Consolidated Case No. 11-12598

IN THE UNITED STATES COURT OF APPEALS
FOR THE ELEVENTH CIRCUIT

Case No. 11-12598

DEFENDERS OF WILDLIFE *et al*.,
Petitioners
v.
BUREAU OF OCEAN ENERGY MANAGEMENT, REGULATION AND ENFORCEMENT, *et al*.,

Respondents.

Consolidated With Case No. 11-12599

GULF RESTORATION NETWORK, *et al*.,
Petitioners
v.
KEN SALAZAR, SECRETARY OF THE DEPARTMENT OF INTERIOR, *et al.*,

Respondents.

Petition for Review of Bureau of Ocean Energy Management, Regulation and Enforcement's Approval of Exploration Plan Control No. S-7444

PETITIONERS GULF RESTORATION NETWORK, FLORIDA WILDLIFE FEDERATION, AND SIERRA CLUB'S REPLY BRIEF

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STATEMENT OF JOINDER

Petitioners Gulf Restoration Network, Florida Wildlife Federation, and Sierra Club join in the Reply Brief of Defenders of Wildlife, Center for Biological Diversity, and Natural Resources Defense Council.

ARGUMENT

I. REPLY TO RESPONDENTS' ARGUMENTS

Petitioners asserted in their Initial Brief that the Agency's risk analysis of the likelihood of a significant spill from the proposed action was arbitrary and capricious because the Agency failed to consider that deepwater wells such as those proposed in Shell's exploration plan pose dramatically higher accident risks than the wells the Agency used for its risk analysis. The Agency's response proves Petitioners' point.

The Agency argues it was reasonable to use historical spill rates for *all* wells drilled on the entire Outer Continental Shelf of the Gulf of Mexico to calculate the probability of the "site specific risk for a spill to occur as a result of the proposed action," AR 153, p. A-4, *i.e.*, the probability of a major spill resulting from an exploration plan that authorizes the drilling of ten approximately 28,000 foot deep wells in water depths that exceed 7000 feet, into an oil bearing formation capable of producing more than 400,000 barrels of oil per day. Resp. Brief, p. 41.

However, the very reason that a Site Specific Environmental Assessment was ordered for Shell's exploration plan is because Director Bromwich has already determined that risk associated with deepwater drilling is *not* the same as risk associated with shallow water drilling:

> "In light of the increasing levels of complexity and risk – and the consequent potential environmental impacts – associated with deepwater drilling, we are taking a fresh look at the NEPA process and the types of environmental reviews that should be required for offshore activity," Secretary Salazar said. "We are committed to full compliance with both the letter and the spirit of NEPA. Our decision-making must be fully informed by an understanding of the potential environmental consequences of federal actions permitting offshore oil and gas development."

AR 8 (News Release of 8/16/2010 announcing intent to subject deepwater drilling activities to environmental assessments).

Having been forced into acknowledging, as a result of the *Deepwater Horizon* disaster, that deepwater drilling poses risks not found in shallow water drilling, the Agency then turned immediately around and conducted the required site-specific risk analysis of Shell's ultra-deepwater wells using historic accident data from shallow water wells knowing that shallow water wells pose less risk than the deepwater wells whose risk it is supposed to be analyzing. An agency acts unreasonably and arbitrarily and capriciously when it entirely fails to consider an important factor, consideration of which was essential to an informed decision. *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43, (1983) (stating the rule); *Hill v. Boy*, 144 F.3d 1446, 1451 (11th Cir. 1998) (Corps

acted arbitrarily and capriciously when it failed to consider oil spill risk from pipeline under a reservoir based on incorrect assumption pipeline would be moved). That test, though stringent, is met here. Respondents cannot assume that the risk of a major spill posed by an exploration plan that proposes the drilling of ultra-deepwater wells can be calculated using historical accident data from wells drilled in shallow water where the Agency has publicly acknowledged that the risk associated with deepwater and shallow water drilling is not the same.

Second, the Agency argues that it *did* analyze deepwater drilling risks because it looked at all wells drilled in the Gulf of Mexico in greater than 500 feet of water and determined that of 4,123 wells spudded (in which drilling began) in greater than 500 feet of water between 1985 and 2010, only one suffered a blowout that resulted in a significant spill – the Macondo well being drilled by the *Deepwater Horizon*.[1] Based on *this* historical accident data, the Agency theorizes that there is a probability rate of a major spill from the proposed action of .24%.[2] This analysis similarly fails to analyze the risks of *deepwater* drilling because it omits any analysis of known risk factors related to the complexity of deepwater

[1] The Agency did not use this analysis in concluding that "it is reasonable to conclude that an accidental spill event is not very likely to occur." AR 153, p. 6 (relying on its .07 percent spill risk calculation).

[2] Calculated by dividing 1 by 4,123 = .024% times the 10 wells in Shell's Exploration Plan = .24% probability for the ten wells.

drilling in the Gulf of Mexico including well depth, the number of casing strings, and penetration of salt layers.

When Director Bromwich ordered site specific environmental assessments of deepwater exploration plans such as the Shell plan at issue here, Director Bromwich based that decision on the "increasing complexity" of deepwater drilling operations. AR 9 (Bromwich memo mandating deepwater environmental assessment requirement). This was not surprising since complexity as a risk factor in drilling oil wells in the Gulf of Mexico is well known and understood by the Gulf oil drilling industry. As described in their Initial Brief, Petitioners provided the Agency with an article which describes the Mechanical Risk Index ("MRI") developed and used by the industry. AR 303. The MRI calculates the complexity of a well based on a number of risk factors. When applied to wells drilled in the Gulf of Mexico, it produced a probability of a major spill from a blowout of a well with the drilling complexity of the Macondo (*Deepwater Horizon*) well of 1 in 43.

Respondents argue that the MRI is not a "standard analysis." Respondents provide no basis for this claim and, as set forth below, extra-record evidence supplied by intervenors supports the credibility, the reliability, and the "standardness" of the risk analysis which was developed by a company that has been in the business for 40 years. As the website cited by Intervenors states:

> MRI provides an industry standard point of reference ranking drilling complexity by a point system. The higher the value of MRI, the more difficult a well is to drill.

https://www.dodsondatasystems.com/Public/Default.aspx?sssid=87. As explained in the *Deepwater Complexity* article, AR 303, the major risk factors which the Mechanical Risk Index examines are well depth, water depth, number of casings, and percent of population penetrating salt.

A 2009 article (and the National Commission's report on the *Deepwater Horizon* disaster) clearly explain why each of these factors is a risk factor in the Gulf deepwater drilling environment. AR 308; AR 297. Water depth is a factor because increasing depth means increasingly cold temperatures, increasingly higher pressures, and increasingly difficult working conditions such as the requirement of using remote controlled robots. AR 308, p. 222. Well depth is a risk factor because the deeper the well the higher the likelihood of encountering high pressure/high temperature oil bearing formations like that involved in the *Deepwater Horizon* disaster.[3] AR 308, p. 221-222; AR 297, pp. 90-91. Subsalt drilling is a risk factor because salt formations are difficult to "see" through, difficult to drill through, and the rock formations below salt are "rubbleized" making it extremely difficult to drill. AR 308, p. 221. The number of casing

[3] For additional information on the many risks associated with high pressure/high temperature ("HP/HT") reservoirs *see* AR 305 and AR 309 (survey of HP/HT professionals).

strings is a factor because more strings means additional challenges related to cementing the strings in narrow tolerances – also an issue in the *Deepwater Horizon* disaster.[4] AR 308, p. 222; AR 297, Ch. 4 *("But, who cares, it's done, end of story, [we] will probably be fine and we'll get a good cement job.": The Macondo Well and the Blowout*). The Agency's deepwater analysis ignores every one of these metrics except water depth.

The effect of using the MRI on the probability analysis can be substantial. The Agency is seeking the probability of an extraordinary event – such as drawing four cards randomly selected from a deck of cards and drawing four aces – which has a probability of 1 in 270,725;[5] however, if a person has already drawn three aces, the probability of drawing the last ace (of the extraordinary event occurring) is only 1/49.[6] Similarly with the MRI, if a well drilled in 500 feet of water also has

[4] Casing strings are a series of telescoping steel tubes installed to line the well as the drilling progresses. They prevent high-pressure fluids (like hydrocarbons) outside the casing from entering the wellbore and flowing up the well. To secure the casing, crews pump in cement to seal the space between the casing and the wellbore. AR 297, p. 92. The more strings, the tighter the telescoping, and the narrower the space between the tubes which must be sealed by the cement. AR 308, p. 222, Figure 3.

[5] There is a 4/52 (1/13) probability of drawing the first ace; a 3/51 (1/17) probability of drawing the second ace; a 2/50 (1/25) probability of drawing the third ace; and a 1/49 probability of drawing the fourth ace. Since these must all happen, the individual probabilities must be multiplied, *e.g.*, 1/13 * 1/17 * 1/25 * 1/49 = 1/270,725 =the probability of drawing four aces from a single 52-card deck.

[6] The probability is 1 in 49 because 3 cards (the three previously drawn aces) have been removed from the deck.

three of the MRI risk factors (*e.g.*, ultra-deep well; numerous casing strings; subsalt), it has a much higher likelihood of having something go wrong than a well drilled in 500 feet of water that possesses none of those risk factors. Stated another way, the agency assumes the risk of a significant spill event is random (1/4123) once it reduces the population of wells it is analyzing to those drilled in 500 feet of water. The MRI proves that assumption is incorrect.

The Agency argues that it did not overlook additional risk factors associated with deepwater drilling and in support cites to pages 1-2 of Appendix A. The discussion on those pages does not support the Agency's argument. Entitled "Blowout," that section assesses *only* those risk factors associated with *responding* to a blowout in deepwater once well control has been lost. Nowhere in its accidental spill discussion does the agency assess risk factors related to drilling operations leading up to the blowout itself. It is that risk which the MRI addresses. An accidental oil spill discussion which examines the risk factors associated with responding to an accident but which entirely fails to discuss the risk factors associated with events leading up to the accident is arbitrary and capricious for entirely failing to consider a relevant factor, the determination of which is necessary for an informed decision. *Hill v. Boy*, 144 F.3d at 1451.

The Agency argues that, in any event, its methodology is entitled to deference and that this court cannot "force" a methodology on an agency.

Petitioners are asking this court to do no such thing. Petitioners are simply pointing out, as they did in comments which were similarly ignored by the Agency, that increasing complexity of deepwater drilling was the primary factor leading Director Bromwich to his decision to require more stringent site-specific review of potential environmental impacts associated with deepwater exploration plans like that one at issue, that there is a standard industry analysis for calculating drilling complexity in the Gulf, and that the Agency completely ignored deepwater risk factors associated with drilling complexity including well depth, number of casings, and percent population penetrating salt when conducting its risk analysis. Petitioners are not asking this court to weigh competing scientific views because no competing view on risk factors associated with events leading up to an accident is expressed. That discussion is simply absent from the analysis. These facts strongly distinguish the case at bar from the Eleventh Circuit cases on which Respondent relies. *See Druid Hills Civic Assoc. v. Federal Highway Admin*., 772 F.2d 700, 709-12 (11th Cir. 1985) (where all relevant factors had been considered, court declined to decide factual dispute between competing expert witnesses); *North Buckhead Civic Ass'n v. Skinner*, 903 F.2d 1533, 1543044 (11th Cir. 1990) (where all relevant factors were considered, court rejected challenge to traffic projections calculated using nationally accepted manual and declined to decide

factual attack as to underlying assumption because plaintiffs offered no alternative method of computation and no specific errors in calculation).

The Agency argues that Petitioners ignore the "new factors" that were not taken into consideration in its historical/statistical evaluation which includes all post-*Deepwater Horizon* actions taken to enhance the safety of drilling operations along with the industry's "heightened safety awareness." Resp. Brief at 41-42. The Agency cannot have it both ways. The Agency can certainly argue that deepwater drilling is now "safer" because of lessons learned and actions taken as a result of the *Deepwater Horizon* disaster, but first it must discuss what that disaster also taught it as to what makes deepwater drilling "unsafe" in the first place. Without that disclosure, there is no way for the public, or this court, to assess whether the safety measures adopted by the Agency (or by the applicant voluntarily) have, in fact, mitigated the risks they are intended to address. To a great extent these safety issues are related to the complexity factors ignored by the Agency – physical attributes of the drilling operation that render certain types of deepwater drilling very risky endeavors indeed.

Lastly, the Agency argues that it couldn't perform the MRI calculation because the well-specific data on which the calculation would be based is not submitted until the permitting stage. Resp. Brief at p.45 n.14. Shell does not join in this argument. It uses proprietary information in the record to prove that the

"penetrating salt" factor in the MRI is not applicable to its wells, and then simply states that no MRI calculation has taken place – not that one couldn't be conducted based on available information. Shell Brief, p. 36. On the Agency's part this is a straw-man argument because the Agency doesn't argue that it couldn't request the information it needs to conduct an assessment.

II. REPLY TO INTERVENORS' ARGUMENTS

Intervenors argue that the *Deepwater Complexity* article cited by Petitioners, AR 303, is "most fairly read" to characterize the MRI as quantifying the effects of various factors on operational efficiencies and refer to websites and several articles wherein the MRI has been used or suggested for use as a predictive tool for designing wells and/or to compare drilling performance of wells.[7] It is hardly surprising that a metric that quantifies "drilling complexity" might be useful for any number of purposes in the same way that the body mass index (a measure of human body fat) can be used to determine how much an individual's weight varies from a normal weight, as a measure of health risk, to measure obesity trends within a population, or to compare populations. The fact that the MRI has multiple uses

[7] Intervenors also note that the principal author is an expert witness for the plaintiffs in the *Deepwater Horizon* mass tort litigation currently underway in the Eastern District Court of Louisiana. API Brief, p. 42. The same website indicates that the author's company (SEPI, Inc.) was selected to chair the *Technical Subcommittee* for the Presidential Commission of the *Deepwater Horizon Study Group*. http://www.successful-energy.com/author/admin.

doesn't alter the fact that it is a risk index based on factors (metrics) which are related to drilling risk.

Intervenors argue that the 500 foot depth is the "functional equivalent" of wells using subsea blowout preventers or surface blowout preventers on floating facilities and then makes an unsupported leap to the claim that this represents the Agency's view "that all wells in water depths greater than five-hundred feet utilize the same types of drilling equipment that correlate with deepwater drilling risks." API Brief, pp. 44-45. First, that isn't the Agency's view – it is API's. Second, that view is clearly and factually incorrect as the MRI attests. A well drilled in 500 feet of water, to a total well depth of 5,000 feet, into a formation that is capable of producing at most 4000 barrels of oil a day, does not pose the same drilling risk (or the risk of producing a major spill) as a well drilled in 7000 feet of water, to a total well depth of 28,000 feet, into a formation that is capable of producing 400,000 barrels of oil a days.

Intervenors argue that, based on extra-record evidence, the MRI is not intended to evaluate the risk of a blowout. API Brief, pp. 42-43. An abstract of another article from the website Intervenors rely upon states:

> A drilling hazard is defined as any event off the critical path of drilling operations. Drilling hazard management focuses on wellbore stability and consequential hazards such as stuck pipe, fluids loss and equivalent circulating density (ECD) management. These events lead to non-productive drilling time in the least case, or catastrophic wellbore failure and loss of well control in the worst cases.

The potential for drilling hazards is exactly what the MRI assesses including the possibility of loss of well control in the worst case.

Respectfully submitted this 5th day of December, 2011.

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CERTIFICATE OF COMPLETENESS

Pursuant to Federal Rule of Appellate Procedure 32(a)(7), I certify that the foregoing Initial Brief is printed in proportionately spaced typeface of 14 points. The brief is double-spaced except for quotations and footnotes. The side, top, and bottom margins are one inch. According to the word processing system's tally, the word count for the brief is 2842 (excluding the Table of Contents, Table of Citations, Table of Record References in Brief, Certificate of Compliance, and Certificate of Service).

/s/ Monica K. Reimer
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CERTIFICATE OF SERVICE

I HEREBY CERTIFY that pursuant to Rule 15(c), Federal Rules of Appellate Procedure, and to 43 U.S.C. section 1349(c)(3), a true and correct copy of the foregoing was served on this 5th day of December, 2011, by U.S. mail to the parties listed below and also mailed to the 11th Circuit Court of Appeals on December 5, 2011.

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