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**In re: Oil Spill by the Oil Rig "Deepwater Horizon" in
the Gulf of Mexico, on April 20, 2010**

**UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF LOUISIANA
MDL No. 2179, SECTION J
JUDGE BARBIER; MAGISTRATE JUDGE SHUSHAN**

Second Response Report of Mark G. VanHaverbeke

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September 26, 2014

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I. INTRODUCTION

On August 15, 2014, I offered an initial report in this litigation. On that same day, Frank M. Paskewich, Captain, U.S. Coast Guard (Retired) ("Captain Paskewich") offered a report on behalf of BP Exploration and Production, Inc. ("BP"). Both Captain Paskewich and I offered second reports on September 12, 2014 ("Round 2 Reports"). In this report I respond to certain opinions offered by Captain Paskewich in his Round 2 Report.

My initial report included a summary of my professional background and my résumé. There have been no changes or additions to my résumé, including my list of publications, since August 15, 2014. Other than the salary that I receive as a government employee, I am receiving no compensation for my expert work in this case. I have not previously testified as an expert witness.

In reaching my conclusions, I have relied upon my personal experience in the areas of oil spill response and oil spill response research and development ("R&D"). I have also reviewed and considered the documents cited throughout this report, Appendix B of this report, my expert reports offered on August 15 and September 12, 2014 and documents cited in those reports, and documents listed in the Appendices to those reports.

II. EXECUTIVE SUMMARY

In this report I respond to the opinions offered by Captain Paskewich in his Round 2 Report. My responses can be summarized as follows:

1. With few exceptions, the *Deepwater Horizon* response relied on previous technology developments.
2. The Alternative Response Technologies Program, while a significant effort to identify better response solutions, produced marginal results.
3. BP's work within the Unified Command is part of the obligation of a responsible party and was not above and beyond what is expected under the Oil Pollution Act of 1990 and the National Contingency Plan.
4. BP has not "set a high standard" for future responsible parties and BP's post-April 22, 2010 actions related to advancing spill response capabilities pale in comparison to the potential threats posed by BP's activities.

III. DISCUSSION

1. With Few Exceptions, the *Deepwater Horizon* Response Relied on Previous Technology Developments.

In sections II.1 and III.A. of his report, Captain Paskewich opines that the response to the *Deepwater Horizon* spill substantially advanced spill response capabilities.¹ I offer the following responses:

First, on page 4 of his Round 2 Report, Captain Paskewich offers a chart he titles “Figure 1: *Deepwater Horizon* Response Innovations and Improvements.” This chart lists or provides images associated with at least 18 different entries organized into five different categories. Captain Paskewich suggests in the text preceding the chart that it is meant to include “innovations and improvements” that the “BP and its Unified Command partners” implemented across the response. While he discusses several of the entries in the body of the report, many are left unaddressed beyond their inclusion in the chart. To the extent that this chart is meant to list new or innovative response techniques and/or technologies attributable to BP, it is largely unsupported and in many cases inaccurate.²

Second, in general, improvements that resulted from the response to the *Deepwater Horizon* spill were a matter of degree and not a matter of inventing whole new approaches. For example, in situ burning was an off-the-shelf capability, as indicated by the Regional Response Team (“RRT”) VI pre-approval and the in situ burn operations manual published by the Coast Guard Research and Development Center in 2003.³ Captain Paskewich quotes the Incident Specific Preparedness Review (“ISPR”) in this section of his report, stating that “the Coast Guard-commissioned [ISPR] team found, “[t]he scale and success of [in situ burning] during the *Deepwater Horizon* incident demonstrated the capability of this important response tool.”⁴ But this quote was taken out of context. In the sentences immediately preceding the quote used by Captain Paskewich, the ISPR stated that “[In situ burning] has been tested and used during spills since 1967. The technology for using [in situ burning], including containing, igniting, and controlling spilled oil, is well established.”⁵ Thus, while the length of BP’s 87-day oil discharge did allow time for the Unified Command to fine-tune the methodology, the improvements from the response to the *Deepwater Horizon* spill were not wholly new response approaches.

¹ Rebuttal Expert Report of Captain Frank M. Paskewich (Ret.), September 12, 2014 (“Paskewich Round 2 Report”) at 3-11.

² See Response Report of Captain Mark G. VanHaverbeke (Ret.), September 12, 2014 at 8-9; see *infra* Section III.2.

³ RRT VI In-Situ Burn Plan Part I (Operations Section) at II-5-6 (HCD020-013902); U.S. Coast Guard, Oil Spill Response Offshore, In-situ Burn Operations Manual (2003) at 47-56 (N7J007-004792).

⁴ Paskewich Round 2 Report at 4-5.

⁵ ISPR (Trex-009124) at 46.

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Third, as with in situ burning, the improvements in dispersant application from the Deepwater Horizon response were a matter of adjustments to recognized approaches. Captain Paskewich touts both the aerial and subsurface application of dispersants in the response.

Surface application of dispersants in this response simply brought together existing capabilities. Coast Guard regulations for oil spill response plans require the identification of specific dispersant resources capable of commencing dispersant-application operations within seven hours of the decision of the Federal On-Scene Coordinator ("FOSC") to use dispersants.⁶ The industry was gearing up for this requirement before the *Deepwater Horizon* response. Thus, the dispersant application innovations and process improvements were, again, driven by the incredible size of the Defendant's spill and the resulting response, as well as the duration of the operation.⁷

Similarly, subsea application of dispersants was a potential response technique that had been identified, though not tested, long before the Deepwater Horizon blowout.⁸ Moreover, the improvements developed during the response are of limited utility. The FOSC, in consultation with the Environmental Protection Agency ("EPA") and the National Oceanic and Atmospheric Association ("NOAA"), agreed with the conceptual testing and subsequent implementation of subsea dispersant application during the response, but the concept needs more development. Again, Captain Paskewich sought support from a quote taken out of context, stating that "[a]s the ISPR team concluded, 'subsea dispersant application proved to be effective' during the *Deepwater Horizon* Response."⁹ A more complete quotation of the ISPR reveals major caveats to that statement: "[s]ubsea dispersant application proved to be effective: however, the conditions under which it can be used and the volume of dispersants required need to be further studied."¹⁰

⁶ 33 C.F.R. § 155.1035 (2014).

⁷ See Mike Gass et al., *Aerial Dispersant Operations in the Deepwater Horizon Spill Response - A Framework for Safely Mounting a Large Scale Complex Dispersant Operation* 3.2.17 (2011) available at <http://ioscproceedings.org/doi/pdf/10.7901/2169-3358-2011-1-262> ("MSRC, IAR, and Dynamic Aviation had recently formed an aerial dispersant capability to meet impending US requirements for their oil industry clients. Ironically, they were preparing for an exercise the very week of their mobilization for the DWH spill." at 3; "There were no standard operating procedures for this size of operation, where safety is paramount. The evolution of those procedures began out of necessity." at 2; "In the early days of a spill response, and as soon as possible, the Aerial Dispersant Group must set procedures for scheduling, airspace management, communications, targeting, reporting, SMART integration, safety reviews. This is simple for a single spray aircraft operation; the complexity increases with the number of aircraft systems that are required for the size of the spill." at 17).

⁸ Oil Spill Containment, Remote Sensing and Tracking For Deepwater Blowouts: Status of Existing and Emerging Technologies, PCCI Maritime and Environmental Engineering (1999) at 33, 50 (Trex-002297).

⁹ Paskewich Round 2 Report at 5.

¹⁰ ISPR (Trex-009124) at 44.

Fourth, the “integrated response information management system”¹¹ deployed in the *Deepwater Horizon* response was a version of the Environmental Response Management Application (“ERMA”) developed by NOAA and the Coastal Response Research Center in consultation with other stakeholders, including the Coast Guard.¹² As noted in the FOSC Report, “[ERMA] was used in the March 2010 Spill of National Significance (SONS) exercise. NOAA established the Gulf of Mexico Exercise (GOMEX) ERMA in less than two days at the end of April and had on-site staff in [Unified Area Command (“UAC”)] Robert and [Incident Command Post (“ICP”)] Houma to start posting the data.”¹³ As noted in the ISPR, “ERMA was a breakthrough in how the entire response was coordinated and communicated.”¹⁴ ERMA is an example of the government’s sustained effort to prepare for a SONS, and key role in implementing an effective response. In other words, this was a technology driven by the United States, not BP.

2. The Alternative Response Technologies Program, While a Significant Effort to Identify Better Response Solutions, Produced Marginal Results.

In subsection III.A.2. of his report, Captain Paskewich opines that “BP helped to develop valuable spill response technologies through the Alternative Response Technologies (“ART”) program.”¹⁵ I offer the following comments.

Suggestions from the public made during a major spill response are not new. The Coast Guard was also inundated with suggestions during the Exxon Valdez response, though on a smaller scale than during the *Deepwater Horizon* spill. In 1989, one had to write a letter and mail it via the U.S. Postal Service or other carrier in order to get it to the Coast Guard. Within the Coast Guard, the letters had to be routed for consideration and comment, and then the response typed and routed for signature. The increased ability to obtain and evaluate suggestions from the public during the *Deepwater Horizon* spill were as much a result of innovations in communication technology (the widespread availability of websites and email) and information management (improvements in database design and work sharing programs) as they were creditable to the Unified Command or BP in particular. Captain Paskewich exaggerates BP’s contribution when he states that, “[b]y establishing an innovative and inclusive process for capturing and evaluating ideas during the Response, the ART Program allowed BP and the others in the Unified Command to leverage the “public’s ingenuity and entrepreneurial spirit.”¹⁶

¹¹ Paskewich Round 2 Report at 5.

¹² Federal On-Scene Coordinator Report: Deepwater Horizon Oil Spill (Sept. 2011) (“FOSC Report”) at 189 (TREX-009105).

¹³ *Id.*

¹⁴ ISPR (TREX-009124) at 53.

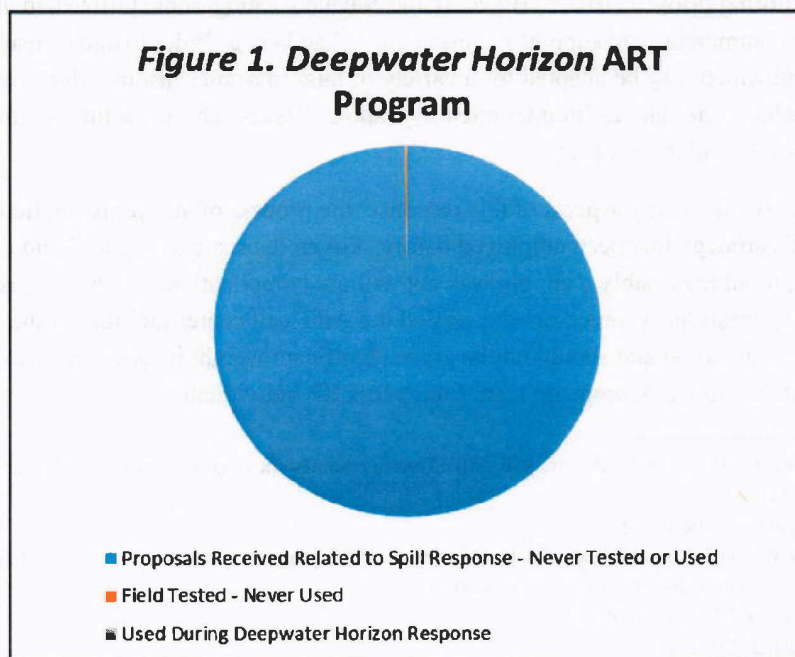
¹⁵ Paskewich Round 2 Report at 6.

¹⁶ Paskewich Round 2 Report at 11.

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Captain Paskewich also overstates the benefits derived from this more open communication ability. First, the amount of oil recovered by mechanical means from the surface of the water was marginal, amounting to approximately three percent of the oil spilled as of mid-July, 2010.¹⁷ As Captain Paskewich stated in his report of August 15, 2014, "On average for most open ocean spill responses, approximately 10-15% of oil is removed, typically using mechanical recovery means, such as skimming."¹⁸ This marginal recovery rate for the *Deepwater Horizon* spill includes recovery by capabilities developed and implemented through the ART process.

Second, while the ART program reviewed a significant number of suggestions, only a very small proportion of these suggestions resulted in actual response activities. Of the 43,000 suggestions submitted for spill response, only 100 (less than one quarter of one percent) were judged worthy of testing.¹⁹ Of those, only 40 were implemented during the response.²⁰ Captain Paskewich acknowledges as much in his Round 2 Report, but the graphic he uses on page 7 appears to inflate the relative yield rate of suggestions to implemented ideas. A more accurate depiction of the ART program yield is offered as figure 1.



¹⁷ Federal Interagency Solutions Group, Oil Budget Calculator Science and Engineering Team, Oil Budget Calculator, Deepwater Horizon, Technical Documentation 39-40 (Nov. 2010), available at http://www.restorethegulf.gov/sites/default/files/documents/pdf/OilBudgetCalc_Full_HQ-Print_111110.pdf at 40 (BP-HZN-2179MDL09219786).

¹⁸ Expert Report of Captain Frank M. Paskewich (Ret.), August 15, 2014 ("Paskewich Round 1 Report") at 19.

¹⁹ Paskewich Round 2 Report at 7.

²⁰ *Id.*

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The vast influx of proposals submitted through the *Deepwater Horizon* ART system consumed significant resources. The system did not anticipate the huge number of submissions, and therefore required adjustments over time. As late as May 22, 2010, BP was still filling key roles.²¹ In addition, the system was seen as unresponsive by the public (which resulted in the government establishing the Interagency Alternative Response Technology Assessment Program ("IATAP")), and was initially needlessly brusque when it did respond ("Your suggestion has been rejected.").²² The final story, as told by BP and Captain Paskewich, glosses over these issues.²³

Finally, many of the technologies that moved through the ART process were off-the-shelf and simply adapted for spill application. As Captain Paskewich states, many of the ART submissions, such as beach cleaning devices, were adapted from other industries to help address the massive expanse of oil contamination, including hundreds of miles of oiled shoreline.²⁴ An example of how Captain Paskewich overstates the benefits of the ART program is his claim that, "BP and other ART team members supported the development of the Wave Glider."²⁵ The Wave Glider was created by a private developer with the support of the Office of Naval Research for ocean monitoring prior to 2010.²⁶ By 2010, the Naval Oceanographic Office had already purchased one commercially to support its missions.²⁷ The Wave Glider in and of itself is a mobile platform which may be adapted for a variety of missions and sensors. Moreover, as with many of the technologies and techniques cited by Captain Paskewich, its usefulness for future spill responses is speculative at best.

Ultimately, like many aspects of this response, the process of accepting public input was a scaling up of a strategy that been employed before. Given the scale of the spill and the intense public interest, it ran reasonably well, but was not without complications.²⁸ But, regardless of the number of suggestions received or who staffed the ART call center facilities,²⁹ the impact on the response was marginal and should not be given significant weight in assessing the overall performance of the Unified Command team (much less BP individually).

²¹ On May 22, when I was part of the Houma ICP, Mike Cortez assumed the over-all lead role as Technical Manager for the ART system.

²² Personal observation of the author.

²³ Compare with Paskewich Round 2 Report at 11. (Calling the ART program an avenue for "community involvement" and "an innovative and inclusive process").

²⁴ See Paskewich Round 2 Report at 9-11.

²⁵ Paskewich Round 2 Report at 8.

²⁶ See, e.g., John A. Hildebrand & Gerald L. D'Spain, *Glider-based Passive Acoustic Monitoring Techniques in the Southern California Region* (2010), available at <http://www.onr.navy.mil/reports/FY10/mbhilde1.pdf>.

²⁷ Federal Business Opportunities Solicitation N62306-10-Q-3013 (July 29, 2010), available at <https://www.fbo.gov/notices/5d393dfa89c50b84e6ce5821d7894ad6>.

²⁸ Expert Report of Captain Mark G. VanHaverbeke (Ret.), August 15, 2014 ("VanHaverbeke Round 1 Report") at 13-14.

²⁹ See Paskewich Round 2 Report at 6 (BP eventually staffed a call center in Houston with as many as 200 operators).

3. Working within the Unified Command Structure is Expected under the Oil Pollution Act of 1990 and the National Contingency Plan.

Captain Paskewich opines that BP worked collaboratively with the Coast Guard and others in the Unified Command, and cites a number of Coast Guard sources, including me.³⁰ I offer the following comments.

First, as the responsible party, BP was under an obligation to respond to the spill in a manner consistent with the Oil Pollution Act ("OPA") of 1990 and the National Contingency Plan ("NCP").³¹ The NCP establishes the basic framework for the response management structure as "a system (e.g., a unified command system), that brings together the functions of the Federal Government, the state government, and a responsible party to achieve effective and efficient response, where the [On-Scene Coordinator ("OSC")] maintains authority."³² Notably, any owner or operator of a facility from which oil is discharged who, without sufficient cause, fails to properly carry out removal of the discharge is subject to a higher civil penalty.³³ Additionally, limits on liability do not apply if the responsible party fails or refuses "to provide all reasonable cooperation and assistance requested by a responsible official in connection with removal activities."³⁴ Thus, BP's participation in the Unified Command was not a voluntary mitigation effort, but compliance with the response framework established under the OPA.

Second, the government recognizes that a structured, unified effort produces better results. That is why we (the United States Government) made it one of the "General organization concepts" in the NCP³⁵ and promote it during response actions.

Third, several of the quotes in figure 7 of Captain Paskewich's report lack the nuance of context. For example, Captain Paskewich asserts that Captain Laferriere said "there was a unity of effort between the United States Coast Guard and BP during the response."³⁶ Earlier in his deposition, when asked about BP operating collaboratively under the NCP, he stated:

[I]f BP was not performing their job adequately, and there were three cases that they hadn't been, the U.S. Coast Guard has an obligation to either direct the response at that point, or what we call federalize, take over. So, for all of the response that I was involved with, with the exception of those three instances, they fulfilled their obligation requirements to ensure an adequate spill. There is no

³⁰ Paskewich Round 2 Report at 12-13 fig. 7.

³¹ 33 U.S.C. § 1321(c)(3)(B) (2012).

³² 40 C.F.R. § 300.105(d) (2007).

³³ 33 U.S.C. § 1321(b)(7)(B) (2012).

³⁴ 33 U.S.C. § 2704(c)(2)(B) (2012).

³⁵ 40 C.F.R. § 300.105(d) (2007).

³⁶ Paskewich Round 2 Report at 12 fig. 7.

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requirement for collaboration. It is a requirement to form a Unified Command and complete the mandate of the oil spill.³⁷

During that same deposition, Captain Laferriere said, “[l]et’s not forget that that is their duty. It is my duty to ensure that they do it adequately, which they did. It doesn’t mean they did it excellently. It doesn’t mean they did it superiorly. It doesn’t mean they were awesome. It means they were adequate, adequate. That’s it.”³⁸ When asked by BP’s attorney, “Do you agree there was a unity of effort between the United States Coast Guard and BP during the response?” he replied, “Yes. Under the National Contingency Plan construct, I believe that.”³⁹ In short, BP’s participation in the Unified Command was adequate as part of the “National Contingency Plan construct” and not a voluntary mitigation effort.

4. BP Has Not “Set a High Standard” for Future Responsible Parties.

Captain Paskewich reviews at length the efforts BP made to share spill response innovations and lessons learned, and opines that BP remains committed to advancing spill response capabilities, citing the amount of money invested by BP and stating that BP’s commitments “set a high standard.”⁴⁰ I offer the following comments.

First, BP engages in commercial activities that have the potential to create massive human, economic, and environmental harm.⁴¹ The company knew well before this spill that the Macondo well and other wells that it was operating have the potential to release a huge volume of oil into the environment.⁴² Captain Paskewich stresses BP’s post-spill spending on response research without acknowledging that there is no evidence that I am aware of indicating that they made any significant investment in oil spill response technology research and development prior to the *Deepwater Horizon* spill.⁴³

Second, Captain Paskewich now points to investments made only after BP’s gross negligence caused one of the worst environmental disasters in United States history. He points out that these investments are larger than those made on an annual basis by the United States

³⁷ Laferriere Dep. at 265:23-266:11.

³⁸ Laferriere Dep. at 309:19-310:7.

³⁹ Laferriere Dep. at 108:20-24.

⁴⁰ Paskewich Round 2 Report at 17.

⁴¹ See generally Rec. Doc. 12373, Motion of the United States to Limit Evidence About the “Seriousness” Factor, February 20, 2014 (US_PP_MAN005129); Expert Report of Dr. Richard W. Clapp, August 15, 2014 (US_PP_EXP001688); Expert Report of Dr. Charles F. Mason, August 15, 2014 (US_PP_EXP001722); Expert Report of Dr. Donald F. Boesch, August 15, 2014 (US_PP_EXP001445).

⁴² BP Gulf of Mexico Regional Oil Spill Response Plan at Appendix H (TED274-000036.TREX2).

⁴³ Trial Testimony of Dr. Robert Bea, United States District Court Eastern District of Louisiana, Day 2 Morning Session Transcript at 447:18-448:6, 448:16-449:9 (DWHP2TTRANS000559); Deposition of Andrew George Inglis at 162:9-21 (P1DEP467809).

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Coast Guard on oil spill containment and response technology.⁴⁴ Again, these statements have been taken out of context:

- Even had Captain Paskewich summarized it accurately, the level of spending allocated to this type of research by the federal government is not relevant to an assessment of BP's actions (or inaction). The more appropriate question is what BP, as a party engaged in actions that could result in the release of hydrocarbons into the environment, has done to prepare for that possibility.
- In making a comparison to only spending by the Coast Guard R&D center, Captain Paskewich ignores the work done by other federal agencies in the same field. Some of the work done by the U.S. Department of the Interior ("DOI") was discussed in my Round 1 report.⁴⁵ DOI has budgeted over \$14 million per year over the last several years for oil spill research.⁴⁶ Combined with spending by other federal agencies, these investments by the U.S. government far outpace the investments by BP, a profit-seeking company undertaking activities with the potential to require the use of these technologies.⁴⁷
- BP's claims concerning R&D investment should be viewed in light of the company's resources and profitability. According to its 2013 annual report, BP generated more than \$370 billion in revenue and earned over \$23 billion in profit last year.⁴⁸ Assuming that BP continued to invest at the maximum level Captain Paskewich cited for 2012 (\$15 million), that means that BP invested roughly 0.004% of their revenue (0.06% of their profit) to developing technologies to respond to what it knows to be a threat posed by one of its core revenue-generating activities.

Third, Captain Paskewich points out that BP has committed to provide \$500 million in funding over 10 years to support the Gulf of Mexico Research Initiative ("GoMRI").⁴⁹ Captain Paskewich fails to note that BP is legally required to continue to fulfill its commitment to fund

⁴⁴ Paskewich Round 2 Report at 16.

⁴⁵ Expert Report of Captain Mark G. VanHaverbeke (Ret.), August 15, 2014 at 6-7.

⁴⁶ The United States Department of the Interior Budget Justifications and Performance Information Fiscal Year 2015 - Bureau of Safety and Environmental Enforcement at 59 (US_PP_MVH004358).

⁴⁷ The United States Department of the Interior Budget Justifications and Performance Information Fiscal Year 2013 - Bureau of Safety and Environmental Enforcement at 55 (US_PP_MVH004648); The United States Department of the Interior Budget Justifications and Performance Information Fiscal Year 2012 - Bureau of Ocean Energy Management, Regulation and Enforcement at 115 (US_PP_MVH004478); Allyson Anderson, BSEE Blog (Sept. 9, 2014) <http://www.bsee.gov/BSEEBlog> (US_PP_MVH004352); Expert Report of Dr. Charles F. Mason, August 15, 2014 at 30-32 (US_PP_EXP001722) ("BPXP's goal is the maximization of its net worth.").

⁴⁸ BP Annual Report and Form 20-F 2013 at 122-123 (BP-HZN-2179MDL07816849).

⁴⁹ Paskewich Round 2 Report at 16-17.

GoMRI by the terms of its 2013 guilty plea agreement stemming from its criminal conduct related to the *Deepwater Horizon* spill.⁵⁰

Given the lack of pre-spill investment and the relatively meager post-spill investment, Captain Paskewich's conclusion that BP's commitments "set a high standard" are wholly unwarranted.⁵¹

5. Additional Comments

BP's efforts to identify innovative response technologies underscores the need for prevention. The need for rapid innovation suggests not that BP is remarkable in its post-spill conduct, but rather that BP's pre-spill conduct failed to take into account the challenges of responding to a spill in the high-risk, leading edge development of oil resources in which it engaged.

For instance, Captain Paskewich emphasizes the post-spill development of the capping stack.⁵² With respect to capping and containment technologies, I noted in my Round 1 Report that Richard Morrison stated that the technology used was generally known in the industry but required fabrication to suit the specific circumstances of the *Deepwater Horizon* spill.⁵³ Further, Mr. Morrison stated that the water depth in the vicinity of the Macondo well required application of the technology in unprecedented circumstances, without offering evidence that BP had planned for responding to an emergency under those circumstances.⁵⁴ BP should have known that they were operating on the leading edge of technology, and should have been prepared should the blowout preventer fail.

Captain Paskewich makes much of BP's post spill efforts to share lessons learned during the response.⁵⁵ However, the spill response community has been sharing research results and lessons learned for decades. The first joint conference of the American Petroleum Institute and the Federal Water Pollution Control Administration was held in 1969 following the *Torrey Canyon* and Santa Barbara oil spills. Now known as the International Oil Spill Conference, it is held on a three-year cycle in coordination with conferences in Europe and Australia.⁵⁶ Independently, the Gulf of Mexico community holds an annual conference (called "Clean Gulf") and Canada hosts a more technical annual conference, called the Arctic and Marine Oilspill Program ("AMOP") Technical Seminar on Environmental Contamination and Response.⁵⁷ BP

⁵⁰ J. at Ex. B, 16, United States v. BP Exploration & Prod., Inc., (No. 2:12-cr-00292-SSV-DEK) (E.D. La. Nov. 15, 2012) at 35 (TED232-011425.TREX2).

⁵¹ Paskewich Round 2 Report at 17.

⁵² Paskewich Round 2 Report at 4.

⁵³ Deposition of Richard Morrison at 185:3-186:16 (PPTRAN000869).

⁵⁴ *Id.* at 204:10-205:17.

⁵⁵ See Paskewich Round 2 Report at 14.

⁵⁶ See <http://www.iosc.org/>

⁵⁷ See <http://www.cleangulf.org/>; <http://ec.gc.ca/amop/>

is, therefore, hardly unique in its post-spill efforts to share lessons learned from the response – this is a standard practice of both the United States and other members of the response community.

IV. CONCLUSION

In response to the largest oil spill in United States history, BP responded within the framework required by federal law and implemented by federal regulation. Within that construct, BP worked with federal and state agencies, academia, and other commercial entities to mount a response, including the adaptation and development of alternative technologies.

Contrary to the contentions of Captain Paskewich, the response relied primarily on previously existing technology and established response techniques. Moreover, many of the technologies seen in the *Deepwater Horizon* response were the result of bringing the constant development of technology *outside of the spill community* to bear on this major and unprecedented event. The benefits derived from ERMA, the Wave Glider, even the ART program itself, among other things, are due to the general progression of technology and not some revolutionary development during the response.

Moreover, BP's actions related to advancing spill response capabilities, both before and after April 22, 2010, pale in comparison to the potential threats posed by BP's activities.

Appendix A: List of Acronyms

AMOP - Arctic and Marine Oilspill Program
ART - Alternative Response Technologies
BP - BP Exploration and Production, Inc.
DOI - United States Department of the Interior
EPA - Environmental Protection Agency
ERMA - Environmental Response Management Application
FOSC - Federal On-Scene Coordinator
GOMEX - Gulf of Mexico Exercise
GoMRI - Gulf of Mexico Research Initiative
IATAP - Interagency Alternative Technology Assessment Program
ICP - Incident Command Post
ISPR - Incident Specific Preparedness Review
NCP - National Contingency Plan
NOAA - National Oceanic and Atmospheric Administration
OPA - Oil Pollution Act
OSC - On-Scene Coordinator
R&D - Research and Development
RRT - Regional Response Team
SONS - Spill of National Significance
UAC - Unified Area Command
USCG - United States Coast Guard

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Appendix B: Sources Considered

The sources considered in preparation of this report include all documents cited throughout this report, my expert reports offered on August 15 and September 12, 2014 and documents cited in those reports, the documents listed in the Appendices to those reports, the consideration materials identified in conjunction with my Round 1 and Round 2 reports, and the sources listed below.

Bates, Exhibit, TREX, or Other Description
BP-HZN-2179MDL05106415-BP-HZN-2179MDL05106662
Deposition Exhibit 12303A
BP-HZN-2179MDL08431201-BP-HZN-2179MDL08431214
BP-HZN-2179MDL08875298-BP-HZN-2179MDL08875335
BP-HZN-2179MDL09249190-BP-HZN-2179MDL09249210
BP-HZN-2179MDL09308487-BP-HZN-2179MDL09308488
CGL001-0183039-CGL001-0183040
Trial Transcript, Phase 2 (Oct. 1, 2013 p.m.)
Trial Transcript, Phase 2 (Oct. 1, 2013 a.m.)
HCD020-013807-HCD020-014043
HCD020-013807-HCD020-014043
OSE038-022360-OSE038-022912
OSE038-022360-OSE038-022912
OSE222-040931-OSE222-041187
OSE234-008559-OSE234-008563
Deposition of Inglis, Andy (July 21, 2011)
Deposition of Morrison, Richard (June 20, 2014)
Deposition Exhibit 12288
Deposition of Casey, LCDR Drew (June 24, 2014)
Deposition of Utsler, Mike (July 27, 2014)
Deposition of LaFerriere, CAPT Roger (August 5, 2014)
TREX-005881
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TREX-009552
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Expert Report of Donald F. Boesch
Expert Report of Walter H. Cantrell
Expert Report of Richard W. Clapp
Expert Report of Charles F. Mason
Rebuttal Expert Report of Frank M. Paskewich
Response Report of Mark VanHaverbeke

Second Response Report of Mark G. VanHaverbeke

US_PP_MAN005129-US_PP_MAN005253
US_PP_MVH004352-US_PP_MVH004357
US_PP_MVH004358-US_PP_MVH004469
US_PP_MVH004470-US_PP_MVH004474
US_PP_MVH004475-US_PP_MVH004477
US_PP_MVH004478-US_PP_MVH004647
US_PP_MVH004648-US_PP_MVH004734
US_PP_USCG109010-US_PP_USCG109164
US_PP_USCG2_1563280-US_PP_USCG2_1563365
US_PP_MVH004738-US_PP_MVH004739
US_PP_MVH004736-US_PP_MVH004737
US_PP_MVH004735-US_PP_MVH004735
BP-HZN-2179MDL09230535-BP-HZN-2179MDL09230579
BPXP'S Memorandum Regarding Penalty Phase Trial Length (Rec. Doc. 13405)