CLAIM SUMMARY / DETERMINATION

Claim Number:	N13024-0001
Claimant:	Taylor Energy Company LLC
Type of Claimant:	RP
Type of Claim:	Affirmative Defense
Claim Manager:	(b) (6) n
Amount Requested:	$353,881,719.70
Action Taken:	Denied

EXECUTIVE SUMMARY:

On or about September 16, 2004, the Taylor Energy MC-20A platform sank and discharged oil into the Gulf of Mexico, a navigable waterway of the United States. The MC-20A platform was located on tract 66-110 of lease OCS-G 04935, Mississippi Canyon Block 20 of the Gulf of Mexico. Taylor Energy Company, LLC, (Taylor or Claimant) owner and operator of the MC-20A platform made notification to the National Response Center on September 17, 2004.[1] Taylor responded, assumed responsibility for the incident and has participated in a series of events in an effort to stop the continuing discharge of oil from its site and to comply with the plugging and abandonment requirements as required for Outer Continental Shelf lessees and operators. On November 16, 2018, Taylor presented an act of God defense claim to the National Pollution Funds Center (NPFC) for $353,881,719.70.[2] The NPFC thoroughly reviewed all documentation submitted with the claim, analyzed the applicable law and regulations, and concluded that Taylor had failed to demonstrate an entitlement to an act of God defense.[3] On July 12, 2019, Taylor timely sought reconsideration and provided additional material in support of its request.[4]

Requests for reconsideration are considered *de novo*. The NPFC has thoroughly reviewed the original claim, the request for reconsideration, all information provided by Taylor, information it obtained independently, and the applicable law and regulations. Upon reconsideration, the NPFC concludes that the facts established by this record do not support Taylor's claim of an entitlement to an act of God defense for the reasons as outlined in the original determination and below.

I. CLAIM HISTORY

On November 16, 2018, Taylor presented an act of God defense claim to the NPFC for $353,881,719.70.[5] The NPFC thoroughly reviewed the original claim, all information provided

[1] National Response Center Report #735409, reported on September 17, 2004.
[2] Taylor Energy Company, LLC, claim submission cover letter dated November 15, 2018, page 2. The sum certain represents costs through August 31, 2017. Taylor asserts that it has incurred additional costs since August 31, 2017, and will submit an updated sum certain at a later date.
[3] NPFC determination issued to Taylor Energy Company, LLC, dated May 14, 2019.
[4] Letter from Taylor Energy Company, LLC, to the NPFC dated July 12, 2019, requesting reconsideration of the NPFC's initial denial determination dated May 14, 2019.
[5] Taylor Energy Company, LLC, claim submission cover letter dated November 15, 2018, page 2. The sum certain represents costs through August 31, 2017. Taylor asserts that it has incurred additional costs since August 31, 2017, and will submit an updated sum certain at a later date.

by Taylor or obtained independently, the relevant statutes and regulations, and ultimately denied the claim because Taylor failed to prove an entitlement to an act of God defense.[6] The NPFC's initial determination is hereby incorporated by reference.[7]

II. REQUEST FOR RECONSIDERATION

The regulations implementing OPA require requests for reconsideration of an initial determination to be in writing and include the factual or legal grounds for the relief requested, along with any additional support for the claim.[8] The claimant has the burden of providing all evidence, information, and documentation deemed necessary by NPFC's Director to support the claim.[9] When analyzing a request for reconsideration, the NPFC performs a *de novo* review of the entire claim submission, including any new information provided by the Claimant in support of its request for reconsideration. The written decision by the NPFC is final.[10]

On July 12, 2019, Taylor timely requested reconsideration of the NPFC's initial determination.[11] In its request for reconsideration, Taylor asserts that the NPFC misinterpreted or misapplied the definition of an act of God under OPA and that the NPFC's interpretation is overly restrictive and inconsistent with the definition of an act of God as intended by Congress. Taylor also asserts that the NPFC should adhere to the common law definition of an act of God and cites to numerous maritime law decisions in which the courts have found that a natural phenomenon qualified as an act of God. Taylor further asserts that the NPFC's reliance on Mr. James Pettigrew as a subject matter expert was misguided as he didn't have the background or qualifications to proffer his opinions expressed in geotechnical engineering and geology. To support this position, Taylor provided numerous reports and declarations by its subject matter experts disputing the findings of Mr. Pettigrew. Moreover, Taylor reiterated that the waves and exerted seafloor pressures resulting from Hurricane Ivan meets the definition of an act of God as those events were a grave natural phenomenon, exceptional and unanticipated, inevitable, irresistible, and the effects of which could not have been prevented by the exercise of due care or foresight. Lastly, Taylor restated its opinion that its costs undertaken as required by the Oil and Gas Regulations for Operations in the Outer Continental Shelf as lessee and operator of Lease OCS-G 04935 should be considered removal costs as defined in the OPA.

III. METHODOLOGY EMPLOYED BY THE NPFC IN REVIEW OF TAYLOR'S CLAIM

To properly adjudicate Taylor's claim, the NPFC hired subject matter experts (SMEs) to conduct independent reviews and analyses of several of Taylor's key positions. Experts in meteorology, oceanography, geotechnical engineering, geology and hydrographic/geophysical surveys reviewed Taylor's exhibits and obtained information independently to provide the NPFC an objective analysis of the information relied upon by Taylor in its claim submission. NPFC tasked the SMEs to review Taylor's information for accuracy and to conduct independent analyses of the materials and opinions submitted with the overall objective of providing impartial

[6] NPFC determination issued to Taylor Energy Company, LLC, dated May 14, 2019.
[7] *Id*.
[8] 33 C.F.R. 136.115(d).
[9] 33 C.F.R. 136.105(a).
[10] 33 C.F.R. 136.105(a).
[11] Taylor Energy Company, LLC, Request for Reconsideration dated July 12, 2019.

and unbiased opinions on the information presented by Taylor in support of its claim submission. The SMEs contracted by the NPFC along with a summary of their findings are below:

1. Mr. James Pettigrew, Director of Operations, Ocean Energy Safety Institute, Texas A&M University[12] was contracted to review the report prepared by Dr. Joseph Suhayda as Dr. Suhayda had provided Sohio Petroleum Company (Sohio) the 100-year storm design wave for the fixed oil platform MC-20A as well as the expected bottom pressures that would be exerted by the 100-year design storm at and around the MC-20 Platform site.[13] In addition, Mr. Pettigrew was tasked to conduct an independent analysis of the Mississippi Canyon Block 20, the weather associated with Hurricane Ivan, the weather associated with hurricanes prior to Ivan, and the experts relied upon by Dr. Suhayda in the preparation of his report.[14] Mr. Pettigrew's report was cited in the NPFC's initial determination and is hereby incorporated by reference.[15] Additionally, Mr. Pettigrew was provided the opportunity to respond to the objections raised by Taylor in its request for reconsideration and are addressed in the NPFC's Analysis of Taylor's Request for Reconsideration.[16]

2. Norwegian Technical Institute (NGI) was contracted to review and provide opinion to the design and subsequent failure of the MC-20A platform during Hurricane Ivan.[17] To assist in its tasking, NGI subcontracted the American Bureau of Shipping Group Consulting, Inc. (ABS) to review the MC-20A jacket structure and provide an opinion on whether the structure would have stayed intact under the action of Hurricane Ivan hindcast loadings (independent from any consideration of foundation failure), and to evaluate the fatigue life of the MC-20A jacket structure after its 20 years in service. NGI also reviewed the weather associated with all of the hurricanes/tropical storms that passed through the Gulf of Mexico during calendar years 2001-2004, that could have caused any significant sediment movement in the areas upslope of the MC-20 platform site or significant sediment accumulation on the mudlobe crests off the platform, including Hurricane Ivan.

   NGI performed an independent analysis of slope stability and capacity of the MC-20A platform pile foundation with a review team that included a professional senior consultant, a senior geotechnical engineer, a technical director and the president of NGI's Houston office.[18] NGI reviewed and relied upon several documents provided by Taylor

[12] Resume for Mr. James Charles Pettigrew.
[13] Exhibit 20 of Taylor Energy Company, LLC, act of God claim submission dated November 15, 2018, pages 8-9.
[14] NPFC Task Order 1 Analysis of Wave Conditions at Mississippi Canyon Block 20 during Hurricane Ivan undated and provided in an email to CG contracting dated March 26, 2019. In follow-up correspondence with CG contracting, this task order was renamed from task order 1 to task order 8.
[15] NPFC determination issued to Taylor Energy Company, LLC, dated May 14, 2019. *See also,* NPFC Task for the Analysis of Wave Conditions at Mississippi Canyon Block 20 during Hurricane Ivan prepared by Mr. James Pettigrew dated April 1, 2019.
[16] NPFC Task Order 14 Response to comments made by Taylor Energy specific to the Analysis of Wave Conditions at Mississippi Canyon Block 20 prepared by Mr. James Pettigrew dated August 9, 2019.
[17] NPFC Task Order 2 Design and Analysis Failure of the MC-20A Platform during Hurricane Ivan undated and provided in an email to CG contracting dated February 12, 2019. In follow-up correspondence with CG contracting, this task order was changed from task order 2 to task order 9.
[18] Platform MC-20A Platform Failure prepared by NGI dated June 25, 2019, page 7.

in support of its claim submission[19] as well as information obtained independently to complete its tasking. NGI concluded that the MC-20A platform toppled because the supporting piles were over-loaded laterally by a deep mudslide caused by wave loading of the slope located on the northwest side of the platform location. An overrunning mudslide that started at the top of the slope and added extra soil weight near the slope bottom, might have acted in combination with the above mechanism and contributed to slope instability and pile failure at the platform site.[20] NGI's conclusion was consistent with the information provided by Taylor in support of its claim submission.

NGI reviewed the MC-20A jacket structure as well as the documents relied upon Taylor's experts, in its assessment of the MC-20A platform.[21] NGI concluded that the global strength analysis under Hurricane Ivan showed that the MC-20A jacket structure had the capacity to withstand the storm load induced by Hurricane Ivan and was consistent with the information provided by Taylor in support of its claim submission.[22]

NGI researched the hurricanes and tropical Storms that passed through the Gulf of Mexico for calendar years 2001-2004 including Hurricane Ivan that could have caused any significant sediment movement in the areas upslope of the MC-20 platform site or significant sediment accumulation on the mudlobe crests off the platform. NGI concluded that there were at least seven storms that could have contributed to significant sediment movement in the areas upslope of the MC-20 platform site or significant sediment accumulation on the mudlobe crests in the area of the platform. Specifically, in the Gulf of Mexico tropical cyclone population of 2001-2004, there was at least one instance a season that a storm could have impacted the sedimentation conditions of the Mississippi Canyon region; one storm in 2001 (Allison), four storms in 2002 (Bertha, Hanna, Isidore, Lili), one storm in 2003 (Bill), and one storm in 2004 (Ivan). Further, in

[19] The documents provided to NGI in support of this task order included Taylor Exhibits 25-27 - Geology & Engineering Analysis Block 20 Mississippi Canyon Area Studies prepared by Woodward-Clyde Oceaneering Volumes 1-3; Taylor Exhibit 38 - Assessment of Seafloor Movements MC-20A Structure, MC-20 Gulf of Mexico Report #020-5381-1 prepared by Fugro McClelland Marine Geosciences dated January 24, 2005; Taylor Exhibit 39 - Geotechnical Investigation Platform A MC-20 Gulf of Mexico Report #020-5381-2 prepared by Fugro McClelland Marine Geosciences dated January 7, 2005; Exhibit 44 - Seafloor Failure Analysis Platform A MC-20 Gulf of Mexico Report #020-5381-7 prepared by Fugro McClelland Marine Geosciences dated February 21, 2006; Exhibit 51 - Platform Capacity Assessment with Original Design Soil prepared by FuryConsult, LLC, Revision 1 dated October 28, 2016; Exhibit 28 - Assessment of Design and Analysis of Failure for Mississippi Canyon 20 Platform prepared by Gilbert and Nodine dated February 15, 2018.

[20] Platform MC-20A Platform Failure prepared by NGI dated June 25, 2019, page 3.

[21] The documents provided to ABS in support of this task order included Taylor Exhibits 25-27 - Geology & Engineering Analysis Block 20 Mississippi Canyon Area Studies prepared by Woodward-Clyde Oceaneering Volumes 1-3; Taylor Exhibit 38 - Assessment of Seafloor Movements MC-20A Structure, MC-20 Gulf of Mexico Report #020-5381-1 prepared by Fugro McClelland Marine Geosciences dated January 24, 2005; Taylor Exhibit 39 - Geotechnical Investigation Platform A MC-20 Gulf of Mexico Report #020-5381-2 prepared by Fugro McClelland Marine Geosciences dated January 7, 2005; Exhibit 44 - Seafloor Failure Analysis Platform A MC-20 Gulf of Mexico Report #020-5381-7 prepared by Fugro McClelland Marine Geosciences dated February 21, 2006; Exhibit 51 - Platform Capacity Assessment with Original Design Soil prepared by FuryConsult, LLC, Revision 1 dated October 28, 2016; Exhibit 28 - Assessment of Design and Analysis of Failure for Mississippi Canyon 20 Platform prepared by Gilbert and Nodine dated February 15, 2018. Additionally, the documents relied upon by Fury Consult in the preparation of their report were provided to the NPFC by Taylor on May 21, 2019.

[22] Assessment of Design and Fatigue Analysis for Mississippi Canyon 20 Platform prepared by ABS dated July 16, 2019, page 5.

this demonstrated environment of subaqueous sediment instabilities, the annual interaction of tropical cyclones only further increases the uncertainty of bottom conditions throughout this dynamic deltaic region. In the fifteen years since Hurricane Ivan, there have only been six seasons when a tropical cyclone did not affect the Mississippi River delta region.[23]

3. GZA GeoEnvironmental, Inc. (GZA) was contracted to review the weather (metocean) conditions that existed during Hurricane Ivan at the location of the MC-20A oil platform to include Hurricane Ivan wave characteristics, Hurricane Ivan wave parameter probabilities, wave characteristics of pre-1983 Gulf of Mexico hurricanes, and failure mechanisms.[24] GZA utilized a review team that included SMEs in hurricane meteorological parameter statistics for the Gulf of Mexico, wind-wave generation associated with Gulf hurricanes, wind-wave conditions associated with Hurricane Ivan and prior hurricanes, prediction of wave-induced bottom stresses, geomorphology and geology of the Mississippi Canyon, and submarine mass failures.[25] GZA conducted extensive independent research and relied upon documents provided by Taylor in support of its claim submission or provided by Taylor at the request of the NPFC.[26] While many of GZA's conclusions were consistent with the information provided by Taylor in support of its claim submission, there were several areas in which GZA's conclusions varied from Taylor's. These included Hurricane Ivan's recurrence intervals, the relevance of Hurricane Camille in the design of the MC-20A platform, the ability to successfully hindcast the waves associated with Hurricane Ivan, and the reliability of Dr. Suhayda's design storm wave and wave period used in the design of the MC-20A platform; all of which are further addressed below.

   In addition to its reports, GZA provided a presentation to the NPFC in which its results were explained and questions were answered specific to the findings in its report.[27]

---

[23] NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan, Task 1, item (i), and Task 2, item (d) prepared by Mr. James Pettigrew dated May 15, 2019, page 27.
[24] NPFC Task Order 10 Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan undated and provided in an email to CG contracting dated April 4, 2019.
[25] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August, 2019, Part 1 page 3.
[26] The documents provided to GZA in support of this task order included Taylor Exhibit 20 - Dr. Joseph Suhayda dated February 5, 2018; Dr. George Forristal hindcast data specific to the computed wave heights, periods, and bottom pressure amplitudes that occurred at MC-20 during Hurricane Ivan provided by Taylor Energy Company, LLC, on April 25, 2019; Taylor Exhibits 25-27 - Geology & Engineering Analysis Block 20 Mississippi Canyon Area Studies prepared by Woodward-Clyde Oceaneering Volumes 1-3; Taylor Exhibit 38 - Assessment of Seafloor Movements MC-20A Structure, MC-20 Gulf of Mexico Report #020-5381-1 prepared by Fugro McClelland Marine Geosciences dated January 24, 2005; Taylor Exhibit 39 - Geotechnical Investigation Platform A MC-20 Gulf of Mexico Report #020-5381-2 prepared by Fugro McClelland Marine Geosciences dated January 7, 2005; Exhibit 44 - Seafloor Failure Analysis Platform A MC-20 Gulf of Mexico Report #020-5381-7 prepared by Fugro McClelland Marine Geosciences dated February 21, 2006; Exhibit 51 - Platform Capacity Assessment with Original Design Soil prepared by FuryConsult, LLC, Revision 1 dated October 28, 2016; Exhibit 28 - Assessment of Design and Analysis of Failure for Mississippi Canyon 20 Platform prepared by Gilbert and Nodine dated February 15, 2018
[27] GZA power point entitled "Mississippi Canyon Block 20 Hurricane Ivan Surface Weather Conditions" dated and presented August 14, 2019.

4. David Evans and Associates (DEA) was contracted to review and compare sonar data and reports from field investigations conducted in and around the MC-20A platform between 2004 and 2019 with a tasking to provide an expert opinion as to the actual source of discharge from the MC-20 and to objectively interpret sonar survey data and reports generated by field investigations conducted in and around the MC-20 between 2004 and 2019.[28] DEA conducted extensive independent research and relied upon several surveys funded by Taylor and submitted as part of its claim submission or provided at the request of the NPFC.[29] In addition, DEA coordinated with NOAA's National Center for Coastal Ocean Science Laboratory (NCCOS) to review sonar surveys conducted or funded by other Federal agencies associated with the Taylor response.[30] Coordinating with NCCOS allowed DEA the opportunity to analyze raw sonar data to better provide a comprehensive and unbiased opinion as to the source of discharge at the MC-20 and to objectively compare those surveys to the surveys conducted by Taylor.[31] However, NPFC did not closely analyze these expert reports and the underlying data in this act of God determination because it is undisputed that discharges of oil from Taylor's platform amounted to an incident under OPA.

IV. LEGAL ANALYSIS OF TAYLOR'S REQUEST FOR RECONSIDERATION[32]

As a preface to the more detailed discussion below, NPFC would like to address a couple of general concerns Taylor raises in its request for consideration and to clarify the record. One concern is that NPFC did not consider certain facts or legal arguments that Taylor raised in its original submission. This is not accurate. NPFC diligently reviewed and considered the over 13,200 pages of material that comprised Taylor's original claim submission. As NPFC explained

[28] NPFC Task Order 11 Taylor Energy Sonar Survey Comparison provided in an email to CG contracting dated April 26, 2019.

[29] The documents provided to DEA in support of this task order included Taylor Exhibit 37 - Oceaneering International, Inc. / Fugro Chance, Inc. MC-20 Partial Debris Survey map sheet dated September 29, 2004; Taylor Exhibit 46 - Fugro Excavation Project Report #0201-6235-1 dated December 14, 2007; Taylor Exhibit 64 - C&C Technologies Downed "A" Platform Survey Report #150477 dated June 5, 2015; C&C Technologies, Inc. Side Scan Sonar Site Survey Report dated July 30, 2010 with Side Scan Sonar Mosaic Maps, Fugro Side Scan Sonar Survey Report #2412-1075 dated August 31, 2012, and Navistry Corporation power point presentation dated October 31, 2012, provided by Taylor on February 27, 2019; and C&C Technologies, Inc. Site Specific Survey Report dated November 15, 2006 with Side Scan Sonar Mosaic Map dated November 3, 2006, provided by Taylor on May 30, 2019. The NPFC independently obtained the Oceaneering International, Inc. / Fugro Chance, Inc. MC-20 Mass Spectrometry Survey Project Sector Scanning Sonar Survey map sheet dated August 28, 2008, from Mr. (b) (b) (6), BSSE, on March 12, 2019.

[30] The information provided by NOAA NCCOS to DEA included the raw multibeam sonar bathymetry data, raw multibeam and split-beam sonar water column data, and raw subbottom profiler data acquired by NOAA research vessel OKEANOS EXPLORER on April 19-20, 2012, during Leg 3 of mission EX1202 as well as processed sonar images; the available reports associated with a Bureau of Safety and Environmental Enforcement (BSEE) survey conducted in and around the MC-20A platform in October 2017; the raw and processed multibeam sonar bathymetry data, subbottom profiler data, and seismic data associated with a United States Geological Survey (USGS) survey conducted in and around the MC-20A platform in May 2017; the raw and processed multibeam sonar and split-beam echosounder data associated with a NOAA National Center for Coastal and Ocean Science (NCCOS) survey conducted in and around the MC-20A platform in September 2018; and the processed and georeferenced point cloud data associated with a Couvillion Group survey conducted in and around the MC-20A platform in May 2019.

[31] Taylor Energy MC-20A Sonar Survey Comparison prepared by David Evans and Associated dated June 2019.

[32] The legal analyses provided in the original determination remain valid and applicable to this determination and are incorporated herein.

in its original determination, "Taylor raises other issues in its claim that NPFC considered but determined did not warrant discussion in this determination." For example, Taylor provided a detailed history of offshore oil and gas development. While NPFC considered that information, it did not believe it warranted discussion in its claims determination on whether the act of God defense applied. Another concern Taylor raises is that the NPFC impermissibly added elements such as "unprecedented" to the statutory definition of "act of God". NPFC acknowledges its use of "unprecedented" in its determination but notes it only did so in response to Taylor's arguments. Taylor uses the term "unprecedented" on 22 separate occasions in its original claim submission to describe the winds, waves, and other characteristics associated with Hurricane Ivan. In responding, the NPFC uses the term three times, and on each occasion to either quote a judicial decision or explain a case or a series of cases that preceded it. To be clear, the NPFC did not impermissibly add any elements to the statutory defense when it adjudicated the original claim.

Background

The Oil Pollution Act of 1990 (OPA) established a strict liability scheme for owners and operators of vessels that discharge oil into or upon the navigable waters and adjoining shorelines of the United States.[33]

OPA designates vessel owners and operators as "responsible parties" for the discharges.[34] A "responsible party" is liable for removal costs and damages except under very narrow circumstances.[35] One such circumstance is an "act of God"; a "responsible party" is not liable for removal costs or damages if the "responsible party" establishes, by a preponderance of the evidence, that the discharge of oil and resulting damages or removal costs were caused *solely* by an "act of God."[36] An "act of God" means an "unanticipated grave natural disaster or other natural phenomenon of an exceptional, inevitable, and irresistible character the effects of which could not have been prevented or avoided by the exercise of due care or foresight."[37]

In order to be successful under an act of God claim, Taylor must establish, by a preponderance of the evidence, that the discharge of oil and resulting damages or removal costs were caused ***solely*** by an "act of God."[38] More specifically, it must establish that each of the elements of the definition of act of God have been met by a preponderance of the evidence. The NPFC has determined after a careful review of the materials submitted by Taylor, its independent review of other relevant materials, and upon application of the statutes and case law, that the facts of this case do not support an act of God defense under OPA.

Taylor's general legal positions

---

[33] *See* 33 U.S.C. § 2702(a); *Cf. Reliance Insurance Co. v. United States,* 677 F.2d 844, 849 (Ct. Cl. 1982)(Congress decided in the Clean Water Act that a system of strict liability with specified limits best served the public interest by properly placing the cost for an oil spill on the responsible party).
[34] 33 U.S.C. § 2701(32).
[35] 33 U.S.C. § 2703(a).
[36] 33 U.S.C. § 2703(a)(1) (emphasis added).
[37] 33 U.S.C. § 2701(1).
[38] 33 U.S.C. § 2703(a)(1) (emphasis added)

Taylor suggests several ways for the NPFC to interpret the OPA act of God defense in its submissions to the NPFC. It primarily argues the common law and general maritime law should be used to analyze the statute, not the precedent under OPA, nor the case law under any other similarly worded environmental remediation statute. In defense of this position, it suggests that the jurisprudence interpreting the OPA act of God language is incorrect. Taylor further argues that, notwithstanding the current case law, the NPFC should not consider legislative history when analyzing the statute. NPFC disagrees and generally addresses Taylor's positions below.

Applicability of Common Law

Taylor claims that common law and general maritime law precedents should control NPFC's interpretation of the "act of God" defense under OPA. NPFC disagrees. Because an act of God defense under the common law or general maritime law arises in a different context than this OPA claim, Taylor's cases do not control here. Unlike the common law and general maritime law, OPA only allows for three exceptions to its strict liability. Importantly, OPA's defenses are exclusive.[39] For example, principles of equity should not lessen the scope of a responsible party's liability under OPA. If a responsible party cannot satisfy the statutory elements of an OPA defense, then the responsible party is strictly liable for the oil spill and any act of God claim against the OSLTF under 33 U.S.C. § 2708 must be denied.

Taylor's argument that the NPFC should construe the OPA "act of God" defense to liability under general maritime common law is misplaced. All three environmental statutes are strict liability schemes in which the responsible party for an oil spill must pay removal costs, subject to narrow defenses.[40] Exceptions to liability for pollution incidents must be narrowly

[39] Should there be any doubt about the fact that Congress intended OPA's statutory defenses to be exclusive, OPA's legislative history explicitly emphasizes the rule: "The Committee emphasizes that *the defenses specifically enumerated are intended to be the only defenses available to a responsible party and no other defenses are allowed* to the strict, joint and several liability which is established in the bill. ... [d]efenses available to a responsible party are limited to those specifically enumerated in the bill." House Report 101-242, Part 1, pp. 32, 39, Committee on Public Works and Transportation (September 18, 1989) (emphasis added). *See also e.g.*, *Cal. ex rel. Cal. Dept. of Toxic Substances Control v. Neville Chem. Co.*, 358 F.3d 661, 672 (9th Cir. 2004) ("Every court of appeals that has considered the precise question whether [CERCLA] permits equitable defenses has concluded that it does not, as the statutory defenses are exclusive."); *B.F. Goodrich v. Betkoski,* 99 F.3d 505, 514 (2d Cir. 1996) (defenses in strict liability environmental statutes like CERCLA are deemed to be the exclusive defenses available under the statute); *Town of Munster Ind., v. Sherwin-Williams Co.*, 27 F.3d. 1268, 1270 ("CERCLA does not permit equitable defenses); *Blasland, Bouck & Lee, Inc. v. City of North Miami*, 283 F.3d 1286, 1304 (11th Cir. 2002)(finding CERCLA does not permit equitable defenses because the defenses permitted are exclusive); *Velsicol Chem. Corp. v. Enenco, Inc.*, 9 F.3d 524, 530 (6th Cir. 1993)(same); *United States v. Timmons Corp.*, No. 103-cv-00951, 2006 WL 314457, at *10 (N.D.N.Y. Feb. 8, 2006) (same); *Richmond, Fredericksburg and Potomac R.R. v. Clarke*, No. 90-cv-00336, 1991 WL 321033, at *5 (E.D. Va. Jan. 22, 1991) ("defenses to CERCLA actions are limited to those defenses that the statute itself specifies."). *Cf., Hall Street Assocs., L.L.C v. Mattel, Inc.,* 552 U.S. 576 (2008) (finding that the enumerated statutory grounds for vacatur and modification under the Federal Arbitration Act were exclusive).

[40] *United States v. Mizhir*, 106 F. Supp. 2d 124, 126 (D. Mass. 2000) (absent any defense, OPA imposes strict liability upon the responsible party for oil removal costs) *citing MetLife Capital Corp. v. M/V Emily S.,* 132 F.3d 818, 820-1 (1st Cir. 1997); *Reliance Insurance Co. v. United States,* 677 F.2d 844, 849 (Ct. Cl. 1982) (Congress decided in the CWA that a system of strict liability with specified limits best served the public interest by properly placing the cost for an oil spill on the responsible party); *United States v. Stringfellow,* 661 F. Supp. 1053, 1061 (C.D. Cal. 1987) (CERCLA imposes strict liability on responsible parties subject only to affirmative defenses).

construed.[41] As NPFC explained in its original determination, the act of God defense is more broadly applied in the common law tort and maritime contexts because generally the issue *du jure* in those cases is whether the court should find fault, or should it absolve fault because of the alleged "act of God". In the environmental liability context, the act of God defense is construed narrowly because fault is generally of no moment to the courts; and thus, often the only question for the court is whether an otherwise responsible party should be absolved of all liability by a Congressionally-consciously enacted, very narrowly tailored, exception in the law. Thus, in the context of this OPA act of God claim, the NPFC does not view the case law cited by Taylor as persuasive authority.

Additionally, OPA preempts or displaces both the federal common law the general maritime law during NPFC's adjudication of this claim against the OSLTF.[42] When it imposes liability against a responsible party, like Taylor, OPA explicitly controls notwithstanding any federal common law or general maritime law that would otherwise limit or restrict its strict liability.[43] A review of the *Sabine Towing*[44] case is particularly enlightening. *Sabine Towing* involved the Clean Water Act, whose liability standard and limited remedies OPA borrows. Similar to Taylor, the plaintiff in that case claimed entitlement to act of God defense. At the outset of the litigation, the trial court, similar to Taylor, suggested that the proper way to analyze the act of God defense was under the common law.[45] However, while the case was progressing, the Supreme Court issued an opinion directly related to this issue.[46] Ultimately, based on the Supreme Court jurisprudence, the *Sabine* court reversed the trial court and decided that it was *not appropriate* to use common law when analyzing the act of God defense under the Clean Water Act.[47] In keeping with the Supreme Court's decision in *City of Milwaukee*, both the Second and Fifth Circuits echoed similar positions as the *Sabine* court, in that "we are to conclude that federal

---

[41] *Kyoei Kaiun Kaisha. Ltd. v. M/V BERING TRADER,* 795 F. Supp. 1054 (W.D. Wa. 1991) ("The clear intent of Congress was to impose liability on the polluting vessel except in very rare circumstances.") *citing United States v. West of England Ship Owner's Mut. Protection & Indem. Ass'n,* 872 F.2d 1192, 1200 (5th Cir. 1989).

[42] Preemption" and "displacement" are often used interchangeably. *See, e.g., Conner v. Aerovox, Inc.,* 730 F.2d 835, 841 (1st Cir.1984) (using "preempt" and "displace" interchangeably in concluding that the Federal Water Pollution Control Act displaced federal maritime law). Technically, however, preemption refers to whether federal statutory law supersedes state law, while "displacement" applies when, as here, a federal statute governs a question previously governed by federal common law. Although in the preemption scenario, we assume that "the historic police powers of the States were not to be superseded by [federal law] unless that was the clear and manifest purpose of Congress," displacement analysis assumes that "it is for Congress, not the federal courts, to articulate the appropriate standards to be applied as a matter of federal law." *City of Milwaukee v. Illinois,* 451 U.S. 304, 316–17 (1981). *United States v. American Commercial Lines*, 759 F.3d 420, 426 n.1.

[43] 33 U.S.C. § 2702 (a) (**Notwithstanding any other provision or rule of law**, and subject to the provisions of this Act, each responsible party … is liable for the removal costs and damages specified in subsection (b) that result from such incident.")(emphasis added); *See also*, 33 U.S.C. § 2752 (e) ("**Except as otherwise provided for in this Act**, this Act does not affect – (1) admiralty and maritime law;")(emphasis added); *Gabarick v. Laurin Maritime Inc.*, 623 F. Supp. 2d 741, 747 (*citing Middlesex County Sewerage Authority v. National Sea Clammers Ass'n,* 453 U.S. 1 (1981); and *City of Milwaukee v. Illinois,* 451 U.S. 304 (1981).

[44] *Sabine Towing & Transp. Co. Inc. v. United States*, 666 F.2d 561 (Ct. Cl. 1981).

[45] *Id*. at 564. ("[t]he order cited in the first paragraph of this opinion suggested resort to the common-law meaning of "act of God" to help in determining how the phrase should be applied in section 1321 cases.").

[46] *City of Milwaukee v. Illinois*, 451 U.S. 304 (1981).

[47] *Id*. ("We now believe that common-law cases on acts of God, to the extent that they embody judicial decisions on allocating the burden of mishap, should not be used in determining the allocation that Congress intended in section 1321.") citing the inappropriateness of using judicially created rules of decision in areas where Congress has legislated. *City of Milwaukee v. Illinois*, 451 U.S. 304 (1981)(emphasis added).

common law has been preempted as to every question to which the legislative scheme spoke directly, and every problem that Congress has addressed."[48] Consistent with these authorities, the NPFC declines to rely on the common law and general maritime law case law cited by Taylor.

Interpretation and Application of the OPA "act of God" Provision

The first step in interpreting a statute is examining the statutory language.[49] When the meaning of statutory language is plain, the reviewing court must abide by it; the court may depart from the plain meaning only to avoid a result "so bizarre that Congress 'could not have intended' it."[50] Under OPA, an "act of God" means "an unanticipated grave natural disaster or other natural phenomenon of an exceptional, inevitable, and irresistible character the effects of which could not have been prevented or avoided by the exercise of due care or foresight."[51] *Apex Oil Company v. United States* was the first case to analyze this defense specifically under OPA.[52] When interpreting various OPA provisions courts have routinely looked to interpretations of similar Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)[53] and the Clean Water Act (CWA)[54]provisions.[55] Not surprisingly, the *Apex* court did the same. The court construed the statutory language of OPA's act of God defense in the context of similar defenses[56] in CERCLA and the CWA. In doing so, it concluded:

> Section 101(1) of CERCLA identically defines the term "act of God" as "an unanticipated grave natural disaster or other natural phenomenon of an exceptional, inevitable, and irresistible character,

---

[48] *United States v. M/V BIG SAM*, 681 F.2d 432, 442 (5th Cir. 1982)(*quoting In re Oswego Barge Corp.*, 664 F.2d 327, 344 (2nd Cir. 1981).

[49] *Uniroyal Chemical Co., Inc. v. Safewav Transportation. Inc.*, 160 F.3d 238, 244 (5th Cir. 1998) *citing Greyhound Corp. v. Mt. Hood Stages. Inc.*, 437 U.S. 322, 330, (1978)).

[50] *Id.*

[51] 33 U.S.C. § 2701(1).

[52] 208 F.Supp.2d 642 (E.D. La. 2002).

[53] 42 U.S.C. §§ 9601-9675.

[54] 33 U.S.C. §§ 1251-1387.

[55] *See, e.g., International Marine Carriers v. Oil Spill Liability Trust Fund,* 903 F. Supp. 1097, 1102-3 (S.D. Tex. 1994) (looking to CERCLA to interpret third-party defense to liability in a cost-recovery action under OPA); *Plantation Pipeline Co. v. Oil Spill Liability Trust Fund,* 47 E.R.C. 1598, 1602 (N.D. Ga. 1998) (adopting CWA definition of "waters of the United States" to determine whether spill threatened navigable waterway under OPA); *United States v. Mizhir*, 106 F. Supp. 2d 124, 126 (D. Mass. 2000) (adopting the CWA definition of "navigable waters" to determine applicability of OPA); *United States v. J.R. Nelson Vessel,* 1 F. Supp. 2d 172, 176 n.2 (E.D.N.Y. 1998) (OPA "Act of God" language described as analogous to CERCLA language), *citing U.S. v. Barrier Indus., Inc.,* 991 F. Supp. 678 (S.D.N.Y. 1998) (prolonged cold spell not "Act of God" under CERCLA).

[56] The "act of God" provision under OPA is very similar to the "act of God" provision under the CWA and is exactly the same as the "act of God" provision under CERCLA. An "act of God" under OPA is an "*unanticipated grave natural disaster or other natural phenomenon of an exceptional, inevitable, and irresistible character the effects of which could not have been prevented or avoided by the exercise of due care or foresight.*"[56] Under the CWA, an "act of God" is "*an act occasioned by an unanticipated grave natural disaster.*"[56] Like OPA, a CERCLA "act of God" is an "*unanticipated grave natural disaster or other natural phenomenon of an exceptional, inevitable, and irresistible character, the effects of which could not have been prevented or avoided by the exercise of due care or foresight.*"

> the effects of which could not have been prevented or avoided by the exercise of due care or foresight."[57]
>
> . . . .
>
> Although there have been few, if any, cases construing the OPA definition of "act of God," there is a substantial body of law interpreting that term pursuant to the CWA, 33 U.S.C. § 1251 and CERCLA, 42 U.S.C. § 9607.[58]

Moreover, the *Apex* court looked to the legislative history to ensure it was interpreting the statute as Congress had intended:

> Congressional intent is clearly that the "exceptional natural phenomenon" (*i.e.,* the "act of God") defense be construed as much more limited in scope than the traditional common law "act of God" defense. The discharger's burden of proof on the defense of "exceptional natural phenomena" is much more onerous than that required for common law or traditional "act of God" defense. The legislative history of CERCLA includes the following explanation regarding the singular "defense for exceptional natural phenomena": The defense for the exceptional natural phenomenon is similar to, but more limited in scope than, the traditional 'act of God' defense. It has three elements: the natural phenomenon must be exceptional, inevitable, and irresistible. Proof of all three elements is required for successful assertion of the defense**. The 'act of God' defense is more nebulous, and many occurrences asserted as 'acts of God' would not qualify as 'exceptional natural phenomenon.' For example, a major hurricane may be an 'act of God,' but in an area (and at a time) where a hurricane should not be unexpected, it would not qualify as a 'phenomenon of exceptional character.'**[59]

---

[57] 42 U.S.C. § 9601(1). *See*, *United States v. Barrier Industries, Inc.,* 991 F.Supp. 678 (S.D.N.Y.1998) (spills of hazardous substances caused by bursting pipes following unprecedented cold spell not an "act of God" within the meaning of CERCLA so as to absolve principal of bankrupt corporate owner of waste site from liability for response costs given other factors antedating cold weather which contributed to the spills); *United States v. M/V SANTA CLARA I,* 887 F.Supp. 825 (D.S.C.1995) ("loss of containers of arsenic trioxide overboard resulting from storm not 'act of God' within the meaning CERCLA where weather predicted by weather service was known to captain and crew prior to their departure, and in light of bad weather crew was directed to take extra precautions to insure vessel and cargo were secure for rough seas"); *United States v. Stringfellow,* 661 F.Supp. 1053 (C.D.Cal.1987) (heavy rainfall not an exceptional natural phenomenon within the meaning of CERCLA's "act of God" defense to payment of response cost incurred as a result of release of hazardous waste from toxic waste disposal site, where rains were foreseeable based on normal climactic conditions, and where harm caused by rain could have been averted by properly designed drainage canals).

[58] *Apex Oil Co. v. United States*, 208 F. Supp. 2d 642, 652-54 (E.D. La. 2002).

[59] *Id. at* 653 (citing H.R.Rep. 99–253(IV), *reprinted in* 1986 U.S.C.C.A.N. 3068, 3100 (emphasis added).

Of note, the court in *Apex* found that the NPFC had correctly interpreted the OPA act of God defense when adjudicating the claim that formed the basis of the lawsuit. Additionally, it provided detailed analysis regarding the context in which to view the defense in OPA by comparing the intent, language, and defenses in OPA with those found in the CWA and CERCLA as well as reviewing the intent of Congress at the time OPA was enacted. NPFC considers this approach sound as these three statutes comprise the major federal environmental statutes that occupy the law in this area, and are necessarily intertwined in their application.

A synopsis of the elements of the defense[60]

a. *Grave Natural Disaster or Other Natural Phenomenon.*

An "act of God" defense requires a natural disaster or phenomenon to be of grave proportions. As defined in *Sabine Towing,* a disaster is "a *sudden* calamitous event bringing great damage, loss, or destruction."[61] In *Sabine Towing,* there was no "act of God" defense where a vessel struck debris that entered the water because of a spring flood (*i.e.,* an annual event). "Congress restricted its definition to 'grave' disasters making clear that the occurrence must be of great magnitude before it falls within the liability exception of section 1321" of the CWA.[62] Congress intended that shippers absorb the costs of cleaning up oil spilled when they decide to conduct normal navigation in conditions known to be dangerous.[63]

In *United States v. Stringfellow*, extremely heavy rains were not a CERCLA "act of God." Water from heavy rains on several occasions flooded acid pits to overflow, releasing contaminated water into a nearby community. The heavy rains and floods were not a natural disaster or 'exceptional' phenomena to which the narrow "act of God" defense applied.[64]

b. *Unanticipated*

To constitute an act of God an event or occurrence must be unanticipated. An "act of God encompasses ... [o]nly those acts about which the owner could have had no foreknowledge, could have made no plans to avoid, or could not predict."[65] In *Liberian Poplar Transports,* a severe thunderstorm was not a CWA "act of God." Weather forecasters provided a warning one-half hour before the storm passed over a vessel. The storm could have been anticipated if the crew had monitored the weather broadcast. Whether the crew actually anticipated the storm was irrelevant because they clearly could have anticipated it and taken necessary precautions.[66]

[60] A more comprehensive analysis of the elements of the defense is found in the original determination. For efficiency, only a brief synopsis is included here.
[61] 666 F.2d 561, 565, n.5 (Ct. Cl. 1981).
[62] *Id*. at 565.
[63] *Id*.
[64] 661 F. Supp. 1053, 1061 (C.D. Cal. 1987).
[65] *Liberian Poplar Transports, Inc. v. United States*, 26 Cl. Ct. 223, 226 (1992).
[66] *Id.* (The court noted that "the [CWA] and the legislative history do not subscribe to a subjective test for anticipation.")

Travelers Indemnity Co. v. United States discussed issues of third-party liability[67] and taking precautions against a known hazard - vandals - at a facility.[68] The discharge of oil at issue, the result of vandals knocking over diesel fuel pumps, could have been prevented had the facility owner taken better precautions against vandals.[69] "[C]onditions being unfortunately what they are today, vandals must always be expected."[70] The facility owner's omission of precautions that could have prevented the discharge precluded recovery of removal costs under the CWA.

Both *Liberian Poplar Transports* and *Travelers Indemnity Co.* are similar to the platform at MC-20A in that the victimized vessel and facility were passive (the vessel was moored) - the alleged "disaster" came upon them. And despite the fact that neither the vessel nor facility was able to move to avoid the incident, neither in *Liberian Poplar Transports* nor *Travelers Indemnity Co.* did the discharger qualify for a defense to liability.

c. *Exceptional, Inevitable and Irresistible Character, the Effects of Which Could Not Have Been Prevented or Avoided by the Exercise of Due Care or Foresight.*

An "act of God" must be of exceptional, inevitable and irresistible character, the effects of which could not have been prevented or avoided by the exercise of due care and foresight. This portion of the statute creates an especially high hurdle for a discharger to prove entitlement to the "act of God" defense. Because of the strict liability scheme of environmental statutes, courts have typically focused upon the foreseeability[71] of the event rather than the due care of the discharger.[72]

A demonstration of due care or the absence of negligence on behalf of the discharger does not give rise to an "act of God" defense. The defense of "act of God" leaves open the possibility that a faultless owner or operator will nevertheless be held liable because of the inapplicability of the narrow defense.[73]

---

[67] Under the CWA (and OPA), third-party liability operates as a complete defense for the responsible party similar to the "act of God" defense.

[68] 230 Ct. Cl. 867 (1982).

[69] *Id.* at 869.

[70] *Id*.

[71] "The term 'act of God' is defined to mean an act occasioned by unanticipated grave natural disaster... [O]nly those acts about which the owner could have had no foreknowledge, could have made no plans to avoid, or could not predict would be included. Thus, grave natural disasters which could not have been anticipated in the design, location, or operation of the facility or vessel by reason of historic, geographic, or climatic circumstances, or phenomena would be outside the scope of the owner's or operator's responsibility." Conf. Rep. No. 91- 940, 91st Cong., 2d Sess. (1970), *reprinted in* 1970 U.S.C.C.A.N. 2722.

[72] *West of England Ship Owner's Mut. Protection & Indem. Assoc.,* 872 F.2d at 1199, n. 13. *See also*, Senate Comm. Report, S. Rep. No. 351, 91st Cong., 1st Sess. 5-6 (1969). Although the Senate Report used the phrases "no control" and "beyond the control of" to refer specifically to an act of war and an act of God, the phrases give some guidance to the word "caused" and to the exceptions as a whole. The Senate Report further defined "beyond the control of," when referring to an act of God, by stating "[a]nother area which the committee believed to be beyond the control of an owner or operator would be any discharge caused solely by an act of God about which the owner could have no foreknowledge, could make no plans to avoid, or could not predict." This language - "no foreknowledge," "make no plans to avoid," and "could not predict"- supports the use of foreseeability as a means of setting the parameters of the term "caused" as used in section 1321(f)(1).

[73] *United States v. Tex-Tow, Inc.,* 589 F.2d 1310, 1315 (7th Cir. 1978) (affirming assessment of CWA civil penalty even though facility owner/operator exercised all due care).

Even if without fault, the responsible party is still "responsible" in a strict liability scheme. In *United States v. Alcan Aluminum Corp.,* when two million gallons of hazardous wastes found their way into the Susquehanna River in Pennsylvania, the District Court determined that Hurricane Gloria and the associated torrential rains were not solely at fault.[74] Even though hurricanes were unusual as far north and inland as Pennsylvania, the effects of the hurricane "could have been prevented or avoided by the exercise of due care or foresight."[75]

V. FACTUAL ANALYSIS OF TAYLOR'S REQUEST FOR RECONSIDERATION

When adjudicating claims against the OSLTF, the NPFC acts as the finder of fact. In this role, the NPFC considers all relevant evidence, including evidence provided by claimants and evidence obtained independently by the NPFC, and weighs its probative value when determining the facts of the claim. The NPFC is not bound by the findings of fact, opinions, or conclusions reached by other entities.[76] If there is conflicting evidence in the record, the NPFC makes a determination as to what evidence is more credible or deserves greater weight, and finds facts and makes its determination based on the preponderance of the credible evidence.

In adjudicating Taylor's claim, the NPFC has spent countless hours analyzing Taylor's voluminous submissions. In order to ensure a diligent review of the information and ensure its understanding of the incident surrounding MC-20A, the NPFC contracted with several experts to provide their independent analyses of the event. NPFC carefully weighed the materials submitted by Taylor, the information it independently gathered and what it received from the contracted experts to ensure its determination was based on the preponderance of the credible evidence. In addition to the information discussed previously in its original determination the NPFC has reviewed and analyzed the following information in its determination on reconsideration.

Taylor's claims of exceptional and unanticipated

Taylor asserts that the waves at the MC-20 were exceptional and unanticipated. Taylor states that "the waves constituted an unanticipated grave natural phenomenon of an exceptional, irresistible and inevitable nature that Taylor could not have reasonably anticipated waves with those characteristics, or taken reasonable measures to prevent or avoid the effect that those waves had on the seafloor.[77]

Taylor argues that the waves generated by Hurricane Ivan at MC-20 were exceptional because of the confluence of two characteristics. It states that it was the combination of the height of the waves and their long periods that made them exceptional and those parameters combined to create extraordinary pressures on the seafloor sediments at and around block MC-20 that caused the MC-20A to fail.

---

[74] *United States v. Alcan Aluminum Corp.*, 892 F. Supp. 648, 658 n.1 (M.D. Pa. 1995).
[75] *Id.* at 658.
[76] *See, e.g.*, *Use of Reports of Marine Casualty in Claims Process by National Pollution Funds Center*, 71 Fed. Reg. 60553 (October 13, 2006) and *Use of Reports of Marine Casualty in Claims Process by National Pollution Funds Center* 72 Fed. Reg. 17574 (concluding that NPFC may consider marine casualty reports but is not bound by them).
[77] Taylor Energy Company, LLC, Request for Reconsideration dated July 12, 2019, page 11.

In support of its argument, Taylor relies upon Dr. Suhayda's reports in which he contends that combined height and length of the waves created pressures on the seafloor that were more than twice those that the 100-year design storm wave would have produced and had a return interval exceeding 2,000 years. Taylor criticizes the NPFC for speculating that if more wave measuring devices had been in place prior to Ivan then its waves would not be considered exceptional and questions the NPFC for relying on scientific papers which reported that Hurricane Ivan did not generate "freak" waves that could not be explained by hindcasting models used in 2004 and refers to Dr. Suhayda's rebuttal report in which he states that in fact, none of those models accurately predicted the worst of Hurricane Ivan's waves. Taylor refers to Cooper and other authors cited by the NPFC who stated that Ivan could have been predicted using their models and point out that those same authors also stated that Hurricane Ivan's waves had return intervals measured in the thousands of years. Taylor claims that the NPFC improperly discredited Dr. Suhayda's 1983 design storm wave and declared that design storm waves do not have factors of safety because they are only one parameter employed by models to assess the capacity of the seafloor to withstand wave-generated bottom pressures. Taylor took exception to the NPFC's claim that Dr. Suhayda did not consider the failure of the seafloor beneath Shell Oil Companies platform at SP70 during Hurricane Camille and questioned the NPFC's reference to mudflow deposition in and around the MC-20 area before the MC-20A platform was built citing that the NPFC was confusing a mudflow with a seafloor failure. Lastly, Taylor criticizes the NPFC for citing the statistics regarding the frequency of hurricanes in the Gulf of Mexico as Taylor did not dispute that hurricanes were an anticipated occurrence in the Gulf of Mexico but refer to Hurricane Ivan as producing the tallest and longest waves ever measured in the Gulf of Mexico.[78]

Independent Subject Matter Expert Analysis

Hurricane Ivan was not a rare event in terms of its intensity (maximum winds and/or minimum central pressure) and other standard meteorological parameters within the Gulf of Mexico which is considered to be one of the most conducive environments in the world to generate severe tropical cyclones. A calculated recurrence interval for a storm with intensity similar to Hurricane Ivan within the entire Gulf of Mexico is approximately 5 to 10 years. A calculated recurrence interval for a storm with intensity similar to Hurricane Ivan within an 80 nautical mile radius of the MC-20A platform is approximately 25 to 50 years. And a calculated recurrence interval for a storm with intensity similar to Hurricane Ivan in the general vicinity (i.e., per degree or 60 nautical miles) of the MC-20A is approximately 70 to 140 years.[79] Similarly, GZA refutes Dr. Suhayda's claim that the recurrence interval of Hurricane Ivan waves exceeded 2,000 years as their hindcast calculations revealed that recurrence intervals of Hurricane Ivan generated wave conditions at the MC-20 were estimated to be on the same order of magnitude of 100 years based on the post-Ivan wave statistics for the Gulf of Mexico.[80] GZA elaborated by stating that the largest observed waves and the observed and hindcast Hurricane Ivan wave heights at the MC-20A platform location were not unpredictable nor exceptional as

[78] Taylor Energy Company, LLC, Request for Reconsideration dated July 12, 2019, pages 12-20.
[79] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Appendix G – Gulf of Mexico Hurricane Statistics page 1.
[80] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Appendix J – Predicted Annual Recurrence Interval of Design Wave and Wave Conditions at MC-20A during Hurricane Ivan page 4.

their hindcast modeling of Hurricane Ivan predicted wave characteristics at the MC-20A platform location with results that indicated maximum wave heights at MC-20A of approximately 93 feet to 95 feet. Analysis of observed wave data (up to approximately 2004, including Hurricane Ivan) by Berek et al., 2007 indicates that wave heights in similar water depths (as former MC-20A) of around 86 feet have recurrence intervals of about 100 years and wave heights similar to Hurricane Ivan's waves have recurrence intervals on the same order of magnitude of 100 years. Cooper et al. (2005) concluded that… "[while] Ivan generated the highest waves ever measured or hindcast in the Gulf of Mexico… [it] does not appear to have generated any 'freak' conditions unexplainable by present hindcast methods or physical understanding of hurricane winds and waves. … [h]ence, the extreme waves generated by Ivan do not appear to be an unexpected event."[81]

Additionally, when Dr. Suhayda selected his design wave height and period values for the MC-20A, he assumed that these could be drawn from independent statistical distributions for wave height and wave period. Based upon these assumptions, Dr. Suhayda selected a design wave period and combined it with a pre-determined 100-year maximum wave height and used the combination to compute maximum bottom pressure during the storm. However, when he combined the probabilities of 2 random variables assumed to be independent to estimate their combined probability of occurrence, Dr. Suhayda ignored the fact that wave height and period are statistically dependent, which has been well known since Longuet-Higgins (1975).[82] Dr. Suhayda's original design analysis only considered a single wave condition, the design wave without consideration of the associated wave spectrum or joint probability parameter dependence. In a given sea state, there are many waves (as combinations of wave height and wave period) which have an equal probability of occurring but will cause much larger bottom pressures (up to nearly twice) than the original design wave. Bea et al. (1983) identified this through data collected during Hurricane Camille at the Gulf of Mexico South Pass 62 in which he stated that "due to the generally shorter periods associated with the maximum wave heights, they generally are not the waves that result in maximum bottom pressures".[83] While the combination selected by Dr. Suhayda might have been a good choice to compute extreme forces on the MC-20A platform, which is more sensitive to wave height, to conservatively estimate the maximum wave-induced bottom pressures, longer periods should have been selected associated with smaller wave heights in order to find the maximum bottom pressure during a given storm segment. At the time Dr. Suhayda selected his design wave and period values, all of the elements to make this adequately conservative design decision were available, such as the strong effect of the wave period on bottom pressures through pressure depth attenuation factor, linear

[81] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Part 1 Conclusions, page 1.
[82] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Appendix K – Joint Probability Distribution of Wave Height and Wave Period, page 1. *See also*, Longuet-Higgins, M. S., 1983, On the Joint Distribution of Wave Periods and Amplitudes in a Random Wave Field, Proceedings of the Royal Society of London. Series A, Mathematical and Physical Sciences, Vol. 389, No. 1797 (Oct. 8, 1983), pp. 241-258.
[83] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Appendix N – Seafloor Bottom Pressure Summary. See also Bea at al 1983. Bea, R., S. Wright, P. Sircar, and A.W. Niedoroda, Wave-Induced Slides in South Pass Block 70, Mississippi Delta, Journal of Geotechnical Engineering, 109(4), 619-644.

wave theory since Stokes in the 19th century, and the understanding of the joint distribution known since Longuet-Higgins (1975).[84]

As stated above, Dr. Suhayda's original analysis only considered a single wave condition, the design wave in place of a design wave spectrum to predict bottom stresses. Using a design wave spectrum, GZA's hindcast results indicate that the "design wave spectrum" created bottom pressures almost twice of those assumed for the original design of the MC-20A platform.[85] In fact, GZA found pressures at the MC-20A platform site varying from 288 to 576 psf with an average of 333 psf, for wave height and wave period combinations with a 7.5% joint exceedance probability.[86]

As demonstrated in Monte Carlo simulations, in a sea state with a 40 feet significant wave height and a wave period of 16.3 seconds which corresponded to the peak of Hurricane Ivan storm conditions, approximately 10% of the waves caused bottom pressures in excess of 400 psf. As such, once the correct sea state parameters were selected, none of the weather associated with Hurricane Ivan is considered exceptional or an "act of God", but merely a product of the expected distribution of wave heights and periods combined with the definition of bottom pressures.[87]

To be clear, GZA's Monte Carlo simulations (predicting multiple wave time series records based on a computed wave spectrum) based upon standard linear superposition technologies were perfectly able to predict the occurrence of waves such as those observed at the Marlin Platform and by way of validation, at the MC-20A platform. Hence, wave heights and periods at the MC-20A were neither unpredictable nor unprecedented, considering the sea state parameters. Those results originated from the wind field expected of a typical Ivan-like hurricane and were very similar to the values Dr. Suhayda had estimated in his rudimentary 1980s wind wave model had he used the 40 foot significant wave height and 11.8 second wave period as identified in his report.[88]

In addition to using a design wave spectrum in lieu of a single wave condition design wave, Dr. Suhayda should have used longer periods associated with shorter waves in the standard distribution in order to find the likely maximum bottom pressures during a given storm. If Dr. Suhayda had used the 40 foot significant wave height and 11.8 second wave period as identified

---

[84] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Appendix O – Additional Discussion on the MC-20A Design Spectrum, page 4. See also Longuet-Higgins, M. S., 1983, On the Joint Distribution of Wave Periods and Amplitudes in a Random Wave Field, Proceedings of the Royal Society of London. Series A, Mathematical and Physical Sciences, Vol. 389, No. 1797 (Oct. 8, 1983), pp. 241-258.

[85] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Appendix N – Seafloor Bottom Pressure Summary

[86] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Appendix O – Additional Discussion on the MC-20A Design Spectrum, page 6.

[87] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Appendix O – Additional Discussion on the MC-20A Design Spectrum, page 4.

[88] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Appendix O – Additional Discussion on the MC-20A Design Spectrum, page 5.

in his design storm wave for Hurricane Carmen and properly tried multiple realizations, he would have identified much larger bottom pressures that this sea state could generate, based upon normal and not exceptional statistics. As such, Taylor's claim that the wave forecasting methodology utilized in the early 1980s could not have anticipated the wave heights and periods produced by Hurricane Ivan's characteristics is incorrect as Dr. Suhayda properly forecast the wave heights and periods in 1983 but failed to perform the correct statistical analysis.[89]

Mr. Pettigrew also provided opinion on Dr. Suhayda's single wave condition design wave. Specifically, he stated that the 72-foot wave measured during Hurricane Camille, by a wave-measuring device installed on a platform, which became the deep-water design wave; was a single-point measurement in a tropical cyclone. There is extreme risk taken in utilizing a single-point measurement to characterize an environment. This is the reason that over the intervening years since 1969 that the sensing network within the Gulf of Mexico (and across the U.S. Outer Continental Shelf) has been invested in and developed. Taking a single point measurement to utilize as the design parameter, inherits significant risk; and we ultimately see that risk materialize in 2004 with the interaction of Hurricane Ivan with the environment of MC20. It is not a 'guess' that higher waves occurred.[90]

Mr. Pettigrew went on to question Dr. Suhayda's Design Environmental Data for Mississippi Canyon Block 20 report dated April 1983 by stating that he believed that the process of the environmental assessment within the report was incomplete. At the very least there was no discussion of the unstable subaqueous nature of the bottom in this region, quite the opposite; his only description in the region of his 1983 report is quite favorable;

> *Thousands of offshore structures have been successfully placed in the area and the experience gained from this long history of operations, plus the results of several broad-scale environmental studies, provide a firm foundation for accurately determining environmental conditions for the design site.*[91]

Dr. Suhayda's report also fails to mention the loss of the Shell SP70 platform in Camille (1969), nor the damage to multiple pipelines throughout the years. There may have been an assumption that the engineering company would know of these past incidents, but this assumption introduces unacceptable risk into the design process. Mr. Pettigrew noted that "critical information that could [have] further provide[d] definition to the offshore environment [was] not part of [the] report".[92]

GZA further provided opinion as to Hurricane Camille and the design of the MC-20A platform when they state that although Hurricane Camille occurred about a decade before the

[89] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Appendix O – Additional Discussion on the MC-20A Design Spectrum, page 5.
[90] Response to comments made by Taylor Energy specific to the Analysis of Wave Conditions at Mississippi Canyon Block 20 prepared by Mr. James Pettigrew dated August 9, 2019, page 5.
[91] Taylor Exhibit 20 - Analysis of Wave Conditions at the Mississippi Canyon Area Block 20 During Hurricane Ivan, prepared by Dr. Suhayda, dated February 5, 2018, page 101 (emphasis added).
[92] Response to comments made by Taylor Energy specific to the Analysis of Wave Conditions at Mississippi Canyon Block 20 prepared by Mr. James Pettigrew dated August 9, 2019, pages 6-7.

MC-20A design, it was apparent that Woodward-Clyde considered it a rare event even though it occurred (along with other intense storms) within a relatively short period of time (14 years prior to 1983). As stated in Woodward-Clyde, a mudflow of 70-90 feet of thickness was regarded as a consequence of very infrequent, large scale disturbances of the seafloor accompanying very extreme surface wave conditions, such as Hurricane Camille.[93] However, that failure scenario was not considered by Woodward-Clyde during their design of the MC-20A.[94] As such, GZA shares Mr. Pettigrew's opinion that Hurricane Camille's wave characteristics were not explicitly taken into account during the design of the MC-20A.[95]

Lastly, Mr. Pettigrew expanded on his previous comments specific to bottom pressures in waters of less than 400 feet and the sediment instabilities of the MC-20. Specifically, he clarified that his statements were in relation to the industry belief that significant bottom pressures could not be exerted below 400 feet, but that in 1969, three platforms were lost in 325 feet of water and that belief should be re-examined. He stated that he never meant to imply that there is no significant difference in the pressure that a wave would exert on the seafloor at these different depths. "Superficial similarities" is a misnomer when referring to the loss of (at least) two platforms, whose locations are within sight of each other (~8 miles); both built and operated in an area of well-established history of the subaqueous sediment instabilities that exist on the shelf off of the Mississippi River delta. The difference between a mudflow and a seafloor failure are certainly academically and technically important. However, the operational fact is that they are both dynamic movements of the ocean bottom, in this area with a history of subaqueous sediment instabilities (repetitiveness intended), that have caused the loss of offshore platforms. Enabling alignment of this knowledge across the whole design process should have been ensured.[96]

NPFC's response

Based upon the above, the waves and resulting wave pressures associated with Hurricane Ivan should have been anticipated and were not exceptional. Dr. Suhayda's methodology and analysis using a single wave condition model in his design wave height and period values combined with his lack of performing the correct statistical analysis of data have been questioned. As a result, experts have concluded that the methodology used in his original calculations was flawed. Specifically, had Dr. Suhayda used the proper methodology, the waves and resulting wave pressures associated with Hurricane Ivan would have been properly identified and provided to Woodward-Clyde for use in the design of the MC-20A platform. Hindcast methods as demonstrated by Monte Carlo simulations indicate that Hurricane Ivan was not a rare event and the waves associated with Hurricane Ivan were neither unanticipated nor exceptional. These simulations properly predicted the waves associated with Hurricane Ivan and confirmed that once the correct sea state parameters were selected, none of the weather associated with

[93] Taylor Exhibit 25 – Geology and Engineering Analysis Block 20 Mississippi Canyon prepared by Woodward-Clyde Oceaneering dated March 1983, pages 1-21–1-22.
[94] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Part 5, Page 8.
[95] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August, 2019, Appendix L – Summary, page 1.
[96] Response to comments made by Taylor Energy specific to the Analysis of Wave Conditions at Mississippi Canyon Block 20 prepared by Mr. James Pettigrew dated August 9, 2019, pages 7-8.

Hurricane Ivan was exceptional. Lastly, the relevance of Hurricane Camille's wave characteristics were not taken into consideration by either Dr. Suhayda or Woodward-Clyde in their design of MC-20A platform. Had these wave characteristics been considered in the design criteria, the waves and resulting wave pressures associated with Hurricane Ivan also would not have been unanticipated nor exceptional.

In conclusion, the NPFC is persuaded by the foregoing expert analysis and credible hypothesis detailed within the footnoted references, which presents a compelling contradiction to the claimant's submission. After completing a comprehensive review of the information provided by Taylor and weighing the probative value of all relevant facts, opinions and conclusions, including those obtained independently, the NPFC determines that Taylor has not demonstrated by a preponderance of the evidence that the waves associated with Hurricane Ivan were either exceptional or unanticipated. NPFC determines, as a factual matter, that a preponderance of the credible evidence in this record establishes that Hurricane Ivan's waves did not satisfy the exceptional or unanticipated requirements of OPA's act of God defense.

Taylor's claim of inevitability and irresistibility

Taylor asserts that the waves and bottom pressure at the MC-20 were inevitable as the MC-20A platform and the seafloor for which it was erected could not move out of the way of Ivan or it's waves and state that the NPFC's initial determination didn't take issue with Taylor's position that Ivan's waves were inevitable.[97] The NPFC did in fact respond to Taylor's claim of Ivan's inevitability in our original determination[98] and further addresses this issue below.

Taylor also asserts that the waves and bottom pressures at the MC-20 were irresistible and reminded the NPFC that the MC-20A platform was designed to meet or exceed all industry standards for offshore platforms in the Mississippi Delta region of the Gulf of Mexico. Taylor criticized the NPFC for stating that the waves and bottom pressures generated by Ivan were not irresistible as the designers of the MC-20A platform were not well-informed about the risks posed by hurricanes for not taking into account the seafloor failure caused by Hurricane Camille at SP70; failed to model the possibility of a seafloor failure on the "most dangerous scenario;" or include a factor of safety in their assessment of those risks. Taylor states that those points are irrelevant to the question of whether the seafloor at MC-20 could withstand the pressures imparted on it by Hurricane Ivan's waves as those pressures caused the seafloor to fail over a large area and that the pressure imparted by Hurricane Ivan's waves was far greater than normal and that it was irresistible to the seafloor at MC-20.[99]

Independent Subject Matter Expert Analysis

When Dr. Suhayda selected his design wave height and period values for the MC-20A, he assumed that these could be drawn from independent statistical distributions for wave height and wave period. Based upon these assumptions, Dr. Suhayda selected a design wave period and

[97] Taylor Energy Company, LLC, Request for Reconsideration dated July 12, 2019, pages 20-21.
[98] NPFC determination issued to Taylor Energy Company, LLC, dated May 14, 2019, page 26.
[99] Taylor Energy Company, LLC, Request for Reconsideration dated July 12, 2019, pages 21.

combined it with a pre-determined 100-year maximum wave height and used the combination to compute maximum bottom pressure during the storm. However, when he combined the probabilities of 2 random variables assumed to be independent to estimate their combined probability of occurrence, Dr. Suhayda ignored the fact that wave height and period are statistically dependent, which has been well known since Longuet-Higgins (1975).[100] Dr. Suhayda's original design analysis only considered a single wave condition, the design wave without consideration of the associated wave spectrum or joint probability parameter dependence. In a given sea state, there are many waves (as combinations of wave height and wave period) which have an equal probability of occurring but will cause much larger bottom pressures (up to nearly twice) than the original design wave.[101] Also, if Dr. Suhayda had used the 40 foot significant wave height and 11.8 second wave period as identified in his design storm wave for Hurricane Carmen and properly tried multiple realizations, he would have identified much larger bottom pressures that this sea state could generate, based upon normal and not exceptional statistics.[102]

Additionally, Hurricane Camille's wave characteristics were not explicitly taken into account during the design of the MC-20A.[103] The large sea bottom pressures created by the waves associated with Hurricane Camille triggered a mass sediment movement extending to depths up to 90 feet below the surface of the seafloor which toppled the Shell Platform "B". That platform had been installed and operated within the South Pass Block of the Mississippi Delta in 325 feet of water and was subsequently moved almost 100 feet down slope from its original position as a result of the incident.[104]

NPFC's response

The effects of the waves and bottom pressures responsible for the failure of the MC-20A platform could have been avoided if Dr. Suhayda had used a design wave spectrum in lieu of a single wave condition design wave and longer periods associated with shorter waves in the standard distribution in order to find the likely maximum bottom pressures during a given storm. Similarly, the effects of the waves and bottom pressures responsible for the failure of the MC-20A platform could have been avoided if Dr. Suhayda had used the correct statistical analysis in his design of wave height and period values. As such, had Dr. Suhayda relied a design wave spectrum or performed the correct statistical analysis based upon his 1983 design storm wave for

[100] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Appendix K – Joint Probability Distribution of Wave Height and Wave Period, page 1. *See also*, Longuet-Higgins, M. S., 1983, On the Joint Distribution of Wave Periods and Amplitudes in a Random Wave Field, Proceedings of the Royal Society of London. Series A, Mathematical and Physical Sciences, Vol. 389, No. 1797 (Oct. 8, 1983), pp. 241-258.
[101] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Appendix N – Seafloor Bottom Pressure Summary.
[102] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Appendix O – Additional Discussion on the MC-20A Design Spectrum, page 5.
[103] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Appendix L – Summary, page 1.
[104] Wave Induced Slides in the South Pass Block 70, Mississippi Delta written by Robert B. Bea, Stephen G. Wright, Members, ASCE, Partha Sircar and Alan Niedoroda, page 3.

Hurricane Carmen, the design and construction the MC-20A platform would have been better suited for storm conditions as generated by Hurricane Ivan and could have resisted the waves and bottom pressures asserted on the sea floor during Hurricane Ivan.

Additionally, the loss of the Shell Platform "B" in 1969 and the loss of the MC-20A platform in 2004 are almost identical in that they occurred in areas within the Gulf of Mexico known to contain geohazards and were the result of mass seafloor sediment movements that occurred well below the surface of the seafloor resulting from elevated sea bottom pressures produced by hurricane force waves. Consideration and planning for mass sediment movement resulting from elevated sea bottom pressures associated with hurricane type conditions in a section of the Gulf of Mexico known for geohazards should have been paramount in the design and construction of the MC-20A. Had Hurricane Camille and the geohazards associated with the MC-20 been better considered during the design and construction of the MC-20A, the loss of the platform could have been avoided as the platform would have been better constructed to resist the waves and bottom pressures asserted on the sea floor during Hurricane Ivan.

In conclusion, the NPFC is persuaded by the foregoing expert analysis and credible hypothesis detailed within the footnoted references, which presents a compelling contradiction to the claimant's submission. After completing a comprehensive review of information provided by Taylor and weighing the probative value of all relevant facts, opinions and conclusions, including those obtained independently, the NPFC determines that Taylor has not demonstrated by a preponderance of the evidence that the waves associated with Hurricane Ivan were inevitable or irresistible. Instead, NPFC determines, as a factual matter, that a preponderance of the credible evidence in this record establishes that the waves and resulting wave pressures associated with Hurricane Ivan were neither inevitable nor irresistible for purposes of OPA's act of God defense.

Taylor's claim of exercise of due care and foreseeability

Taylor asserts that the effects of Hurricane Ivan were not foreseeable and could not have been prevented by the exercise of due care of foresight. It states that the 100 year storm design wave was the accepted industry design standard and that Sohio retained Woodward-Clyde Oceaneering to assess the stability of the MC-20 seafloor, and its capacity to withstand the forces that would be imparted on it by a 100 year storm design wave. It disagrees with NPFC's position that Sohio should have assessed the ability of the MC-20 seafloor to withstand the pressures that would be imparted by waves generated by a "worst case" hurricane. Taylor argues that if the owner of a facility designs and builds the facility to industry standards and codes that have been developed to account for the natural phenomenon, then the owner has presumably exercised "due care" to guard against the effects of the natural phenomenon and it was undisputed that Sohio's analysis of the strength of the MC-20 seafloor, and its subsequent design and construction of the MC-20A platform, met or exceeded all applicable industry standards.[105]

Independent Subject Matter Expert Analysis

[105] Taylor Energy Company, LLC, Request for Reconsideration dated July 12, 2019, pages 21-22.

As previously stated, when Dr. Suhayda selected his design wave height and period values for the MC-20A, he assumed that these could be drawn from independent statistical distributions for wave height and wave period. Based upon these assumptions, Dr. Suhayda selected a design wave period and combined it with a pre-determined 100-year maximum wave height and used the combination to compute maximum bottom pressure during the storm. However, when he combined the probabilities of 2 random variables assumed to be independent to estimate their combined probability of occurrence, Dr. Suhayda ignored the fact that wave height and period are statistically dependent, which has been well known since Longuet-Higgins (1975).[106] Dr. Suhayda's original design analysis only considered a single wave condition, the design wave without consideration of the associated wave spectrum or joint probability parameter dependence. In a given sea state, there are many waves (as combinations of wave height and wave period) which have an equal probability of occurring but will cause much larger bottom pressures (up to nearly twice) than the original design wave.[107] Additionally, if Dr. Suhayda had used the 40 foot significant wave height and 11.8 second wave period as identified in his design storm wave for Hurricane Carmen and properly tried multiple realizations, he would have identified much larger bottom pressures that this sea state could generate, based upon normal and not exceptional statistics.[108]

The Gulf of Mexico itself is highly conducive to the generation of major hurricanes (i.e., hurricanes of Category 3 or greater intensity) and within the Gulf of Mexico, the presence of the Loop Current and eddies which provide deep reservoirs of very warm water relative to the Mississippi Delta region contributes to a high risk of major hurricanes that track in the vicinity of the former MC-20A platform. GZA's statistical analysis of hurricane intensity, using available NOAA hurricane best track data including all hurricanes within the Gulf of Mexico domain, indicates that storms with intensities similar to Hurricane Ivan within the entire Gulf of Mexico is approximately 5 to 10 years. GZA also considered the recurrence interval of storms with similar intensity (i.e., major hurricanes) tracking within an 80 nautical mile radius of the MC-20A platform (four times the typical radius of maximum winds and representing an approximate zone of significant storm influence) and an approximately 25 to 50 year recurrence interval was estimated. Similarly, the recurrence interval of storms with similar intensity (i.e., major hurricanes) tracking within the general vicinity of the MC-20A platform as defined by 1 nautical degree (60 nautical miles) was estimated to be approximately 70 to 140 years.[109] As detailed by GZA, the probability of sediment failure, prior to and during the life of the MC-20A platform and currently, within this region is high.[110] There was also information available that a hurricane

[106] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Appendix K – Joint Probability Distribution of Wave Height and Wave Period, page 1. *See also*, Longuet-Higgins, M. S., 1983, On the Joint Distribution of Wave Periods and Amplitudes in a Random Wave Field, Proceedings of the Royal Society of London. Series A, Mathematical and Physical Sciences, Vol. 389, No. 1797 (Oct. 8, 1983), pp. 241-258.
[107] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Appendix N – Seafloor Bottom Pressure Summary.
[108] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Appendix O – Additional Discussion on the MC-20A Design Spectrum, page 5.
[109] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Appendix G – Gulf of Mexico Hurricane Statistics page 1.
[110] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Conclusions, page iv.

with characteristics such as Ivan, could sink the MC-20A platform.[111] Additionally, Woodward-Clyde did not explicitly take Hurricane Camille's wave characteristics into account during the design of the MC-20A.[112] The large sea bottom pressures created by the waves associated with Hurricane Camille triggered a mass sediment movement extending to depths up to 90 feet below the surface of the seafloor which toppled the Shell Platform "B". That platform had been installed and operated within the South Pass Block of the Mississippi Delta in 325 feet of water and was subsequently moved almost 100 feet down slope from its original position as a result of the incident.[113]

Lastly, Mr. Pettigrew described the potential effects of hurricanes on the sediments of the MC-20 when he concluded that there were at least seven storms that could have contributed to significant sediment movement in the areas upslope of the MC-20 platform site or significant sediment accumulation on the mudlobe crests in the area of the platform. Specifically, in the Gulf of Mexico tropical cyclone population of 2001-2004, there was at least one instance a season that a storm could have impacted the sedimentation conditions of the Mississippi Canyon region; one storm in 2001 (Allison), four storms in 2002 (Bertha, Hanna, Isidore, Lili), one storm in 2003 (Bill), and one storm in 2004 (Ivan). Further, in this demonstrated environment of subaqueous sediment instabilities; the annual interaction of tropical cyclones only further increases the uncertainty of bottom conditions throughout this dynamic deltaic region. In the fifteen years since Hurricane Ivan, there have only been six seasons when a tropical cyclone did not affect the Mississippi River delta region.[114]

NPFC's response

Taylor made a business decision to purchase the MC20 lease and fixtures knowing that it was located in a geomorphic region that consisted of very soft and under-consolidated sediment with high moisture content and low shear strength and was inherently unstable and vulnerable to sediment failures and mudslides due to surface waves. Taylor either was aware, or should have been aware, of the propensity for hurricanes within the Gulf of Mexico and the unstable sedimentation conditions within the Mississippi Canyon. In its submission to the NPFC, Taylor de-values these risks and conditions and seeks to shield itself from the strict liabilities resulting from that decision by citing that the 100 year storm design wave used in the construction of the MC-20A was the accepted industry design standard. It heavily relies on the fact that Sohio retained Woodward-Clyde Oceaneering to assess the stability of the MC-20 seafloor and that its platform had a capacity to withstand the forces that would be imparted on it by a 100 year storm design wave as designed by Dr. Suhayda.

But as previously discussed, the effects of the waves and bottom pressures responsible for the failure of the MC-20A platform could have been avoided if Dr. Suhayda had used a design wave

[111] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Appendix J – Predicted Annual Recurrence Interval of Design Wave and Wave Conditions at MC-20A during Hurricane Ivan page 4.
[112] GZA Technical Report – NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan dated August 2019, Appendix L – Summary, page 1.
[113] Wave Induced Slides in the South Pass Block 70, Mississippi Delta written by Robert B. Bea, Stephen G. Wright, Members, ASCE, Partha Sircar and Alan Niedoroda, page 3.
[114] NPFC Task for the Analysis of Weather Conditions at Mississippi Canyon Block 20 during Hurricane Ivan, Task 1, item (i), and Task 2, item (d) prepared by Mr. James Pettigrew dated May 15, 2019, page 27.

spectrum in lieu of a single wave condition design wave and longer periods associated with shorter waves in the standard distribution in order to find the likely maximum bottom pressures during a given storm. Similarly, the effects of the waves and bottom pressures responsible for the failure of the MC-20A platform could have been avoided if Dr. Suhayda had used the correct statistical analysis in his design of wave height and period values. As such, had Dr. Suhayda performed the correct statistical analysis based upon his 1983 design storm wave for Hurricane Carmen, the loss of the MC-20A platform could have been prevented and avoided by the exercise of due care in the form of correct statistical analysis.

In addition, the loss of the Shell Platform "B" in 1969 and the loss of the MC-20A platform in 2004 are almost identical in that they occurred in areas within the Gulf of Mexico known to contain geohazards and were the result of mass seafloor sediment movements that occurred well below the surface of the seafloor resulting from elevated sea bottom pressures produced by hurricane force waves. Consideration and planning for mass sediment movement resulting from elevated sea bottom pressures associated with hurricane type conditions in a section of the Gulf of Mexico known for geohazards should have been paramount in the design and construction of the MC-20A. Had Hurricane Camille and the geohazards associated with the MC-20 been considered during the design and construction of the MC-20A, the loss of the platform could have been prevented and avoided through better planning and the exercise of due care and foresight.

Lastly, there were seven named storms in the Gulf of Mexico between 2001 and 2004 that could have contributed to sediment movement in the areas upslope of the MC-20A platform. These storms, along with the propensity for additional hurricanes and the unstable sediment conditions of the MC-20 were essentially dismissed by Taylor when considering the due care of their platform. As cited in our original determination, Taylor failed to conduct geophysical surveys of the mudflow channels and depositional lobes located above the platform site every other year and after major storms as recommended by Woodward and required by the Mineral Management Service (MMS). When Taylor was questioned about the frequency of its geophysical surveys in, around or upslope of the platform site as well as its geophysical surveys of the mudflow channels and depositional lobes located above the platform, Taylor responded that it had only conducted one geophysical survey of MC-21 block in 2001 and that survey had extended into the MC-20 platform site and areas upslope of the MC-20. Taylor's failure to conduct these surveys calls into question the stability of the mudflow channels, depositional lobes and areas upslope of the MC-20 and requires Taylor to speculate on the condition of the sediments subject to this claim based upon a geophysical survey conducted three years before the casualty and geophysical surveys conducted post casualty as part of Taylor response to plug and abandon its wells as required for Outer Continental Shelf lessees and operators.

In conclusion, the NPFC is persuaded by the foregoing expert analysis and credible hypothesis detailed within the footnoted references, which presents a compelling contradiction to the claimant's submission. After completing a comprehensive review of information provided by Taylor and weighing the probative value of all relevant facts, opinions and conclusions, including those obtained independently, the NPFC determines that Taylor has not demonstrated by a preponderance of the evidence that it exercised due care and foresight against the effects of Hurricane Ivan. NPFC determines, as a factual matter, that a preponderance of the credible

evidence in this record establishes that Taylor failed to exercise due care and foresight against the effects of Hurricane Ivan.

Taylor's claim as to sole cause

Taylor asserts that Hurricane Ivan's waves were the sole cause of the MC-20 incident. Taylor disagrees with NPFC's original determination that its failure to conduct geophysical surveys biennially and following major storms, as recommended by Woodward-Clyde Oceaneering in its 1983 report, and as required by the MMS, could have contributed to the incident. Finally, Taylor contends that if Hurricane Ivan's waves were an act of God, but its winds or other natural phenomenon involved in the chain of causation were not acts of God, then it still should be able to assert an act of God defense.[115]

NPFC's response

Taylor failed to conduct geophysical surveys every other year and after major storms of the mudflow channels and depositional lobes located above the platform site as recommended by Woodward-Clyde and required by the MMS. NPFC finds that the failure to conduct these surveys could have contributed to the collapse of the MC-20A platform.

Additionally, NPFC determines from the research that Taylor has not provided a preponderance of the evidence to support its claim that the waves were the sole cause of the incident. At a minimum, there was a chain of causation from the hurricane itself, to winds, to waves, to a failure of the subsea floor. It may be more proper to view the hurricane as the cause of the incident, but even when viewing this event with that wide-angle aperture, the NPFC is still not convinced by a preponderance of the evidence that it was the sole cause of platform failure.

VI. AMOUNTS CLAIMED BY TAYLOR

Taylor seeks to recover at least $353,881,719.70 from the OSLTF based upon its act of God claim. Before NPFC can authorize payment from the OSLTF for any claim, the claimant must show that the costs claimed are compensable under OPA. Because NPFC has determined that Taylor is not entitled to an act of God defense, NPFC did not analyze whether any of the costs claimed by Taylor would be OPA compensable. If this determination is overturned, then NPFC will address how much, if any, of the amount claimed by Taylor is actually compensable by the OSLTF.

VII. CONCLUSION

The NPFC reviewed Taylor's original claim submission, Taylor's request for reconsideration, all of the exhibits and additional information provided by Taylor and additional information acquired independently. The NPFC concludes that the facts of this case do not support an act of God defense under OPA.

[115] Taylor Energy Company, LLC, Request for Reconsideration dated July 12, 2019, pages 23-25.

Hurricanes are common occurrences, especially in the Gulf of Mexico. In fact, there have been over 300 hurricane strikes in the Atlantic and Gulf coast regions since 1851. They are certainly not unanticipated. Hurricanes bring with them several known characteristics, including high winds, high waves, and high wave pressures. While the intensity may vary from storm to storm, it is unquestioned that these characteristics are attendant, in one way or another, with all hurricanes. There can be little doubt that Taylor was well-aware of the propensity and intensity of hurricanes in Gulf of Mexico.

The unstable subsea conditions at MC-20 were also well-known. Research was clear far before Taylor assumed the lease that the submerged delta apron consisted of thick, very weak sediments that are inherently unstable and vulnerable to hurricane wave-induced failure and that even a small change in prevailing conditions, such as wave input, can trigger a mudflow. As a result, wave-induced bottom pressures accompanying large hurricanes can cause spectacular failures of the accumulated sediments. Yet despite this research Taylor made the decision to acquire the lease. It cannot later successfully claim that this instability was unanticipated.

NPFC's research concluded that the wave pressures *should* have been anticipated and were not exceptional. Specifically, NPFC's experts questioned the methodology and analysis used in the reports that Taylor's relies upon to support its claim. Examples include the calculation of Hurricane Ivan's recurrence intervals, the relevance of Hurricane Camille in the design of the MC-20A platform, the ability to successfully hindcast the waves associated with Hurricane Ivan, and the reliability of Dr. Suhayda's design storm wave and wave period used in the design of the MC-20A. Experts have also specifically concluded that the methodology used in the original calculations in determining the anticipated wave pressures was flawed. Had the proper methodology been used, then the expected wave pressures would have been reported differently to the Department of Interior by Woodward-Clyde; and thus, ultimately, Ivan's wave pressures would have fallen into the "expected" range.

Taylor asserts that the effects of the act of God could not have been prevented or avoided because MC-20A was a platform affixed to the seafloor. As outlined previously, Taylor with full knowledge of the propensity of hurricanes in the Gulf of Mexico and the historic instability of the seafloor at the site still made the business decision to acquire the lease. For several years, Taylor was able to capitalize on its decision. However, under the facts of this case, Taylor cannot now attempt to escape liability for this oil spill by claiming it could not have avoided this incident.

Taylor contends it should not be held liable because MC-20A platform was built to all applicable standards and that the MMS approved of the design and installation. However, neither the design approval nor the issuance of the lease serves to exonerate Taylor from liability resulting from an oil spill.

Taylor also argues that it was completely without fault for this incident. There is no calculus of fault when strict liability applies. However, with respect to the alleged act of God being the "sole cause" of the incident as required by OPA, the NPFC notes that Taylor did not comply with a mandate of the MMS to conduct geophysical surveys of the site biennially and following major storms. Since several storms had affected the region prior to Ivan, it is possible that the geophysical surveys could have detected sediment instabilities in and around the MC-20A

platform that could have been rectified prior to Ivan. In any event, failure to conduct these surveys calls into question whether the incident was the sole cause of the structure's failure.

Ultimately, Taylor made a decision to purchase the MC20 lease and fixtures knowing that the lease was located on a tract of land that was identified to contain geohazardous conditions and described to contain instabilities caused by unconsolidated sediments, slumping, shallow faulting or gaseous sediments in an area of the country prone to hurricanes. It is the determination of the NPFC that Taylor should remain liable for this decision as its act of God defense fails.

The NPFC has thoroughly reviewed all documentation submitted with the claim, analyzed the applicable law and regulations, and as discussed in detail above and previously, has concluded that the claimant has not demonstrated, by a preponderance of the evidence, that it is entitled to an act of God defense. Taylor's act of God defense is denied upon reconsideration.

(b) (6)

Claim Supervisor: (b) (6)

Date of Supervisor's Review: ***October 10, 2019***

Supervisor Action: ***Denied***