

**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
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* JUDGE BARBIER
* MAGISTRATE JUDGE SHUSHAN

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**Round 3 Report of
Kenneth E. Arnold, PE, NAE**

Prepared on behalf of Anadarko Petroleum Corporation

September 26, 2014

TABLE OF CONTENTS

	Page
SUMMARY OF RESPONSE.....	1
I. NO-WIOs HAVE LIMITED INFLUENCE OVER AN OPERATOR’S SAFETY CULTURE	1
A. Safety Leadership Resides With the Operator	1
B. NO-WIOs Can Influence Perception of Risk by Participating in Integrated Project Teams After the Exploration Stage	3
C. Safety Assurances Are Limited	4
II. WALKUP DOES NOT DESCRIBE INDUSTRY NORMS	5
III. WALKUP’S RELIANCE ON A “RULE-BASED” APPROACH TO SAFETY HAS BEEN DISCREDITED BY THE INDUSTRY AND THE REGULATORS BECAUSE IT BREEDS A “COMPLIANCE MENTALITY” THAT DOES NOT PROMOTE SAFETY	5
IV. ANADARKO’S ROLE AT MACONDO.....	6
 APPENDIX: RELIANCE MATERIALS	

SUMMARY OF RESPONSE

In his expert report dated September 12, 2014, Gardner W. Walkup, Jr. asserts that NO-WIOs “have both the capacity and information to positively influence HSE.”¹ Although Walkup makes this assertion in the context of rebutting my initial report, he completely misses the point of my report. I never claimed that NO-WIOs lack the ability to positively influence safety.² What Walkup fails to recognize is that Integrated Project Teams, which are the primary vehicle for NO-WIOs to influence safety, are normally formed **after** the exploratory stage (*i.e.* are limited to directing development planning or construction of production facilities); since the Macondo well never reached the production stage, Walkup’s point has limited application to this case. Walkup also fails to recognize that there is a fundamental difference between contributing to safety and being responsible for it. This latter point was the primary focus of my initial report, where I showed that making multiple parties responsible for safety, as opposed to having an ultimate work authority (which is the industry best practice in multiple countries), can actually decrease safety.

Walkup purports to show how a NO-WIO can impact safety by examining Anadarko’s role at Macondo. However, the Court has already held that “BP was **solely responsible** for the drilling operations. Any access to information that Anadarko and MOEX may have had **did not give rise to a duty** to intercede in an **independent contractor’s** operations....”³ I will not attempt to second-guess the Court’s decision, and therefore will not address Walkup’s purported recitation of facts about Anadarko’s role. Rather, I will discuss general industry practice to show that Walkup exaggerates the role that a NO-WIO can have, especially in a well’s exploration stage. Walkup’s attempts to impose duties and responsibilities on NO-WIOs are far beyond what is practical, what is normal industry practice, and what federal regulations require.

I. NO-WIOs HAVE LIMITED INFLUENCE OVER AN OPERATOR’S SAFETY CULTURE.

Walkup gives three main examples of ways in which a NO-WIO can contribute to an operator’s safety culture. In each example he either exaggerates and misstates the role of the NO-WIO or refers to stages of deepwater operations that never occurred at Macondo.

A. Safety Leadership Resides With the Operator

Throughout his rebuttal, Walkup relies heavily on the 2014 SPE Technical Report on “The Human Factor: Process Safety and Culture.” I was on the steering committee that organized the two-day workshop of 75 international experts on safety culture and human factors that led to the development of this report. The steering committee wrote the original talking points for the workshop and the final Technical Report. John Thorogood, Ford Brett, and I were the final

¹ Expert Report of Gardner W. Walkup, Jr. on behalf of the United States of America at 3 (Sept. 12, 2014) (Walkup Rebuttal).

² In fact, I stated the opposite, albeit in the proper context, unlike Walkup. *See* Report of Kenneth E. Arnold, PE, NAE at 5, n. 18 (Aug. 15, 2014).

³ Order and Reasons [As to Motions to Dismiss the B1 Master Complaint], Rec. Doc. 3830 at 28 (emphasis added).

editors of this report, and I was chosen by SPE to present the results of the effort at a workshop sponsored by BSEE .

In using the report, Walkup argues that the term “leaders” in the report should be read expansively to include NO-WIOs. He is mistaken. That idea was never discussed in developing the report, was not the intent of the recommendations in the report, and does not exist in the report itself. As one who was personally involved in organizing the conference, gathering the ideas, and finalizing the report, I can state that the clear intent of those who contributed to writing this report was to talk about the leadership of the ultimate work authority, the Operator of the installation.

Walkup uses his expansive definition of leadership to conclude that “leaders” should conduct site visits to promote safety. He states that “the industry literature” demonstrates his expansive view and cites two articles as support.⁴ Again, he is mistaken. First, culling two obscure articles from the database of “industry literature” does not establish an industry standard. It merely shows the goals and aspirations of the two authors. This is hardly a compendium of sources from which an industry standard can be gleaned. Second, the two articles do not support Walkup’s views. The OMV article does not purport to review the industry literature or give an account of industry practices. Indeed, the paper says in its abstract that “[t]here are still many conflicting opinions about the role that a non-operating partner should fulfil; from almost no involvement on the one hand to close supervision and direction at the other end of the scale.”⁵

Also, the paper describes OMV’s procedure for engaging with and assessing partners, and explains the degree in which OMV will participate in “the initial phases of design, development, FEED [Front End Engineering Design of production systems] and sanction.”⁶ But the author notes that “once the project has been sanctioned and if the operator has a well-established track record, than the involvement may be reduced somewhat.”⁷ He further notes that the degree of engagement and assessment depends on several factors including the “quality & experience of operator.” In short, there is nothing in the paper that describes the industry practice generally or the degree of assessment that OMV would use for a well being drilled by an experienced operator (like BP) in an area where the operator had extensive experience.

The paper also provides a few anecdotal examples of OMV’s participation as a NO-WIO. In reviewing these, Walkup fails to point out that OMV is an Austrian-based oil company whose primary strategy is to enhance the recovery rates of mature onshore fields in places like Romania, Libya, Yemen, Kurdistan, and Tunisia, where the operator may be a National Oil Company. This arrangement is very different from a common venture with another private business that has extensive knowledge and experience in offshore deepwater exploration and operations. In fact, OMV has only recently become involved in offshore operations and new field development, and I have seen no evidence that it participates in any drilling or production in the US offshore or

⁴ Graeme Lawrie, *The Role of a Non-Operating Partner in contributing to HSE Excellence*, SPE 155941 (2012); Robert C. Visser, Joseph D. Williams, and Bob Aquadro, *Typhoon Offshore Safe and Clean: Authentic Leadership to Produce an Incident and Injury-Free Environment*, OTC 14127 (2002).

⁵ Lawrie 2012 at 1.

⁶ *Id.* at 5.

⁷ *Id.*

onshore. Thus, the observations and views of an author whose company has little to no experience in deepwater exploration in the Gulf of Mexico are of limited value.

The second paper cited by Walkup⁸ regards Chevron and describes an instance where a Chevron Project Manager formed a Safety Leadership Team with BHP Billiton (the NO-WIO), the project's major contractors, and the export pipeline company to create an environment for injury-free performance during the offshore hook-up and commissioning phase of installing a Tension Leg Platform (which included installing the hull, lifting the production equipment on top, hooking up the pipelines, interconnecting piping between the hull and production equipment, commissioning and starting up the production equipment). This effort had nothing to do with drilling wells or the exploration stage (or even the feasibility stage) of the Typhoon development. By citing this example, Walkup glosses over not only the difference between exploration and later stages of a project, but also between personal safety and process safety, a fundamental difference familiar to any safety professional. The former deals with injuries such as slips, trips, and falls. Process safety, on the other hand, deals with large-scale systematic risks. Improving personal safety may have little or no effect on process safety.

Based on my own decades of experience in the industry, it is not the norm for NO-WIOs to visit offshore drilling operations of independent operators; nor is there any such requirement by the regulator for the NO-WIO to do so. The AAPL Model OA places restrictions on a NO-WIO's access to a drilling rig. Visits must be scheduled through the operator at least 48 hours in advance, only at "reasonable" times, and a NO-WIO is prohibited from "unreasonably" interfering with operations.⁹ Simply put, the operator controls a NO-WIO's access and some operations can have multiple NO-WIOs.¹⁰ Requiring each to independently conduct site visits at regular intervals would add extra layers of complexity to already demanding operations. Having this many "cooks in the kitchen" also could degrade safety, as I explained in my initial report.

B. NO-WIOs Can Influence Perception of Risk by Participating in Integrated Project Teams After the Exploration Stage

I discussed the use of Integrated Project Teams (IPTs) in my September 12 report. There I made the central point that IPTs are limited to development and production stages, and not employed in the exploratory stage. Macondo never went past the exploration stage. Walkup seems to agree with this conclusion when he states that "[a]lthough **Macondo was an exploration well**, it is important to note that the vast majority of activity (e.g. drilling) actually occurs during the **development stage**. Deepwater activities **during development** are managed by [IPTs]"¹¹

Walkup also exaggerates the role that NO-WIOs play in IPTs. He recognizes that the operator has "a strong influence" and chooses the "critical" Project Manager, but also asserts that NO-WIOs and contractors strongly influence the IPT.¹² Operators generally have majority control

⁸ Robert C. Visser, Joseph D. Williams, and Bob Aquadro, *Typhoon Offshore Safe and Clean: Authentic Leadership to Produce an Incident and Injury-Free Environment*, OTC 14127 (2002).

⁹ AAPL Model Form 810 (2007) § 7.3.

¹⁰ The OMV paper that Walkup cites notes that some projects can have "up to 6 or 7 partners." Lawrie 2012 at 2.

¹¹ Walkup Rebuttal at 13 (emphasis added).

¹² *Id.* at 14.

over both the overall operations and the IPT specifically. Therefore a NO-WIO has a very limited ability to override the controlling share of the operator. NO-WIOs can contribute their resources and express their views, but they are not responsible for the operations, and anything they contribute must be made in a fashion that does not disrupt ultimate work authority.

Walkup quotes his own paper to show that “IPTs use a ‘stage-gate management process’ that was explicitly developed to help improve decision quality.”¹³ But he fails to add that this same paper recognizes that giving NO-WIOs too much control or participation in decisions impedes operations. Walkup seems to favor the potential solution of “segment[ing] decisions between those that are strategic, for which all partners need to be involved, from those that are tactical, for which the operator can follow a more traditional communication style.”¹⁴ In other words, Walkup seems to favor limiting a NO-WIO’s involvement in certain circumstances (e.g. “tactical” decisions). The same reasoning -- that too much NO-WIO control or participation impedes operations -- applies to my arguments that forcing NO-WIOs to be responsible for safety would decrease the quality of the operation.

C. Safety Assurances Are Limited

Walkup asserts that NO-WIOs have “clear roles and responsibilities” for safety assurance, and citing (i) regulations in Norway and the UK, and (ii) Exhibit K to the Model Form OA. My September 12 report explains in detail why Walkup’s reliance on Norwegian and UK regulations is unfounded. Neither nation imposes the types of duties and liabilities on NO-WIOs that Walkup suggests.

In citing Exhibit K to the Model OA, Walkup again exaggerates its usefulness in supporting his views. He claims that Exhibit K grants NO-WIOs the right to audit and inspect the operator’s Safety Management Systems. This view exhibits a lack of understanding of how such provisions operate in practice. Exhibit K provides that a NO-WIO can **request copies** of HSE audits already conducted. It says nothing about a NO-WIO being able to instigate or require an audit. And the “inspection” of Safety Management Systems is not as in-depth as Walkup suggests. Exhibit K allows NO-WIOs to submit a written request for an “overview” of the operator’s Safety Management Systems. This does not allow for a full inspection, review, and informed critique. Nor is it necessarily needed. BSEE requires **the operator** to hire a third party to perform an audit of the operator’s safety management system on a periodic basis.¹⁵

Walkup also cites a paper by Chevron’s Operational Excellence Audit Group, which describes a new process Chevron has put in place to conduct audits “for assessing the health, environment, and safety (HES) capabilities” of operations where Chevron is not the operator.¹⁶ But this process requires planning and information gathering “before a site visit is determined to be necessary.”¹⁷ Presumably site visits are not normally made for operators with well-developed

¹³ *Id.* at 15.

¹⁴ Gardner W. Walkup, Jr. and J. Robert Ligon, *The Good, the Bad, and the Ugly of the Stage-Gate Project Management Process in the Oil and Gas Industry* at 8, SPE 102926 (2006) (citations omitted).

¹⁵ 78 Fed. Reg. 20,423 (Apr. 5, 2013).

¹⁶ Operational Excellence Audit Group, Chevron, *HES Assessments of Non-Operated Joint Ventures* at 1, SPE 168575 (2014).

¹⁷ *Id.* at 6.

safety management plans. The paper also describes what happens if the operator does not want to participate in the assessment or does not allow a site visit. (Presumably some operators object to the assessment and the two-day site visit.) Notably, the areas that Chevron focuses on in its assessment are Leadership and HES Culture, Process Safety, Workforce Safety, and Environmental Management;¹⁸ thus, the focus is on the overall safety management system of the company, not the specifics of the safety management system as employed to the detailed design and drilling of an individual exploration well.

II. WALKUP DOES NOT DESCRIBE INDUSTRY NORMS.

Walkup provides scant evidence of what he describes as “industry best practices.” In reality, he is a proponent of imposing duties and responsibilities on NO-WIOs that do not currently exist as industry norms or as regulatory requirements. His references do not show wide-spread practices or long-standing regulatory requirements. As I set forth in my initial report, it has *never* been the practice of the regulator to pursue NO-WIOs for the mistakes of operators. Walkup makes no attempt whatsoever to counter or explain this evidence.

Walkup’s arguments are aspirational. He describes his own ideal of what the regulatory environment and industry practices should be. But this would require major modifications, and such modifications would not be wise. Holding NO-WIOs to such a high level of responsibility over the safety of operations over which the NO-WIO has limited or no control would decrease overall process safety. I base this opinion on more than 50 years of experience in offshore operations, including decades of experience specifically in matters of safety. I also find it instructive that the federal regulators have made no specific changes to the duties and responsibilities of NO-WIOs since the Macondo Incident, despite numerous new notices to lessees, revisions to regulations, government investigations, and the dramatic restructuring of the regulatory agencies.

III. WALKUP’S RELIANCE ON A “RULE-BASED” APPROACH TO SAFETY HAS BEEN DISCREDITED BY THE INDUSTRY AND THE REGULATORS BECAUSE IT BREEDS A “COMPLIANCE MENTALITY” THAT DOES NOT PROMOTE SAFETY.

Finally, Walkup incorrectly describes industry “best practices” when he asserts that operational decisions should be “‘rule based’ meaning determined *a priori* to actual operations during design.”¹⁹ He claims that such an approach, where key decisions should be “removed from those conducting the operations in real time,” is in “direct conflict” with my own views regarding the critical nature of safety culture.²⁰ Walkup presents a false dichotomy where the rule-based approach and a company’s overall safety culture are mutually exclusive. In reality, a rule-based approach can be effective only if it operates within a proper and effective culture of safety.

As I explained in my August 15 report, creating a system where safety is pursued simply by “following the rules” breeds a harmful compliance mentality that is detrimental to safety. This

¹⁸ *Id.* at 10.

¹⁹ Walkup Rebuttal at 18.

²⁰ *Id.*

has been recognized in the literature for decades,²¹ and more recently embraced by the federal regulators.²² Furthermore, Walkup's suggestion ignores the complex reality of offshore operations. Not every decision and event can be planned in advance, and front-line personnel who have been trained only to follow *a priori* rules will be helpless when faced with the unexpected. Promoting a culture of safety will ensure that the people who actually do the work on a rig make the right choices -- no matter how much time or information they have or whether anyone else is watching.

IV. ANADARKO'S ROLE AT MACONDO

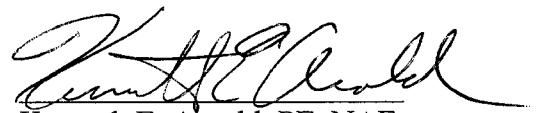
Unlike Walkup, I do not purport to be an expert on what occurred on the *Deepwater Horizon* on April 20, 2010, or in the weeks and months leading up to the blowout. I have not been asked to opine on such matters as what exactly Anadarko knew, when APC knew it, what documents it received and when, which personnel were involved, and to what degree. I have been advised by counsel that all such evidence has been excluded from the case. I also have been advised that the Court previously held that BP was solely responsible for the drilling operations at Macondo (as is the case with any operations where a NO-WIO designates an operator) and that Anadarko did not have a duty to intercede in "an independent contractor's operations."²³ As such, I do not find it necessary to refute Walkup's many characterizations, recitations, and conclusions on this point.²⁴

²¹ See Committee on Alternatives for Inspection of Outer Continental Shelf Operations, National Research Council, *Alternatives for Inspecting Outer Continental Shelf Operations* (1990).

²² As I noted in my August 15 Report, regulators require operators to maintain a SEMS program to help counteract the compliance mentality. Report of Kenneth E. Arnold, PE, NAE at 3-4 (Aug. 15, 2014).

²³ Rec. Doc. 3830 at 28.

²⁴ As with my past reports, I reserve the right to amend or supplement this report should additional facts come to light.



Kenneth E. Arnold, PE, NAE

Appendix: Reliance Materials

All materials relied upon for the opinions I express in this Report are cited in the body of the Report. In addition, I incorporate the reliance materials listed in my previous reports.