
Sent: Wednesday, May 19, 2010 7:45 PM
To: Goo, Michael
Cc: Benjamin.Herricks@bp.com; jason.caldwell@bp.com; Taffi.Gillani@bp.com; Miles Roden; Wade Anderson
Subject: Video Portal User ID : 05/19/2010
Attachments: ROV Feed Study-JD1.pdf

Categories: Yellow Category

Your login ID for the collaborative BP Video Portal has been established.
Your user id is :emarkey2
Your Password will follow in another email and will be changed and emailed to you every 12 hours for security purposes.

Upon receipt of your password please reply or send a confirmation email to mroden@oceaneering.com and mstevens@oceaneering.com

Here is the link to the Portal : https://oceanet.oii.oceaneering.com/oiivideo
The enclosed document provides detailed instructions for gaining access to the video feed.

For support please feel free to call, we are available 24/7. If the phones go to voice mail press 2 to be routed to our cell phones.:
Miles Roden 713-329-4318
Mark Stevens 713-329-4558

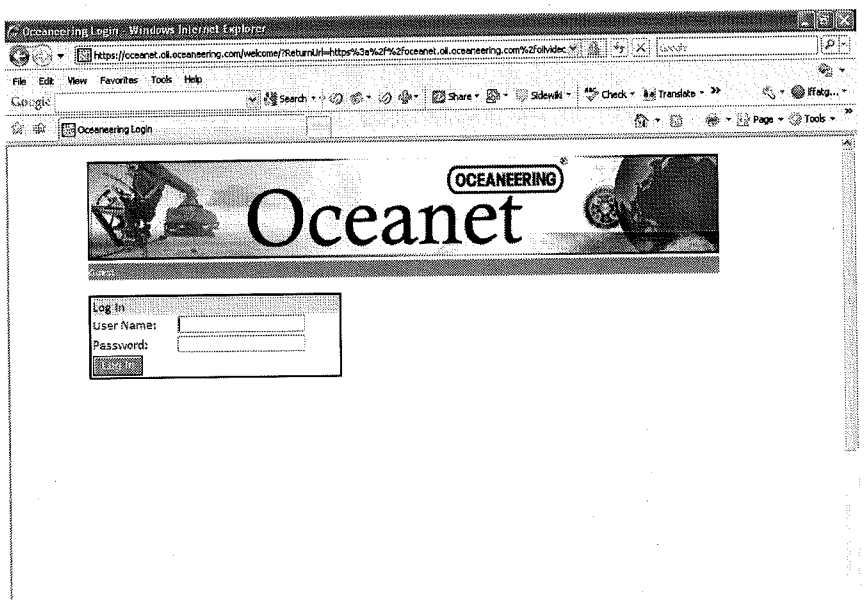
This ID is for use within the time period allowed by BP and is for your use only and not for distribution. It will be deleted upon notification from BP that use is no long required.

Oceaneering International, Inc. Communications

Mark Stevens
Director-Communications/Application Development
Oceaneering International
*104558
Work: 713-329-4558
Cell: 832-594-0613

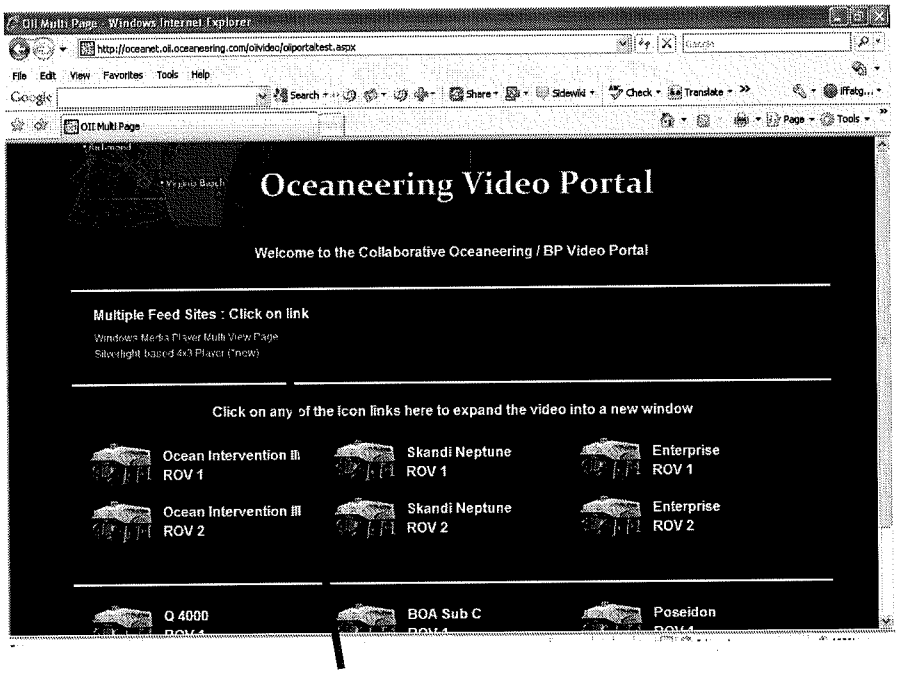
Steps to access the MC 252 Live Video Feed

- Login to the website https://oceanet.oii.oceaneering.com/oiivideo/



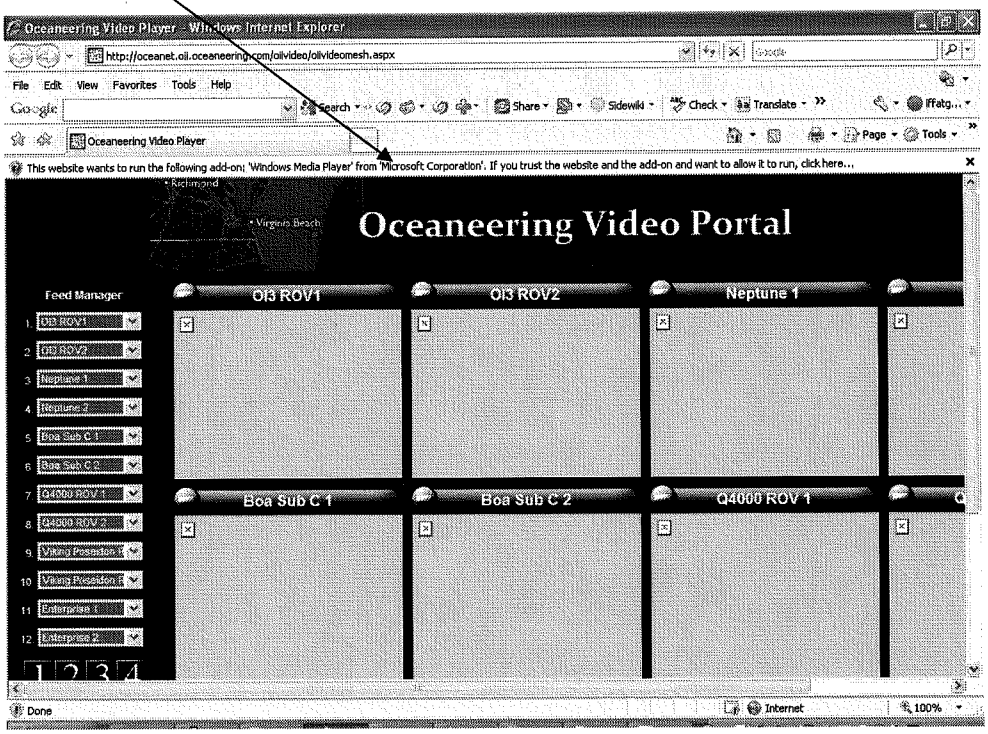
- Enter your login name and password (provided and changed every 12 hours)

  You will be led to the following screen



- Click on the "Window Media Player Multi View Page"

- If the following yellow pop up bar appears, please click on it and install the Active X control



If the video feed from Oceaneering is not clear or stops:

- Hit F5 on the keyboard to refresh the webpage. This will reload the entire webpage.
- Ctrl + F5 (re-clears the local cache)
- You can also select the Drop down menu on the left side of the page and select "video stopped". Click the drop down box again and choose the vessel name again to restart the feed.
- If the green, black or colored bars come up on the video, you can select the "Stop Video" drop down box again to verify if the feed is operating. There will be periods of time where the ROV cameras are shut-off and will appear blank. Completing the "Stop Video" process will confirm if the video is available or not.

For Support or Questions regarding the video portal, feel free to call or email the following:

- Mark Stevens (Director of Communications -Oceaneering) at 713-329-4558 or 832-594-0613 (cell phone). His email address is mstevens@oceaneering.com
- 2nd level support-Miles Roden. Phone number : 713-329-4318 or 713-397-0584 (cell phone). His email address is mroden@oceaneering.com
- 3rd level support is Bret Thompson. Phone number: 713-329-4389 or 832-656-9770 (cell phone). His email address is bthompson@oceaneering.com
- 4th level support is Tim Proeber. His phone number is 713-329-4645 or 713-443-8801 (cell phone). His email address is tproeber@oceaneering.com

Duncan, Jeff

From: eigwdxerox@mail.house.gov
Sent: Friday, May 21, 2010 3:04 PM
To: Goo, Michael
Subject: Scan from a Xerox WorkCentres
Attachments: Scan001.PDF

Categories: Yellow Category

scinentistfundletter

Please open the attached document. It was scanned and sent to you using a Xerox WorkCentre.

Attachment File Type: PDF

WorkCentre Location: machine location not set Device Name: Global-Warming

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ONE HUNDRED ELEVENTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON ENERGY AND COMMERCE

2125 RAYBURN HOUSE OFFICE BUILDING

WASHINGTON, DC 20515–6115

MAJORITY (202) 225–2927
FACSIMILE (202) 225–2525
MINORITY (202) 225–3641

energycommerce.house.gov

May 21, 2010

Mr. Lamar McKay
President and CEO
BP America, Inc.
501 WestLake Park Boulevard
Houston, Texas 77079

Mr. Steve Newman
President and CEO
Transocean Ltd.
P.O. Box 2765
Houston, TX 77252

Mr. David J. Lesar
Halliburton Co.
U.S. Corporate Headquarters
3000 North Sam Houston Parkway East
Houston, Texas 77032

Dear Mr. McKay, Mr. Newman and Mr. Lesar:

Over the past month, BP has maintained that only 5,000 barrels a day of oil are flowing from the Deepwater Horizon well into the Gulf of Mexico. It is now clear that this estimate is highly inaccurate. At a minimum, tens of thousands of barrels a day are escaping from the well, with some estimates ranging above 70,000 barrels a day. This amount of oil flowing directly and continuously into the ocean is unprecedented. The Gulf region is now experiencing an environmental catastrophe of unknown proportions – not only in the volume of the oil spilled, but also in the use of dispersants, in the virtually unknown behavior of oil expelled at low temperatures and high pressures on the deep sea floor, and in the movement of oil plumes at various depths along different currents. Your companies bear complete responsibility for this disaster and have a duty to assist with the investigation of the causes of the spill,

to implement solutions that halt the flow of oil, to monitor the spill's location and trajectory, and to assess ecological impacts on the human, marine and coastal populations of the oil and the oil/dispersant mixes being released.

To that end, I ask that you establish a fund, managed by an independent entity, to make funding available to researchers in academia and other independent institutions that might assist with these efforts. We need to have all of our best minds on board and all hands on deck to confront this ongoing environmental catastrophe. In your efforts to "do whatever it takes" to resolve the crisis, it would be short-sighted to ignore the hundreds of scientists in the region that are ready, able and willing to lend a hand, if only they had the funds for sample collection, travel, supplies and analyses.

Making grants available to independent researchers and laboratories would also remove the pall of conflicting interests that hangs over the current *modis operandi* – such as the use of the TDI-Brooks International laboratory in College Station, TX, which was reported in today's New York *Times*. According to the Times article, since this lab counts BP among its biggest clients, concerns have been raised about a potential appearance of partiality. The public is going to be mistrustful of the results, and BP is under suspicion regardless of the accuracy of the data. Therefore allowing independent scientists to sample our oceans and provide their own independent tests-- using their own laboratories-- will be critical in generating reliable and unbiased information.

Given the tens of millions of dollars already provided by BP to the Gulf States for promoting tourism – worthwhile but hardly expected to address the issues of the spill itself – it would be only reasonable to provide a similar amount to those scientists and researchers that could actually assist in the monitoring and mitigation of the spill and its effects.

If you have any questions or concerns, please have your staff contact Michal Freedhoff of my staff (202-225-2836). We look forward to your response.

Sincerely,

Edward J. Markey
Chairman, Subcommittee on Energy and Environment
Energy and Commerce Committee

Cc: Honorable Henry Waxman, Chairman,
Honorable Joe Barton, Ranking Member
Honorable Fred Upton, Ranking Member

Duncan, Jeff

From: eigwdxerox@mail.house.gov
Sent: Friday, May 21, 2010 3:08 PM
To: Goo, Michael
Subject: Scan from a Xerox WorkCentre
Attachments: Scan001.PDF

Categories: Yellow Category

scientistfund

Please open the attached document. It was scanned and sent to you using a Xerox WorkCentre.

Attachment File Type: PDF

WorkCentre Location: machine location not set Device Name: Global-Warming

For more information on Xerox products and solutions, please visit http://www.xerox.com

Duncan, Jeff

From: Ganesan.Arvin@epamail.epa.gov
Sent: Friday, May 21, 2010 3:44 PM
To: Goo, Michael
Subject: Fw: Redacted BP response
Attachments: bp response redacted.pdf

Categories: Yellow Category

The bp letter

Sent from my Blackberry Wireless Device

----- Original Message -----
From: Carolyn Levine
Sent: 05/21/2010 03:42 PM EDT
To: Arvin Ganesan
Subject: Redacted BP response

(See attached file: bp response redacted.pdf)

May 20, 2010

Rear Admiral Mary Landry
Commander, Eighth Coast Guard District
Hale Boggs Federal Building
500 Poydras Street
New Orleans, LA 70130

Samuel Coleman, P.E.
Director, Superfund Division
U.S. EPA Region 6
Dallas, TX 75202

Re: May 19, 2010 Addendum 2 to Dispersant Monitoring and Assessment Directive ("Addendum 2")

Dear Admiral Landry and Mr. Coleman:

This letter is the response to the directive in Addendum 2 for BP Exploration & Production Inc. ("BP") to identify within 24 hours of issuance of Addendum 2 one or more approved dispersant products from the National Contingency Plan Product Schedule that are "available in sufficient quantities, are as effective at dispersing the oil plume, and have a toxicity value less than or equal to 23.00 ppm LC50 toxicity value for Menidia or 18.00 ppm LC50 for Mysidopis, as indicated on the NCP Product Schedule".

BP's response below considers the criteria set forth in the directive in the following order (1) dispersants with a toxicity value greater than or equal to 32.00 ppm LC50 toxicity value for Menidia or 18.00 ppm LC50 for Mysidopis, as indicated on the NCP Product Schedule, (2) the availability based on existing stockpiles, the estimated time to begin aerial and subsurface application, and time for manufacturing, shipping and warehousing, and (3) as effective as Corexit EC9500A at dispersing the oil plume. As discussed below, given the above criteria, BP continues to believe that Corexit EC9500A is the best alternative.

(1) Toxicity Value.

Only five products on the NCP Product Schedule meet the criteria in the May 19th directive. These are: Sea Brat #4, Nokomis 3-F4 and Nokomis 3-AA, Mare Clean 200, and Neos AB3000.

EPA has used acute toxicity criteria to evaluate dispersants that will be applied to oil floating on the water surface. When evaluating the same materials for subsea use, additional criteria may be relevant. We have attached a summary of the criteria that BP is using to evaluate dispersant options, and comparison tables that evaluate each dispersant by such criteria, based on information currently available to us.

One relevant criterion, given the amount of dispersant that is required at this site and the proposed application near the ocean floor, is the potential long term effect and persistence of the chemicals in each dispersant.

In this regard, Sea Brat #4 contains a small amount of a chemical that may degrade to a nonylphenol (NP). The class of NP chemicals have been identified by various government agencies as potential endocrine disruptors, and as chemicals that may persist in the environment for a period of years. The manufacturer has not had the opportunity to evaluate this product for those potential effects, and BP has not had the opportunity to conduct independent tests to evaluate this issue either. BP learned of this issue after it applied for permission to use Sea Brat #4 at the incident site.

With this additional information in hand, we believe it would be prudent to evaluate the potential NP issue more carefully before EPA or the FOSC require Sea Brat to be used at the incident site, and in particular, before it is applied underwater near the ocean floor.

It would also be prudent to obtain the chemical formulas for the other dispersants that meet the acute toxicity criteria in the May 19th directive, and evaluate them for their potential to degrade to NP, or any other chemical that has been identified as a potential endocrine disruptor. BP has not been able to obtain this information in the 24 hour time frame provided in the directive.

COREXIT does not contain chemicals that degrade to NP. The manufacturer indicates that COREXIT reaches its maximum biodegradability within 28 days of application, and that it does not persist in the environment. These qualities make COREXIT a better choice for subsea application, based on the information currently available. COREXIT appears to have fewer long term effects than the other dispersants evaluated.

(2) Availability.

BP has an inventory of 246,380 gallons of COREXIT that are available for immediate use, and the manufacturer is able to produce an additional 68,000 gallons/day, which is sufficient to meet all anticipated dispersant needs at this site.

BP also has an inventory of 100,000 gallons of Sea Brat #4 available for immediate use. The manufacturer is able to produce an additional [redacted] gallons/day, which would be sufficient to meet all anticipated surface application needs, but may not be sufficient to meet both surface and subsurface application needs combined.

BP does not have a stockpile of the other dispersants that meet the criteria in the May 19th Directive, and the manufacturers tell us that they cannot produce the requested volume for 10 to 14 days or more.

Attached to this letter is a table that describes the availability and production capability for each dispersant option (See "Dispersant Supply Profile.')

(3) Effectiveness.

COREXIT was 55% to 63% effective in dispersing samples of South Louisiana Crude Oil. Sea Brat #4 was 61% effective in dispersing samples of the same material. The products are expected to have similar levels of effectiveness in the field.

Attached to this letter is a table that shows the expected effectiveness ratings for the four other dispersants that meet the acute toxicity criteria in Addendum 2. The Nokomis products are slightly more effective (64-65%), while Mare Clean and Neos AB3000 are reported to be substantially more effective at dispersing oil (84% and 90%).

(4) Conclusion.

In the midst of an oil spill response, one of the most important criteria is whether the dispersant in question can be obtained in sufficient volumes to meet immediate needs. Dispersants must be applied to the spill shortly after release to be effective. As oil weathers in the environment, it becomes increasingly difficult to disperse with any of the listed products.

COREXIT was the only dispersant that was available immediately, in sufficiently large quantities, to be useful at the time of the spill. Subsequent efforts have identified Sea Brat #4 as a possible alternative that is equally effective at dispersing oil, but has fewer acute toxicity effects. In the short

time provided to us, BP and the manufacturer of Sea Brat #4 have not had the opportunity to evaluate other potentially significant criteria, including the risk that a small fraction of Sea Brat #4 may degrade to NP, and/or may persist in the environment.

None of the other dispersants that meet the acute toxicity and effectiveness criteria in Addendum 2 are available in sufficient quantities at this time. In addition, before supporting a decision to switch to those dispersants, it would be important to review the formula for each alternative, and evaluate it for additional risks, such as persistence in the environment. BP has not been able to do this in the time provided.

Based on the information that is available today, BP continues to believe that COREXIT was the best and most appropriate choice at the time when the incident occurred, and that COREXIT remains the best option for subsea application.

Before the Coast Guard and EPA issue further directives requiring a change in dispersant products or monitoring, we would appreciate the opportunity to meet with you to discuss the options and their efficacy and potential impacts, in view of the circumstances at the spill site, and the proposed methods of usage.

After you have the opportunity to review the attached information, please let me know the earliest time when you might be available to meet with our team to discuss these issues.

Sincerely,

Douglas J. Suttles

I. INTRODUCTION

This attachment contains detailed technical information in response to the directive addendum from the U.S. Coast Guard (USCG) and the Environmental Protection Agency (EPA), directing BP to identify "one or more approved dispersant products from the National Contingency Plan Schedule that are available in sufficient quantities, are as effective at dispersing the oil plume, and have a toxicity value [greater][1] than or equal to 23.00 ppm LC50 toxicity value for Menidia or 18.00 ppm LC50 for Mysidopsis." *See* Dispersant Monitoring and Assessment Directive - Addendum, dated May 19, 2010 ("May 19th Directive").

To respond to the short deadline contained in the May 19th Directive, the information that we can provide is necessarily limited to the information that was in hand or could be obtained on 24 hours notice.

II. BACKGROUND

By way of background, and to provide some context, we begin by briefly describing why COREXIT was selected and approved for use by the EPA and the USCG. COREXIT is on the list of dispersants that are pre-approved for surface application to oil. It is one of the most commonly used dispersants, and has been used before in the Gulf of Mexico. Most important is that it was possible to quickly obtain a large enough supply of COREXIT to meet the anticipated needs at this site, by purchasing it from the manufacturer and by borrowing it from other companies. No other dispersant was available in the required amounts at the time of the oil spill.

III. POTENTIAL ALTERNATIVE DISPERSANTS

BP has identified the following dispersant products as potential alternatives to the COREXIT products approved for use:

1. Dispersit SPC 1000;
2. JD 2000;
3. Mare Clean 200;
4. Neos AB3000; and
5. Nokomis 3-AA;
6. Nokomis 3-F4
7. SAF-RON Gold;

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[1] The directive says "less than or equal to," but BP presumes that the intended expression was "greater than or equal to," since lower toxicity values indicate higher toxicity.

8. Sea Brat #4;

The Mare Clean 200, Neos AB3000, Nokomis 3-AA, Nokomis 3-F4 and Sea Brat #4 all have LC50 values greater than or equal to either the *Menidia* or *Mysidopsis* criteria, as required by the May 19th Directive.

IV. EVALUATION CRITERIA

In the table in section __ below, BP provides nine categories of information to assist the USCG and EPA in choosing alternative dispersants for use in the Spill Response. These categories are the following:

A. NCP Product Schedule Listing

Pursuant to Subpart J of the National Oil and Hazardous Substances Pollution Contingency Plan, no dispersant may be used in the United States if it is not listed on the National Contingency Plan Product Schedule. Accordingly, the only dispersant products being considered for possible use in the spill response are among those currently listed on the NCP National Product Schedule.

B. Effectiveness in Laboratory Trials

Each dispersant must be tested for effectiveness before it is listed in the Product Schedule. In addition, pursuant to EPA and U.S. Coast Guard approval, samples of Dispersit SPC 1000, JD-2000, Nokomis 3-AA, SAF-RON Gold, and Sea Brat #4 were tested in the laboratory for their effectiveness in dispersing oil using both the swirling task method (EPA-approved method) and a modified EXDET (Exxon Dispersant Effectiveness Test).[2] The test oil used was a surrogate from the nearby Thunder Hawk rig since fresh crude oil from the MC 252 was unavailable at the time.

C. Effectiveness in Field Trials

Actual field trials can provide a more accurate assessment of the potential performance of dispersants than laboratory trials. Field trials on MC 252 oil in various stages of weathering have been completed for Nalco EC 9500A.

D. Acute Toxicity

Each dispersant must be tested for acute toxicity before it is listed in the Product Schedule. In addition, we have reviewed and will continue to review information available from

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[2] The EXDET test measures relative dispersant effectiveness, allows comparisons among small-scale laboratory tests, and assists with comparisons to field trials (Becker, K.W., L.G. Coker, and M.A. Walsh. 1991. "A method for evaluating oil spill dispersants, Exxon Dispersant Effectiveness Test (EXDET)" in Oceans '91 Proceedings, Oceanic Engineering Society of IEEE, New York, NY. pp. 1486-1490).

material data safety sheets (MSDS), toxicity information available from the National Product Schedule, information provided by manufacturers and information available in scientific literature.

E. Persistence, Bioaccumulation and Chronic Effects and Endocrine Disruption

BP is reviewing available information about the persistence, bioaccumulation, chronic effects, endocrine disruption and other impacts of each dispersant to determine which dispersants will have the fewest impacts overall, and not just the best performance on the tests for the Product Schedule. There may be only limited data on long-term impacts for many of the dispersants as formulated, however. In addition, there may be only limited information on the constituents of the dispersants, since the dispersants typically contain proprietary substances whose identities are not publicly available. For those dispersants where constituents and/or data are publicly available, BP will identify and catalogue long-term impacts. For those where constituents are not publicly available, BP will endeavor to obtain confidential information about the constituents so that we may identify long-term impacts and review them with the EPA in a confidential manner.

*** CONFIDENTIAL INFORMATION BELOW***

[

]

NP is a potential endrocrine disrupter that has been mentioned by the U.S. EPA's Endocrine Disruption Screening Program, and the EPA has developed final marine acute and chronic water quality criteria developed for NP. NP also has been reviewed under the U.S. EPA's Great Lakes Binational Strategy, is on the OSPAR list of hazardous contituents for discharge into the sea, and is a priority hazardous pollutant under EU Water Directive.

This regulatory attention notwithstanding, NP is still widely used in consumer and agricultural products, and is regularly detected in wastewater treatment plant effluent. For example, Kolpin et al (2002) reported on a 1999-2000 survey of 85 sample sites across the U.S. (freshwater) that NP concentrations averaged 0.8 ug/L.

If a dispersant with NPE levels comparable to those of [ ] is used on the spill, the acute criteria may be temporarily exceeded shortly after application, depending on the thickness of the oil slick and the amount of dispersant applied. Exceedances of the chronic criteria appear unlikely, but could occur if [ ] is applied in the same area over a period of several days. Whether or not the acute criterion will be exceeded largely depends on the interval between applications.

For NP at or near the surface, photochemical transformation can be a significant route of abiotic degradation, according to a literature review conducted by Melcer et. al. (2007). Under simulated summer sunlight conditions in the surface layer of natural waters, NP's half-life has been estimated as less than a day.

For NP in dark, anoxic environments such as deep water sediments, however, available information suggests much slower degradation.

*** CONFIDENTIAL INFORMATION ABOVE***

F. Whether Potential Alternatives Have Been Prohibited Outside the United States

As part of our evaluation of the COREXIT products approved for use, BP has reviewed available information concerning their use outside the United States.[3] BP has conducted similar research for the 8 potential alternatives products. To date, we are not aware that any have been prohibited by any foreign regulators.

G. Behavior in the Environment

The behavior of dispersants in the environment may affect both its effectiveness and its long term impacts. One factor determining the behavior of dispersants after application is the tendency of a dispersant to rise or sink in the water column which, in turn, depends on whether the dispersants contain significant quantities of petroleum-based solvents that are less dense than water. Two other factors are the biodegradation of the dispersant and its tendency to bioaccumulate and bioconcentrate.

H. Quantities Currently Available and Reliability of Supply

An important consideration in identifying and selecting possible alternative dispersants is the commercial availability of those products in quantities sufficient to meet current and anticipated needs. Approximately 75,000 gallons of dispersant is used each day for surface

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[3] We have learned that COREXIT 9527 and COREXIT 9500 were removed from the list of approved dispersants in the UK. Our understanding is that these two products were removed due to a new test added by the UK regulators. The test, known as the "rocky shores test," is designed to evaluate the toxicity of the dispersants when sprayed in the tidal zone, and the mortality of limpets exposed to the dispersant. The test was added because of concerns that dispersants may cause more significant ecological impacts on rocky shores than they do on sandy or pebble beaches (primarily seaweed overgrowth due to increased mortality in the harvester species). The UK regulators continue to allow the use of existing stockpiles of these COREXIT products away from rocky shorelines, with approval. We have not been informed by the On Scene Coordinator that the "rocky shores test" is applicable to the conditions in the Gulf, as most tidal areas near the release are not rocky, and again US EPA and Coast Guard have approved both products for use in this response.

and subsea application. Going forward, an estimated 50,000 gallons per day will be needed for continued aerial spraying. It is also important to consider the extent to which a manufacturer can reliably produce and deliver sufficient quantities of quality-grade product to the field. Therefore, we have and will continue to evaluate any potential supply chain problems (e.g., interruptions in the manufacturer's ability to obtain raw materials needed to make the product), quality control issues (e.g., production of significant volumes off-specification product that is ineffective in dispersing oil and could not be used) and delivery problems (e.g., inability to arrange timely transport of the product to the field).

V. Available Data on the Potential Alternatives

In the following table, BP has compiled the available information relevant to the dispersants and criteria described above.

Evaluation Criteria for Selected Dispersants								
Evaluation Criteria	**Comment**	**Corexit® EC9500A**	**Corexit® EC9527A**	**JD-2000**	**Dispersit SPC 1000™**	**Nokomis 3-F4**	**Sea Brat #4**	**Saf-Ron Gold**
A. NCP Product Schedule		Yes	Yes	Yes	Yes	Yes	Yes	Yes
B. Effectiveness (EPA Swirl Test)	% Effective (Prudhoe Bay crude)	45.3	37.4	60.4	40	63.20	53.6	84.80
	% Effective (South Lousiana crude)	54.7	63.4	77.8	100	65.70	60.7	53.80
	% Effective (Average)	50.0	50.4	69.1	73	64.50	57.1	69.30
C. Effectiveness (Gulf Field Test)	Based on field test protocols developed by the Dispersant Operation Group				Not yet tested	Not yet tested	May 8 field test indicated oil dispersed with formation of droplets with a likely median diameter <50 microns	Not yet tested
D.1 Acute Toxicity Data (NCP Schedule)	*Mysidopsis bahia* (shrimp) *48hr LC50 (mg/L)*	32.23	24.14	90.50	16.6	20.16	14.0	63.00
	Menidia berylilina (inland silverside fish) *96hr LC50 (mg/L)*	25.20	14.57	407.00	3.5	34.2	30.0	29.43
D.2 Additional Acute Toxicity Data (from MSDS)	*Acartia tonsa* marine copepod) 48hr LC50 (mg/L)	34	--	--	--	--	--	--
	Artemia (shrimp) 48hr LC50 (mg/L)	20.7	--	--	--	--	--	--
	Psetta maxima (Turbot flatfish) 96hr LC50 (mg/l)	--	50	--	--	--	--	--

Evaluation Criteria for Selected Dispersants								
Evaluation Criteria	**Comment**	**Corexit® EC9500A**	**Corexit® EC9527A**	**JD-2000**	**Dispersit SPC 1000™**	**Nokomis 3-F4**	**Sea Brat #4**	**Saf-Ron Gold**
E. Persistence, Bioaccumulation and Chronic Effects and Endocrine Disruption: Constituents	Based on Information Provided by Manufacturer	Proprietary Mixture	Proprietary Mixture	Proprietary Mixture	Proprietary Mixture	Formulations may contain nonylphenol polyethylene ethoxylates (NPE), which biodegrade to nonylphenol, a potential endrocrine disruptor. NPE use restricted in EU, under review in US.	Proprietary Mixture	Proprietary Mixture
G.1. Behavior in the Environment: Solvent	Based on Information Provided by Manufacturer	Petroleum based solvent with proplyene glycol	2-butoxyethanol and propylene glycol	Proprietary mixture, insufficient information	Water based containing emulsifiers, dispersants, and water dilutable coupling solvent	Water and propylene glycol	Water and propylene glycol	Proprietary mixture, insufficient information

Evaluation Criteria for Selected Dispersants								
Evaluation Criteria	**Comment**	**Corexit® EC9500A**	**Corexit® EC9527A**	**JD-2000**	**Dispersit SPC 1000™**	**Nokomis 3-F4**	**Sea Brat #4**	**Saf-Ron Gold**
G.2. Behavior in the Environment: Biodegradation	Based on Information Provided by Manufacturer	Manufacturer describes as biodegradable, majority of components expected to readily biodegrade	Manufacturer describes as biodegradable, majority of components expected to readily biodegrade	Proprietary mixture, insufficient information	Manufacturer describes as "completely biodegradable surfactants" - Proprietary Mixture Currently Insufficient Composition Information to Assess	Nonylphenol, degradation product of NPE, potentially resistant to biodegradation during subsurface application - Proprietary Mixture Currently Insufficient Composition Information to Assess	MSDS describes product as highly biodegradable	Proprietary mixture, insufficient information
G.3. Behavior in the Environment: Potential for Bioaccumulation	Based on Information Provided by Manufacturer	Manufacturer reports component substances have a potential to bioaccumulate	Manufacturer reports component substances have a low potential to bioconcentrate	Proprietary mixture, insufficient information	Proprietary mixture, insufficient information	Proprietary mixture, insufficient information	Proprietary mixture, insufficient information	Proprietary mixture, insufficient information
H. Quantities Currently Available and Reliability of Supply		BP to provide	BP to provide	BP to provide	Anticipates increasing to 20,000 gallons per day, and possibly later to 60,000 gallons per day.	BP to provide	BP to provide	BP to provide

VI. Conclusions

As discussed above, there are many considerations that are relevant to selecting dispersants for use.

*** CONFIDENTIAL INFORMATION BELOW***

In addition, there may be significant concerns with certain of the constituents of the dispersants that we cannot yet evaluate because we lack the proprietary information to do so. We currently have such information only for Sea Brat #4, Corexit EC 9500A, Corexit EC 9527A, and SAF-RON Gold. Of these four, the two Corexits appear to have no constituents that raise issues over and above any that might be evident from the acute toxicity tests. [

]

The MSDS and patent information that are available for Disperit suggest that it does not contain NP or a chemical that would degrade to NP. However, this needs to be confirmed by a review of the current formula, which the manufacturer has not supplied to us.

*** CONFIDENTIAL INFORMATION ABOVE***

Duncan, Jeff

From: Freedhoff, Michal
Sent: Saturday, May 22, 2010 8:47 AM
To: Goo, Michael; Duncan, Jeff; Burnham-Snyder, Eben; Joseph, Avenel; Gray, Morgan; Reilly, Daniel; Unruh-Cohen, Ana
Subject: Fw: Redacted BP response
Attachments: bp response redacted.pdf

Categories: Yellow Category

Arvin seems to think he sent it to us already.
Michal Ilana Freedhoff, Ph.D.
Policy Director
Office of Representative Edward J. Markey
2108 Rayburn House Office Building
Washington, DC 20515
202-225-2836

Sent using BlackBerry

From: Ganesan.Arvin@epamail.epa.gov <Ganesan.Arvin@epamail.epa.gov>
To: Freedhoff, Michal
Sent: Sat May 22 08:42:04 2010
Subject: Fw: Redacted BP response

I sent this to Goo last afternoon. Sorry for not sending it to you as well. I believe EPA has not responded to this letter yet but I am verifying that is the case.

ARVIN R. GANESAN
Deputy Associate Administrator
Congressional Affairs
Office of the Administrator
United States Environmental Protection Agency
Ganesan.Arvin@epa.gov
(p) 202.564.5200
(f) 202.501.1519

-----Forwarded by Arvin Ganesan/DC/USEPA/US on 05/22/2010 08:39AM -----

To: Arvin Ganesan/DC/USEPA/US@EPA
From: Carolyn Levine/DC/USEPA/US
Date: 05/21/2010 03:42PM
Subject: Redacted BP response

(See attached file: bp response redacted.pdf)

May 20, 2010

Rear Admiral Mary Landry
Commander, Eighth Coast Guard District
Hale Boggs Federal Building
500 Poydras Street
New Orleans, LA 70130

Samuel Coleman, P.E.
Director, Superfund Division
U.S. EPA Region 6
Dallas, TX 75202

Re: May 19, 2010 Addendum 2 to Dispersant Monitoring and Assessment Directive ("Addendum 2")

Dear Admiral Landry and Mr. Coleman:

This letter is the response to the directive in Addendum 2 for BP Exploration & Production Inc. ("BP") to identify within 24 hours of issuance of Addendum 2 one or more approved dispersant products from the National Contingency Plan Product Schedule that are "available in sufficient quantities, are as effective at dispersing the oil plume, and have a toxicity value less than or equal to 23.00 ppm LC50 toxicity value for Menidia or 18.00 ppm LC50 for Mysidopis, as indicated on the NCP Product Schedule".

BP's response below considers the criteria set forth in the directive in the following order (1) dispersants with a toxicity value greater than or equal to 32.00 ppm LC50 toxicity value for Menidia or 18.00 ppm LC50 for Mysidopis, as indicated on the NCP Product Schedule, (2) the availability based on existing stockpiles, the estimated time to begin aerial and subsurface application, and time for manufacturing, shipping and warehousing, and (3) as effective as Corexit EC9500A at dispersing the oil plume. As discussed below, given the above criteria, BP continues to believe that Corexit EC9500A is the best alternative.

(1) Toxicity Value.

Only five products on the NCP Product Schedule meet the criteria in the May 19th directive. These are: Sea Brat #4, Nokomis 3-F4 and Nokomis 3-AA, Mare Clean 200, and Neos AB3000.

EPA has used acute toxicity criteria to evaluate dispersants that will be applied to oil floating on the water surface. When evaluating the same materials for subsea use, additional criteria may be relevant. We have attached a summary of the criteria that BP is using to evaluate dispersant options, and comparison tables that evaluate each dispersant by such criteria, based on information currently available to us.

One relevant criterion, given the amount of dispersant that is required at this site and the proposed application near the ocean floor, is the potential long term effect and persistence of the chemicals in each dispersant.

In this regard, Sea Brat #4 contains a small amount of a chemical that may degrade to a nonylphenol (NP). The class of NP chemicals have been identified by various government agencies as potential endocrine disruptors, and as chemicals that may persist in the environment for a period of years. The manufacturer has not had the opportunity to evaluate this product for those potential effects, and BP has not had the opportunity to conduct independent tests to evaluate this issue either. BP learned of this issue after it applied for permission to use Sea Brat #4 at the incident site.

With this additional information in hand, we believe it would be prudent to evaluate the potential NP issue more carefully before EPA or the FOSC require Sea Brat to be used at the incident site, and in particular, before it is applied underwater near the ocean floor.

It would also be prudent to obtain the chemical formulas for the other dispersants that meet the acute toxicity criteria in the May 19th directive, and evaluate them for their potential to degrade to NP, or any other chemical that has been identified as a potential endocrine disruptor. BP has not been able to obtain this information in the 24 hour time frame provided in the directive.

COREXIT does not contain chemicals that degrade to NP. The manufacturer indicates that COREXIT reaches its maximum biodegradability within 28 days of application, and that it does not persist in the environment. These qualities make COREXIT a better choice for subsea application, based on the information currently available. COREXIT appears to have fewer long term effects than the other dispersants evaluated.

(2) Availability.

BP has an inventory of 246,380 gallons of COREXIT that are available for immediate use, and the manufacturer is able to produce an additional 68,000 gallons/day, which is sufficient to meet all anticipated dispersant needs at this site.

BP also has an inventory of 100,000 gallons of Sea Brat #4 available for immediate use. The manufacturer is able to produce an additional [ ] gallons/day, which would be sufficient to meet all anticipated surface application needs, but may not be sufficient to meet both surface and subsurface application needs combined.

BP does not have a stockpile of the other dispersants that meet the criteria in the May 19th Directive, and the manufacturers tell us that they cannot produce the requested volume for 10 to 14 days or more.

Attached to this letter is a table that describes the availability and production capability for each dispersant option (See "Dispersant Supply Profile.')

(3) Effectiveness.

COREXIT was 55% to 63% effective in dispersing samples of South Louisiana Crude Oil. Sea Brat #4 was 61% effective in dispersing samples of the same material. The products are expected to have similar levels of effectiveness in the field.

Attached to this letter is a table that shows the expected effectiveness ratings for the four other dispersants that meet the acute toxicity criteria in Addendum 2. The Nokomis products are slightly more effective (64-65%), while Mare Clean and Neos AB3000 are reported to be substantially more effective at dispersing oil (84% and 90%).

(4) Conclusion.

In the midst of an oil spill response, one of the most important criteria is whether the dispersant in question can be obtained in sufficient volumes to meet immediate needs. Dispersants must be applied to the spill shortly after release to be effective. As oil weathers in the environment, it becomes increasingly difficult to disperse with any of the listed products.

COREXIT was the only dispersant that was available immediately, in sufficiently large quantities, to be useful at the time of the spill. Subsequent efforts have identified Sea Brat #4 as a possible alternative that is equally effective at dispersing oil, but has fewer acute toxicity effects. In the short

time provided to us, BP and the manufacturer of Sea Brat #4 have not had the opportunity to evaluate other potentially significant criteria, including the risk that a small fraction of Sea Brat #4 may degrade to NP, and/or may persist in the environment.

None of the other dispersants that meet the acute toxicity and effectiveness criteria in Addendum 2 are available in sufficient quantities at this time. In addition, before supporting a decision to switch to those dispersants, it would be important to review the formula for each alternative, and evaluate it for additional risks, such as persistence in the environment. BP has not been able to do this in the time provided.

Based on the information that is available today, BP continues to believe that COREXIT was the best and most appropriate choice at the time when the incident occurred, and that COREXIT remains the best option for subsea application.

Before the Coast Guard and EPA issue further directives requiring a change in dispersant products or monitoring, we would appreciate the opportunity to meet with you to discuss the options and their efficacy and potential impacts, in view of the circumstances at the spill site, and the proposed methods of usage.

After you have the opportunity to review the attached information, please let me know the earliest time when you might be available to meet with our team to discuss these issues.

Sincerely,

Douglas J. Suttles

I. INTRODUCTION

This attachment contains detailed technical information in response to the directive addendum from the U.S. Coast Guard (USCG) and the Environmental Protection Agency (EPA), directing BP to identify "one or more approved dispersant products from the National Contingency Plan Schedule that are available in sufficient quantities, are as effective at dispersing the oil plume, and have a toxicity value [greater][1] than or equal to 23.00 ppm LC50 toxicity value for Menidia or 18.00 ppm LC50 for Mysidopsis." *See* Dispersant Monitoring and Assessment Directive - Addendum, dated May 19, 2010 ("May 19th Directive").

To respond to the short deadline contained in the May 19th Directive, the information that we can provide is necessarily limited to the information that was in hand or could be obtained on 24 hours notice.

II. BACKGROUND

By way of background, and to provide some context, we begin by briefly describing why COREXIT was selected and approved for use by the EPA and the USCG. COREXIT is on the list of dispersants that are pre-approved for surface application to oil. It is one of the most commonly used dispersants, and has been used before in the Gulf of Mexico. Most important is that it was possible to quickly obtain a large enough supply of COREXIT to meet the anticipated needs at this site, by purchasing it from the manufacturer and by borrowing it from other companies. No other dispersant was available in the required amounts at the time of the oil spill.

III. POTENTIAL ALTERNATIVE DISPERSANTS

BP has identified the following dispersant products as potential alternatives to the COREXIT products approved for use:

1. Dispersit SPC 1000;
2. JD 2000;
3. Mare Clean 200;
4. Neos AB3000; and
5. Nokomis 3-AA;
6. Nokomis 3-F4
7. SAF-RON Gold;

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[1] The directive says "less than or equal to," but BP presumes that the intended expression was "greater than or equal to," since lower toxicity values indicate higher toxicity.

8. Sea Brat #4;

The Mare Clean 200, Neos AB3000, Nokomis 3-AA, Nokomis 3-F4 and Sea Brat #4 all have LC50 values greater than or equal to either the *Menidia* or *Mysidopsis* criteria, as required by the May 19th Directive.

IV. EVALUATION CRITERIA

In the table in section __ below, BP provides nine categories of information to assist the USCG and EPA in choosing alternative dispersants for use in the Spill Response. These categories are the following:

A. NCP Product Schedule Listing

Pursuant to Subpart J of the National Oil and Hazardous Substances Pollution Contingency Plan, no dispersant may be used in the United States if it is not listed on the National Contingency Plan Product Schedule. Accordingly, the only dispersant products being considered for possible use in the spill response are among those currently listed on the NCP National Product Schedule.

B. Effectiveness in Laboratory Trials

Each dispersant must be tested for effectiveness before it is listed in the Product Schedule. In addition, pursuant to EPA and U.S. Coast Guard approval, samples of Dispersit SPC 1000, JD-2000, Nokomis 3-AA, SAF-RON Gold, and Sea Brat #4 were tested in the laboratory for their effectiveness in dispersing oil using both the swirling task method (EPA-approved method) and a modified EXDET (Exxon Dispersant Effectiveness Test).[2] The test oil used was a surrogate from the nearby Thunder Hawk rig since fresh crude oil from the MC 252 was unavailable at the time.

C. Effectiveness in Field Trials

Actual field trials can provide a more accurate assessment of the potential performance of dispersants than laboratory trials. Field trials on MC 252 oil in various stages of weathering have been completed for Nalco EC 9500A.

D. Acute Toxicity

Each dispersant must be tested for acute toxicity before it is listed in the Product Schedule. In addition, we have reviewed and will continue to review information available from

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[2] The EXDET test measures relative dispersant effectiveness, allows comparisons among small-scale laboratory tests, and assists with comparisons to field trials (Becker, K.W., L.G. Coker, and M.A. Walsh. 1991. "A method for evaluating oil spill dispersants, Exxon Dispersant Effectiveness Test (EXDET)" in Oceans '91 Proceedings, Oceanic Engineering Society of IEEE, New York, NY. pp. 1486-1490).

material data safety sheets (MSDS), toxicity information available from the National Product Schedule, information provided by manufacturers and information available in scientific literature.

E. Persistence, Bioaccumulation and Chronic Effects and Endocrine Disruption

BP is reviewing available information about the persistence, bioaccumulation, chronic effects, endocrine disruption and other impacts of each dispersant to determine which dispersants will have the fewest impacts overall, and not just the best performance on the tests for the Product Schedule. There may be only limited data on long-term impacts for many of the dispersants as formulated, however. In addition, there may be only limited information on the constituents of the dispersants, since the dispersants typically contain proprietary substances whose identities are not publicly available. For those dispersants where constituents and/or data are publicly available, BP will identify and catalogue long-term impacts. For those where constituents are not publicly available, BP will endeavor to obtain confidential information about the constituents so that we may identify long-term impacts and review them with the EPA in a confidential manner.

*** CONFIDENTIAL INFORMATION BELOW***

[

]

NP is a potential endrocrine disrupter that has been mentioned by the U.S. EPA's Endocrine Disruption Screening Program, and the EPA has developed final marine acute and chronic water quality criteria developed for NP. NP also has been reviewed under the U.S. EPA's Great Lakes Binational Strategy, is on the OSPAR list of hazardous contituents for discharge into the sea, and is a priority hazardous pollutant under EU Water Directive.

This regulatory attention notwithstanding, NP is still widely used in consumer and agricultural products, and is regularly detected in wastewater treatment plant effluent. For example, Kolpin et al (2002) reported on a 1999-2000 survey of 85 sample sites across the U.S. (freshwater) that NP concentrations averaged 0.8 ug/L.

If a dispersant with NPE levels comparable to those of [ ] is used on the spill, the acute criteria may be temporarily exceeded shortly after application, depending on the thickness of the oil slick and the amount of dispersant applied. Exceedances of the chronic criteria appear unlikely, but could occur if [ ] is applied in the same area over a period of several days. Whether or not the acute criterion will be exceeded largely depends on the interval between applications.

For NP at or near the surface, photochemical transformation can be a significant route of abiotic degradation, according to a literature review conducted by Melcer et. al. (2007). Under simulated summer sunlight conditions in the surface layer of natural waters, NP's half-life has been estimated as less than a day.

For NP in dark, anoxic environments such as deep water sediments, however, available information suggests much slower degradation.

*** CONFIDENTIAL INFORMATION ABOVE***

F. Whether Potential Alternatives Have Been Prohibited Outside the United States

As part of our evaluation of the COREXIT products approved for use, BP has reviewed available information concerning their use outside the United States.[3] BP has conducted similar research for the 8 potential alternatives products. To date, we are not aware that any have been prohibited by any foreign regulators.

G. Behavior in the Environment

The behavior of dispersants in the environment may affect both its effectiveness and its long term impacts. One factor determining the behavior of dispersants after application is the tendency of a dispersant to rise or sink in the water column which, in turn, depends on whether the dispersants contain significant quantities of petroleum-based solvents that are less dense than water. Two other factors are the biodegradation of the dispersant and its tendency to bioaccumulate and bioconcentrate.

H. Quantities Currently Available and Reliability of Supply

An important consideration in identifying and selecting possible alternative dispersants is the commercial availability of those products in quantities sufficient to meet current and anticipated needs. Approximately 75,000 gallons of dispersant is used each day for surface

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[3] We have learned that COREXIT 9527 and COREXIT 9500 were removed from the list of approved dispersants in the UK. Our understanding is that these two products were removed due to a new test added by the UK regulators. The test, known as the "rocky shores test," is designed to evaluate the toxicity of the dispersants when sprayed in the tidal zone, and the mortality of limpets exposed to the dispersant. The test was added because of concerns that dispersants may cause more significant ecological impacts on rocky shores than they do on sandy or pebble beaches (primarily seaweed overgrowth due to increased mortality in the harvester species). The UK regulators continue to allow the use of existing stockpiles of these COREXIT products away from rocky shorelines, with approval. We have not been informed by the On Scene Coordinator that the "rocky shores test" is applicable to the conditions in the Gulf, as most tidal areas near the release are not rocky, and again US EPA and Coast Guard have approved both products for use in this response.

and subsea application. Going forward, an estimated 50,000 gallons per day will be needed for continued aerial spraying. It is also important to consider the extent to which a manufacturer can reliably produce and deliver sufficient quantities of quality-grade product to the field. Therefore, we have and will continue to evaluate any potential supply chain problems (e.g., interruptions in the manufacturer's ability to obtain raw materials needed to make the product), quality control issues (e.g., production of significant volumes off-specification product that is ineffective in dispersing oil and could not be used) and delivery problems (e.g., inability to arrange timely transport of the product to the field).

V. Available Data on the Potential Alternatives

In the following table, BP has compiled the available information relevant to the dispersants and criteria described above.

Evaluation Criteria for Selected Dispersants								
Evaluation Criteria	**Comment**	**Corexit® EC9500A**	**Corexit® EC9527A**	**JD-2000**	**Dispersit SPC 1000™**	**Nokomis 3-F4**	**Sea Brat #4**	**Saf-Ron Gold**
A. NCP Product Schedule		Yes	Yes	Yes	Yes	Yes	Yes	Yes
B. Effectiveness (EPA Swirl Test)	% Effective (Prudhoe Bay crude)	45.3	37.4	60.4	40	63.20	53.6	84.80
	% Effective (South Lousiana crude)	54.7	63.4	77.8	100	65.70	60.7	53.80
	% Effective (Average)	50.0	50.4	69.1	73	64.50	57.1	69.30
C. Effectiveness (Gulf Field Test)	Based on field test protocols developed by the Dispersant Operation Group				Not yet tested	Not yet tested	May 8 field test indicated oil dispersed with formation of droplets with a likely median diameter <50 microns	Not yet tested
D.1 Acute Toxicity Data (NCP Schedule)	*Mysidopsis bahia* (shrimp) *48hr LC50 (mg/L)*	32.23	24.14	90.50	16.6	20.16	14.0	63.00
	Menidia berylilina (inland silverside fish) *96hr LC50 (mg/L)*	25.20	14.57	407.00	3.5	34.2	30.0	29.43
D.2 Additional Acute Toxicity Data (from MSDS)	*Acartia tonsa* marine copepod) 48hr LC50 (mg/L)	34	--	--	--	--	--	--
	Artemia (shrimp) 48hr LC50 (mg/L)	20.7	--	--	--	--	--	--
	Psetta maxima (Turbot flatfish) 96hr LC50 (mg/l)	--	50	--	--	--	--	--

Evaluation Criteria for Selected Dispersants								
Evaluation Criteria	**Comment**	**Corexit® EC9500A**	**Corexit® EC9527A**	**JD-2000**	**Dispersit SPC 1000™**	**Nokomis 3-F4**	**Sea Brat #4**	**Saf-Ron Gold**
E. Persistence, Bioaccumulation and Chronic Effects and Endocrine Disruption: Constituents	Based on Information Provided by Manufacturer	Proprietary Mixture	Proprietary Mixture	Proprietary Mixture	Proprietary Mixture	Formulations may contain nonylphenol polyethylene ethoxylates (NPE), which biodegrade to nonylphenol, a potential endrocrine disruptor. NPE use restricted in EU, under review in US.	Proprietary Mixture	Proprietary Mixture
G.1. Behavior in the Environment: Solvent	Based on Information Provided by Manufacturer	Petroleum based solvent with propiyene glycol	2-butoxyethanol and propylene glycol	Proprietary mixture, insufficient information	Water based containing emulsifiers, dispersants, and water dilutable coupling solvent	Water and propylene glycol	Water and propylene glycol	Proprietary mixture, insufficient information

Evaluation Criteria for Selected Dispersants								
Evaluation Criteria	**Comment**	**Corexit® EC9500A**	**Corexit® EC9527A**	**JD-2000**	**Dispersit SPC 1000™**	**Nokomis 3-F4**	**Sea Brat #4**	**Saf-Ron Gold**
G.2. Behavior in the Environment: Biodegradation	Based on Information Provided by Manufacturer	Manufacturer describes as biodegradable, majority of components expected to readily biodegrade	Manufacturer describes as biodegradable, majority of components expected to readily biodegrade	Proprietary mixture, insufficient information	Manufacturer describes as "completely biodegradable surfactants" - Proprietary Mixture Currently Insufficient Composition Information to Assess	Nonylphenol, degradation product of NPE, potentially resistant to biodegradation during subsurface application - Proprietary Mixture Currently Insufficient Composition Information to Assess	MSDS describes product as highly biodegradable	Proprietary mixture, insufficient information
G.3. Behavior in the Environment: Potential for Bioaccumulation	Based on Information Provided by Manufacturer	Manufacturer reports component substances have a potential to bioaccumulate	Manufacturer reports component substances have a low potential to bioconcentrate	Proprietary mixture, insufficient information	Proprietary mixture, insufficient information	Proprietary mixture, insufficient information	Proprietary mixture, insufficient information	Proprietary mixture, insufficient information
H. Quantities Currently Available and Reliability of Supply		BP to provide	BP to provide	BP to provide	Anticipates increasing to 20,000 gallons per day, and possibly later to 60,000 gallons per day.	BP to provide	BP to provide	BP to provide

VI. Conclusions

As discussed above, there are many considerations that are relevant to selecting dispersants for use.

*** CONFIDENTIAL INFORMATION BELOW***

In addition, there may be significant concerns with certain of the constituents of the dispersants that we cannot yet evaluate because we lack the proprietary information to do so. We currently have such information only for Sea Brat #4, Corexit EC 9500A, Corexit EC 9527A, and SAF-RON Gold. Of these four, the two Corexits appear to have no constituents that raise issues over and above any that might be evident from the acute toxicity tests. [

]

The MSDS and patent information that are available for Disperit suggest that it does not contain NP or a chemical that would degrade to NP. However, this needs to be confirmed by a review of the current formula, which the manufacturer has not supplied to us.

*** CONFIDENTIAL INFORMATION ABOVE***

Duncan, Jeff

From: eigwdxerox@mail.house.gov
Sent: Monday, May 24, 2010 2:52 PM
To: Goo, Michael
Subject: McKay Letter May 24 2101
Attachments: McKay001.PDF

Categories: Yellow Category

Please open the attached document. It was scanned and sent to you using a Xerox WorkCentre.

Attachment File Type: PDF

WorkCentre Location: machine location not set Device Name: Global-Warming

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ONE HUNDRED ELEVENTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON ENERGY AND COMMERCE

2125 RAYBURN HOUSE OFFICE BUILDING

WASHINGTON, DC 20515–6115

MAJORITY (202) 225–2927
FACSIMILE (202) 225–2525
MINORITY (202) 225–3641

energycommerce.house.gov

May 24, 2010

Mr. Lamar McKay
President and CEO,
BP America, Inc.
501 Westlake Park Boulevard
Houston, Texas, 70779

Dear Mr. McKay:

As the oil spill in the Gulf of Mexico continues into its second month, all eyes are on the broken and gushing riser pipe 5000 feet below the ocean floor. Just last week, in response to my request, you agreed to grant the public access to the live video feed from the accident site. The entire world is now able to see for itself a limited view of the oil flowing into the ocean waters, as well as efforts by BP to contain the spill. That is a critical step forward in providing the transparency necessary for the public and for outside experts to be able to judge the size and extent of the spill, and to consider and evaluate options for halting the flow of toxic oil and oil dispersant mixes into the environment. It will also be important to subsequent efforts to assess the full extent of natural resource damages resulting from the BP spill.

I appreciate your decision to allow the public to view this feed, and as you know, there has been an overwhelming response to the availability of this information. The websites for the Select Committee on Energy Independence and Global Warming and the Energy and Commerce Committee have received hundreds of thousands of visitors seeking to watch this feed. Due to the incredible response, BP decided put the live feed on its own website and provided access to news organizations. I commend your efforts to provide this information to the public.

However, I have received thousands of comments from citizens across the nation regarding this footage, and feel it is important to make you aware of those comments, including:

Multiple Screens: BP currently has the ability to view several video images from the ocean floor at one time, using as many as 12 cameras at one time. While BP has made these images available to members of Congress, there is still only one video feed available to the public and news media.

Date and Time Information Previous footage included date and time stamp information. The current live feed does not contain such information.

Archiving of Footage: Several scientists and students from Universities have informed the Select Committee that archiving the video could help others devise better response efforts and develop new engineering technology to be used on the ocean floor in the future.

I would like to ask that you make immediately available, in real time, feed from all of the cameras that are currently operating at the accident site, and that you retain all available footage. BP has the capacity to provide live streams from several different camera sites operating underwater at the accident site. Although not all such cameras are operating simultaneously, BP can stream live feed from all video sites that are in operation at any given time.

As an example of the importance of this information, our initial view of the live feed from all cameras revealed at least two cameras showing 2 leaks at different points of the riser pipe. Although much of the live feed has shown the oil flowing from what appears to be the larger of the two leaks, to our knowledge the live feed has not allowed the public to view the smaller of the two leaks. In addition, BP now appears to be showing on live feed some critical rover activities, which are presumably being conducted in preparation for the upcoming "top kill" effort. If all cameras were streaming live feed, we would be able to obtain a more complete picture of the situation. If there is footage being shot from any camera, we would ask that you make it available to news media and the public.

I want to emphasize that I do not want to affect operations of the spill response team in any way by seeking this information for the public. It is of supreme importance that BP immediately take whatever actions are necessary to stop the flow of oil and kill the well. I would not want BP to redirect cameras or to affect in any way the quality or integrity of the live video feed to operators or others within the response team.

I do, however, ask that you make available all live video feed from all cameras that are operational at any given time and see no reason why, at this point in the 21st century, that such information cannot be made available without any impact on operations. This information will be helpful to the public and to outside experts attempting to assess the situation and to devise solutions to the problem. In particular, this information will be necessary for purposes of transparency, as BP conducts it "top kill" operation and other operations designed to stop the flow of oil.

Although the spill is BP's, the ocean into which it is flowing, and the coastlines and subsea environments that it is destroying belong to the American people. It is incumbent upon BP to at least provide the American public with a complete and accurate picture of the situation as it unfolds.

Because of the overwhelming interest in viewing this information, especially as BP heads into this week's "Top Kill" activity, I strongly suggest that you make the video feeds available in easy to access, multiple formats that will make it easier for the public to access, share and comment on.

Finally, I want to request that you archive and not destroy all available video footage shot since the time of the accident. This footage will be a critical record of the event and will be useful to the Independent Blue Ribbon Commission created by President Obama. I would request that you make such footage publicly available as soon as possible.

Sincerely,

Edward J. Markey

Edward J. Markey
Chairman, Subcommittee on Energy and Environment
Committee on Energy and Commerce Committee

CC: Honorable Henry Waxman, Chairman
Honorable Joe Barton, Ranking Member
Honorable Fred Upton, Ranking Member

Duncan, Jeff

From: Goo, Michael
Sent: Monday, May 24, 2010 2:19 PM
To: Burnham-Snyder, Eben; Duncan, Jeff; Sharp, Jeff; Unruh-Cohen, Ana; Gray, Morgan; Phillips, Jonathan; Baussan, Danielle
Subject: FW: McKay Letter May 24 2101
Attachments: McKay001.PDF

Categories: Yellow Category

-----Original Message-----
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Attachment File Type: PDF

WorkCentre Location: machine location not set
Device Name: Global-Warming

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ONE HUNDRED ELEVENTH CONGRESS

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2125 RAYBURN HOUSE OFFICE BUILDING
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As an example of the importance of this information, our initial view of the live feed from all cameras revealed at least two cameras showing 2 leaks at different points of the riser pipe. Although much of the live feed has shown the oil flowing from what appears to be the larger of the two leaks, to our knowledge the live feed has not allowed the public to view the smaller of the two leaks. In addition, BP now appears to be showing on live feed some critical rover activities, which are presumably being conducted in preparation for the upcoming "top kill" effort. If all cameras were streaming live feed, we would be able to obtain a more complete picture of the situation. If there is footage being shot from any camera, we would ask that you make it available to news media and the public.

I want to emphasize that I do not want to affect operations of the spill response team in any way by seeking this information for the public. It is of supreme importance that BP immediately take whatever actions are necessary to stop the flow of oil and kill the well. I would not want BP to redirect cameras or to affect in any way the quality or integrity of the live video feed to operators or others within the response team.

I do, however, ask that you make available all live video feed from all cameras that are operational at any given time and see no reason why, at this point in the 21st century, that such information cannot be made available without any impact on operations. This information will be helpful to the public and to outside experts attempting to assess the situation and to devise solutions to the problem. In particular, this information will be necessary for purposes of transparency, as BP conducts it "top kill" operation and other operations designed to stop the flow of oil.

Although the spill is BP's, the ocean into which it is flowing, and the coastlines and subsea environments that it is destroying belong to the American people. It is incumbent upon BP to at least provide the American public with a complete and accurate picture of the situation as it unfolds.

Because of the overwhelming interest in viewing this information, especially as BP heads into this week's "Top Kill" activity, I strongly suggest that you make the video feeds available in easy to access, multiple formats that will make it easier for the public to access, share and comment on.

Finally, I want to request that you archive and not destroy all available video footage shot since the time of the accident. This footage will be a critical record of the event and will be useful to the Independent Blue Ribbon Commission created by President Obama. I would request that you make such footage publicly available as soon as possible.

Sincerely,

Edward J. Markey

Edward J. Markey
Chairman, Subcommittee on Energy and Environment
Committee on Energy and Commerce Committee

CC: Honorable Henry Waxman, Chairman
Honorable Joe Barton, Ranking Member
Honorable Fred Upton, Ranking Member

Duncan, Jeff

From: Goo, Michael
Sent: Monday, May 24, 2010 4:54 PM
To: 'Reicherts, Elizabeth A'
Subject: FW: McKay Letter May 24 2101
Attachments: McKay001.PDF

Categories: Yellow Category

Here is the letter and we are quite clear we do not want to compromise operational integrity.....but call me on cell. 7034756386

-----Original Message-----
From: eigwdxerox@mail.house.gov [mailto:eigwdxerox@mail.house.gov]
Sent: Monday, May 24, 2010 2:52 PM
To: Goo, Michael
Subject: McKay Letter May 24 2101

Please open the attached document. It was scanned and sent to you using a Xerox WorkCentre.

Attachment File Type: PDF

WorkCentre Location: machine location not set
Device Name: Global-Warming

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ONE HUNDRED ELEVENTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON ENERGY AND COMMERCE
2125 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515–6115

MAJORITY (202) 225–2927
FACSIMILE (202) 225–2525
MINORITY (202) 225–3641

energycommerce.house.gov

May 24, 2010

Mr. Lamar McKay
President and CEO,
BP America, Inc.
501 Westlake Park Boulevard
Houston, Texas, 70779

Dear Mr. McKay:

As the oil spill in the Gulf of Mexico continues into its second month, all eyes are on the broken and gushing riser pipe 5000 feet below the ocean floor. Just last week, in response to my request, you agreed to grant the public access to the live video feed from the accident site. The entire world is now able to see for itself a limited view of the oil flowing into the ocean waters, as well as efforts by BP to contain the spill. That is a critical step forward in providing the transparency necessary for the public and for outside experts to be able to judge the size and extent of the spill, and to consider and evaluate options for halting the flow of toxic oil and oil dispersant mixes into the environment. It will also be important to subsequent efforts to assess the full extent of natural resource damages resulting from the BP spill.

I appreciate your decision to allow the public to view this feed, and as you know, there has been an overwhelming response to the availability of this information. The websites for the Select Committee on Energy Independence and Global Warming and the Energy and Commerce Committee have received hundreds of thousands of visitors seeking to watch this feed. Due to the incredible response, BP decided put the live feed on its own website and provided access to news organizations. I commend your efforts to provide this information to the public.

However, I have received thousands of comments from citizens across the nation regarding this footage, and feel it is important to make you aware of those comments, including:

Multiple Screens: BP currently has the ability to view several video images from the ocean floor at one time, using as many as 12 cameras at one time. While BP has made these images available to members of Congress, there is still only one video feed available to the public and news media.

Date and Time Information Previous footage included date and time stamp information. The current live feed does not contain such information.

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Chairman, Subcommittee on Energy and Environment
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CC: Honorable Henry Waxman, Chairman
Honorable Joe Barton, Ranking Member
Honorable Fred Upton, Ranking Member

Duncan, Jeff

From: Reicherts, Elizabeth A [Liz.Reicherts@bp.com]
Sent: Monday, May 24, 2010 9:16 PM
To: Goo, Michael
Subject: BP America response
Attachments: BP-HZN-CEC020095.pdf; BP-HZN-CEC020103.pdf; BP-HZN-CEC020107.pdf; Document.pdf

Categories: Red Category

Michael: Please find attached the response letter and documents to your May 14 letter.
Liz

Liz Reicherts
Sr. Director, US Government & International Affairs
BP America Inc.
1101 New York Avenue, NW, Suite 700
Washington, DC 20005
202.457.6585 direct
202.669.9892 cell

Attachment 1

Using "Standard Guide for Visually Estimating Oil Spill Thickness on Water, ASTM F 2534 - 06."

Oil on Water Estimate - Low

	sq mi	Cover Factor	gal/sq mi	gals	bbls
Sheen	1500	0.5	50	37500	893
Dull oil	250	0.2	666	33300	793
Dark oil	9	0.15	3330	4495.5	107
Total oil on water				75296	1793
x 2 to compensate for evap and disp					3586
recovered					200
chemically dispersed					1000
Total emitted					4786
Barrels emitted per day					**1063**

Oil on Water Estimate - Best Guess

	sq mi	Cover Factor	gal/sq mi	gals	bbls
Sheen	1500	0.66	333	329670	7849
Dull oil	250	0.35	1332	116550	2775
Dark oil	9	0.25	6660	14985	357
Total oil on water				461205	10981
x 2 to compensate for evap and disp					21962
recovered					450
chemically dispersed					3500
Total emitted					25912
Barrels emitted per day					**5758**

Oil on Water Estimate - High

	sq mi	Cover Factor	gal/sq mi	gals	bbls
Sheen	1500	0.75	666	749250	17839
Dull oil	250	0.5	3330	416250	9911
Dark oil	9	0.35	13320	41958	999
Total oil on water				1E+06	28749
x 2 to compensate for evap and disp					57498
recovered					700
chemically dispersed					6000
Total emitted					64198
Barrels emitted per day					**14266**

ATTACHMENT 2

Using "Standard Guide for Visually Estimating Oil Spill Thickness on Water ASTM F 2534 - 06"

Oil on Water Estimate - Low

	sq mi	Cover Factor	gal/sq m	gals	bbls
Sheen	1641	0.5	50	41025	977
Dull oil	235	0.2	666	31302	745
Dark oil	21	0.15	3330	10490	250
Total oil on water				82817	1972
x 2 to compensate for evap and disp					3944
recovered					200
chemically dispersed					1000
Total emitted					5144
Barrels emitted per day					**935**

Oil on Water Estimate - Best Guess

	sq mi	Cover Factor	gal/sq m	gals	bbls
Sheen	1641	0.66	333	360659	8587
Dull oil	235	0.35	1332	109557	2609
Dark oil	21	0.25	6660	34965	833
Total oil on water				505181	12028
x 2 to compensate for evap and disp					24056
recovered					450
chemically dispersed					3500
Total emitted					28006
Barrels emitted per day					**5092**

Oil on Water Estimate - High

	sq mi	Cover Factor	gal/sq m	gals	bbls
Sheen	1641	0.75	666	819680	19516
Dull oil	235	0.5	3330	391275	9316
Dark oil	21	0.35	13320	97902	2331
Total oil on water				1308857	31163
x 2 to compensate for evap and disp					62327
recovered					700
chemically dispersed					6000
Total emitted					69027
Barrels emitted per day					**12550**

Using "Standard Guide for Visually Estimating Oil Spill Thickness on Water, ASTM F 2534 - 06."

Attachments 3

Oil on Water Estimate - Low

	sq mi	Cover Factor	gal/sq mi	gals	bbls
Sheen	1929	0.5	50	48225	1148
Dull oil	238	0.2	666	31702	755
Dark oil	91	0.15	3330	45455	1082
Total oil on water				125381	2985
x 2 to compensate for evap and disp					5971
recovered					400
chemically dispersed					1400
Total emitted					7771
Barrels emitted per day					**1195**

Oil on Water Estimate - Best Guess

	sq mi	Cover Factor	gal/sq mi	gals	bbls
Sheen	1929	0.66	333	423956	10094
Dull oil	238	0.35	1332	110956	2642
Dark oil	91	0.25	6660	151515	3608
Total oil on water				686426	16343
x 2 to compensate for evap and disp					32687
recovered					1500
chemically dispersed					4200
Total emitted					38387
Barrels emitted per day					**5906**

Oil on Water Estimate - High

	sq mi	Cover Factor	gal/sq mi	gals	bbls
Sheen	1929	0.75	666	963536	22941
Dull oil	238	0.5	3330	396270	9435
Dark oil	91	0.35	13320	424242	10101
Total oil on water				1784048	42477
x 2 to compensate for evap and disp					84955
recovered					3000
chemically dispersed					6000
Total emitted					93955
Barrels emitted per day					**14455**

ATTACHMENT 4

Using "Standard Guide for Visually Estimating Oil Spill Thickness on Water. ASTM F 2534 - 06"

Oil on Water Estimate - Low

	sq mi	Cover Factor	gal/sq m	gals	bbls
Sheen	2481	0.5	50	62025	1477
Dull oil	160	0.2	666	21312	507
Dark oil	35	0.15	3330	17483	416
Total oil on water				100820	2400
x 2 to compensate for evap and disp					4801
recovered					500
chemically dispersed					1600
Total emitted					6901
Barrels emitted per day					**920**

Oil on Water Estimate - Best Guess

	sq mi	Cover Factor	gal/sq m	gals	bbls
Sheen	2481	0.66	333	545274	12983
Dull oil	160	0.35	1332	74592	1776
Dark oil	35	0.25	6660	58275	1388
Total oil on water				678141	16146
x 2 to compensate for evap and disp					32292
recovered					2000
chemically dispersed					4900
Total emitted					39192
Barrels emitted per day					**5226**

Oil on Water Estimate - High

	sq mi	Cover Factor	gal/sq m	gals	bbls
Sheen	2481	0.75	666	1239260	29506
Dull oil	160	0.5	3330	266400	6343
Dark oil	35	0.35	13320	163170	3885
Total oil on water				1668830	39734
x 2 to compensate for evap and disp					79468
recovered					4000
chemically dispersed					7200
Total emitted					90668
Barrels emitted per day					**12089**

Attachment 5

Using "Standard Guide for Visually Estimating Oil Spill Thickness on Water, ASTM F 2534 - 06."

Oil on Water Estimate - Low

	sq mi	Cover Factor	gal/sq mi	gals	bbls
Sheen	5256	0.5	50	131400	3129
Dull oil	597	0.2	666	79520.4	1893
Dark oil	120	0.15	3330	59940	1427
Total oil on water				270860.4	6449
x 2 to compensate for evap and disp					12898
recovered					15838
chemically dispersed					16500
burned					5821
Total emitted					51057
Barrels emitted per day					**1891**

Oil on Water Estimate - Best Guess

	sq mi	Cover Factor	gal/sq mi	gals	bbls
Sheen	5256	0.66	333	1155164	27504
Dull oil	597	0.35	1332	278321.4	6627
Dark oil	120	0.25	6660	199800	4757
Total oil on water				1633285	38888
x 2 to compensate for evap and disp					77775
recovered					31676
chemically dispersed					33000
burned					11642
Total emitted					154093
Barrels emitted per day					**5707**

Oil on Water Estimate - High

	sq mi	Cover Factor	gal/sq mi	gals	bbls
Sheen	5256	0.75	666	2625372	62509
Dull oil	597	0.5	3330	994005	23667
Dark oil	120	0.35	13320	559440	13320
Total oil on water				4178817	99496
x 2 to compensate for evap and disp					198991
recovered					63352
chemically dispersed					66000
burned					23284
Total emitted					351627
Barrels emitted per day					**13023**

Attachment 6

Seafloor Exit
7" x 9-7/8" Casing Annulus Flow Path

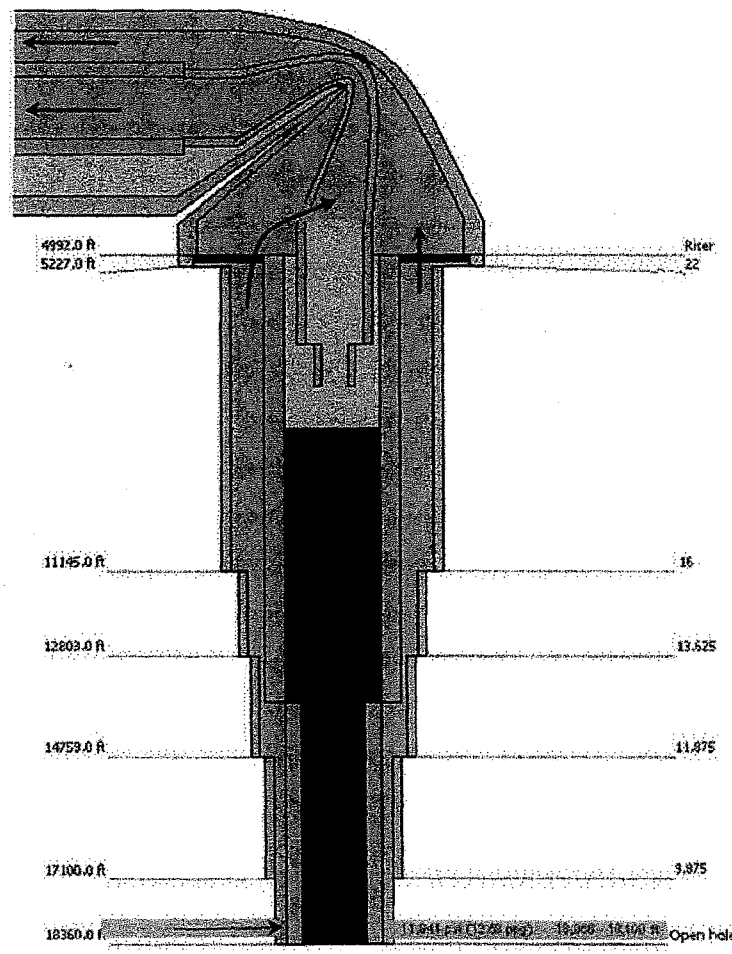
Worst case theoretical flow assumes:

- Split 5-1/2" drill pipe at subsea BOP and flow out 6-5/8" drill pipe
- Maximum theoretical flow rate is 60,000 BOPD

Items that reduce worst case theoretical flow:

- Crushed and bent riser and drill pipe
- Cement sheath in open hole by casing annulus
- Casing hanger and pack-off restriction
- Sand production (unconsolidated formation)
- Shale collapse
- Water production
- BOP functions activated
- Expected range of possible flow rates is 5,000 to 40,000 BOPD

NOTE: Removal of all restrictions (riser, BOP, and drill pipe) adds ~10,000 BOPD to rates above



ATTACHMENT 7

Key Messages

Expected Case:

In the current state a wellhead pressure decrease from 3800 psi to 2270 psi (pressure seafloor) results in a flow rate increase ranging from 15% to 30%

Alternate Case:

If fluid flow is only through the drill pipe – and then the drill pipe is unintentionally removed and flows into the sea (2270 psi):

- For flow up the annulus the rate doubles
- For flow inside production casing the rate triples

Note:

If BOP and wellhead are removed and if we have incorrectly modeled the restrictions – the rate could be as high as ~ 100,000 barrels per day up the casing or 55,000 barrels per day up the annulus (low probability worst cases)

09.0.2009.10.

Attachment 8

Estimation of the Oil Released from Deepwater Horizon Incident (26 April 2010, 1200hrs PDT)

1) Surface Oil volume Estimation

Estimating oil volume by the visual appearance of the slick is a highly unreliable process. At best, one can calculate an answer to only an order of magnitude. Other estimation methods, if available, are likely to give more accurate answers

Oil spills separate into thick portions that can be as thick as an inch or more and thin sheen that are only as thick as a few visible light wavelengths. Most of the oil volume in a typical crude oil spill is in the thick part (but most of the area is sheen

Much of the oil from the light crude that is being released will evaporate or disperse in the water column. We would expect at least half of the oil released to be accounted for by these mechanisms

The oil that makes it to the surface is showing signs of emulsification. Emulsified oil can contain up to 90% water.

Weathered oil that has formed tar balls are not detectable by satellites or overflights.

Based upon past experiments, published standards, and actual spills, NOAA/ERD defines the range of thickness of slicks as

Sheen thickness – $(10^{-6}m \leftrightarrow 10^{-5}m)$
Dark oil thickness- $(10^{-5}m \leftrightarrow 10^{-2}m)$

Area coverage of slick (4/26/10), based upon satellite images $(1500km^2 \leftrightarrow 3000km^2)$

→ Sheen volume, using average thickness of 0.1 micron, area of 2000 sq. km and 100% coverage yields oil volume of 200 cu. m = 1200 bbl= 50,000 gal

→ Thick oil volume, using average thickness of 100 microns, 1% average coverage and 50% water content yields an oil volume of 1000 cu. m = 6000 bbl. = 0.25 million gal

→ To an order of magnitude, we estimate that there are around 10,000 bbl of oil on the water surface, or around a half million gallons

2) Estimated Present Volume Release Rate

The following assumptions are used to make a release rate calculation. If any of them are changed, the answer could be significantly different.

The oil is leaking, in a vertical plume from a hole approximately 40 cm. in diameter.

The velocity of the material in the plume is estimated by visual observation to be between 7 cm/sec and 30 cm/sec.

The plume itself contains gas bubbles, oil droplets, and entrained seawater.

Assuming that 50% of the plume volume is oil and a rise velocity of 15 cm/sec, the oil released from this source would be roughly 5000 bbl/day. (approximately 200,000 gal/day) Other sources would contribute additional oil. This answer will be refined as additional information becomes available.

Mississippi Canyon 252 #1
Flow Rate Calculations

Context
A 30 second video clip of hydrocarbons leaking from the broken end of the Deepwater Horizon drilling riser has been released to the public. Various "experts" are challenging Unified Command's best guess estimate of flow rate at the seabed based on this video clip. This note summarizes the various estimates that have been made within Unified Command.

Mass Balance
The mass balance calculation involves estimating, through visual inspection, the volume of oil on the surface of the water. Allowances are then made for natural dispersion and evaporation. Estimates of volumes skimmed, burned, and chemically dispersed then allow an estimate of the oil released at the seabed over the duration of the spill. The calculation is repeated each day weather permitting.

In the early days of the spill, the surface expression of the spill was relatively small. Overflights were able to provide fidelity with respect to the character of the oil on the surface. Three descriptors were used

- Sheen
- Dull
- Dark oil

There are two Standards for estimating the thickness of oil on water using visual descriptors.

- US-based ASTM Standard
- European-based Bonn Agreement

The visual descriptors are different in the two standards and the relationships to thickness are also different.

From April 27 through April 30 daily estimates of flow rate were made on the basis of visual description of the oil on the surface. Three estimates were made each day – low, best guess, and high – to allow for differences between the two standards, and uncertainties around the input parameters.

- Low end was always around 1,000 barrels per day
- Best guess was between 5,000 and 6,000 barrels per day
- High end varied from 12,000 to 14,000 barrels per day

The tables associated with these estimates are attached (Attachments 1-4). These estimates played an important part in Unified Command's decision to raise the estimate of flow rate from 1,000 to 5,000 barrels per day.

During the storm which began on May 1, and for several days after, no visual description of the spill was obtained. From May 8, daily outlines of the spill have been available based on a combination of satellite and aerial overflights. However, because of the size of the spill area, overflights have been unable to provide fidelity on the visual appearance of the oil within the spill area. During the five days in April for which fidelity was available, the ratios of dark oil to dull oil to sheen remained relatively constant at 2/10/88. These ratios have been applied to the total area of spill on May 17. Current estimates of volumes of oil skimmed, burned, and chemically dispersed were then applied to provide an updated range of possible flow rates as follows: 2,000 – 6,000 – 13,000 barrels per day (Attachment 5).

Note that all serious scientists recognize that there are huge uncertainties in estimating oil volumes from visual inspection. Oil thickness is by far the greatest uncertainty, with both sheen and darker oil thicknesses varying by orders of magnitude.

Maximum Discharge Calculation

Prior to drilling the MC 252 exploration well a maximum discharge estimate was provided as part of the permitting process. Predictions of reservoir thickness, quality, and pressure were convolved with the well design to develop a worse case scenario as follows.

- Optimistic assumptions for reservoir thickness, quality, pressure, and fluid properties.
- Total loss of control of well after drilling through reservoir in largest hole size allowed by the well design – 12 ¼".
- Totally uncontrolled flow from drilling riser at surface.

Using these assumptions, a maximum case discharge of 162,000 barrels per day was estimated.

After the sinking of the Deepwater Horizon, this estimate was reviewed in the light of the actual situation as it was understood at that time.

- Formation evaluation of the reservoir interval.
- 9 7/8" hole size in the reservoir
- 7" production tubing across the reservoir
- Flow to seabed through casing annulus
- Split 5 ½" drill pipe at BOP and flow out 6 5/8" drill pipe
- No restrictions in BOP, riser, or drill pipe (ie well head open to seabed – requires BOP to fall off well head)

An absolute worst case flow rate of 60,000 barrels per day was calculated. A more reasonable worst case scenario of 40,000 barrels per day recognizes the following.

- BOP is in place and may be partially activated.
- The riser and drill pipe is crushed and kinked.

- Restrictions provided by cement in the casing annulus, formation collapse, casing hangers, etc., are likely.

This analysis is summarized on Attachment 6.

A more sophisticated version of this calculation has been carried out as more has been learned about pressures at the top and bottom of the well head. This review calculates unconstrained flow rate through the casing as well as up the annulus. Absolute worst cases with wellhead and BOP removed, and no downhole restrictions, are as follows (Attachment 7).

- Annular flow – 55,000 barrels per day
- Casing flow – 100, 000 barrels per day

Fluid Velocity At Seabed

On April 26, NOAA scientists made an estimate of volume release rate at the seabed as follows.

- Oil leaking from a hole approximately 40 cm in diameter (Deepwater Horizon riser is 19.5"/49.5 cm ID, and is somewhat crimped at release point).
- By visual inspection the velocity of the material in the plume is between 7 and 30 cm per second.
- The plume contains roughly 50% oil droplets (together with gas bubbles and entrained seawater).

The NOAA estimate using these assumptions was roughly 5,000 barrels per day (Attachment 8).

Evidence Against Extreme Flow Rates At Seabed

A Professor from Purdue University has calculated a current flow rate at the seabed of 70,000 +/- 14,000 barrels per day. He bases his estimate on the velocity of fluid exiting the drilling riser on the seabed. His estimate is unlikely to allow for the following additional factors required to estimate the flow of oil.

- Drill pipe in riser reducing flow area
- Partial crimping of riser end reducing flow area
- Proportion of gas and entrained water exiting riser with the oil
- Volume reduction of oil as gas escapes en route from seabed to surface
- Flow rate not constant

Finally, there is absolutely no evidence of any floating material being entrained in the plume exiting the broken riser. In a report to the MMS on Oil Spill Containment, Remote Sensing and Tracking For Deepwater Blowouts, PCCI Marine and Environmental Engineering made the following statement.

> *"The blowout plume will make it difficult to approach the well with anything but very massive equipment pieces or ROVs. The operation of ROVs will be difficult around the blowout point. The jet zone will cause vast amounts*

of water to flow towards the well. The danger of having lighter equipment sucked into the flow is large. Many ROVs have been rendered useless by relatively minor blowout plumes"

ROV video shows neutrally buoyant material passing within inches of the plume without being sucked in. From this observation alone, the flow must be relatively minor.

PetroVR Well Production

Macondo-FM_80% \ Mocando TAM

4-way

Units: 7/22/2009 7:46:09 AM 7.101

Well	Reservoir	Well Type	Unit	Fluid	365 2009	365 2010	365 2011	366 2012	365 2013	366 2014	365 2015	366 2016	365 2017	365 2018	365 2019	366 2020	365 2021	365 2022	365 2023	366 2024	365 2025	366 2026	365 2027	366 2028	365 2029	365 2030	365 2031	366 2032	365 2033	365 2034	365 2035	366 2036	365 2037	365 2038	365 2039	366 2040	365 2041	365 2042	365 2043	366 2044	365 2045	365 2046	365 2047	366 2048	365 2049	365 2050	365 2051	366 2052	365 2053	365 2054	365 2055	366 2056	365 2057	365 2058	Cum
Development Well Completion 1	Primary Target	Oil	bpd	Oil	0	0	0	0	909	14598	10136	6291	3789	2284	1377	830	500	301	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
Development Well Completion 1	Primary Target	Oil	bpd	Water	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Development Well Completion 1	Primary Target	Oil	MM scfd	Gas	0	0	0	0	1	12	8	5	3	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
Exploration Well Completion	Primary Target	Oil	bpd	Oil	0	0	0	0	563	14654	10246	6361	3832	2310	1392	839	505	305	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
Exploration Well Completion	Primary Target	Oil	bpd	Water	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exploration Well Completion	Primary Target	Oil	MM scfd	Gas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
Development Well Completion 2	Primary Target	Oil	bpd	Oil	0	0	0	0	0	12	8	5	3	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
Development Well Completion 2	Primary Target	Oil	bpd	Water	0	0	0	0	0	4034	14213	9226	5558	3350	2029	1217	733	442	266	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Development Well Completion 2	Primary Target	Oil	MM scfd	Gas	0	0	0	0	0	3	11	7	4	3	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12

BP-HZN-CEC 020107

bp

May 24, 2010

BY ELECTRONIC DELIVERY

The Honorable Edward J. Markey
Chairman
Subcommittee on Energy and Environment
Committee on Energy and Commerce
U.S. House of Representatives
2125 Rayburn House Office Building
Washington, DC 20515-6115

Re: Response to Chairman Markey's Correspondence, Dated May 14, 2010, to Mr. Lamar McKay, President and CEO of BP America, Inc.

Dear Chairman Markey:

I am writing on behalf of BP America, Inc. ("BPA") in response to your May 14, 2010 letter to Mr. Lamar McKay. We very much appreciate the importance of providing reliable and timely information regarding the flow of oil from the damaged wellhead in the Gulf of Mexico. With that objective in mind and in the spirit of cooperation and transparency that has informed all of our efforts to date, BPA is providing the responses below to your questions and the accompanying documents, identified by the Bates-range BP-HZN-CEC 020095 – 020107.

As you know, the estimate of 5,000 barrels per day is a Unified Command estimate, not a BP estimate. The primary methods which Unified Command has used to estimate the amount of oil flowing from the well are summarized below and in the attached materials, identified as BP-HZN-CEC 020103 - BP-HZN-CEC 020106. The range varies from about 1,000 barrels per day to roughly 15,000 barrels per day, with a best scientific guess of roughly 5,000 barrels per day – the number that Unified Command has used repeatedly and has made clear is only a rough estimate.

1. Prior to the incident, did BP already have an estimate of the maximum amount of oil that could be expected to flow from this well under normal conditions?

Prior to drilling, BP had prepared a production estimate for this well based on expected overall oil volume in place, expected reservoir properties, and the anticipated development concept. This concept included three (3) wells processed through a neighboring oil production facility. The rate associated with this initial well was 15,000 barrels per day.

2. What was the basis for this estimate?

Prior to the drilling of the Macondo well, the estimate of the maximum amount of oil that could be expected to flow from the well under normal conditions was based on interpretation and modeling from: (1) production information from other wells in the Mississippi Canyon; (2) geological information from other wells in the Mississippi Canyon; and (3) seismic data.

3. Please provide all documents that relate to the amount of oil that could be expected to flow from this well, including any estimates of profits that this well was projected to generate.

We have enclosed a production profile estimate for three development wells, one of which is the Mississippi Canyon 252 #1 exploration well. [BP-HZN-CEC 020107.] If you require additional information, please let us know.

4. What is the BP method and scientific basis for the estimate of 5,000 barrels per day? Was this estimate based solely on surface monitoring of the size of the spill?

The estimate of 5,000 barrels per day is a Unified Command estimate, not a BP estimate. The initial work leading to this estimate was carried out by the National Oceanic and Atmospheric Administration ("NOAA"). Two approaches were used – estimation of oil volumes on surface and estimates of velocity of the plume exiting the riser. The documentation provided by NOAA is shown at BP-HZN-CEC 020102.

- It is our understanding that NOAA estimated, through visual observation, that the volume of oil on the water on April 26 was 10,000 barrels. Using this information, a daily flow rate can be estimated as follows.
  - For this oil type, 50% of the volume is expected to evaporate or disperse naturally within hours of release.
  - Thus, 10,000 barrels on the water implies 20,000 barrels were released. (At this point in the response, negligible oil had been skimmed or dispersed, and none had been burned.)
  - The spill began when the Deepwater Horizon sank on April 22. Thus, 20,000 barrels represents four days of flow.
  - 20,000 barrels divided by four days equals 5,000 barrels per day.

- It is our understanding that, by observing the velocity of the plume exiting the end of the riser, NOAA scientists made an estimate of the flow rate at the seabed as follows.
  - Oil leaking from a hole approximately 40 cm in diameter (the Deepwater Horizon riser is 19.5"/49.5 cm ID, and is somewhat crimped at the release point).
  - By visual inspection the velocity of the material in the plume is between 7 and 30 cm per second.
  - The plume contains roughly 50% oil droplets (together with gas bubbles and entrained seawater).
  - Assuming a mid-range velocity of 15 cm per second, NOAA estimated a flow rate of 5,000 barrels per day. The associated range would be from 2,500 to 10,000 barrels per day.

Subsequent estimates of flow rate have been carried out within Unified Command and have yielded consistent results.

5. Were all or any of the latest methods that are available today for estimating the amount of such a spill employed?

To the best of our knowledge, Unified Command has employed, and is continuing to employ, all viable methods to estimate the volume of oil flowing. We have recently learned that the U.S. Geologic Survey ("USGS") has an aircraft-mounted system known as AVIRIS (Airborne Visible/Infrared Imaging Spectrometer), which can measure the thickness of oil on water. The system has been deployed, and the data are currently being processed.

6. Please provide all documents created since the incident occurred that bear on, or relate to, in any way, estimates of the amount of oil being released.

We are producing documents, which can be found at BP-HZN-CEC 020095 - BP-HZN-CEC 020106, that relate to estimates of the amount of oil being released. If you require additional information, please let us know.

In addition, the federal government created a Flow Rate Technical Group ("FRTG"), comprised of members of the scientific community and government agencies, to provide further specificity on the flow rate. Consistent with its stated commitment to transparency and cooperation, BP has provided the FRTG with data showing release points and amounts of oil and gas currently being collected on the Discoverer Enterprise, as well as subsea video of the oil release to assist with FRTG's efforts.

7. What is the basis, if any, for the worst case estimate of approximately 60,000 barrels per day provided to the Energy and Commerce Committee during a May 4th briefing?

Prior to drilling the Mississippi Canyon 252 exploration well, an estimate of the maximum discharge from the well in the worst case scenario of an uncontrolled flow was provided as part of the permitting process. Predictions of reservoir thickness, quality and pressure were considered, in light of the well design, to develop this scenario. After the sinking of the Deepwater Horizon, that earlier estimate was reviewed in light of new data points and assumptions relating to the then-current situation, which yielded the estimated flow rate, in the worst case, of approximately 60,000 barrels per day.

8. Was BP, as has been reported in the press, offered an opportunity to use the latest technology for estimating the volume of oil flowing from the pipe?

Please see answer to Question 5.

9. Did BP accept or refuse any such offers and has BP used the latest technology to estimate the volume of oil flowing from the well?

As noted above, the Unified Command has developed the estimates regarding the rate of oil flowing from the well. It is our understanding that Unified Command has employed, and is

continuing to employ, all viable technologies to estimate the volume of oil flow. We are also assisting FRTG with its efforts to provide further specificity on the flow rate.

10. Has BP used any subsurface technology to estimate the amounts of oil flowing from the well? If so, please provide the results of any such efforts.

BP is not aware of any technology that reliably estimates the amount of oil flowing from the well, either subsea or subsurface.

11. Is it accurate to suggest as BP Vice President Kent Wells did recently that "There's just no way to measure it?" If so, then does BP stand behind the current estimates of the amount of oil flowing or not?

Under the current circumstances, it is indeed challenging to determine the rate of oil flow with precision. No direct measurement of the flow rate at the well is feasible. That said, one can make scientifically informed estimates regarding the likely flow by observing a range of factors at sea level as well as the limited available subsea information. BP believes the Unified Command made a reasonable judgment based on the available information. In addition, BP is currently assisting FRTG with its efforts to provide further specificity on the flow rate.

12. Could an increased flow from the riser pipe affect proposed or attempted efforts to stop the flow of oil, such as the failed containment dome strategy, the so called "junk shot" strategy, attempts to place an additional pipe into the riser, and the drilling of relief wells for plugging the well bore?

Yes. Flow rates have been considered in connection with all efforts to stop the flow of oil.

13. Please indicate for the record BP's current estimate of the amount of oil flowing from the well and provide the basis and methodology for that estimate, along with any uncertainty or error ranges for the estimate.

The primary methods which Unified Command, and in particular NOAA, has used to estimate the amount of oil flowing from the well are summarized above in response to Question 4. The resulting calculation ranges from about 1,000 barrels per day to roughly 15,000 barrels per day, with the most scientifically-informed judgment suggesting a best guess of roughly 5,000 barrels per day. Please note that, as the Unified Command has made clear, these are only estimates.

14. BP has suggested in press reports that it is focused on closing the leak, rather than in measuring it. Are efforts to close the leak inconsistent with efforts to measure its volume? Why wouldn't such efforts actually be complementary?

BP is committed to stopping the leak, containing the oil offshore as much as possible and taking proactive mitigation to protect the shoreline. Although no direct measurement of the flow

rate at the well is feasible, the methodologies and results for inferred estimation are described in the answer to Question 4 above.

15. **Using estimates of 5,000 barrels per day, 40,000 barrels per day and 70,000 barrels per day, and further assuming that the leak continues for another 60 days, what is the projected extent of the spill in square miles and the amount of Gulf coastline in miles that would potentially be affected by such a spill?**

As the Committee undoubtedly appreciates, the situation in the Gulf of Mexico continues to be highly dynamic, and any estimate regarding the potential geographic reach of the spill or the amount of impacted coastline will depend on a range of factors that are not static, including meteorological forecasts which cannot be predicted with any degree of confidence beyond NOAA's three-day forecast.

* * * * * * * *

Please note that the documents that we are providing in connection with these responses contain confidential business information. BP respectfully requests that these documents be maintained confidentially and that, if the Committee or Subcommittee is considering releasing any of these documents, BP be given an opportunity to be heard on that question.

Again, thank you for the opportunity to respond to your concerns. If you have any questions, please feel free to contact me or to have your staff contact Liz Reicherts at (202) 457-6585.

Sincerely,

R. Kevin Bailey

Enclosures

cc (w/o encl.):

Chairman Henry Waxman
Ranking Member Joe Barton
Ranking Member Fred Upton

Duncan, Jeff

From: Goo, Michael
Sent: Tuesday, May 25, 2010 12:32 PM
To: Baussan, Danielle
Subject: FW: BP America response
Attachments: BP-HZN-CEC020095.pdf; BP-HZN-CEC020103.pdf; BP-HZN-CEC020107.pdf; Document.pdf

Categories: Red Category

From: Reicherts, Elizabeth A [mailto:Liz.Reicherts@bp.com]
Sent: Monday, May 24, 2010 9:16 PM
To: Goo, Michael
Subject: BP America response

Michael: Please find attached the response letter and documents to your May 14 letter.
Liz

Liz Reicherts
Sr. Director, US Government & International Affairs
BP America Inc.
1101 New York Avenue, NW, Suite 700
Washington, DC 20005
202.457.6585 direct
202.669.9892 cell

ATTACHMENT 1

Using "Standard Guide for Visually Estimating Oil Spill Thickness on Water, ASTM F 2534 - 06."

Oil on Water Estimate - Low

	sq mi	Cover Factor	gal/sq mi	gals	bbls
Sheen	1500	0.5	50	37500	893
Dull oil	250	0.2	666	33300	793
Dark oil	9	0.15	3330	4495.5	107
Total oil on water				75296	1793
x 2 to compensate for evap and disp					3586
recovered					200
chemically dispersed					1000
Total emitted					4786
Barrels emitted per day					**1063**

Oil on Water Estimate - Best Guess

	sq mi	Cover Factor	gal/sq mi	gals	bbls
Sheen	1500	0.66	333	329670	7849
Dull oil	250	0.35	1332	116550	2775
Dark oil	9	0.25	6660	14985	357
Total oil on water				461205	10981
x 2 to compensate for evap and disp					21962
recovered					450
chemically dispersed					3500
Total emitted					25912
Barrels emitted per day					**5758**

Oil on Water Estimate - High

	sq mi	Cover Factor	gal/sq mi	gals	bbls
Sheen	1500	0.75	666	749250	17839
Dull oil	250	0.5	3330	416250	9911
Dark oil	9	0.35	13320	41958	999
Total oil on water				1E+06	28749
x 2 to compensate for evap and disp					57498
recovered					700
chemically dispersed					6000
Total emitted					64198
Barrels emitted per day					**14266**

ATTACHMENT 2

Using "Standard Guide for Visually Estimating Oil Spill Thickness on Water ASTM F 2534 - 06"

Oil on Water Estimate - Low

	sq mi	Cover Factor	gal/sq m	gals	bbls
Sheen	1641	0.5	50	41025	977
Dull oil	235	0.2	666	31302	745
Dark oil	21	0.15	3330	10490	250
Total oil on water				82817	1972
x 2 to compensate for evap and disp					3944
recovered					200
chemically dispersed					1000
Total emitted					5144
Barrels emitted per day					**935**

Oil on Water Estimate - Best Guess

	sq mi	Cover Factor	gal/sq m	gals	bbls
Sheen	1641	0.66	333	360659	8587
Dull oil	235	0.35	1332	109557	2609
Dark oil	21	0.25	6660	34965	833
Total oil on water				505181	12028
x 2 to compensate for evap and disp					24056
recovered					450
chemically dispersed					3500
Total emitted					28006
Barrels emitted per day					**5092**

Oil on Water Estimate - High

	sq mi	Cover Factor	gal/sq m	gals	bbls
Sheen	1641	0.75	666	819580	19516
Dull oil	235	0.5	3330	391275	9316
Dark oil	21	0.35	13320	97902	2331
Total oil on water				1308857	31163
x 2 to compensate for evap and disp					62327
recovered					700
chemically dispersed					6000
Total emitted					69027
Barrels emitted per day					**12550**

ATTACHMENT B

Using "Standard Guide for Visually Estimating Oil Spill Thickness on Water, ASTM F 2534 - 06."

Oil on Water Estimate - Low

	sq mi	Cover Factor	gal/sq mi	gals	bbls
Sheen	1929	0.5	50	48225	1148
Dull oil	238	0.2	666	31702	755
Dark oil	91	0.15	3330	45455	1082
Total oil on water				125381	2985
x 2 to compensate for evap and disp					5971
recovered					400
chemically dispersed					1400
Total emitted					7771
Barrels emitted per day					**1195**

Oil on Water Estimate - Best Guess

	sq mi	Cover Factor	gal/sq mi	gals	bbls
Sheen	1929	0.66	333	423956	10094
Dull oil	238	0.35	1332	110956	2642
Dark oil	91	0.25	6660	151515	3608
Total oil on water				686426	16343
x 2 to compensate for evap and disp					32687
recovered					1500
chemically dispersed					4200
Total emitted					38387
Barrels emitted per day					**5906**

Oil on Water Estimate - High

	sq mi	Cover Factor	gal/sq mi	gals	bbls
Sheen	1929	0.75	666	963536	22941
Dull oil	238	0.5	3330	396270	9435
Dark oil	91	0.35	13320	424242	10101
Total oil on water				1784048	42477
x 2 to compensate for evap and disp					84955
recovered					3000
chemically dispersed					6000
Total emitted					93955
Barrels emitted per day					**14455**

ATTACHMENT 4

Using "Standard Guide for Visually Estimating Oil Spill Thickness on Water. ASTM F 2534 - 06."

Oil on Water Estimate - Low

	sq mi	Cover Factor	gal/sq m	gals	bbls
Sheen	2481	0.5	50	62025	1477
Dull oil	160	0.2	666	21312	507
Dark oil	35	0.15	3330	17483	416
Total oil on water				100820	2400
x 2 to compensate for evap and disp					4801
recovered					500
chemically dispersed					1600
Total emitted					6901
Barrels emitted per day					**920**

Oil on Water Estimate - Best Guess

	sq mi	Cover Factor	gal/sq m	gals	bbls
Sheen	2481	0.66	333	545274	12983
Dull oil	160	0.35	1332	74592	1776
Dark oil	35	0.25	6660	58275	1388
Total oil on water				678141	16146
x 2 to compensate for evap and disp					32292
recovered					2000
chemically dispersed					4900
Total emitted					39192
Barrels emitted per day					**5226**

Oil on Water Estimate - High

	sq mi	Cover Factor	gal/sq m	gals	bbls
Sheen	2481	0.75	666	1239260	29506
Dull oil	160	0.5	3330	266400	6343
Dark oil	35	0.35	13320	163170	3885
Total oil on water				1668830	39734
x 2 to compensate for evap and disp					79468
recovered					4000
chemically dispersed					7200
Total emitted					90668
Barrels emitted per day					**12089**

Attachment 5

Using "Standard Guide for Visually Estimating Oil Spill Thickness on Water, ASTM F 2534 - 06."

Oil on Water Estimate - Low

	sq mi	Cover Factor	gal/sq mi	gals	bbls
Sheen	5256	0.5	50	131400	3129
Dull oil	597	0.2	666	79520.4	1893
Dark oil	120	0.15	3330	59940	1427
Total oil on water				270860.4	6449
x 2 to compensate for evap and disp					12898
recovered					15838
chemically dispersed					16500
burned					5821
Total emitted					51057
Barrels emitted per day					**1891**

Oil on Water Estimate - Best Guess

	sq mi	Cover Factor	gal/sq mi	gals	bbls
Sheen	5256	0.66	333	1155164	27504
Dull oil	597	0.35	1332	278321.4	6627
Dark oil	120	0.25	6660	199800	4757
Total oil on water				1633285	38888
x 2 to compensate for evap and disp					77775
recovered					31676
chemically dispersed					33000
burned					11642
Total emitted					154093
Barrels emitted per day					**5707**

Oil on Water Estimate - High

	sq mi	Cover Factor	gal/sq mi	gals	bbls
Sheen	5256	0.75	666	2625372	62509
Dull oil	597	0.5	3330	994005	23667
Dark oil	120	0.35	13320	559440	13320
Total oil on water				4178817	99496
x 2 to compensate for evap and disp					198991
recovered					63352
chemically dispersed					66000
burned					23284
Total emitted					351627
Barrels emitted per day					**13023**

ATTACHMENT 6

Seafloor Exit
7" x 9-7/8" Casing Annulus Flow Path

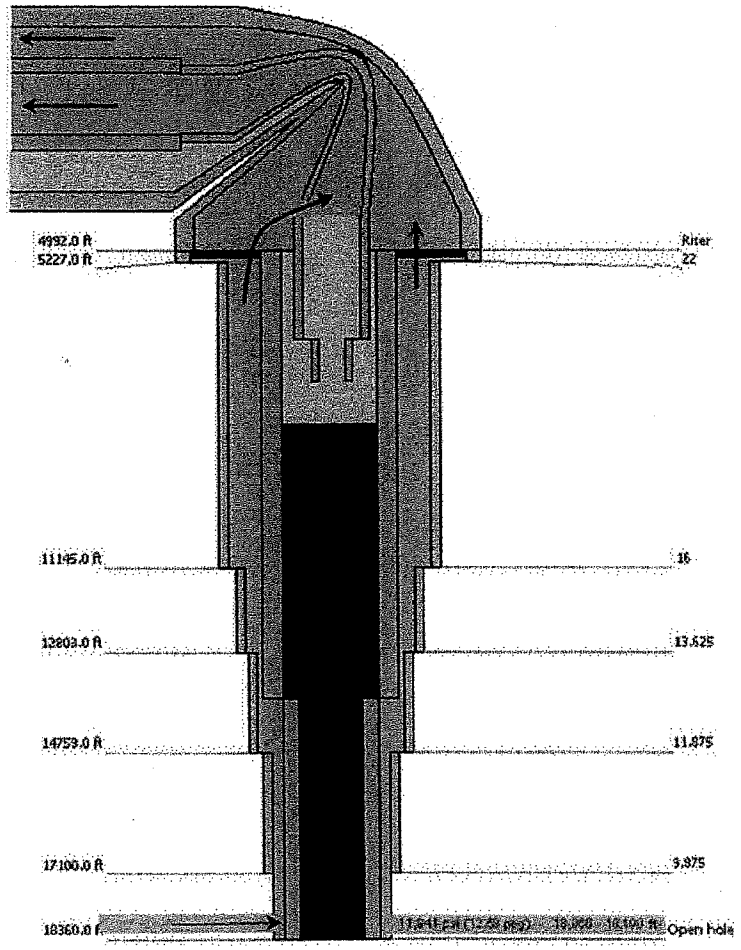
Worst case theoretical flow assumes:

- Split 5-1/2" drill pipe at subsea BOP and flow out 6-5/8" drill pipe
- Maximum theoretical flow rate is 60,000 BOPD

Items that reduce worst case theoretical flow:

- Crushed and bent riser and drill pipe
- Cement sheath in open hole by casing annulus
- Casing hanger and pack-off restriction
- Sand production (unconsolidated formation)
- Shale collapse
- Water production
- BOP functions activated
- Expected range of possible flow rates is 5,000 to 40,000 BOPD

NOTE: Removal of all restrictions (riser, BOP, and drill pipe) adds ~10,000 BOPD to rates above



BP-HZN-CEC020100

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ATTACHMENT 7

Key Messages

Expected Case:
In the current state a wellhead pressure decrease from 3800 psi to 2270 psi (pressure seafloor) results in a flow rate increase ranging from 15% to 30%

Alternate Case:
If fluid flow is only through the drill pipe – and then the drill pipe is unintentionally removed and flows into the sea (2270 psi):

- For flow up the annulus the rate doubles
- For flow inside production casing the rate triples

Note:
If BOP and wellhead are removed and if we have incorrectly modeled the restrictions – the rate could be as high as ~ 100,000 barrels per day up the casing or 55,000 barrels per day up the annulus (low probability worst cases)

09.0.000.10.

ATTACHMENT 8

Estimation of the Oil Released from Deepwater Horizon Incident (26 April 2010, 1200hrs PDT)

1) Surface Oil volume Estimation

Estimating oil volume by the visual appearance of the slick is a highly unreliable process. At best, one can calculate an answer to only an order of magnitude. Other estimation methods, if available, are likely to give more accurate answers

Oil spills separate into thick portions that can be as thick as an inch or more and thin sheen that are only as thick as a few visible light wavelengths. Most of the oil volume in a typical crude oil spill is in the thick part (but most of the area is sheen

Much of the oil from the light crude that is being released will evaporate or disperse in the water column. We would expect at least half of the oil released to be accounted for by these mechanisms

The oil that makes it to the surface is showing signs of emulsification. Emulsified oil can contain up to 90% water.

Weathered oil that has formed tar balls are not detectable by satellites or overflights.

Based upon past experiments, published standards, and actual spills, NOAA/ERD defines the range of thickness of slicks as

Sheen thickness – $(10^{-6}\,m \leftrightarrow 10^{-5}\,m)$
Dark oil thickness- $(10^{-5}\,m \leftrightarrow 10^{-2}\,m)$

Area coverage of slick (4/26/10), based upon satellite images $(1500 km^2 \leftrightarrow 3000 km^2)$

→ Sheen volume, using average thickness of 0.1 micron, area of 2000 sq. km and 100% coverage yields oil volume of 200 cu. m = 1200 bbl= 50,000 gal

→ Thick oil volume, using average thickness of 100 microns, 1% average coverage and 50% water content yields an oil volume of 1000 cu. m = 6000 bbl. = 0.25 million gal

→ To an order of magnitude, we estimate that there are around 10,000 bbl of oil on the water surface, or around a half million gallons

2) Estimated Present Volume Release Rate

The following assumptions are used to make a release rate calculation. If any of them are changed, the answer could be significantly different.

The oil is leaking, in a vertical plume from a hole approximately 40 cm. in diameter.

The velocity of the material in the plume is estimated by visual observation to be between 7 cm/sec and 30 cm/sec.

The plume itself contains gas bubbles, oil droplets, and entrained seawater.

Assuming that 50% of the plume volume is oil and a rise velocity of 15 cm/sec, the oil released from this source would be roughly 5000 bbl/day. (approximately 200,000 gal/day) Other sources would contribute additional oil. This answer will be refined as additional information becomes available.

Mississippi Canyon 252 #1
Flow Rate Calculations

Context
A 30 second video clip of hydrocarbons leaking from the broken end of the Deepwater Horizon drilling riser has been released to the public. Various "experts" are challenging Unified Command's best guess estimate of flow rate at the seabed based on this video clip. This note summarizes the various estimates that have been made within Unified Command.

Mass Balance
The mass balance calculation involves estimating, through visual inspection, the volume of oil on the surface of the water. Allowances are then made for natural dispersion and evaporation. Estimates of volumes skimmed, burned, and chemically dispersed then allow an estimate of the oil released at the seabed over the duration of the spill. The calculation is repeated each day weather permitting.

In the early days of the spill, the surface expression of the spill was relatively small. Overflights were able to provide fidelity with respect to the character of the oil on the surface. Three descriptors were used

- Sheen
- Dull
- Dark oil

There are two Standards for estimating the thickness of oil on water using visual descriptors.

- US-based ASTM Standard
- European-based Bonn Agreement

The visual descriptors are different in the two standards and the relationships to thickness are also different.

From April 27 through April 30 daily estimates of flow rate were made on the basis of visual description of the oil on the surface. Three estimates were made each day – low, best guess, and high – to allow for differences between the two standards, and uncertainties around the input parameters.

- Low end was always around 1,000 barrels per day
- Best guess was between 5,000 and 6,000 barrels per day
- High end varied from 12,000 to 14,000 barrels per day

The tables associated with these estimates are attached (Attachments 1-4). These estimates played an important part in Unified Command's decision to raise the estimate of flow rate from 1,000 to 5,000 barrels per day.

During the storm which began on May 1, and for several days after, no visual description of the spill was obtained. From May 8, daily outlines of the spill have been available based on a combination of satellite and aerial overflights. However, because of the size of the spill area, overflights have been unable to provide fidelity on the visual appearance of the oil within the spill area. During the five days in April for which fidelity was available, the ratios of dark oil to dull oil to sheen remained relatively constant at 2/10/88. These ratios have been applied to the total area of spill on May 17. Current estimates of volumes of oil skimmed, burned, and chemically dispersed were then applied to provide an updated range of possible flow rates as follows: 2,000 – 6,000 – 13,000 barrels per day (Attachment 5).

Note that all serious scientists recognize that there are huge uncertainties in estimating oil volumes from visual inspection. Oil thickness is by far the greatest uncertainty, with both sheen and darker oil thicknesses varying by orders of magnitude.

Maximum Discharge Calculation

Prior to drilling the MC 252 exploration well a maximum discharge estimate was provided as part of the permitting process. Predictions of reservoir thickness, quality, and pressure were convolved with the well design to develop a worse case scenario as follows.

- Optimistic assumptions for reservoir thickness, quality, pressure, and fluid properties.
- Total loss of control of well after drilling through reservoir in largest hole size allowed by the well design – 12 ¼".
- Totally uncontrolled flow from drilling riser at surface.

Using these assumptions, a maximum case discharge of 162,000 barrels per day was estimated.

After the sinking of the Deepwater Horizon, this estimate was reviewed in the light of the actual situation as it was understood at that time.

- Formation evaluation of the reservoir interval.
- 9 7/8" hole size in the reservoir
- 7" production tubing across the reservoir
- Flow to seabed through casing annulus
- Split 5 ½" drill pipe at BOP and flow out 6 5/8" drill pipe
- No restrictions in BOP, riser, or drill pipe (ie well head open to seabed – requires BOP to fall off well head)

An absolute worst case flow rate of 60,000 barrels per day was calculated. A more reasonable worst case scenario of 40,000 barrels per day recognizes the following.

- BOP is in place and may be partially activated.
- The riser and drill pipe is crushed and kinked.

- Restrictions provided by cement in the casing annulus, formation collapse, casing hangers, etc., are likely.

This analysis is summarized on Attachment 6.

A more sophisticated version of this calculation has been carried out as more has been learned about pressures at the top and bottom of the well head. This review calculates unconstrained flow rate through the casing as well as up the annulus. Absolute worst cases with wellhead and BOP removed, and no downhole restrictions, are as follows (Attachment 7).

- Annular flow – 55,000 barrels per day
- Casing flow – 100, 000 barrels per day

Fluid Velocity At Seabed

On April 26, NOAA scientists made an estimate of volume release rate at the seabed as follows.

- Oil leaking from a hole approximately 40 cm in diameter (Deepwater Horizon riser is 19.5"/49.5 cm ID, and is somewhat crimped at release point).
- By visual inspection the velocity of the material in the plume is between 7 and 30 cm per second.
- The plume contains roughly 50% oil droplets (together with gas bubbles and entrained seawater).

The NOAA estimate using these assumptions was roughly 5,000 barrels per day (Attachment 8).

Evidence Against Extreme Flow Rates At Seabed

A Professor from Purdue University has calculated a current flow rate at the seabed of 70,000 +/- 14,000 barrels per day. He bases his estimate on the velocity of fluid exiting the drilling riser on the seabed. His estimate is unlikely to allow for the following additional factors required to estimate the flow of oil.

- Drill pipe in riser reducing flow area
- Partial crimping of riser end reducing flow area
- Proportion of gas and entrained water exiting riser with the oil
- Volume reduction of oil as gas escapes en route from seabed to surface
- Flow rate not constant

Finally, there is absolutely no evidence of any floating material being entrained in the plume exiting the broken riser. In a report to the MMS on Oil Spill Containment, Remote Sensing and Tracking For Deepwater Blowouts, PCCI Marine and Environmental Engineering made the following statement.

> *"The blowout plume will make it difficult to approach the well with anything but very massive equipment pieces or ROVs. The operation of ROVs will be difficult around the blowout point. The jet zone will cause vast amounts*

of water to flow towards the well. The danger of having lighter equipment sucked into the flow is large. Many ROVs have been rendered useless by relatively minor blowout plumes"

ROV video shows neutrally buoyant material passing within inches of the plume without being sucked in. From this observation alone, the flow must be relatively minor.

PetroVR Well Production

Macondo-FM_80% v Mocando TAM

4-way

Wells 7/22/2009 7:46:09 AM 7.101

Well	Reservoir	Well Type	Unit	Fluid	365 2009	365 2010	365 2011	366 2012	365 2013	365 2014	365 2015	366 2016	365 2017	365 2018	365 2019	366 2020	365 2021	365 2022	365 2023	366 2024	365 2025	365 2026	365 2027	366 2028	365 2029	365 2030	365 2031	366 2032	365 2033	365 2034	365 2035	366 2036	365 2037	365 2038	365 2039	366 2040	365 2041	365 2042	365 2043	366 2044	365 2045	365 2046	365 2047	366 2048	365 2049	365 2050	365 2051	366 2052	365 2053	365 2054	365 2055	366 2056	365 2057	365 2058	Cum
Deveopment Well Completion 1	Primary Target	Oil	bpd	Oil	0	0	0	0	909	14696	10135	6291	3789	2284	1377	830	500	301	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
Deveopment Well Completion 1	Primary Target	Oil	bpd	Water	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deveopment Well Completion 1	Primary Target	Oil	MM scfd	Gas	0	0	0	0	1	12	8	5	3	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
Exploration Well Completion	Primary Target	Oil	bpd	Oil	0	0	0	0	563	14654	10248	6361	3832	2310	1392	839	505	305	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exploration Well Completion	Primary Target	Oil	bpd	Water	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exploration Well Completion	Primary Target	Oil	MM scfd	Gas	0	0	0	0	0	12	8	5	3	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
Deveopment Well Completion 2	Primary Target	Oil	bpd	Oil	0	0	0	0	0	4034	14213	9226	5558	3350	2020	1217	733	442	266	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deveopment Well Completion 2	Primary Target	Oil	bpd	Water	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deveopment Well Completion 2	Primary Target	Oil	MM scfd	Gas	0	0	0	0	0	3	11	7	4	3	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12

BP-HZN-CEC 020107

bp

May 24, 2010

BY ELECTRONIC DELIVERY

The Honorable Edward J. Markey
Chairman
Subcommittee on Energy and Environment
Committee on Energy and Commerce
U.S. House of Representatives
2125 Rayburn House Office Building
Washington, DC 20515-6115

Re: Response to Chairman Markey's Correspondence, Dated May 14, 2010, to Mr. Lamar McKay, President and CEO of BP America, Inc.

Dear Chairman Markey:

I am writing on behalf of BP America, Inc. ("BPA") in response to your May 14, 2010 letter to Mr. Lamar McKay. We very much appreciate the importance of providing reliable and timely information regarding the flow of oil from the damaged wellhead in the Gulf of Mexico. With that objective in mind and in the spirit of cooperation and transparency that has informed all of our efforts to date, BPA is providing the responses below to your questions and the accompanying documents, identified by the Bates-range BP-HZN-CEC 020095 – 020107.

As you know, the estimate of 5,000 barrels per day is a Unified Command estimate, not a BP estimate. The primary methods which Unified Command has used to estimate the amount of oil flowing from the well are summarized below and in the attached materials, identified as BP-HZN-CEC 020103 - BP-HZN-CEC 020106. The range varies from about 1,000 barrels per day to roughly 15,000 barrels per day, with a best scientific guess of roughly 5,000 barrels per day – the number that Unified Command has used repeatedly and has made clear is only a rough estimate.

1. Prior to the incident, did BP already have an estimate of the maximum amount of oil that could be expected to flow from this well under normal conditions?

Prior to drilling, BP had prepared a production estimate for this well based on expected overall oil volume in place, expected reservoir properties, and the anticipated development concept. This concept included three (3) wells processed through a neighboring oil production facility. The rate associated with this initial well was 15,000 barrels per day.

2. What was the basis for this estimate?

Prior to the drilling of the Macondo well, the estimate of the maximum amount of oil that could be expected to flow from the well under normal conditions was based on interpretation and modeling from: (1) production information from other wells in the Mississippi Canyon; (2) geological information from other wells in the Mississippi Canyon; and (3) seismic data.

3. **Please provide all documents that relate to the amount of oil that could be expected to flow from this well, including any estimates of profits that this well was projected to generate.**

We have enclosed a production profile estimate for three development wells, one of which is the Mississippi Canyon 252 #1 exploration well. [BP-HZN-CEC 020107.] If you require additional information, please let us know.

4. **What is the BP method and scientific basis for the estimate of 5,000 barrels per day? Was this estimate based solely on surface monitoring of the size of the spill?**

The estimate of 5,000 barrels per day is a Unified Command estimate, not a BP estimate. The initial work leading to this estimate was carried out by the National Oceanic and Atmospheric Administration ("NOAA"). Two approaches were used – estimation of oil volumes on surface and estimates of velocity of the plume exiting the riser. The documentation provided by NOAA is shown at BP-HZN-CEC 020102.

- It is our understanding that NOAA estimated, through visual observation, that the volume of oil on the water on April 26 was 10,000 barrels. Using this information, a daily flow rate can be estimated as follows.
  - For this oil type, 50% of the volume is expected to evaporate or disperse naturally within hours of release.
  - Thus, 10,000 barrels on the water implies 20,000 barrels were released. (At this point in the response, negligible oil had been skimmed or dispersed, and none had been burned.)
  - The spill began when the Deepwater Horizon sank on April 22. Thus, 20,000 barrels represents four days of flow.
  - 20,000 barrels divided by four days equals 5,000 barrels per day.

- It is our understanding that, by observing the velocity of the plume exiting the end of the riser, NOAA scientists made an estimate of the flow rate at the seabed as follows.
  - Oil leaking from a hole approximately 40 cm in diameter (the Deepwater Horizon riser is 19.5"/49.5 cm ID, and is somewhat crimped at the release point).
  - By visual inspection the velocity of the material in the plume is between 7 and 30 cm per second.
  - The plume contains roughly 50% oil droplets (together with gas bubbles and entrained seawater).
  - Assuming a mid-range velocity of 15 cm per second, NOAA estimated a flow rate of 5,000 barrels per day. The associated range would be from 2,500 to 10,000 barrels per day.

Subsequent estimates of flow rate have been carried out within Unified Command and have yielded consistent results.

5. Were all or any of the latest methods that are available today for estimating the amount of such a spill employed?

To the best of our knowledge, Unified Command has employed, and is continuing to employ, all viable methods to estimate the volume of oil flowing. We have recently learned that the U.S. Geologic Survey ("USGS") has an aircraft-mounted system known as AVIRIS (Airborne Visible/Infrared Imaging Spectrometer), which can measure the thickness of oil on water. The system has been deployed, and the data are currently being processed.

6. Please provide all documents created since the incident occurred that bear on, or relate to, in any way, estimates of the amount of oil being released.

We are producing documents, which can be found at BP-HZN-CEC 020095 - BP-HZN-CEC 020106, that relate to estimates of the amount of oil being released. If you require additional information, please let us know.

In addition, the federal government created a Flow Rate Technical Group ("FRTG"), comprised of members of the scientific community and government agencies, to provide further specificity on the flow rate. Consistent with its stated commitment to transparency and cooperation, BP has provided the FRTG with data showing release points and amounts of oil and gas currently being collected on the Discoverer Enterprise, as well as subsea video of the oil release to assist with FRTG's efforts.

7. What is the basis, if any, for the worst case estimate of approximately 60,000 barrels per day provided to the Energy and Commerce Committee during a May 4th briefing?

Prior to drilling the Mississippi Canyon 252 exploration well, an estimate of the maximum discharge from the well in the worst case scenario of an uncontrolled flow was provided as part of the permitting process. Predictions of reservoir thickness, quality and pressure were considered, in light of the well design, to develop this scenario. After the sinking of the Deepwater Horizon, that earlier estimate was reviewed in light of new data points and assumptions relating to the then-current situation, which yielded the estimated flow rate, in the worst case, of approximately 60,000 barrels per day.

8. Was BP, as has been reported in the press, offered an opportunity to use the latest technology for estimating the volume of oil flowing from the pipe?

Please see answer to Question 5.

9. Did BP accept or refuse any such offers and has BP used the latest technology to estimate the volume of oil flowing from the well?

As noted above, the Unified Command has developed the estimates regarding the rate of oil flowing from the well. It is our understanding that Unified Command has employed, and is

continuing to employ, all viable technologies to estimate the volume of oil flow. We are also assisting FRTG with its efforts to provide further specificity on the flow rate.

10. Has BP used any subsurface technology to estimate the amounts of oil flowing from the well? If so, please provide the results of any such efforts.

BP is not aware of any technology that reliably estimates the amount of oil flowing from the well, either subsea or subsurface.

11. Is it accurate to suggest as BP Vice President Kent Wells did recently that "There's just no way to measure it?" If so, then does BP stand behind the current estimates of the amount of oil flowing or not?

Under the current circumstances, it is indeed challenging to determine the rate of oil flow with precision. No direct measurement of the flow rate at the well is feasible. That said, one can make scientifically informed estimates regarding the likely flow by observing a range of factors at sea level as well as the limited available subsea information. BP believes the Unified Command made a reasonable judgment based on the available information. In addition, BP is currently assisting FRTG with its efforts to provide further specificity on the flow rate.

12. Could an increased flow from the riser pipe affect proposed or attempted efforts to stop the flow of oil, such as the failed containment dome strategy, the so called "junk shot" strategy, attempts to place an additional pipe into the riser, and the drilling of relief wells for plugging the well bore?

Yes. Flow rates have been considered in connection with all efforts to stop the flow of oil.

13. Please indicate for the record BP's current estimate of the amount of oil flowing from the well and provide the basis and methodology for that estimate, along with any uncertainty or error ranges for the estimate.

The primary methods which Unified Command, and in particular NOAA, has used to estimate the amount of oil flowing from the well are summarized above in response to Question 4. The resulting calculation ranges from about 1,000 barrels per day to roughly 15,000 barrels per day, with the most scientifically-informed judgment suggesting a best guess of roughly 5,000 barrels per day. Please note that, as the Unified Command has made clear, these are only estimates.

14. BP has suggested in press reports that it is focused on closing the leak, rather than in measuring it. Are efforts to close the leak inconsistent with efforts to measure its volume? Why wouldn't such efforts actually be complementary?

BP is committed to stopping the leak, containing the oil offshore as much as possible and taking proactive mitigation to protect the shoreline. Although no direct measurement of the flow

rate at the well is feasible, the methodologies and results for inferred estimation are described in the answer to Question 4 above.

15. **Using estimates of 5,000 barrels per day, 40,000 barrels per day and 70,000 barrels per day, and further assuming that the leak continues for another 60 days, what is the projected extent of the spill in square miles and the amount of Gulf coastline in miles that would potentially be affected by such a spill?**

As the Committee undoubtedly appreciates, the situation in the Gulf of Mexico continues to be highly dynamic, and any estimate regarding the potential geographic reach of the spill or the amount of impacted coastline will depend on a range of factors that are not static, including meteorological forecasts which cannot be predicted with any degree of confidence beyond NOAA's three-day forecast.

* * * * * * * *

Please note that the documents that we are providing in connection with these responses contain confidential business information. BP respectfully requests that these documents be maintained confidentially and that, if the Committee or Subcommittee is considering releasing any of these documents, BP be given an opportunity to be heard on that question.

Again, thank you for the opportunity to respond to your concerns. If you have any questions, please feel free to contact me or to have your staff contact Liz Reicherts at (202) 457-6585.

Sincerely,

R. Kevin Bailey

Enclosures

cc (w/o encl.):

Chairman Henry Waxman
Ranking Member Joe Barton
Ranking Member Fred Upton

Duncan, Jeff

From: Keefe, Jessica L [Jessica.Keefe@wilmerhale.com]
Sent: Wednesday, May 26, 2010 7:45 PM
To: Goo, Michael; Jim Massie
Subject: RE: Let me know
Attachments: 2010-05-24 Washington Briefing 1 of 2.zip

Categories: Red Category

It didn't go through. Trying it in two parts.

From: Goo, Michael [mailto:Michael.Goo@mail.house.gov]
Sent: Wednesday, May 26, 2010 7:42 PM
To: Jim Massie; Keefe, Jessica L
Subject: RE: Let me know

I still don't have it but maybe its getting rejected in my email box? Thanks much.

From: Jim Massie [mailto:jmassie@alpinegroup.com]
Sent: Wednesday, May 26, 2010 7:07 PM
To: Goo, Michael; Jessica.Keefe@wilmerhale.com
Subject: Re: Let me know

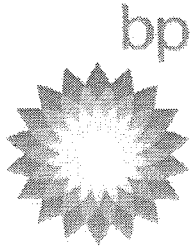
Jessica. Can you send to michael. I have it but can't forward it. Thank u.

From: Goo, Michael <Michael.Goo@mail.house.gov>
To: Jim Massie
Sent: Wed May 26 19:02:16 2010
Subject: RE: Let me know

I don't have it.

From: Jim Massie [mailto:jmassie@alpinegroup.com]
Sent: Wednesday, May 26, 2010 6:35 PM
To: Goo, Michael
Subject: Let me know

If u got it. Its huge



Draft – Work in Progress. Subject to Revision

Washington Briefing
Deepwater Horizon Interim Incident Investigation

24th May 2010

Content

Investigation Overview

Draft – Work in Progress. Subject to Revision

24 May, 2010

- The Terms of Reference is focused on determining facts and causation
- Investigation team comprises ~ 70 internal and external personnel (inclusive of technical staff supported by legal, documentation and other support disciplines)
- Investigation based on:
  - Reports
  - Engineering drawings
  - Real-time data transmitted from the rig
  - Witness accounts (personnel both on the rig and others involved in operations and planning of Macondo Well)
  - Modeling & analysis
  - Aim to test equipment (cement sample, float collar, BOP)
- Investigation & analysis has access to limited physical evidence only
- Some key third party interviews and data have not yet been available

Macondo Well Diagram – Key Components & Critical Factors

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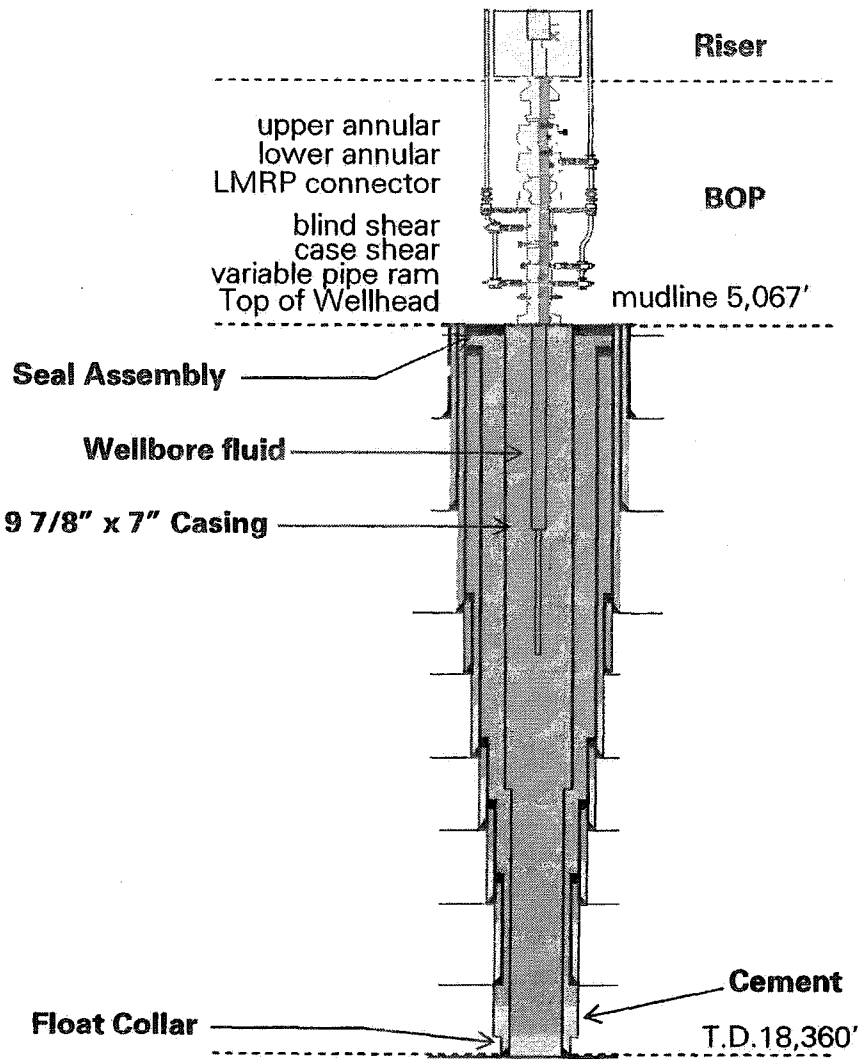
24 May, 2010



Critical Factors

1. Loss of Integrity of the 9 7/8" x 7" casing created a path for hydrocarbon (HC) influx
2. Unrecognized well conditions
   - Influx unrecognized - Integrity test failed to identify communication with the reservoir
   - Operations allowed HC influx to enter and move up the well bore – *well became capable of flowing*
   - Response failed to control the well
3. BOP & Emergency Systems failed to isolate the HC source
4. Gas plume ignited

Not All Information has been verified / corroborated.
Subject to review in light of additional information or analysis

Critical Factor 1 – Loss of Integrity of Casing

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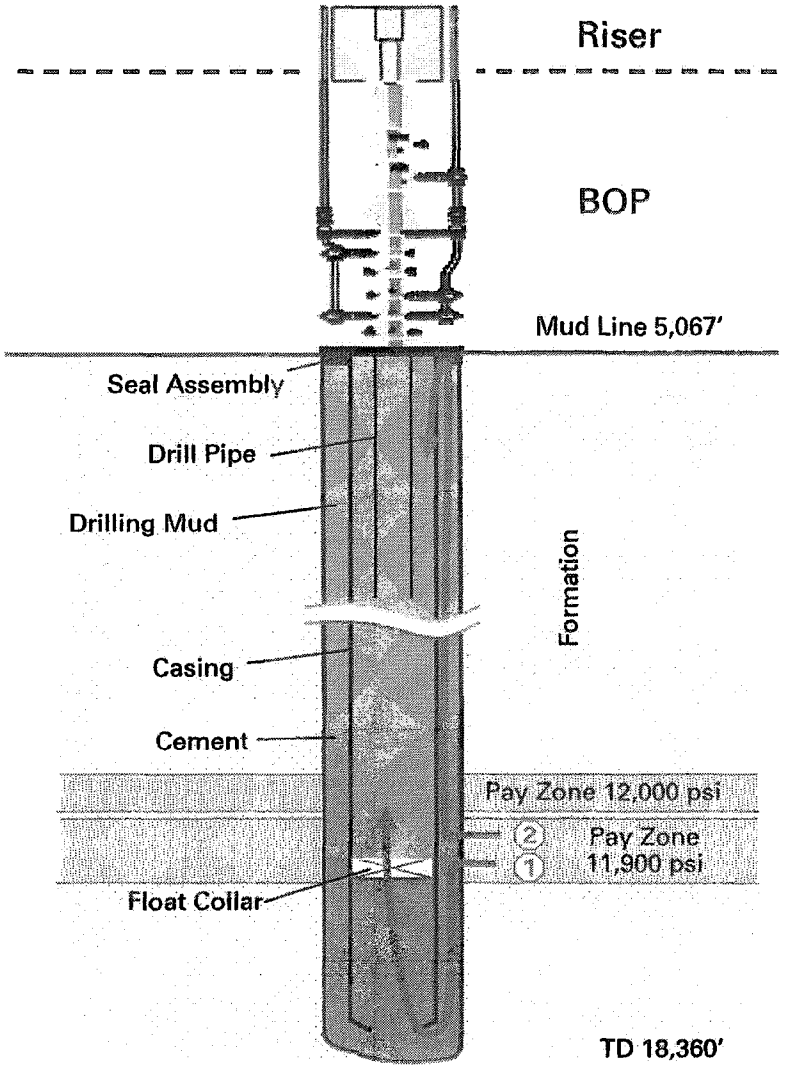
24 May, 2010



Loss of Integrity of 9-7/8" x 7" Casing

- Cement failed to isolate the reservoir
- The float collar (1) or the seal assembly (2) leaked

On-going work & forward plans

- Review design and execution of the cement job
- Review design and installation of casing shoe track and seal assembly
- Laboratory testing of float collar
- Detailed well dynamic modeling to assess likely influx point

Not All Information has been verified / corroborated.
Subject to review in light of additional information or analysis

Critical Factor 2 – Unrecognized Well Conditions

Unrecognized Well Conditions

- Integrity test failed to identify communication with the reservoir
- Operations allowed HC influx to enter and move up the well bore – **well became capable of flowing**
- Rig crew response to well flow failed to control the well

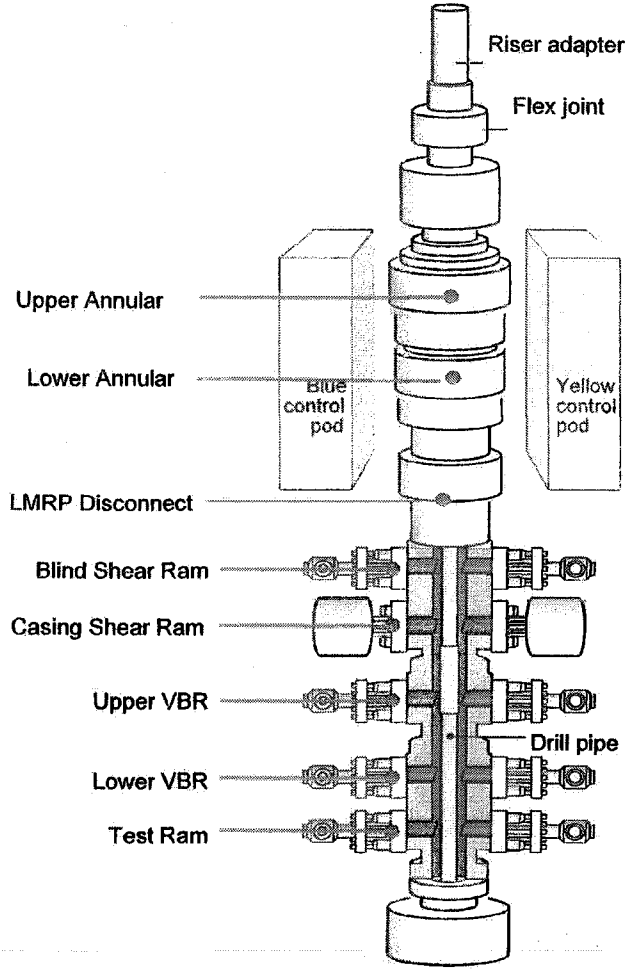
Ongoing work & forward plans

- Reconstruct timeline from available data and interviews to estimate when influx occurred and when it should have been recognized
- Try to ascertain why well flow conditions were not detected earlier
- Try to ascertain rig crew response to well flow conditions
- Review integrity testing procedure
- Transocean interviews when possible

Critical Factor 3 – BOP Failed to Isolate Source

Draft – Work in Progress. Subject to Revision

24 May, 2010



BOP Failed to Isolate Source

- Action to activate the BOP once well condition was recognized failed to isolate the source
- EDS failed to secure the well (when activated from bridge after explosion)
- AMF/Dead-man failed to secure well
- Subsequent ROV interventions failed to secure the well

Ongoing work & forward plans

- Understand BOP testing history and performance of emergency systems, EDS, Auto shear, AMF (Deadman), ROV hot stab
- Understanding of BOP modifications – could they have affected its functionality?
- Assess leaks identified during ROV intervention and determine significance – could they have affected its functionality?
- Evaluation of BOP maintenance history regards system completeness, OEM parts and 3rd party services
- Inspect & test BOP once retrieved from sea floor

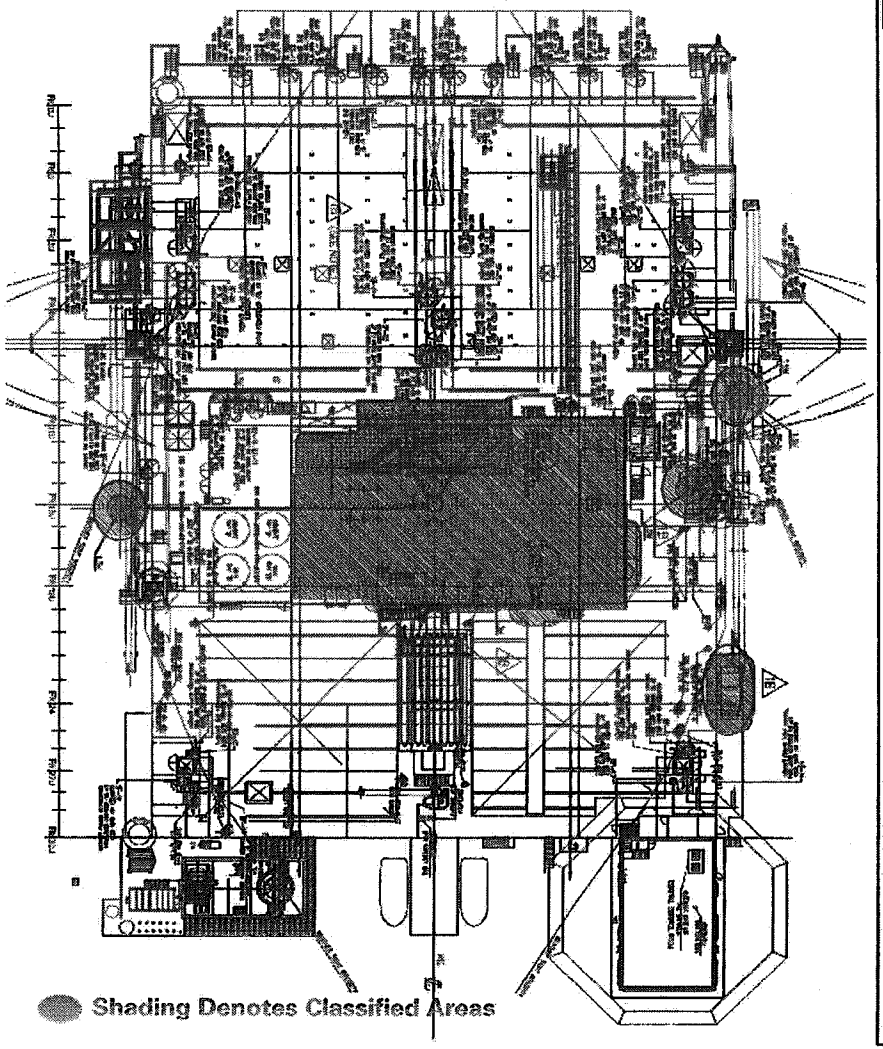
Not All Information has been verified / corroborated.
Subject to review in light of additional information or analysis

Critical Factor 4 – Ignition of Hydrocarbons

Draft – Work in Progress. Subject to Revision

24 May, 2010

Hazardous Area Classification - Main Deck



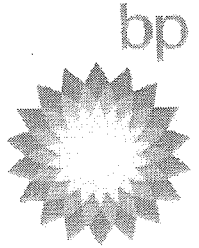
Ignition of Released Hydrocarbons

- Hydrocarbon gas detected by several gas detectors prior to explosion (two witness statements from bridge).
- Several potential scenarios of hydrocarbon release to atmosphere have been identified.
- Dynamic modeling estimates suggests that flammable gas mixtures could have reached non-electrically classified areas.

Ongoing work

- Fluid dynamic modeling being further developed in-line with most probable release scenarios.
  - Access to pit room / mud pumps
  - Access to derrick via degasser
  - Access to engine room
- Review of electrical area classification, fire and gas design and ventilation system design.

Not All Information has been verified / corroborated.
Subject to review in light of additional information or analysis



Draft – Work in Progress. Subject to Revision

Deepwater Horizon Incident Timeline and Animation of Events

Presented May 24, 2010 in Washington D.C.

Finish Drilling and Complete Logging

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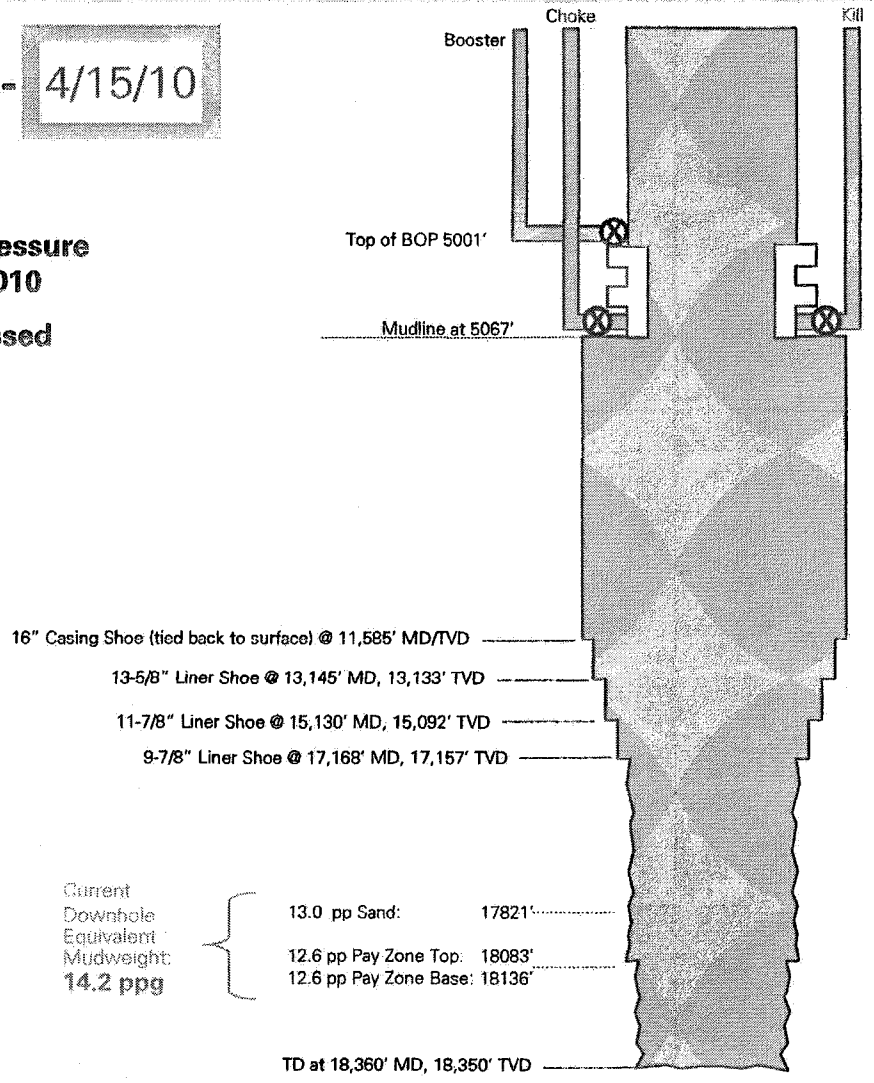
bp

4/9/10 - 4/15/10

Last BOP pressure test: 4/10/2010

All tests passed



Data

- **Finish drilling**
  - **9-7/8" x 8-1/2" open hole**
  - **14.0 ppg mud inside and out**
- **Trip out with drilling assembly**
- **Wireline log for 4 days**

Interpretation

- **Hole stable**

Wiper Trip

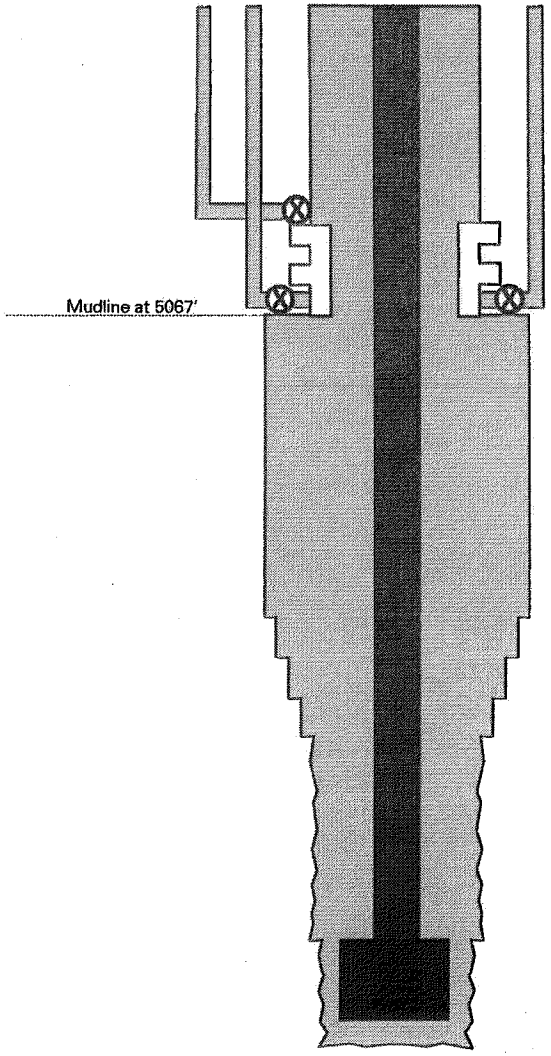
Draft – Work in Progress. Subject to Revision

14:00 - 12:00

4/16/10 - 4/17/10

Function test BOP:
4/17/10 at 01:00

Function test diverter:
4/17/10 at 01:30



Data

- Run in hole for wiper trip
  - Circulate bottoms up at TD
  - Pump high vis sweep
  - Monitor for gains or losses – none
  - 14.0 ppg clean mud throughout before trip out
- Pump out from 18360' – 14759'
  - 4 flow checks during trip out – no flow

Interpretation

Retrieve Wear Sleeve

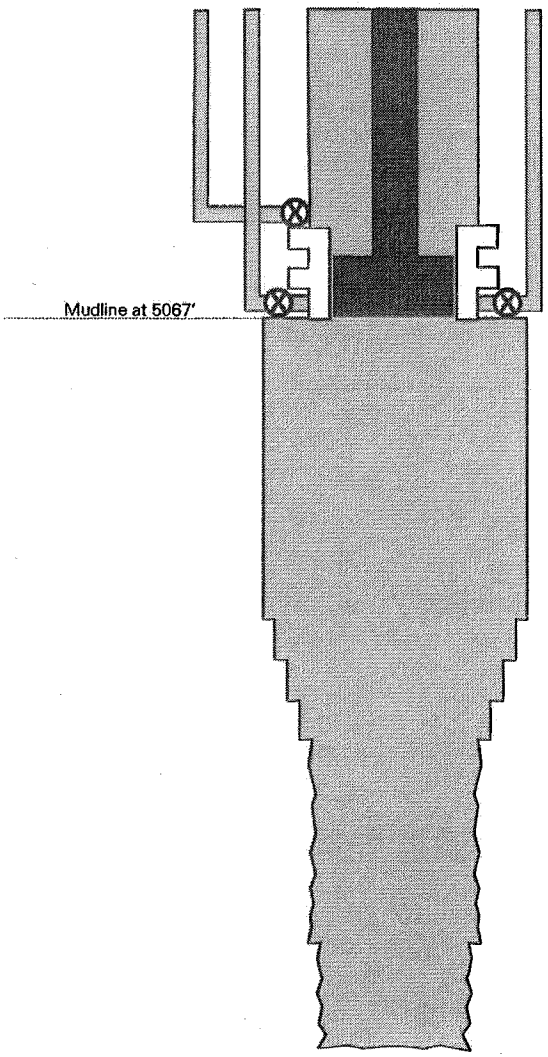
Draft – Work in Progress. Subject to Revision

bp

12:00 - 00:30

4/17/10 - 4/18/10

Function test BSR
4/17/10 23:00



Data

- Make trip to retrieve wear sleeve
  - Retrieval successful

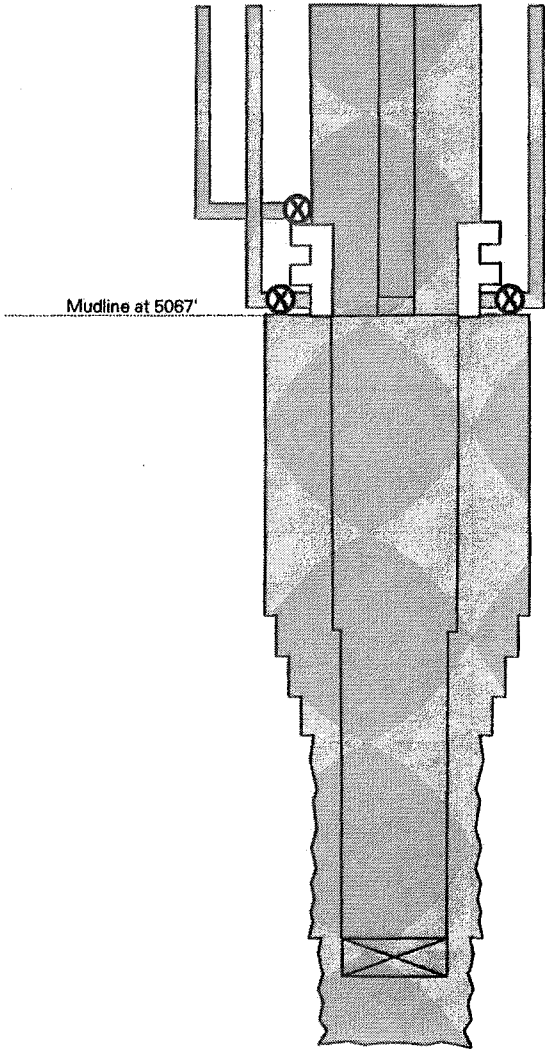
Interpretation

Run Casing – Convert Float Equipment

Draft – Work in Progress. Subject to Revision

00:30 - 17:30

4/18/10 - 4/19/10



Data

- **Run 7" x 9-7/8' production casing**
  - **Crossover at 12487'**
  - **Float Collar at 18114'**
  - **Shoe at 18304'**
  - **56' of rat hole**
- **Laid out three joints of 7" due to damaged threads**
- **Saw 10k weight bobble at 18218 (only time string took weight during run)**
- 9 attempts to convert float equipment
  - Sheared at 3142 psi vs 500-700 psi design

Interpretation

- Circulating pressure below normal after shearing float collar

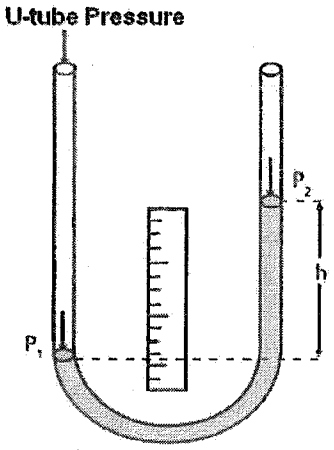
Cement Job

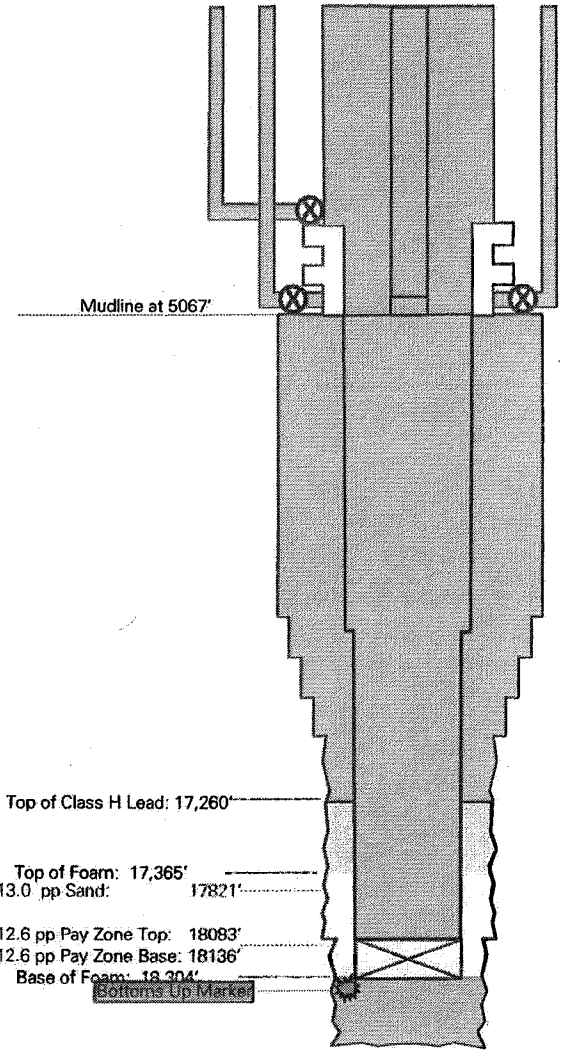
Draft – Work in Progress. Subject to Revision

bp

17:30 - 00:30

4/19/10 - 4/20/10





Data

- **Circulate 342 bbl before cement job**
- **Pump nitrified foam cement**
  - **Pumped 60 bbl cement**
- **Estimated TOC at 17260'**
- **Bumped plug with 1150 psi**
  - **Cement in place at 00:35**
  - **Bled back 5 bbls to 0 psi**
  - Minimal calculated U-tube pressure after job (nearly balanced)
- **14.0 ppg mud in rathole with 16.7 ppg cement in shoe track**

Interpretation

- **Job pumped per plan – no cement losses observed**
- Minimal U-tube may have prevented definitive float test
- Potential for contamination of cement in shoe track due to density difference between cement and mud

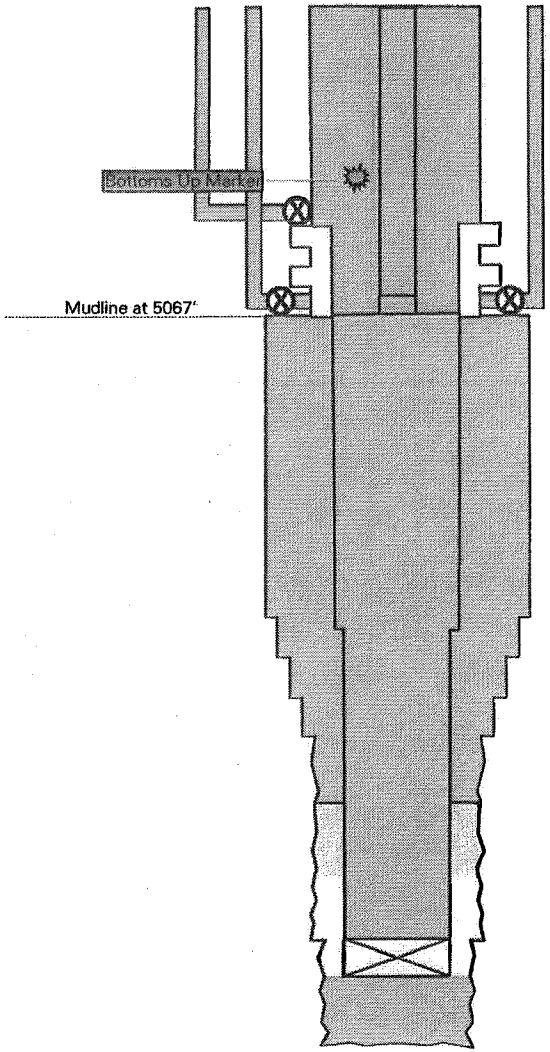
Set Seal Assembly - Lay Down Landing String

Draft – Work in Progress. Subject to Revision

00:30 - 07:00

4/20/10

Close Upper VBR's to test seal assembly. Test successful



Data

- **Release running tool**
- **Set seal assembly at 5059' to seal the 9-7/8" casing annulus**
- **Successful pressure test of seal assembly**
- **Setting and testing procedure as per plan**
- **Begin tripping out**

Interpretation

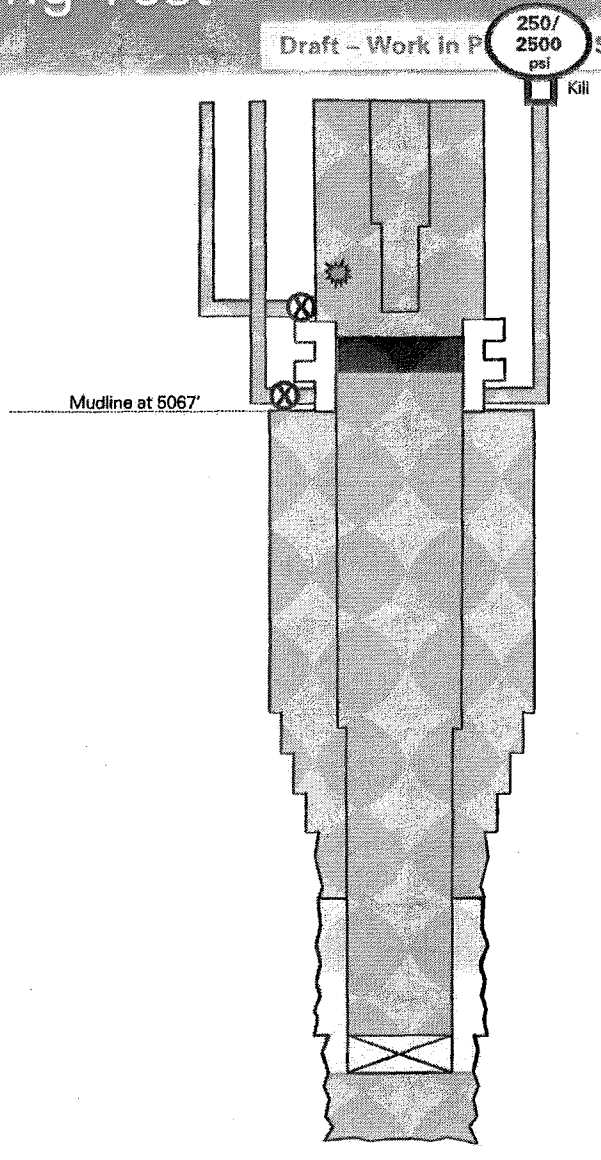
- **Set and test of seal assembly is normal**

Trip in and Casing Test

07:00 - 12:00

4/20/10

12:00 – Close BSR. Pump down kill line to test casing to 250/2500 psi for 30 min



Data

- Run in with tapered string for cement plug:
  - 6-5/8" x 5-1/2" x 3-1/2" drill pipe
- Stop at 4700' (above BOP)
- Close blind shear rams
- Positive test casing to 250 and 2500 psi

Interpretation

- Positive casing test is successful
  - Pressures and volumes are as expected