

**UNITED STATES DISTRICT COURT  
EASTERN DISTRICT OF LOUISIANA**

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

**Applies to: *U.S. v. BP Exploration & Prod. Co.*,  
No. 2:10-cv-04536.**

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\* MDL No. 2179  
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\* SECTION: J  
\*  
\* JUDGE BARBIER  
\* MAGISTRATE JUDGE SHUSHAN

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**Report of  
Kenneth E. Arnold, PE, NAE**

**Prepared on behalf of Anadarko Petroleum Corporation**

**August 15, 2014**

**TREX-280011.0001**

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## I. QUALIFICATIONS

I have more than 50 years of experience in offshore design, project management, and operations, and I have worked on such projects for a variety of oil companies large and small throughout the world. I spent 16 years at Shell Oil Company and 27 years at Paragon Engineering Services. Most of my time at Shell and Paragon involved research, design, and management of projects in the Gulf of Mexico.

I have been advising the oil and gas industry and the federal government on offshore safety regulations for almost 50 years. Some examples of my work in offshore safety are:

- (i) In 2013, I was chosen by the National Academies to review a report requested by BSEE on worker health and safety on offshore wind farms.
- (ii) From 2012 to 2013, I served on the Subcommittee on Safety and Environmental Management Systems and Human Factors of the Offshore Energy Safety Advisory Board to advise BOEMRE on safety matters.
- (iii) From 2012 to 2014, I served on the Society of Petroleum Engineers Steering Committee on The Human Factor and Process Safety Management to develop a technical report that was adopted by the SPE Board in March 2014.
- (iv) From 2009 to 2014, I served as chair of the Transportation Research Board of the National Research Council's Committee on Evaluating the Effectiveness of Offshore Safety and Environmental Management Systems. The committee was tasked by MMS, and then re-tasked by BSEE, to review the current safety inspection regime and recommend how best to evaluate the effectiveness of the new SEMS requirements.
- (v) I served on various committees since 1971 that were responsible for developing offshore safety and anti-pollution equipment standards, which have been incorporated in MMS and BSEE regulations.

I am editor of a book entitled *Petroleum Engineering Handbook, Facilities and Construction Engineering*, and co-author of two textbooks on surface production operations. I also have written more than 50 technical articles on project management, safety management, and facilities design.

I have taught facilities engineering at the University of Houston and at Technion University in Israel and serve on the advisory board of the engineering schools at Tulane University and Cornell University.

I was elected to the National Academy of Engineering in 2005. I have received the SPE Public Service Award, the SPE DeGolyer Distinguished Service Medal (the highest professional award of the society), and the SPE Production Engineering Award.

I am a registered professional engineer. A copy of my resume is attached to this report as Appendix 1.

## II. INTRODUCTION AND SUMMARY

I have been asked to provide my opinions on what impact imposing responsibility or duties on Non-Operating Working Interest Owners (NO-WIOs)<sup>1</sup> would have on the safety of offshore oil and gas operations. As noted above, I have extensive experience with offshore operations generally and with offshore safety in particular.

In my opinion, the key to offshore safety is for operations to be performed within a culture of safety, and only the Operator can establish and maintain that culture.<sup>2</sup> NO-WIOs by contrast, lack the information and capacity to control or influence operational decisions. Making them responsible for offshore safety will not improve safety, but will create confusion, slow response time (particularly in the event of an emergency), and reduce safety overall.

The public interest, therefore, is in having only one safety management system and holding the Operator in charge of that system accountable. In keeping with those facts and principles, the Government historically has held only the Operators of offshore oil and gas operations responsible for meeting the requirements of regulations.

## III. ONLY THE OPERATOR OF THE LEASE CAN CREATE AND MAINTAIN THE CULTURE NECESSARY FOR OFFSHORE SAFETY.

Operational safety requires a culture in which the people who actually do the work always make the right choices—no matter how much time or information they have or whether anyone else is watching. That culture must be managed like any other part of a business, and the only organization capable of doing this is the organization in charge of the operation—*i.e.* the organization with ultimate work authority. As a young engineer, I learned that, if everyone is responsible, then no one is responsible and no one is accountable. That rule is still valid today. Operational safety requires clear lines of responsibility. Any action that blurs those lines or adds other lines is likely to reduce safety.

### A. A Culture of Safety

For the last 25 years, major reports on offshore safety have recognized the significance of culture to creating and maintaining safety.<sup>3</sup> A “safety culture” is one that recognizes “the

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<sup>1</sup> I understand that, in this case, different terms have been used to refer to parties in Anadarko’s position—like Non-Operating Owner, Non-Operating Investor, and Non-Operating Party. In this report, I use the term Non-Operating Working Interest Owners because that is the term used throughout the oil and gas industry.

<sup>2</sup> In this report, I define the term “Operator” as the organization designated by MMS as the Operator for the lease. The term includes an operator’s designees.

<sup>3</sup> See National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling* 217 (2011) (“Government oversight ... must be accompanied by the oil and gas industry’s internal reinvention: sweeping reforms that accomplish no less than a fundamental transformation of its safety culture.”); Committee on the Effectiveness of Safety and Environmental Management Systems for Outer Continental Shelf Oil and Gas Operations, Transportation Research Board of the National Academies, *Evaluating the Effectiveness of Offshore Safety and Environmental Management Systems*, Special Report 309, 2012, at 20 (“TRB Report”) (“As major incident investigations have shown (e.g., Borthwick 2010; BP

intrinsic value of the importance of safety.”<sup>4</sup> Put differently, a safety culture comprises “Shared values (what is important) and beliefs (how things work) that interact with an organization’s structures and control systems to produce behavioural norms (the way we do things around here).”<sup>5</sup> “The safety culture of an organization is the product of individual and group values, attitudes, competencies, and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organization’s health and safety programmes. Organizations with a positive safety culture are characterized by communications founded on mutual trust, by shared perceptions of the importance of safety, and by confidence in the efficacy of preventive measure.”<sup>6</sup> Safety in operations depends on the staff at every level knowing that their superiors really believe and act with these shared values. This requires many pro-safety acts from all levels of management that constantly reinforce the shared safety values.

Compliance with regulations alone cannot create a safety culture. On the contrary, it fosters a harmful “compliance mentality,” which assumes that the government and its inspectors are in charge of safety.<sup>7</sup> Federal agencies have tried to counteract the compliance mentality by encouraging and now requiring *operators* to establish and implement Safety and Environmental Management Systems (SEMS), a “more systematic approach to managing offshore operations.”<sup>8</sup> SEMS programs “can create the backbone of the safety culture”—but they need “ownership and engagement” to work.<sup>9</sup> In other words, a SEMS is *necessary* for a safety culture, but not *sufficient*.

The only entity that can bring “ownership and engagement” needed to promote the proper safety environment is the organization in charge of the operation. Only it can support the SEMS and promote the intrinsic value of safety at all levels of the operation. A lasting safety culture thus emerges organically over a period of time, as a result of active

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U.S. Refineries Independent Safety Review Panel 2007; CAIB 2003; CSB 2007; Cullen 1990; National Commission on the BP *Deepwater Horizon* Oil Spill and Offshore Drilling 2011), the existence of an effective safety culture is fundamental to the creation of a safe work environment.”).

<sup>4</sup> TRB Report at 20.

<sup>5</sup> *Id.* (citing James Reason, *Achieving a Safe Culture: Theory and Practice*, Vol. 12, No. 3 *Work and Stress* 294 (1983); and James Reason, *Managing the Risks of Organizational Accidents* 192 (Ashgate Publishing Company 1997)).

<sup>6</sup> *Id.* (citing R. Booth, *Safety Culture: Concept, Measurement and Training Implications*, Proceedings of the British Health and Safety Society Spring Conference: Safety Culture and the Management of Risk, Apr. 19-20 (1993) at 5. *See also* National Academy of Engineering and National Research Council of the National Academies, *Macondo Well - Deepwater Horizon Blowout: Lessons for Improving Offshore Drilling Safety* 92-93 (2011) (listing the following aspects of a safety culture: “Leadership safety values and actions; Personal accountability; Problem identification and resolution; Work processes; Continuous learning; Environment for raising concerns; Effective safety communication; Respectful work environment; Questioning attitude”).

<sup>7</sup> Committee on Alternatives for Inspection of Outer Continental Shelf Operations, National Research Council, *Alternatives for Inspecting Outer Continental Shelf Operations* 5 (1990); TRB Report at 20 (“The term ‘safety culture’ is often misconstrued as indicating a means of convincing individuals to comply with regulations and procedures”).

<sup>8</sup> Greg Gordillo and Lucas Lopez-Videla, *Managing SEMS Audits: Past, Present, and Future*, *Journal of Petroleum Technology*, Feb. 2014, at 72.

<sup>9</sup> TRB Report at 25.

leadership and constant management.<sup>10</sup> “Safety professionals have understood for decades that to increase safety in complex industrial installations, organizations must manage safety with the same principles of planning, organization, implementation, and investigation that they use to carry out any other business function.”<sup>11</sup>

A safety culture cannot be imposed from the outside (e.g., through regulations and inspections). “The operating leaseholder company is the only entity involved in offshore drilling that is positioned to manage the overall system safety of well drilling and rig operations.”<sup>12</sup> This conclusion is not revolutionary. For the last 25 years, publications uniformly have assumed and concluded that operators are solely responsible for safety in their offshore operations and for cultivating safety culture.<sup>13</sup>

## **B. Ultimate Work Authority**

Along the same lines, BSEE recognizes that the safety of any operation depends on an ultimate work authority—*i.e.* someone in charge of a facility for operational and safety decision-making at any time. The need for a single ultimate work authority wherever operations are being carried out has been recognized by safety professionals for decades. Ultimate work authority was incorporated by BSEE in its final rule to modify SEMS (known in the industry as SEMS II) in 2013. The notice in the Federal Register for this final rule is instructive.<sup>14</sup> It mentions the duty of the “operator” twelve times and never once mentions the duty of a NO-WIO. Thus, for operations on a MODU, where multiple organizations are involved, BSEE is clear that there must be a single ultimate work authority and it must be the operator or the operator’s designee.

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<sup>10</sup> TRB Report at 20; *see also* TRB Report at 24-25 (“The culture of safety cannot be built or sustained through publishing statements from the chief executive officer and human resources department, posting notices in company internal and external communications, punishing individuals for incidents of noncompliance (INCs), rewarding individuals for a lack of INCs, or reading perfunctory safety minutes prior to meetings. It is something that the leadership must live.”).

<sup>11</sup> TRB Report at 1.

<sup>12</sup> National Academy of Engineering and National Research Council of the National Academies, *Macondo Well - Deepwater Horizon Blowout: Lessons for Improving Offshore Drilling Safety* 101 (2011).

<sup>13</sup> Press Release, Bureau of Safety and Environmental Enforcement, *BSEE Announces Final Safety Culture Policy Statement* (May 9, 2013) (noting that a recent rule “provides greater protection by supplementing **operators’** SEMS programs with greater employee participation, empowering field level personnel with safety management decisions and strengthening oversight by requiring audits to be conducted by accredited third-parties.”) (emphasis added); Committee on Alternatives for Inspection of Outer Continental Shelf Operations, National Research Council, *Alternatives for Inspecting Outer Continental Shelf Operations* 5 (1990) (“it is important for MMS to ensure that **operators** do not sink into a compliance mentality. To reiterate: in practice and by law, the **operators** bear the primary responsibility for safety.”) (emphasis added); *id.* at 42 (noting that “operational safety can be increased by improving” several factors entirely within **operators’** control: “Management attitude;” “Housekeeping;” “Training;” and “Communication;”); *id.* at 43 (suggesting that inspectors “establish a profile of all the **operators** on the OCS as well as for each individual facility”) (emphasis added).

<sup>14</sup> 78 Fed. Reg. 20,423 (Apr. 5, 2013).

#### IV. NO-WIOs CANNOT CONTROL OPERATIONS AND ARE NOT SITUATED TO ENSURE OFFSHORE SAFETY.

I am not aware of any report that even suggests that NO-WIOs can be or should be responsible for offshore safety. Throughout the 1990 report by the Marine Board, for example, there is no mention of the responsibility of NO-WIOs in developing the safety culture of the operation.<sup>15</sup> As explained above, the culture of an operation can be developed and sustained only by the organization in charge of that operation. Because a NO-WIO is not routinely present on the jobsite, it can do neither.

NO-WIOs are not otherwise situated to ensure offshore safety. Operating Agreements typically provide that the Operator (i) is not subject to NO-WIOs' control, (ii) hires the drilling contractor, and (iii) makes reports to the Government. Operating Agreements also typically provide the Operator maximum and exclusive control over exploratory operations. Anadarko's Operating Agreement with BP and MOEX, effective October 1, 2009, is no exception.<sup>16</sup>

During exploration, a NO-WIO might have informal conversations with the Operator's staff, such as when the Operator is preparing an AFE to drill a well or change the scope of an approved AFE (e.g., sidetrack a well because of drilling problems, temporarily abandon (or plug and abandon) a well before reaching the agreed objectives).<sup>17</sup> But a NO-WIO is not expected to check design calculations or detailed operating procedures. A NO-WIO has extremely limited influence. It can (i) attempt to convince the Operator to alter his plans and issue a replacement AFE; (ii) attempt to convince the majority of the Working Interest Owners to overrule the Operator (if the Operator controls less than 50% of the working interest); and, (iii) in certain instances, elect not to approve an AFE and forfeit rights.<sup>18</sup>

NO-WIOs normally ask for and receive information on the status of the well's progress for business reasons—such as disclosing information under SEC rules, evaluating AFEs, determining whether additional funds are needed for cash flow and budget planning purposes, and generally keeping officers of the NO-WIO informed about progress. The type and quality of information furnished to a NO-WIO in this way is typically not sufficient for a NO-WIO engineer to monitor operations on a real-time basis.

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<sup>15</sup> Committee on Alternatives for Inspection of Outer Continental Shelf Operations, National Research Council, *Alternatives for Inspecting Outer Continental Shelf Operations* (1990).

<sup>16</sup> See, e.g., Ex. 8200, Macondo Prospect Offshore Deepwater Operating Agreement §§ 5.1, 5.3, and 5.6.

<sup>17</sup> In normal industry practice, the AFE process is used by an operator to request concurrence from NO-WIOs to proceed with a well or alter an agreed to scope. It is not intended to convey a detailed report of the well design, the alternatives considered and the calculations that led to the recommendation. Rather, it is meant to assure the NO-WIOs make an election to either invest more in the well or make a business decision to abandon a portion of their ownership in the going forward operation.

<sup>18</sup> The blowout here occurred before the end of exploratory operations, so typical Operating Agreement provisions giving NO-WIOs more influence over later stages did not kick in. This concept of phased stages, with the potential for greater involvement in planning of the later stages, is typical for industry. After the exploratory/appraisal stages, the monetary obligations tend to be much larger and thus the NO-WIO may wish to participate more closely on the team evaluating alternatives to assure that its interests are protected.

Some operators have the ability to monitor wells they are drilling from an on-shore operations center. This requires (i) a complex instrument console, which contains information that is available to the driller on the rig, (ii) the ability to access multiple TV cameras, and (iii) the capability to have real-time communication with the rig. These consoles are manned 24 hours a day. Because the communications and electronics are so complex, very few wells are being so monitored.

Where wells are monitored from on-shore operations centers, the ultimate work authority still resides on the rig. The on-shore center exists as a *resource* for the ultimate work authority, not to supplant and otherwise function as the ultimate work authority.

In conclusion, once a NO-WIO has obtained a leasehold interest and designated another entity as the Operator, there is little it can do to influence ongoing operational decisions. The information contained in AFEs and the information furnished directly from the operations do not allow real-time monitoring of the operation in sufficient detail to detect problems and make accurate decisions.

More importantly, as explained above, offshore safety would be compromised if every operational decision required approval of multiple parties, and decision-making would be slowed in ways that could increase safety risks. Multiple decisions have to be made in real time with potentially incomplete, inconsistent, or misleading data, and too many cooks in the kitchen spoil the broth.

## **V. HISTORY OF REGULATORY ENFORCEMENT ON THE OUTER CONTINENTAL SHELF**

In keeping with the principles described above, I am aware of no instance where any federal agency enforced regulations against a NO-WIO or even notified a NO-WIO that the operator or rig owner was in violation of a regulation. As explained below, federal agencies historically have regulated operators only.

### **A. Minerals Management Service (MMS)**

MMS—and its predecessor the United States Geologic Survey (USGS) and successors the Bureau of Environmental Management and Regulatory Enforcement (BOEMRE) and Bureau of Energy and Environmental Enforcement (BSEE)—conduct regular inspections of operations to assure compliance with DOI regulations.<sup>19</sup> MMS attempts to inspect each producing platform once per year and each drilling rig once per month, although they often do not reach this goal due to weather or staff shortages. The agency's enforcement-related and inspection-related documents make clear that the agency is focused on “operators,” as there is no mention of NO-WIOs.<sup>20</sup>

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<sup>19</sup> At the time of the Deepwater Horizon incident, the applicable agency was the MMS, so I will use “MMS” AND “BSEE” interchangeably to indicate the agency responsible for DOI regulations.

<sup>20</sup> <http://www.bsee.gov/Inspection-and-Enforcement/Enforcement-Programs/Enforcement-Programs/>;  
<http://www.bsee.gov/Inspection-and-Enforcement/Inspection-Programs/Inspection-Programs/>



Inspections are carried out with a Potential Incidents of Non-Compliance (PINC) list. At about 70 pages long, the PINC list includes many rules on how operations are to be carried out and that require equipment to be in place, maintained, and tested to specific standards. If an inspector finds a violation of a rule on the PINC list, an Incident of Non-Compliance (INC) citation is issued to the operator and recorded as charged to the operator.

Each year a list of INCs issued is posted on the MMS website.<sup>21</sup> I have reviewed the lists for 2007 through April 4, 2014. None purports to charge an INC (or even an inspection) to a NO-WIO; all are charged to operators only. The agency also lists INCs given to “Operators/ Contractors” as a result of Panel investigations in 2013. No NO-WIOs are listed.

Each year, a list of penalties paid for violations of OCSLA regulations is posted on the MMS website.<sup>22</sup> I have reviewed the lists for 2007 through first quarter 2014. None purports to show a penalty paid by a NO-WIO; all were paid by operators only. In several incidents, even though an operating management company (*e.g.*, Grasso Production Management) or drilling company (*e.g.*, Nabors Drilling) was listed as being involved, the penalty was assessed against the operator only.

In addition to carrying out inspections, MMS also approves a host of operating plans and designs for compliance to regulations. I know of no case where MMS notified a NO-WIO that a design or operating plan submitted by an operator did not meet regulations. In all cases, the communication was between the operator and the MMS.

Finally, it is worth noting that, since the Macondo Incident, BSEE has implemented many significant changes to operations on the Outer Continental Shelf, including, for example, the requirement that a professional engineer sign off on well designs. As far as I am aware, BSEE has not implemented any changes to the requirements for NO-WIOs to approve designs or operations.

## **B. U.S. Coast Guard (USCG)**

The USCG is responsible for enforcing regulations relating to the safety of life for offshore oil and gas operations. For fixed platforms the focus is on fire fighting, emergency lighting, escape and abandonment. For floating structures it also includes hull integrity, ballast control, marine systems and manning, and the like.

The USCG requires annual inspections to be done by the operator of fixed platforms on the OCS. USCG inspectors perform the initial inspection prior to start-up, but subsequently perform only spot inspections to assure that the other inspections are being performed and documented by the operator. USCG inspects floating facilities for compliance with USCG regulations and has the power to withdraw a facility’s Certificate

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<sup>21</sup> <http://www.bsee.gov/Inspection-and-Enforcement/Enforcement-Programs/Incidents-of-Non-Compliance/>

<sup>22</sup> <http://www.bsee.gov/Inspection-and-Enforcement/Civil-Penalties-and-Appeals/Civil-Penalties-and-Appeals/>

of Compliance. If violations involve potential civil penalties, USCG refers the case to MMS.

In practice, compliance with USCG regulations is the responsibility of the operator of a fixed platform and the “owner” of a floating facility. An ex-USCG inspector confirmed this to me: When I asked him whom USCG holds responsible for failure to adhere to USCG regulations, his response was, “Whoever’s name is on the heliport.” That never is a NO-WIO, and in no case do I know of the USCG holding NO-WIOs responsible.

Over the years there have been several Memorandums of Understandings (MOUs) and Memorandums of Agreements (MOAs) between the USCG and the MMS.<sup>23</sup> In 2002, MMS was authorized to perform annual oversight inspections on behalf of USCG for USCG-regulated items on fixed platforms.<sup>24</sup> MMS inspectors carry this out using 27 program-specific PINCs (denoted by the alpha character “Z”). MMS District offices provide bi-annual reports based on inspection statistics to the USCG’s Assistant Commandant for Operations to ensure the program of inspections receive appropriate attention at the highest level.<sup>25</sup> In 2008, an MOA between the two agencies explained how they divided or shared responsibility with a detailed Responsibility Matrix.<sup>26</sup> Nowhere in any of these documents is there mention of holding NO-WIOs responsible for violation of any USCG regulations.

### **C. U.S. Environmental Protection Agency (EPA)**

EPA and DOI entered into a MOU on October 28, 1983 and a MOA on September 12, 1989 assigning inspection responsibilities for NPDES compliance to MMS using a mutually developed PINC list.<sup>27</sup> If sampling inspections are carried out, they may only be conducted by EPA. The PINC list allows MMS inspectors to issue warnings, component shut-ins, or facility shut-ins; further administrative actions are undertaken by EPA. To avoid confusion, DOI, DOT, and EPA entered into a MOU “Establishing Jurisdictional Responsibilities for Offshore Facilities.”<sup>28</sup> DOI retained jurisdiction for oil spill prevention and control, contingency planning, and response equipment inspection over offshore facilities located seaward of the coast line with the exception of deepwater ports and their associated pipelines.

To date, NO-WIOs have not been held responsible for requirements under EPA’s jurisdiction. Rather, the person in charge of a vessel or facility must report discharges.<sup>29</sup>

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<sup>23</sup> <http://www.bsee.gov/BSEE-Newsroom/Publications-Library/Interagency-Agreements/>

<sup>24</sup> <http://www.bsee.gov/Inspection-and-Enforcement/Inspection-Programs/Fixed-Platform-Self-Inspection-Program-Oversight/>

<sup>25</sup> *Id.*

<sup>26</sup> [http://www.uscg.mil/hq/cg5/cg522/cg5222/docs/mou/FLOATING\\_OFFSHORE\\_FACILITIES.pdf](http://www.uscg.mil/hq/cg5/cg522/cg5222/docs/mou/FLOATING_OFFSHORE_FACILITIES.pdf)

<sup>27</sup> [http://www.bsee.gov/uploadedFiles/BSEE/Newsroom/Publications\\_Library/001\\_1984-MOU.pdf](http://www.bsee.gov/uploadedFiles/BSEE/Newsroom/Publications_Library/001_1984-MOU.pdf);

[http://www.bsee.gov/uploadedFiles/BSEE/Newsroom/Publications\\_Library/1989%20NPDES%20MOA%20EPA-R6%20and%20GOMR.pdf](http://www.bsee.gov/uploadedFiles/BSEE/Newsroom/Publications_Library/1989%20NPDES%20MOA%20EPA-R6%20and%20GOMR.pdf)

<sup>28</sup> 59 Fed Reg. 9494 (Feb. 28, 1994).

<sup>29</sup> [http://www.uscg.mil/hq/cg5/cg522/cg5222/docs/mou/MOA%20OCS%2003\\_FINAL\\_Signed\\_3APR12.pdf](http://www.uscg.mil/hq/cg5/cg522/cg5222/docs/mou/MOA%20OCS%2003_FINAL_Signed_3APR12.pdf)

at 8.

Furthermore, I am not aware of any other EPA regulations which specifically hold NO-WIOs responsible for compliance. Common practice is to look towards the operator of an offshore facility or the owner of a MODU. I have a list of every spill of 50 barrels or more in the Gulf of Mexico from 1964 through 2009 (the list was furnished to me by the MMS in 2010). There are 330 spills representing over 550,000 barrels. In almost every case, the operator of the lease is listed as responsible. Sometimes, when the leak was associated with a pipeline between two platforms, the operators of both platforms are listed. In two instances, both the operator and the rig owner are listed. In no case is a NO-WIO listed.

## VI. CONCLUSION


It is, of course, in the public interest to increase offshore safety. As described above, every major evaluation of offshore safety since 1990 has concluded that safety depends on safety culture, that the operator is responsible for the culture, and that the operator, therefore, should be held accountable for safety problems.<sup>30</sup> Holding a NO-WIO accountable for offshore safety is not in the public interest: It will drive NO-WIOs to take actions that detract from the safety culture and lead to confusion, which in turn will likely decrease the safety of operational decisions.

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<sup>30</sup> Committee on Alternatives for Inspection of Outer Continental Shelf Operations, National Research Council, *Alternatives for Inspecting Outer Continental Shelf Operations* (1990); National Academy of Engineering and National Research Council of the National Academies, *Macondo Well - Deepwater Horizon Blowout: Lessons for Improving Offshore Drilling Safety* (2011); National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling* (2011); TRB Report; Press Release, Bureau of Safety and Environmental Enforcement, *BSEE Announces Final Safety Culture Policy Statement* (May 9, 2013); 78 Fed. Reg. 20,423 (Apr. 5, 2013).

**Statement of Compensation**

I am being compensated at a rate of \$555 per hour for my work on this case.



Kenneth E. Arnold, PE, NAE

**APPENDIX 1**

Resume of Kenneth E. Arnold, PE, NAE

Attached under separate cover

**APPENDIX 2**

Documents Considered by Mr. Arnold

Attached under separate cover

### **APPENDIX 3**

#### Previous Testimony and Depositions in Past 4 Years

Deposition in *United States of America ex relatione Kenneth W. Abbott, Kenneth W. Abbott individually and Food & Water Watch, Inc., v. p.l.c., BP America, Inc., BP Products North America, Inc., and BP Exploration & Production Inc.*, United States District Court for the Southern District of Texas (2011)