

Document 1

From: Leary, Michael J
Sent: Fri Apr 30 04:44:18 2010
To: O'Bryan, Patrick L
Subject: FW: BP Macondo Well Control Modeling 043010.ppt
Importance: Normal
Attachments: BP Macondo Well Control Modeling 043010.ppt
Attachments: BP Macondo Well Control Modeling 043010.ppt

Pat:

I would like to visit with you about this in the morning. The MMS is asking the question on worst case (Napolitano apparently has asked the question). The POE has 162,000 BOPD.

Suttles wanted me to visit with you to get your view on potential.

Call me on my mobile.

Mick

From: Mix, Kurt
Sent: Thursday, April 29, 2010 2:59 PM
To: Leary, Michael J
Subject: BP Macondo Well Control Modeling 043010.ppt

286918b0c74876ca9dfc1c3b7d73b205

HIGHLY CONFIDENTIAL

BP-HZN-2179MDL05688700

TREX-160004.002

MC 252 #1 – Macondo Prospect
OCS-G-32306

Well Control Simulation Results

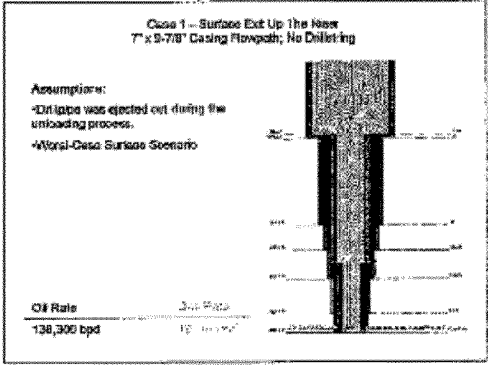
April 29, 2010

c14d8bdd0145368273849f23f8ddd740

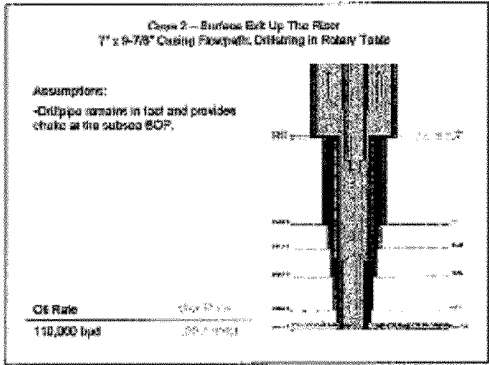
HIGHLY CONFIDENTIAL

BP-HZN-2179MDL05688701

TREX-160004.003



c14d8bdd0145368273849f23f8ddd740



c14d8bdd0145368273849f23f8ddd740

Case 3 - Surface Fall Up The Riser
7" x 9-7/8" Casing Flowpath: Drilling Dropped Into 7" Casing

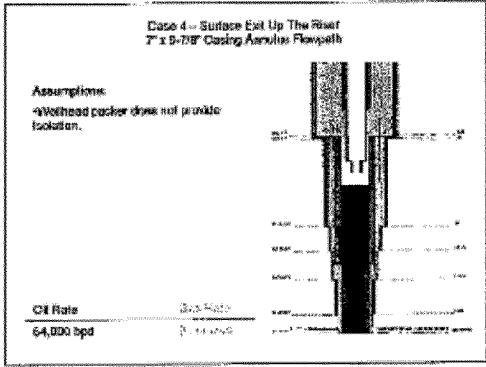
Assumptions:

- Drill pipe was cut out during the unloading process and hangs up to the top of the 7" casing due to the 5-1/2" drill pipe tool joints being 7" OD.
- 147 ft 6-5/8" x 8" pipe sticking out

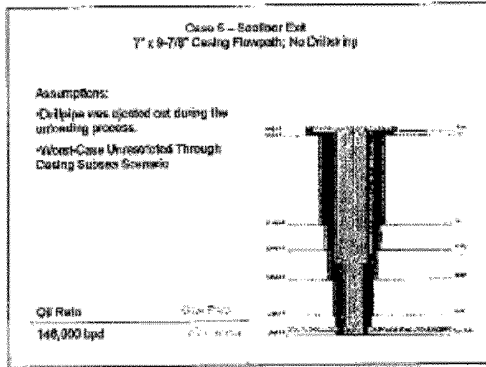
CE Rate

93,000 gpd

c14d8bdd0145368273849f23f8ddd740



c14d8bdd0145368273849f23f8ddd740

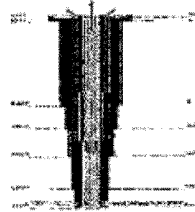


c14d8bdd0145368273849f23f8ddd740

Case 6 – Sealoff Exit
7" x 8-7/8" Casing Flowpath; Drilling Dropped into 7" Casing

Assumptions:

- Drill pipe was cut out during the unloading process and hangs up in the top of the 7" casing due to the 6-1/2" drill pipe tool joints being 7" OD; acts as a choke on the flow.
- ~147 ft 6-5/8" drill pipe sticking out

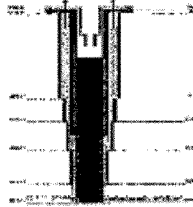


Oil Rate	Gas Rate
77,000 bpd	77,000 bpd

c14d8bdd0145368273849f23f8ddd740

Case 7 - Sealoff EOL
7" x 3.75" Casing Annular Flowpath

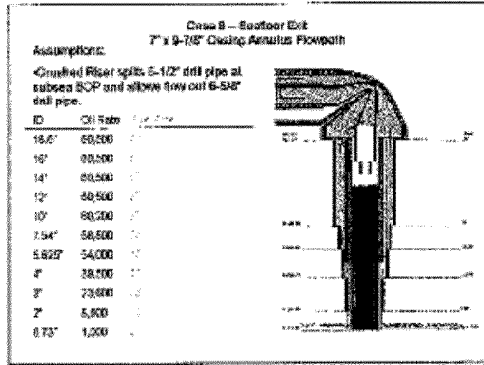
Assumptions:
- Drilling Fluid Flow with LMRP
disconnected at surface BOP
- Worst-Case Restricted Sealoff
Annular Flow



DR Rate
69,606 bpd

Flow Rate
12,000 bpd

c14d8bdd0145368273849f23f8ddd740



c14d8bdd0145368273849f23f8ddd740

Well Control Simulation Results
Surface Exit Up The Risar

Case	Oil Rate	Gas Rate	BOE	Comments
Flow up the 7" x 9-7/8" Casing String				
1	138,300	194	172,550	No Drift
2	110,000	155	137,505	DP @ Surface
3	95,000	131	115,330	DP @ Drapped
Flow behind the 7" x 9-7/8" Casing Annulus				
4	64,000	81	80,207	22" Exposed

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Well Control Simulation Results
Seafloor Exit @ 4,002 ft Water Depth

Case	Oil Rate	Gas Rate	BOE	Comments
Flow up the 7" x 9-7/8" Casing String				
5	145,000	147	173,180	No Drillpipe
6	77,000	75	90,821	DP @ Drapped
Flow behind the 7" x 9-7/8" Casing Annulus				
7	69,500	79	51,887	22" Exposed

c14d8bdd0145368273849f23f8ddd740

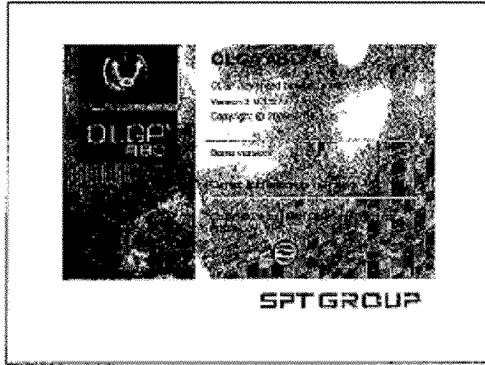
Well Control Simulation Results
Relief Well - Surface Exit Up Riser

Case	Oil Rate	Gas Rate	BOE	Comments
8-1/2" Open Hole @ 1000 Sand Package				
RW1	257,000	600	399,500	No Drip Pipe
RW2	110,000	162	138,800	DP @ Surface

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Dynamic Kill Simulation Results			
Seafloor Exit @ 4,002 ft Water Depth			
OR Rate	Gas Rate	Mud Weight	Kill Rate
Flow up the 7" x 9-7/8" Casing String			
146,000 bpd	147 mmsecf	18 ppG	26 bpm
		19 ppG	26 bpm
		20 ppG	18 bpm
77,000 bpd	79 mmsecf	18 ppG	0F @ Drapped
		19 ppG	15 bpm
Flow behind the 7" x 9-7/8" Casing Annulus			
89,500 bpd	70 mmsecf	15 ppG	15 bpm
		16 ppG	15 bpm
		20 ppG	10 bpm

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c14d8bdd0145368273849f23f8ddd740

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BP-HZN-2179MDL05688714
TREX-160004.016

Document 2

From: Leary, Michael J
Sent: Fri Apr 30 15:48:21 2010
To: O'Bryan, Patrick L; Suttles, Doug J; Price, Bruce
Subject: URGENT REVIEW REQUESTED BY 1200 Hours - BP Macondo Well Control Modeling 043010.ppt
Importance: Normal
Attachments: BP Macondo Well Control Modeling 043010.ZIP
Attachments: BP Macondo Well Control Modeling 043010.ZIP

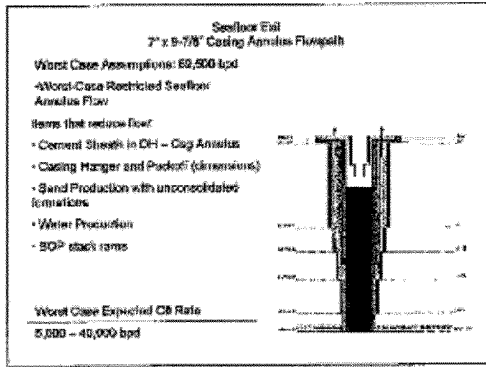
Draft of worst case flow model slide for review and comment prior to sending to the MMS

e1c0181d052120b127322b94b11b3e50

HIGHLY CONFIDENTIAL

BP-HZN-2179MDL05688716

TREX-160004.018



0b46eb2a07a9421147b299cdfb7adbhd

Document 3

Suttles, Doug J

From: Leary, Michael J
Sent: Friday, April 30, 2010 11:24 PM
To: Blankenship, Cynthia L
Cc: Suttles, Doug J; O'Bryan, Patrick L; Price, Bruce
Subject: Possible Discharge Rates

Attachments: BP Macondo Modeling 043010Rev2.ppt (Compressed)

As per your request, attached is a slide that was put together today to answer a question that the Secretary of the Interior asked. I discussed this with Lars Herbst today.

This was networked with Pat O'Bryan and others in Houston.

I understand that the President wants to be briefed on this. I would suggest that whomever does this briefing needs to be knowledgeable about the issues around these estimates.

I would suggest that Doug Suttles also needs to endorse this prior to sending it up. Doug and I visited about an earlier version of this last night.

Mick



BP Macondo
Modeling 043010Rev2

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

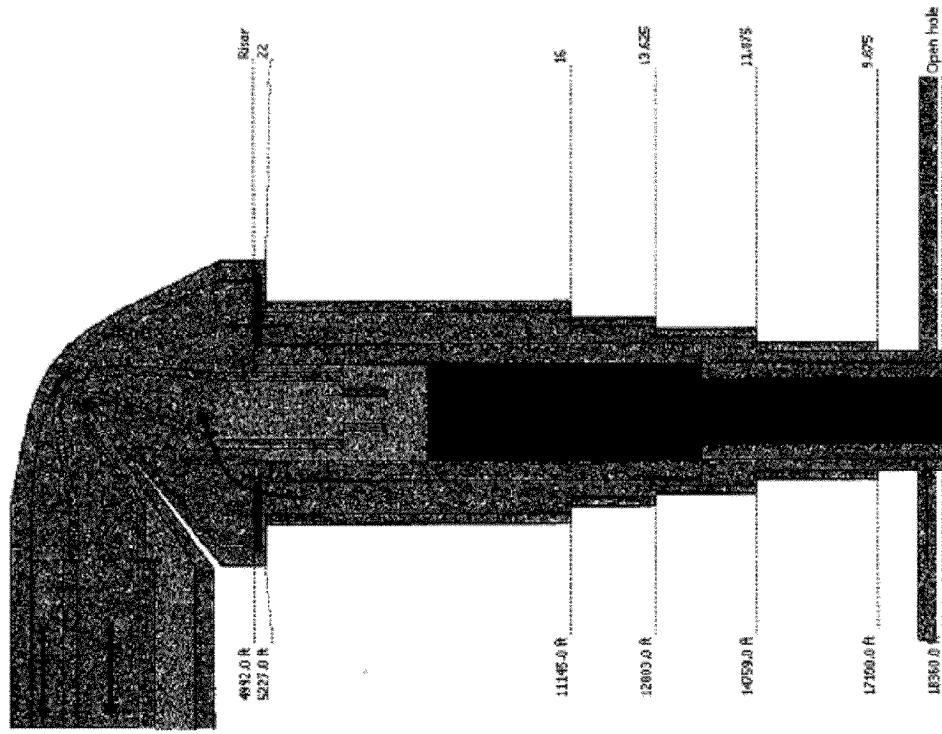
Worst case theoretical flow assumes:

- 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



Document 4

From: Leary, Michael J
Sent: Wed May 05 19:28:37 2010
To: Rainey, David I
Subject: Information You Requested
Importance: Normal
Attachments: BP Macondo Modeling 043010Rev2.ZIP

<<...>>

*Michael J. "Mick" Leary
Functional Performance Manager
BP America Production Inc.
CDO Drilling and Completions
Office - 281-366-2371
e-mail - michael.leary@bp.com*

f948aad265000cb19fd6fa9512237146

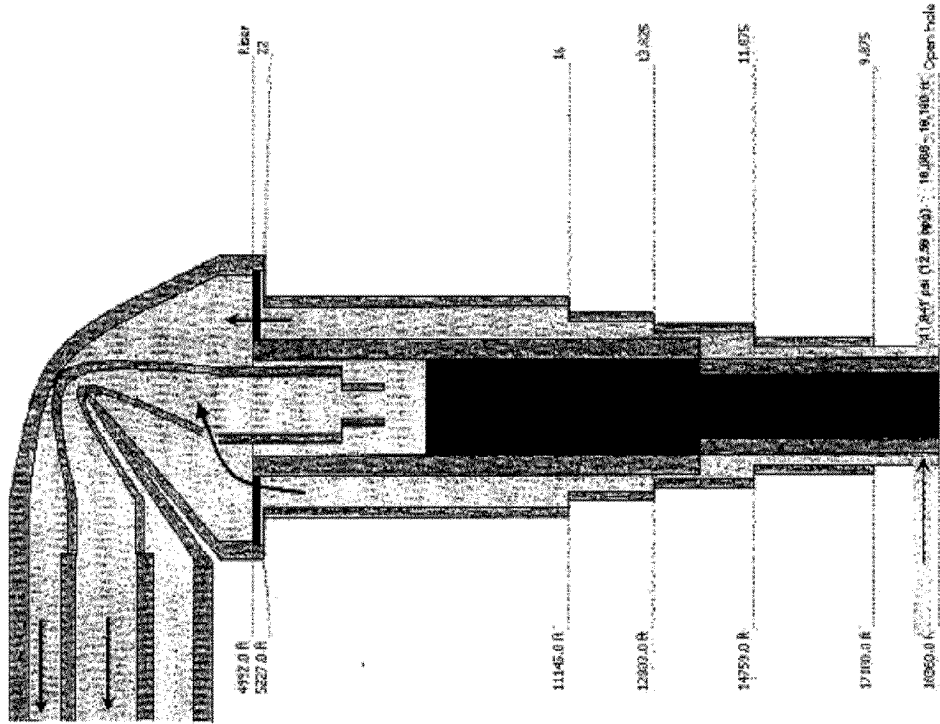
Seafloor Exit 7" x 9-7/8" Casing Annulus Flow Path

- 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



Other Assumptions

- 18360 Sand
- Black Oil
- Linear PI
- 13066 – 13090
- 10255 psi
- 260 deg F
- PI – 50 bopd / psi
- GOR – 3000 scf/stb
- 10% water cut
- 35 API gravity crude

Document 5

From: Leary, Michael J <Michael.Leary@bp.com>
Sent: Friday, June 11, 2010 2:07 PM (GMT)
To: Rainey, David I <david.rainey@bp.com>
Subject: FW: David: question re summary of video requests and deliveries
Attach: RE_ New Plume Video.msg; RE_ New Plume Video - Clarification.msg; FW_ New Plume Video.msg; FW_ Video for NOAA.msg

Shouldn't the FRTG be able to answer this question and ask us to see if we agree with it. Unless you have a good e-mail trail, this may be difficult to do. Derek Anthony probably has the actual submission e-mails, although I don't think he is here on site.

I have attached the key e-mails I have in my records. All of my e-mail trails are from Monday 24 May. I don't know when the earlier request came. Obviously it was earlier than this due to the time required to get the ROV folks to put the data on DVD or hard drive. Once we received the data off the vessels, we got them the key information they needed on the same day on this request list.

Mick

From: Mark K Sogge [mailto:mark_sogge@usgs.gov]
Sent: Friday, June 11, 2010 8:42 AM
To: Rainey, David I
Cc: Leary, Michael J; Martha N Garcia
Subject: David: question re summary of video requests and deliveries
Importance: High

Hi David,

We are getting requests from the Coast Guard and the Department of Interior to develop a timetable of when the Flow Rate Technical Group requested plume video data and when we received the various videos. Most of this occurred before I began my assignment, so I only have this information for the most recent video from after the riser was cut and before the Top Hat was applied.

Martha Garcia (the USGS liaison to the NIC) and I are working to gather information for the period before the June 3 videos. Do you have any log of when the data requests came to you, or emails from which we could compile the information? If this query is best directed to someone else, could you point us in the right direction?

Any help or insights you have are much appreciated.

Mark

Mark Sogge
Chief of Staff, USGS Western Region
2255 Gemini Drive, Flagstaff, AZ 86001
Cell: 928-606-1286; FAX: 928-556-7266
mark_sogge@usgs.gov

WHBP00011177

HIGHLY CONFIDENTIAL

BP-HZN-2179MDL05688726

TREX-160004.028

From: Openshaw, Graham (TecPM) <graham.openshaw@tecpm.com>
Sent: Monday, May 24, 2010 3:53 PM (GMT)
To: Leary, Michael J <Michael.Leary@bp.com>
Cc: Sullivan, Paul <paul.sullivan@uk.bp.com>
Subject: RE: New Plume Video

Thanks Mick,
There has been a lot of confusing noise on this one.

Note: There were two drives, one addressed to me directly. This is a much larger drive that should not be uploaded. The one addressed to the USCG should correspond to the video log and is the one to upload.

New videos will arrive from the Skandi, OI# and Enterprise around lunch time. These need to be uploaded to a separate folder labeled as today's data.

Please call me if there are any problems.

Graham

T: (603) 373-8228
M: (832) 244-2163

From: Leary, Michael J [mailto:Michael.Leary@bp.com]
Sent: Monday, May 24, 2010 10:28 AM
To: Openshaw, Graham (TecPM)
Subject: RE: New Plume Video

Graham:

Will get it uploaded as soon as we get the ftp site address.

Mick

*Michael J. "Mick" Leary
Deepwater Horizon Response
Unified Area Command - Technical Specialist*

*Cell - 281-782-8994
e-mail - michael.leary@bp.com*

From: Graham Openshaw [mailto:graham.openshaw@tecpm.com]
Sent: Monday, May 24, 2010 10:25 AM
To: Sullivan, Paul; Leary, Michael J
Cc: Murdoch, Alistair ; Broman, William H(HOU)
Subject: RE: New Plume Video

Attached is the video log with upload priority if the log references separate files.

WHBP00011178

Graham

T: (603) 373-8228
M: (832) 244-2163

From: Sullivan, Paul [mailto:paul.sullivan@uk.bp.com]
Sent: Monday, May 24, 2010 8:50 AM
To: Leary, Michael J
Cc: Openshaw, Graham (TecPM); Murdoch, Alistair ; Broman, William H(HOU)
Subject: FW: New Plume Video

Mick,

Steve Haden asked me to follow up on a package of video that is coming in from the Skandi this morning. I believe the chopper is in the air at the moment. Once the package gets to Houma I have asked logistics to get it sent over to Roberts.

If you have IT support in Roberts this data needs to get uploaded to a government site – The contact person for details of the upload is Lance Davey 1-2062761761

Please can you help direct once the package gets to Roberts and advise when the upload has been completed.

Thanks.

Paul

From: Haden, Steven K
Sent: Monday, May 24, 2010 8:34 AM
To: Easley, Max
Cc: Openshaw, Graham (TecPM); Sullivan, Paul
Subject: FW: New Plume Video

Max,

I may push these guys your way if there starts to be lots of requests. Just trying to help with the immediate one for now. Sounds like they are upping their team - Dr. McNutt is head of the USGS I believe and is now leading this group - so may be more questions. In the mean time, Graham, Paul and I are trying to get the material to their satisfaction.

Steve

From: Moore, David M. [mailto:David.Moore@mms.gov]
Sent: 24 May 2010 08:32
To: McNutt, Marcia
Cc: Bill.Lehr@noaa.gov; White, Michael CAPT; Grawe, William; Scott.B.Beeson@uscg.mil; Moore, David M.; Haden, Steven K
Subject: New Plume Video

Dr. McNutt,

I was just contacted by BP regarding additional video footage that was requested. BP staff will bring it to the UC, upload it, and then notify you that it is available for viewing.

The primary contact for offshore video is Mr. Steve Haden 011-44-7917-554495.

Thank You.

WHBP00011178_0002

David M. Moore

WHBP00011178_0003

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BP-HZN-2179MDL05688729
TREX-160004.031

From: Openshaw, Graham (TecPM) <graham.openshaw@tecpm.com>
Sent: Monday, May 24, 2010 3:43 PM (GMT)
To: Openshaw, Graham (TecPM) <Graham.Openshaw@tecpm.com>; Sullivan, Paul <paul.sullivan@uk.bp.com>; Leary, Michael J <Michael.Leary@bp.com>
Cc: Murdoch, Alistair <Alistair.Murdoch@bp.com>; Broman, William H(HOU) <william.broman@bp.com>; Anthony, Derck (SULLEXIS LLC) <Derek.Anthony@bp.com>
Subject: RE: New Plume Video - Clarification

The excel spreadsheet sent recently is associated with the video file(s) sent to Roberts early this morning from the Skandi Neptune and, hopefully, now with Derek Anthony.

There is now another set of videos of recent activity from the Skandi, the OIB and the Enterprise that has an approx ETA Hammond of 13:00hrs. We will ship these to Derek Anthony at Roberts.

Please let me know if you need additional information.

Graham

T: (603) 373-8228
M: (832) 244-2163

From: Graham Openshaw [mailto:graham.openshaw@tecpm.com]
Sent: Monday, May 24, 2010 10:25 AM
To: 'Sullivan, Paul'; 'Leary, Michael J'
Cc: 'Murdoch, Alistair'; 'Broman, William H(HOU)'
Subject: RE: New Plume Video

Attached is the video log with upload priority if the log references separate files.

Graham

T: (603) 373-8228
M: (832) 244-2163

From: Sullivan, Paul [mailto:paul.sullivan@uk.bp.com]
Sent: Monday, May 24, 2010 8:50 AM
To: Leary, Michael J
Cc: Openshaw, Graham (TecPM); Murdoch, Alistair ; Broman, William H(HOU)
Subject: FW: New Plume Video

Mick,

Steve Haden asked me to follow up on a package of video that is coming in from the Skandi this morning. I believe the chopper is in the air at the moment. Once the package gets to Houma I have asked logistics to get it sent over to Roberts.

If you have IT support in Roberts this data needs to get uploaded to a government site – The contact person for details of the upload is Lance Davey 1-2062761761

Please can you help direct once the package gets to Roberts and advise when the upload has been completed.

WHBP00011179

Thanks,

Paul

From: Haden, Steven K
Sent: Monday, May 24, 2010 8:34 AM
To: Easley, Max
Cc: Openshaw, Graham (TecPM); Sullivan, Paul
Subject: FW: New Plume Video

Max,

I may push these guys your way if there starts to be lots of requests. Just trying to help with the immediate one for now. Sounds like they are upping their team - Dr. McNutt is head of the USGS I believe and is now leading this group - so may be more questions. In the mean time, Graham, Paul and I are trying to get the material to their satisfaction.

Steve

From: Moore, David M. [mailto:David.Moore@mms.gov]
Sent: 24 May 2010 08:32
To: McNutt, Marcia
Cc: Bill.Lehr@noaa.gov; White, Michael CAPT; Grawe, William; Scott.B.Beeson@uscg.mil; Moore, David M.; Haden, Steven K
Subject: New Plume Video

Dr. McNutt,

I was just contacted by BP regarding additional video footage that was requested. BP staff will bring it to the UC, upload it, and then notify you that it is available for viewing.

The primary contact for offshore video is Mr. Steve Haden 011-44-7917-554496.

Thank You,

David M. Moore

WHBP00011179_0002

HIGHLY CONFIDENTIAL

BP-HZN-2179MDL05688731

TREX-160004.033

From: Leary, Michael J <learymj1@bp.com>
Sent: Monday, May 24, 2010 1:53 PM (GMT)
To: McMahon, Shiva P <Shiva.McMahon@bp.com>; Rainey, David I <david.rainey@bp.com>
Subject: FW: New Plume Video

Information on the video coming off of the Skandi. Looks to be the video we talked about this morning in the telecon.

Let me know what I can do to assist.

From: Sullivan, Paul
Sent: Monday, May 24, 2010 8:50 AM
To: Leary, Michael J
Cc: Openshaw, Graham (TecPM); Murdoch, Alistair ; Broman, William H(HOU)
Subject: FW: New Plume Video

Mick,

Steve Haden asked me to follow up on a package of video that is coming in from the Skandi this morning. I believe the chopper is in the air at the moment. Once the package gets to Houma I have asked logistics to get it sent over to Roberts.

If you have IT support in Roberts this data needs to get uploaded to a government site – The contact person for details of the upload is Lance Davey 1-2062761761

Please can you help direct once the package gets to Roberts and advise when the upload has been completed.

Thanks.

Paul

From: Haden, Steven K
Sent: Monday, May 24, 2010 8:34 AM
To: Easley, Max
Cc: Openshaw, Graham (TecPM); Sullivan, Paul
Subject: FW: New Plume Video

Max,

I may push these guys your way if there starts to be lots of requests. Just trying to help with the immediate one for now. Sounds like they are upping their team - Dr. McNutt is head of the USGS I believe and is now leading this group - so may be more questions. In the mean time, Graham, Paul and I are trying to get the material to their satisfaction.

Steve

From: Moore, David M. [mailto:David.Moore@mms.gov]
Sent: 24 May 2010 08:32
To: McNutt, Marcia
Cc: Bill.Lehr@noaa.gov; White, Michael CAPT; Grawe, William; Scott.B.Beeson@uscg.mil; Moore, David M.; Haden, Steven K
Subject: New Plume Video

Dr. McNutt,

WHBP00011180

I was just contacted by BP regarding additional video footage that was requested. BP staff will bring it to the UC, upload it, and then notify you that it is available for viewing.

The primary contact for offshore video is Mr. Steve Haden 011-44-7917-554495.

Thank You,

David M. Moore

WHBP00011180_0002

HIGHLY CONFIDENTIAL

BP-HZN-2179MDL05688733

TREX-160004.035

From: Leary, Michael J <learymj1@bp.com>
Sent: Monday, May 24, 2010 10:36 PM (GMT)
To: Rainey, David I <david.rainey@bp.com>; Easley, Max <EasleyM@bp.com>
Subject: FW: Video for NOAA

FYI. Sounds like they have information they need to at least get started on.

Mick

From: Anthony, Derek (SULLEXIS LLC)
Sent: Monday, May 24, 2010 5:31 PM
To: Leary, Michael J
Subject: FW: Video for NOAA
Importance: High

FYI

Derek Anthony

Mobile: +1 225 823 7213 (*preferred*)

Office: +1 281 366 7046

DC: 146*39672*165

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From: Graham Openshaw [mailto:graham.openshaw@tecpm.com]
Sent: Monday, May 24, 2010 4:53 PM
To: Peijs, Jasper
Cc: Anthony, Derek (SULLEXIS LLC); Baker, Kate H (UNKNOWN BUSINESS PARTNER); Dupree, James H; Hyde-Barber Catherine
Subject: Video for NOAA
Importance: High

Jasper,

Derek and I have had a very good online editing session that has resulted in a succinct set of files of good quality as described below. I recommend that we speed things up by allowing Jasper to make two copies of the files, sending one to your contact and one to you or Cathie Hyde-Barber who is replacing me. This should be done this evening. Text to on pass as follows:

We have provided two sets of video files. The first are 30min segments from the 36hr window that occurred between trenching out the riser end and the insertion of the RIT. This was also without dispersant. These files are as follows:

May 12 2010 1004 H14 Riser End Plume 157deg.mpg

May 14 2010 2024 H14 Riser End Plume 91deg.mpg

May 15 2010 1950 H14 Riser Kink Plume 322deg.mpg

More recent, and better quality, video was obtained last night that includes both the RIT production and dispersant. Filenames for this are:

WHBP00011181

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BP-HZN-2179MDL05688734

TREX-160004.036

May 24 2010 0247 H6 Riser End Plume 87deg.mpg

May 24 2010 0254 H14 Riser End Plume 1deg.mpg (this video has a bad first 4mins)

May 24 2010 0825 Riser Kink Plume 89deg.mpg (this may arrive as a separate DVD if a converter is not located)

These are also 30min segments.

Regards

Graham Openshaw

Tel: 1 (603) 373 8228

Mob: 1 (832) 244 2163

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WHBP00011181_0002

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BP-HZN-2179MDL05688735

TREX-160004.037