

ENDNOTES

The Commission has reviewed thousands of pages of documents from dozens of government agencies, private companies, and other entities, and interviewed hundreds of witnesses from these same agencies, companies, and entities. When possible, we include all pertinent details in the following endnote citations for those documents and interviews that have contributed to this report. Many documents and interviews, however, were disclosed or given to the Commission on a confidential basis. For these “non-public” sources, our citations include only as much detail as we can comfortably disclose while still respecting the privacy concerns of the source (e.g., “non-public BP document,” “interview with government official,” “interview with Coast Guard official”).

The vast majority of non-public material that we cite in the endnotes below comes from documents and interviews provided by four government agencies—the Chemical Safety Board, the Coast Guard, the Department of Energy, and the Department of the Interior—and ten companies—BP, Cameron, Chevron, Dril-Quip, ExxonMobil, Halliburton, Schlumberger, Shell, Transocean, and Weatherford. In addition, the Commission participated in the Coast Guard’s Incident Specific Preparedness Review of the BP Deepwater Horizon spill, through which dozens of officials from a variety of federal and state agencies, federal, state, and local elected officials, and executives and personnel from private companies and other spill response-related entities have been interviewed. All Coast Guard Incident Specific Preparedness Review interviews are also cited as non-public. Finally, the Commission has interviewed many Gulf Coast residents who wish to remain anonymous. These interviews are cited as non-public as well.

Chapter One

- ¹ Internal Halliburton document (HAL_0011208); Testimony of Nathaniel Chaisson, Hearing before the Deepwater Horizon Joint Investigation Team, August 24, 2010, 423. This report cites many “Internal documents” that the Commission received from companies, including BP, Halliburton, and Transocean. Those internal documents are identified by their document production serial numbers when available, which were assigned by the entity that provided them.
- ² Internal BP document (BP, presentation to Commission, August 9, 2010, slides 5 & 12).
- ³ Testimony of Nathaniel Chaisson, 411; U.S. Department of Energy, *Well Configuration* (BP document made public by the Department of Energy), http://www.energy.gov/open/documents/3.1_Item_2_Macondo_Well_07_Jun_1900.pdf; Testimony of Natalie Roshto, Hearing before the Deepwater Horizon Joint Investigation Team, July 22, 2010, 15.
- ⁴ Testimony of Michael Williams, Hearing before the Deepwater Horizon Joint Investigation Team, July 23, 2010, 35–36.
- ⁵ Testimony of John Guide, Hearing before the Deepwater Horizon Joint Investigation Team, July 22, 2010, 260–266; Testimony of James Wilson, Hearing before the Deepwater Horizon Joint Investigation Team, October 6, 2010, 176.
- ⁶ Brian Morel, e-mail message to Richard Miller and Mark Hafle, April 14, 2010, 13:31, <http://energycommerce.house.gov/documents/20100614/BP-April14.Email.calling.Macondo.a.nightmare.well.pdf>.
- ⁷ BP, “GoM Exploration Wells: MC 252 #1—Macondo Prospect Well Information,” September 2009, <http://bpoilresponse.markimooore.com/blog/bp-media/docs/Macondo.Prospect.Well.Information.pdf>.
- ⁸ Testimony of Richard Tink, Hearing before the Deepwater Horizon Joint Investigation Team, May 26, 2010, 392; Deepwater Horizon Joint Investigation Team, *APE Summary for the Macondo Well*, October 7, 2010, <http://www.deepwaterinvestigation.com/external/content/document/3043/914919/1/APE%20Summary%20for%20the%20Macondo%20Well.pdf>.
- ⁹ BP, Deepwater Horizon *Accident Investigation Report* (September 8, 2010), 17.
- ¹⁰ Transocean, *Our Company*, <http://www.deepwater.com/fw/main/Our-Company-2.html>.
- ¹¹ Press Release, Transocean, Transocean Ltd. Reports Fourth Quarter and Full-Year 2009 Results, February 24, 2010.
- ¹² Press Release, Transocean, Transocean Inc. and GlobalSantaFe Corporation Agree to Combine, July 23, 2007.
- ¹³ “Contractors ordering offshore rigs on speculation,” *Drilling Contractor*, May/June 2002.
- ¹⁴ “Global 500,” CNNMoney.com, July 26, 2010, http://money.cnn.com/magazines/fortune/global500/2010/full_list/index.html.
- ¹⁵ Internal Transocean documents (TRN-HCJ 93526, 93528).
- ¹⁶ Internal BP document (BP-HZN-MBI 126338); Internal BP document (BP-HZN-OSC 5378).
- ¹⁷ “Brazil Pins Hopes on Massive, untapped Oil Fields,” NPR, December 1, 2009, <http://www.npr.org/templates/story/story.php?storyId=120966523>.
- ¹⁸ Bureau of Ocean Energy Management, Regulation, and Enforcement, *Installations, Removals, and Cumulative Totals of Offshore Production Facilities in Federal Waters; 1959–2010*, February 2010, <http://www.boemre.gov/stats/PDFs/OCSPlatformActivity.pdf>; Bureau of Ocean Energy Management, Regulation and Enforcement, *OCS Incidents/Spills by Category: 1996–2005*, October 19, 2007, <http://www.boemre.gov/incidents/Incidents1996-2005.htm>; Bureau of Ocean Energy Management, Regulation, and Enforcement, *OCS Incidents/Spills by Category: 2006–2010*, July 10, 2010, <http://www.boemre.gov/incidents/IncidentStatisticsSummaries.htm>.

- 19 Testimony of Ronald Sepulvado, Hearing before the Deepwater Horizon Joint Investigation Team, July 23, 2010, 7, 14, 34.
- 20 Testimony of John Guide, 23.
- 21 *Ibid.*, 43–44 and 189; Schlumberger, “Oilfield Glossary: cement bond log,” accessed November 19, 2010, <http://www.glossary.oilfield.slb.com/Display.cfm?Term=cement%20bond%20log>.
- 22 Testimony of John Guide, 43–44, 189–191.
- 23 Testimony of Douglas Brown, Hearing before the Deepwater Horizon Joint Investigation Team, May 26, 2010, 88, 91.
- 24 Testimony of Jimmy Harrell, Hearing before the Deepwater Horizon Joint Investigation Team, May 27, 2010, 77; Internal Transocean document (TRN-HCDC 92).
- 25 Internal Transocean document (TRN-HCDC 92); BP, Deepwater Horizon *Accident Investigation Report*, 82.
- 26 Testimony of Ross Skidmore, Hearing before the Deepwater Horizon Joint Investigation Team, July 20, 2010, 264.
- 27 BP, Deepwater Horizon *Accident Investigation Report*, 24.
- 28 Testimony of Jimmy Harrell, 38, 113; Testimony of Curt Kuchta, Hearing before the Deepwater Horizon Joint Investigation Team, May 27, 2010, 166, 183, 184.
- 29 Testimony of Daun Winslow, Hearing before the Deepwater Horizon Joint Investigation Team, August 24, 2010, 188 and 191.
- 30 Testimony of Jimmy Harrell, 113; Testimony of Curt Kuchta, 184.
- 31 Testimony of David Sims, Hearing before the Deepwater Horizon Joint Investigation Team, August 26, 2010, 119.
- 32 Testimony of Daun Winslow, Hearing before the Deepwater Horizon Joint Investigation Team, August 23, 2010, 442.
- 33 Testimony of Stephen Bertone, Hearing before the Deepwater Horizon Joint Investigation Team, July 19, 2010, 29, 33; Testimony of Randy Ezell, Hearing before the Deepwater Horizon Joint Investigation Team, May 28, 2010, 279.
- 34 Testimony of Randy Ezell, 275.
- 35 BP, Deepwater Horizon *Accident Investigation Report*, 24.
- 36 Testimony of Stephen Bertone, 33.
- 37 *Ibid.*; Testimony of Randy Ezell, 280.
- 38 Testimony of Daun Winslow, August 23, 2010, 443.
- 39 Testimony of Stephen Bertone, 33–34; Testimony of Daun Winslow, August 23, 2010, 443.
- 40 Testimony of Randy Ezell, 281.
- 41 *Ibid.*
- 42 *Ibid.*
- 43 *Ibid.*
- 44 Testimony of Chris Pleasant, Hearing before the Deepwater Horizon Joint Investigation Team, May 28, 2010, 115, 281.
- 45 *Ibid.*, 116–118; Testimony of Jimmy Harrell, 117.
- 46 John R. Smith, *Review of Operational Data Preceding Explosion on Deepwater Horizon in MC252*, July 1, 2010, 11–12.
- 47 Testimony of Lee Lambert, Hearing before the Deepwater Horizon Joint Investigation Team, July 20, 2010, 291; Internal BP documents (BP-HZN-CEC 20347, 20178).
- 48 Internal BP documents (BP-HZN-CEC 20347, 20178).
- 49 Internal BP document (BP-HZN-MBI 21265).
- 50 Testimony of Patrick O’Bryan, Hearing before the Deepwater Horizon Joint Investigation Team, August 26, 2010, 364–365, 393.
- 51 Brian Morel, e-mail message to Richard Miller and Mark Hafle.
- 52 Testimony of Jimmy Harrell, 13.
- 53 BP, Deepwater Horizon *Follow Up Rig Audit, Marine Assurance Audit and Out of Service Period*, September 2009, 2, 18–48; Internal BP document (BP-HZN-MBI 136211).
- 54 Testimony of Patrick O’Bryan, 364.
- 55 Testimony of David Sims, Hearing before the Deepwater Horizon Joint Investigation Team, May 29, 2010, 172, 313.
- 56 BP, Deepwater Horizon *Accident Investigation Report*, 25; Internal BP document (BP-HZN-CEC 17621).

- ⁵⁷ BP, *Deepwater Horizon Accident Investigation Report*, 33.
- ⁵⁸ *Ibid.*, 25; Testimony of Chris Pleasant, 118–119.
- ⁵⁹ Testimony of John Gisclair, Hearing before the Deepwater Horizon Joint Investigation Team, October 8, 2010, 131–132.
- ⁶⁰ Testimony of Curt Kuchta, 185–186; Testimony of Jimmy Harrell, 12.
- ⁶¹ Testimony of Yancy Keplinger, Hearing before the Deepwater Horizon Joint Investigation Team, October 5, 2010, 128–129.
- ⁶² *Ibid.*; Testimony of Andrea Fleytas, Hearing before the Deepwater Horizon Joint Investigation Team, October 5, 2010, 16; Testimony of Daun Winslow, August 23, 2010, 296.
- ⁶³ Testimony of Daun Winslow, August 23, 2010, 295; Testimony of Pat O’Bryan, 366.
- ⁶⁴ Testimony of Daun Winslow, August 23, 2010, 295–296.
- ⁶⁵ Testimony of Randy Ezell, 281, 282, 294.
- ⁶⁶ *Ibid.*, 282.
- ⁶⁷ *Ibid.*, 281–282, 311.
- ⁶⁸ Testimony of Patrick O’Bryan, 219–220.
- ⁶⁹ Testimony of David Sims, August 26, 2010, 163.
- ⁷⁰ *Ibid.*, 317; Testimony of Patrick O’Bryan, 367.
- ⁷¹ Testimony of David Sims, August 26, 2010, 174.
- ⁷² *Ibid.*, 367.
- ⁷³ Testimony of Patrick O’Bryan, 367.
- ⁷⁴ Internal BP documents (BP-HZN-MBI 21418, 21420); BP, *Deepwater Horizon Accident Investigation Report*, 150.
- ⁷⁵ Testimony of Randy Ezell, 282, 283.
- ⁷⁶ *Ibid.*, 283.
- ⁷⁷ *Ibid.*, 283–284.
- ⁷⁸ Testimony of Micah Sandell, Hearing before the Deepwater Horizon Joint Investigation Team, May 29, 2010, 8, 10, 12.
- ⁷⁹ *Ibid.*, 11.
- ⁸⁰ Internal BP documents (*Deepwater Horizon Schematic*; BP August 9, 2010 presentation to Oil Spill Commission, slide 5).
- ⁸¹ Testimony of Douglas Brown, 88–89, 92–93.
- ⁸² Testimony of Paul Meinhart, Hearing before the Deepwater Horizon Joint Investigation Team, May 29, 2010, 28.
- ⁸³ Testimony of Douglas Brown, 93–94.
- ⁸⁴ *Ibid.*, 94–95.
- ⁸⁵ Testimony of Steve Bertone, Hearing before the Deepwater Horizon Joint Investigation Team, July 19, 2010, 28, 34.
- ⁸⁶ Testimony of James Nicholas Wilson, Hearing before the Deepwater Horizon Joint Investigation Team, October 13, 2010, 10; Testimony of Steve Bertone, 35.
- ⁸⁷ Testimony of Steve Bertone, 35.
- ⁸⁸ Testimony of Gregory Meche, Hearing before the Deepwater Horizon Joint Investigation Team, May 28, 2010, 198.
- ⁸⁹ Testimony of Steve Bertone, 35–36.
- ⁹⁰ *Ibid.*
- ⁹¹ Testimony of Andrea Fleytas, 14.
- ⁹² Testimony of Gregory Meche, 235.
- ⁹³ Testimony of Andrea Fleytas, 14.
- ⁹⁴ Complaint at 2, *Shivers v. BP Plc.*, No. 10-cv-381 (S.D. Ala. July 20, 2010).
- ⁹⁵ *Ibid.*
- ⁹⁶ *Ibid.*
- ⁹⁷ *Ibid.*

- ⁹⁸ *Ibid.*; Tracey Dalzell Walsh, "Forced To Become Emergency Workers, Fishermen Say BP Never Even Said Thanks," *Courthouse News Service*, July 22, 2010.
- ⁹⁹ Testimony of Steve Bertone, 37.
- ¹⁰⁰ *Ibid.*, 37–38.
- ¹⁰¹ *Ibid.*, 38.
- ¹⁰² *Ibid.*, 38–39.
- ¹⁰³ Testimony of Randy Ezell, 284–285.
- ¹⁰⁴ *Ibid.*, 285.
- ¹⁰⁵ Testimony of Yancy Keplinger, 165.
- ¹⁰⁶ Testimony of Randy Ezell, 285–286.
- ¹⁰⁷ *Ibid.*, 286.
- ¹⁰⁸ *Ibid.*
- ¹⁰⁹ *Ibid.*, 286–287.
- ¹¹⁰ *Ibid.*, 287.
- ¹¹¹ Testimony of Yancy Keplinger, 152; Testimony of Tyrone Benton, Hearing before the Deepwater Horizon Joint Investigation Team, July 23, 2010, 250.
- ¹¹² Testimony of Gregory Meche, 209; Testimony of David Young, Hearing before the Deepwater Horizon Joint Investigation Team, May 27, 2010, 327; Testimony of Randy Ezell, 283; Testimony of Jimmy Harrell, 65; Testimony of Yancy Keplinger, 153.
- ¹¹³ Testimony of Micah Sandell, 11–13.
- ¹¹⁴ Testimony of Capt. Alwin Landry, Hearing before the Deepwater Horizon Joint Investigation Team, May 11, 2010, 98–100.
- ¹¹⁵ Testimony of Paul Erickson, Hearing before the Deepwater Horizon Joint Investigation Team, May 11, 2010, 231–232.
- ¹¹⁶ Testimony of Capt. Alwin Landry, 101–102.
- ¹¹⁷ *Ibid.*, 104–105.
- ¹¹⁸ Testimony of Gregory Meche, 202, 211, 223.
- ¹¹⁹ Testimony of Anthony Gervasio, Hearing before the Deepwater Horizon Joint Investigation Team, May 11, 2010, 173, 187–188.
- ¹²⁰ *Ibid.*, 187; Testimony of Kevin Robb, Hearing before the Deepwater Horizon Joint Investigation Team, May 11, 2010, 42.
- ¹²¹ Testimony of Anthony Gervasio, 189.
- ¹²² *Ibid.*, 105, 190; Testimony of Gregory Meche, 223.
- ¹²³ Testimony of Daun Winslow, August 23, 2010, 447–448.
- ¹²⁴ *Ibid.*, 448–449, 452.
- ¹²⁵ Testimony of Mark Hay, Hearing before the Deepwater Horizon Joint Investigation Team, May 28, 2010, 225.
- ¹²⁶ Testimony of Daun Winslow, August 23, 2010, 452; Testimony of Randy Ezell, 287.
- ¹²⁷ Testimony of Daun Winslow, August 23, 2010, 452.
- ¹²⁸ *Ibid.*, 449–450, 452; Testimony of Randy Ezell, 289; Testimony of Anthony Gervasio, 190, 199.
- ¹²⁹ Testimony of Daun Winslow, August 23, 2010, 450; BP, Deepwater Horizon *Accident Investigation Report*, 123.
- ¹³⁰ Testimony of Daun Winslow, August 23, 2010, 450; Testimony of Steve Bertone, 39.
- ¹³¹ Testimony of Steve Bertone, 39.
- ¹³² *Ibid.*
- ¹³³ *Ibid.*
- ¹³⁴ Testimony of Daun Winslow, August 23, 2010, 451; Testimony of Steve Bertone, 39.
- ¹³⁵ Testimony of Steve Bertone, 39.
- ¹³⁶ *Ibid.*
- ¹³⁷ Testimony of Patrick O'Bryan, 368, 396.
- ¹³⁸ Testimony of Daun Winslow, August 23, 2010, 452.

- ¹³⁹ Internal BP Document (BP-HZN-MBI 21277).
- ¹⁴⁰ Testimony of Daun Winslow, August 23, 2010, 451–452.
- ¹⁴¹ Internal BP Document (BP August 9, 2010 presentation to Oil Spill Commission, slide 13).
- ¹⁴² Testimony of Daun Winslow, August 23, 2010, 454.
- ¹⁴³ *Ibid.*, 454–455.
- ¹⁴⁴ Testimony of Yancy Keplinger, October 5, 2010, 157.
- ¹⁴⁵ Associated Press, “‘The Real Deal’: Survivors recall the Deepwater Horizon explosion,” *Press-Register*, May 9, 2010.
- ¹⁴⁶ *Ibid.*; BP, Deepwater Horizon *Accident Investigation Report*, 103.
- ¹⁴⁷ Testimony of Steve Bertone, 39–40.
- ¹⁴⁸ *Ibid.*, 40.
- ¹⁴⁹ *Ibid.*, 40–41.
- ¹⁵⁰ *Ibid.*, 41–43.
- ¹⁵¹ *Ibid.*, 43.
- ¹⁵² *Ibid.*
- ¹⁵³ Testimony of Randy Ezell, 288.
- ¹⁵⁴ Testimony of Steve Bertone, 44.
- ¹⁵⁵ *Ibid.*, 44–46.
- ¹⁵⁶ *Ibid.*, 45–46.
- ¹⁵⁷ *Ibid.*, 46–47.
- ¹⁵⁸ *Ibid.*, 47–48.
- ¹⁵⁹ Testimony of Michael Williams, 26.
- ¹⁶⁰ Testimony of Steve Bertone, 48.
- ¹⁶¹ Testimony of Andrea Fleytas, 15.
- ¹⁶² Testimony of Steve Bertone, 48.
- ¹⁶³ *Ibid.*
- ¹⁶⁴ *Ibid.*, 48–49.
- ¹⁶⁵ *Ibid.*, 48.
- ¹⁶⁶ Testimony of Curt Kuchta, 219.
- ¹⁶⁷ Testimony of Daun Winslow, August 28, 2010, 467.
- ¹⁶⁸ Testimony of Steve Bertone, 50.
- ¹⁶⁹ *Ibid.*
- ¹⁷⁰ Testimony of Anthony Gervasio, 197.
- ¹⁷¹ Testimony of Steve Bertone, 49.
- ¹⁷² Internal Transocean document (TRN-USCG_MMS 30428).
- ¹⁷³ Testimony of Anthony Gervasio, 224.
- ¹⁷⁴ Testimony of Steve Bertone, 50.
- ¹⁷⁵ Testimony of Capt. Alwin Landry, 112.
- ¹⁷⁶ Testimony of Steve Bertone, 51.
- ¹⁷⁷ Testimony of Kevin Robb, Hearing before the Deepwater Horizon Joint Investigation Team, May 11, 2010, 44.
- ¹⁷⁸ Ian Urbina and Justin Gillis, “Workers On Oil Rig Recall a Terrible Night of Blasts,” *New York Times*, May 7, 2010.
- ¹⁷⁹ Internal BP Document (BP-HZN-MBI 143366).
- ¹⁸⁰ Testimony of Alwin Landry, 115.
- ¹⁸¹ Urbina and Gillis, “Workers On Oil Rig Recall a Terrible Night of Blasts.”
- ¹⁸² Walsh, “Forced to Become Emergency Workers, Fishermen Say BP Never Even Said Thanks.”
- ¹⁸³ Testimony of Steve Bertone, 52; *Ibid.*, 48–53.
- ¹⁸⁴ Testimony of Randy Ezell, 330.

¹⁸⁵ Testimony of Alwin Landry, 120–121.

¹⁸⁶ Testimony of Daun Winslow, August 28, 2010, 44–45.

¹⁸⁷ Testimony of Capt. Alwin Landry, 121–122.

¹⁸⁸ *Ibid.*, 125–126.

¹⁸⁹ *Ibid.*, 126.

Chapter Two

¹ Joseph Pratt, Tyler Priest, and Christopher Castaneda, *Offshore Pioneers: Brown & Root and the History of Offshore Oil and Gas* (Houston: Gulf Publishing, 1997), 7–13; “First Well in Gulf of Mexico Was Drilling Just 25 Years Ago,” *Offshore* (October 1963): 17–19.

² Quoted in Tom Zoellner, “Oil and Water: The Adventure of Getting One from Deep Beneath the Other,” *Invention and Technology* (Fall 2000): 48.

³ Daniel Yergin, *The Prize: The Epic Quest for Oil, Money, and Power* (New York: Simon and Schuster, 1992), 409.

⁴ Pratt, Priest, and Castaneda, *Offshore Pioneers*, 15–52, 137–157.

⁵ *Ibid.*, 21–25.

⁶ Tyler Priest, “Extraction Not Creation: The History of Offshore Petroleum in the Gulf of Mexico,” *Enterprise & Society* 8, no. 2 (June 2007): 240.

⁷ Alden J. LaBorde, *My Life and Times* (New Orleans: LaBorde Printing Company, 1996), 174.

⁸ James W. Calvert, “Gulf Offshore Activity Booming,” *World Petroleum* (January 1957): 48.

⁹ Ben C. Belt, “Louisiana and Texas Offshore Prospects,” *Drilling* (March 1956): 119.

¹⁰ “Special Offshore Report,” *World Oil* (May 1957): 118; Calvert, “Gulf Offshore Activity Booming,” 48.

¹¹ Pratt, Priest, and Castaneda, *Offshore Pioneers*, 36–48.

¹² Tyler Priest, *The Offshore Imperative: Shell Oil’s Search for Petroleum in Postwar America* (College Station: Texas A&M Press, 2007), 81–91.

¹³ *Ibid.*, 95–98.

¹⁴ Tyler Priest, “Auctioning the Ocean: The Creation of the Federal Offshore Leasing Program, 1954–1962,” *History of the Offshore Oil and Gas Industry in Southern Louisiana: Vol. 1: Papers on the Evolving Offshore Industry* (Minerals Management Service OCS Study 2004-049, 2008).

¹⁵ U.S. Department of Interior, “Petroleum and Sulfur on the U.S. Continental Shelf,” internal study, August 1969, box 134, Central Classified Files, 1969–1972, Record Group 48, Records of the Secretary of Interior, National Archives and Records Administration (NARA), College Park, MD.

¹⁶ Priest, “Auctioning the Ocean,” 113.

¹⁷ On Project Mohole and JOIDES, see David K. van Keuren, “Breaking New Ground: The Origins of Scientific Ocean Drilling,” in *The Machine in Neptune’s Garden: Historical Perspectives on Technology and the Marine Environment*, eds. Helen M. Rozwadowski and David K. van Keuren (Sagamore Beach, MA: Science History Publications, 2004), 183–210. On Shell’s *Eureka* project, see Priest, *The Offshore Imperative*, 97, 218.

¹⁸ F. P. Dunn, “Deepwater Production: 1950–2000” (Offshore Technology Conference [OTC] Paper 7627, Houston, TX, May 1994).

¹⁹ Priest, *The Offshore Imperative*, 127–130.

²⁰ *Ibid.*

²¹ Cliff Hernandez, interview by Andrew Gardner, May 1, 2001, New Iberia, LA, *History of the Offshore Oil and Gas Industry in Southern Louisiana*, Houston History Archives, M.D. Anderson Library Special Collections, University of Houston, Houston, TX. This interview is one of approximately 450 oral histories conducted for *History of the Offshore Oil and Gas Industry in Southern Louisiana*, Minerals Management Service OCS Study 2004-049 (2008).

²² Ken Arnold, interview with Tyler Priest, May 10, 2004, Houston, TX, *History of the Offshore Oil and Gas Industry in Southern Louisiana*, Houston History Archives, M.D. Anderson Library Special Collections, University of Houston, Houston, TX.

²³ Don E. Kash et al., *Energy Under the Oceans: A Technology Assessment of Outer Continental Shelf Oil and Gas Operations* (Norman: University of Oklahoma Press, 1973), 104.

²⁴ U.S. Geological Survey, *Monthly Engineering Reports* Vol. 128 (December 1958) and *Monthly Engineering Reports* Vol. 144 (February 1960), RG 57, Records of the U.S. Geological Survey, NARA.

²⁵ Kash et al., *Energy Under the Oceans*, 105.

²⁶ Neil R. Eton to President Nixon, March 18, 1970, Central Classified Files, 1968–1974, Box 71, RG 57, Records of the

- U.S. Geological Survey, NARA.
- ²⁷ Kash et al., *Energy Under the Oceans*, 104.
- ²⁸ Robert E. Kallman and Eugene D. Wheeler, *Coastal Crude in a Sea of Conflict* (San Luis Obispo: Blake Printery and Publishing, 1984), 63.
- ²⁹ Riley E. Dunlap and Angela G. Mertig, *American Environmentalism: The U.S. Environmental Movement, 1970–1990* (Philadelphia: Taylor and Francis, 1992).
- ³⁰ Russell Wayland, “The New Federal OCS Regulations in the Light of Santa Barbara,” (Society of Petroleum Engineers [SPE] Paper 2780, San Francisco, CA, November 1969); Richard B. Krahl and David W. Moody, “Gulf Coast Lease Management Inspection Program” (OTC Paper 1714, Houston, TX, May 1972), 846.
- ³¹ M.D. Reifel, “Offshore Blowouts and Fires,” in *The Technology of Offshore Drilling, Completion and Production*, ETA Offshore Seminars, Inc. (Tulsa: The Petroleum Publishing Company, 1976), 239–257; “The Wicked Witch is Dead,” *Shell News* no. 2 (1978): 2–8; and R.C. Visser, “Offshore Platform Accidents, Regulations, and Industry Standards” (OTC Paper 7118, Houston, TX, May 1993).
- ³² Krahl and Moody, “Gulf Coast Lease Management Program;” Donald Solanas, “Update—OCS Lease Management Program” (OTC Paper 1754, Houston, TX, April/May, 1973); E.W. Standley to Jack W. Boller, February 15, 1972, Central Classified Files, 1969–1972, Box 136, Part 13, RG 48, Records of the Secretary of Interior, NARA.
- ³³ K. E. Arnold, P. S. Koszela, and J. C. Viles, “Improving Safety of Production Operations in the U.S. OCS” (OTC Paper 6079, Houston, TX, May 1989).
- ³⁴ Peter Lovie, “Classification and Certification of Offshore Drilling Units,” in *The Technology of Offshore Drilling, Completion and Production*, ETA Offshore Seminars, (Tulsa: The Petroleum Publishing Company, 1976), 389–413.
- ³⁵ Dunn, “Deepwater Production.”
- ³⁶ See data in National Academy of Sciences, Committee on Assessment of Safety of OCS Activities, *Safety and Offshore Oil* (Washington D.C.: National Academy Press, 1981).
- ³⁷ E. P. Danenberger, “Outer Continental Shelf Drilling Blowouts, 1971–1991” (OTC Paper 7248, Houston, TX, May 1993).
- ³⁸ U.S. Energy Information Administration (EIA), “Petroleum,” Table 5.13.c, in *Annual Energy Review 2009* (Washington, D.C.: U.S. EIA, 2010), <http://www.eia.gov/emeu/aer/petro.html>.
- ³⁹ “Bidders Snub Most Deepwater Tracts,” *Oil and Gas Journal* (April 8, 1974): 36.
- ⁴⁰ Priest, *The Offshore Imperative*, 191–195.
- ⁴¹ Stephen P.J. Cossey, “Celebrations Began with Cognac,” *AAPG Explorer* (September 2004), http://www.aapg.org/explorer/2004/09sep/gom_history.cfm.
- ⁴² Priest, *The Offshore Imperative*, 196–201.
- ⁴³ Pratt, Priest, and Castaneda, *Offshore Pioneers*, 83–90.
- ⁴⁴ “Gulf Lease Sale Shatters Two Records,” *Oil & Gas Journal* (October 6, 1980): 34; Charlie Blackburn, quoted in Priest, *The Offshore Imperative*, 216; D.A. Holmes, “1970–1986 Lookback of Offshore Lease Sales in the Gulf of Mexico Cenozoic,” interoffice memorandum, Shell Offshore Inc., August 24, 1987.
- ⁴⁵ Priest, *The Offshore Imperative*, 209–215.
- ⁴⁶ Juan Carlos Boué with Edgar Jones, *A Question of Rigs, of Rules, or of Rigging the Rules? Upstream Profits and Taxes in U.S. Gulf Offshore Oil and Gas* (Oxford: Oxford University Press, 2007), 17.
- ⁴⁷ Rich Sears, “A Brief History of Deepwater” (draft prepared for the National Commission, August 2010).
- ⁴⁸ Paul Voosen, “Gulf of Mexico’s Deepwater Oil Industry Is Built on Pillars of Salt,” *New York Times*, July 28, 2010; Gary Steffens and Neil Braunsdorf, “The Gulf of Mexico Deepwater Play: 50 Years from Concept to Commercial Reality” (AAPG Distinguished Lecture Series, 1997–1998).
- ⁴⁹ Priest, *The Offshore Imperative*, 218–220.
- ⁵⁰ Juan Carlos Boué and Gerardo Lyando, *U.S. Gulf Offshore Oil: Petroleum Leasing and Taxation and Their Impact on Industry Structure, Competition, Production, and Fiscal Revenues* (Oxford: Oxford Energy Institute, 2002).
- ⁵¹ Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE), “Gulf of Mexico Oil and Gas Leasing Offerings,” <http://www.gomr.boemre.gov/homepg/lseale/swiler/swiler.html>.
- ⁵² Priest, *The Offshore Imperative*, 221–222.
- ⁵³ “The Time to Start Looking is Now,” *Shell News* no. 4 (1984): 16.
- ⁵⁴ By 1990, Americans consumed less gasoline on a per capita basis (437 gallons per year) than they did in 1979. U.S. Energy Information Administration (EIA), *Annual Energy Review*, Petroleum, Table 5.13.c, <http://www.eia.gov/emeu/aer/petro.html>.
- ⁵⁵ On the forgotten victory of energy conservation and efficiency, see Jay Hakes, *A Declaration of Energy Independence: How Freedom from Foreign Oil Can Improve National Security, Our Economy, and the Environment* (Hoboken: John Wiley & Sons, 2008), 41–71.

- ⁵⁶ Robert Gramling, *Oil on the Edge: Offshore Development, Conflict, Gridlock* (Albany, NY: SUNY Press, 1996), 118.
- ⁵⁷ "Bullwinkle Takes Shape," *Shell News* no. 6 (1987): 2–7; "Rising Above the Crowd," *Shell News* no. 6 (1988): 28–34.
- ⁵⁸ "How Conoco Developed the Tension-Leg Platform," *Ocean Industry*, August 1984, 35–46.
- ⁵⁹ Tom Curtis, "Lifestyles of the Rich and Bankrupt," *Texas Monthly*, March 1988, 90.
- ⁶⁰ Congress of the United States, Office of Technology Assessment, *Oil and Gas Technologies for the Arctic and Deepwater: Summary* (Washington: GPO, 1985), 22–23.
- ⁶¹ On the struggle over Bristol Bay, see Charles Frederick Lester, "The Search for Dialogue in the Administrative State: The Politics, Policy, and Law of Offshore Development" (Ph.D. dissertation, University of California, Berkeley, 1992), 113–146.
- ⁶² Priest, *The Offshore Imperative*, 209–215.
- ⁶³ Steffens and Braunsdorf, "The Gulf of Mexico Deepwater Play."
- ⁶⁴ BOEMRE, "Gulf of Mexico Oil and Gas Leasing Offerings," <http://www.gomr.boemre.gov/homepg/lseale/swiler/swiler.html>.
- ⁶⁵ Priest, *The Offshore Imperative*, 237–251.
- ⁶⁶ *Ibid.*, 254–255.
- ⁶⁷ *Ibid.*, 253–261; "Launch Pad into the Deep," *Houston Chronicle*, August 17, 1997.
- ⁶⁸ Bob Horton quoted in Tom Bower, *Oil: Money, Politics, and Power in the 21st Century* (New York: Grand Central Publishing, 2009), 19.
- ⁶⁹ William A. Schneider, "3-D Seismic: A Historical Note," *The Leading Edge* (March 1998): 375; "Looking Ahead in Marine and Land Geophysics—A Conversation with Woody Nestvold and Ian Jack," *The Leading Edge* (October 1995): 1061–1067.
- ⁷⁰ "Exploring the Ocean's Frontiers," *Time*, December 17, 1990, 98; "Offshore Oil: How Deep Can They Go?" *Popular Science*, January 1992): 80–97.
- ⁷¹ "Oil and Gas Technology Development," (Topic Paper #26, National Petroleum Council Global Oil & Gas Study, November 22, 2006), 16. This topic paper was one of 38 working documents used to produce the 2007 National Petroleum Council study, *Facing the Hard Truths About Energy* <http://www.npchardtruthsreport.org/>.
- ⁷² Susanne S. Pagano, "Offshore Drilling, Production—New Waves of Technology," *Sea Technology* (April 1991): 19–21; "There's Oil Down There . . . Way Down There," *Texas Shores* 31, no. 1 (Spring 1998): 14–15.
- ⁷³ Priest, *The Offshore Imperative*, 243–251.
- ⁷⁴ "Shell Marks Progress in Deepwater Gulf," *Oil & Gas Journal* 93, no. 46 (November 13, 1995); "Debottlenecking Removes Auger Production Constraints," *Oil & Gas Journal* 94, no. 46 (November 11, 1996).
- ⁷⁵ Priest, *The Offshore Imperative*, 251–253.
- ⁷⁶ Press Release, Minerals Management Service, Shell to Pay \$49 Million in Settlement Agreement with Minerals Management Service, August 5, 2003.
- ⁷⁷ Boué and Jones, *A Question of Rigs*, 130.
- ⁷⁸ F. Jay Schempf, "New Study Finds Port Fourchon 'Vital' to U.S. Economy," *Offshore* (March 1, 2008).
- ⁷⁹ D.G. Godfrey et al., "The Mars Project Overview" (OTC Paper 8368, Houston, TX, May 1997).
- ⁸⁰ *Ibid.*
- ⁸¹ David Ernst and Andrew M.J. Steinhubl, "Alliances in Upstream Oil and Gas," *McKinsey Quarterly* 2 (1997).
- ⁸² Jeff Ryser, "Hot Play in the Gulf," *Texas Business* (August 1995): 33.
- ⁸³ "The Cloning of Mars," *Shell News* 64, no. 1 (1996): 8–13; Michael Davis, "Shell Oil Goes Deep in Gulf," *Houston Chronicle*, April 9, 1999; Priest, *The Offshore Imperative*, 260–262.
- ⁸⁴ Mary Judice, "Out of the LOOP," *Times Picayune*, September 17, 1995; C.G. Steube, "Addressing Transportation Needs for Deepwater Gulf of Mexico" (OTC Paper 13169, Houston, TX, April/May 2001).
- ⁸⁵ Boué and Jones, *A Question of Rigs*, 17.
- ⁸⁶ Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE), "Installations, Removals, and Cumulative Totals of Offshore Production Facilities in Federal Waters: 1959–2010," www.boemre.gov/stats/PDFs/OCSPatformActivity.pdf.
- ⁸⁷ Dolly Jorgenson, "An Oasis in a Watery Desert: Discourses on an Industrial Ecosystem in the Gulf of Mexico Rigs-to-Reefs Program," *History and Technology* 25, no. 4 (November 2009): 343–364.
- ⁸⁸ Press Release, Minerals Management Service, High Bids Total \$307 Million in Central Gulf of Mexico Lease Sale 152, May 10, 1995, <http://www.boemre.gov/ooc/press/1995/50037.txt>.
- ⁸⁹ Voosen, "Gulf of Mexico's Deepwater Oil Industry Is Built on Pillars of Salt"; Helen Thorpe, "Oil and Water," *Texas*

- Monthly* (February 1996): 140–141.
- ⁹⁰ Scott L. Montgomery and Dwight Moore, “Subsalt Play, Gulf of Mexico: A Review,” *AAPG Bulletin* 81, no. 6 (June 1997): 875–876.
- ⁹¹ Rhonda Duey, “Pioneering a Global Play,” *Hart’s E&P* (July 1, 2009); Thorpe, “Oil and Water,” 142.
- ⁹² R.R. Israel et al., “Challenges Evolve for Directional Drilling Through Salt in Deepwater Gulf of Mexico,” *Drilling Contractor* (May/June 2008), <http://drillingcontractor.org/challenges-evolve-for-directional-drilling-through-salt-in-deepwater-gulf-of-mexico-1622>.
- ⁹³ David Ivanovich, “Gulf is Heart of Deepwater Drilling,” *Houston Chronicle*, May 4, 1997.
- ⁹⁴ Brian Knowlton, “Oil Growth Boomerangs on Houston,” *International Herald Tribune*, April 1, 2002.
- ⁹⁵ David Townshend, “Golden Triangle Dominates,” *Petroleum Economist*, October 2002.
- ⁹⁶ Tim Colton and LaVar Huntziner, *A Brief History of Shipbuilding in Recent Times* (Alexandria, VA: CNA Corporation, 2002); Mike Hunt and Lenny Gary, “Gulf of Mexico Fabrication Yards Built 5,500 Platforms Over 50 Years,” *Offshore* (January 2000).
- ⁹⁷ Ronald W. Ferrier, *The History of the British Petroleum Company, Vol. 1: The Developing Years, 1901–1932* (Cambridge: Cambridge University Press, 1982); J.H. Bamberg, *The History of British Petroleum, Vol. 2: The Anglo-Iranian Years, 1928–1945* (Cambridge: Cambridge University Press, 1994); and James Bamberg, *British Petroleum and Global Oil, 1950–1975: The Challenge of Nationalism* (Cambridge: Cambridge University Press, 2000).
- ⁹⁸ Agis Salpukas, “BP Amoco’s Leader Remakes An Oil Giant, Again,” *New York Times*, April 1, 1999.
- ⁹⁹ Kathy Shirley, “Vision Led to Crazy Horse Find,” *AAPG Explorer*, March 2002.
- ¹⁰⁰ *Ibid.*
- ¹⁰¹ Kristen Hays, “After All of Thunder Horse’s Problems, BP Looks Ahead To Seeing A Return On Its Enormous Investment In The Platform, Payoff Is A Long Time in Coming,” *Houston Chronicle*, November 18, 2007.
- ¹⁰² *Ibid.*
- ¹⁰³ Peter Lehner with Bob Deans, *In Deep Water: The Anatomy of a Disaster, the Fate of the Gulf, and Ending Our Oil Addiction* (New York: The Experiment, 2010), 63.
- ¹⁰⁴ “Deepwater GOM New Focus of BP Growth Strategy,” *Oil & Gas Journal* 100, no. 33 (August 19, 2002): 36.
- ¹⁰⁵ Neela Banerjee, “This Oil’s Domestic, but It’s Deep and It’s Risky,” *New York Times*, August 11, 2002.
- ¹⁰⁶ “The Jack-2 Perspective,” *Oil & Gas Journal* 104, no. 34 (September 11, 2006): 17.
- ¹⁰⁷ B.F. Thurmond, D.B.L. Walker, H.H. Banon, A.B. Luberski, M.W. Jones, and R.R. Peters, “Challenges and Decisions in Developing Multiple Deepwater Fields” (OTC Paper 16573, Houston, TX, May 2004).
- ¹⁰⁸ K.L. Marshall and G.H. Smith, “Inspection Management Experience for a Fleet of Spars in the Gulf of Mexico” (OTC Paper 17619, Houston, TX, May 2005); C. Jim Thibodeaux, R. Don Vardeman, and Charles E. Kindel, “Nansen/Boomvang Projects: Overview and Project Management” (OTC Paper 14089, Houston, TX, May 2002).
- ¹⁰⁹ Thurmond et al., “Challenges and Decisions in Developing Multiple Deepwater Fields.”
- ¹¹⁰ Bill Kirton, Gary Wulf, and Bill Henderson, “Thunder Horse Drilling Riser Break—The Road to Recovery” (SPE Paper 90628, 2004).
- ¹¹¹ Simon Todd and Dan Replogle, “Thunder Horse and Atlantis: The Development and Operation of Twin Giants in the Deepwater Gulf of Mexico” (OTC Paper 20395, Houston, TX, May 2010).
- ¹¹² *Ibid.*
- ¹¹³ Laurel Brubacker Calkins, “BP Sued by Watchdog Group over Atlantis Platform,” Bloomberg, September 13, 2010, <http://www.bloomberg.com/news/2010-09-10/bp-sued-over-alleged-safety-gaps-at-atlantis-production-platform.html>.
- ¹¹⁴ Det Norske Veritas, *Pipeline Damage Assessment from Hurricane Ivan in the Gulf of Mexico*, (Minerals Management Service Report No. 440 38570, May 8, 2006). Includes data on damages from hurricanes through 2005.
- ¹¹⁵ Lesley D. Nixon et al., *Deepwater Gulf of Mexico 2009: Interim Report of 2008 Highlights* (OCS Report, MMS 2009-016, 2009), <https://www.gomr.mms.gov/homepg/espis/espisfront.asp>.
- ¹¹⁶ “BP Taps Vast Pool of Crude in Deepest Oil Well,” *Associated Press*, September 2, 2009; Brett Clanton, “Shell’s Perdido First to Produce in Key Deep Water Gulf Region,” *Houston Chronicle*, March 31, 2010; Brett Clanton, “Chevron Plans New Floating City,” *Houston Chronicle Energy Watch* blog, FuelFix, October 21, 2010, <http://fuelfix.com/energywatch/2010/10/21/chevron-plans-new-floating-city/>.
- ¹¹⁷ Frank Close, Bob McCavitt, and Brian Smith, “Deepwater Gulf of Mexico Development Challenges Overview,” (SPE Paper 113011, 2008), 2.
- ¹¹⁸ Melvyn Whitby, “Design Evolution of a Subsea BOP: Blowout Preventer Requirements Get Tougher as Drilling Goes Ever Deeper,” *Drilling Contractor* (May/June 2007).
- ¹¹⁹ Mary C. Boatman and Jennifer Peterson, *Oceanic Gas Hydrate Research and Activities Review* (OCS Report MMS

2000-017, U.S. Department of Interior, Minerals Management Service, Gulf of Mexico OCS Region, 2000).

¹²⁰ Fergus Addison, Kevin Kennelley, and Fikry Botros, "Future Challenges for Deepwater Developments" (OTC Paper 20404, Houston, TX, May 2010).

¹²¹ Center for Biological Diversity v. U.S. Department of the Interior, 563 F.3d 466 (D.C. Cir. 2009).

¹²² The White House, Office of the Press Secretary, Remarks by the President in a Discussion on Jobs and the Economy in Charlotte, North Carolina, April 2, 2010, <http://www.whitehouse.gov/the-press-office/remarks-president-a-discussion-jobs-and-economy-charlotte-north-carolina>.

¹²³ Gabriel Garcia Marquez, *One Hundred Years of Solitude*, translated by Gregory Rambassa (New York: Avon Books, 1970), 212.

Chapter Three

¹ Press Release, U.S. Department of the Interior, Salazar Launches Safety and Environmental Protection Reforms to Toughen Oversight of Offshore Oil and Gas Operations, May 11, 2010, <http://www.doi.gov/news/pressreleases/Salazar-Launches-Safety-and-Environmental-Protection-Reforms-to-Toughen-Oversight-of-Offshore-Oil-and-Gas-Operations.cfm>.

² Press Release, U.S. Department of the Interior, Salazar Divides MMS's Three Conflicting Missions, May 19, 2010, <http://www.doi.gov/news/pressreleases/Salazar-Divides-MMSs-Three-Conflicting-Missions.cfm>; Secretary of the Interior, Establishment of the Bureau of Ocean Energy Management, the Bureau of Safety and Environmental Enforcement, and the Office of Natural Resources Revenue, No. 3299 (May 19, 2010), <http://www.doi.gov/deepwaterhorizon/loader.cfm?csModule=security/getfile&PageID=32475>.

³ Secretary of the Interior, Change of the Name of the Minerals Management Service to the Bureau of Ocean Energy Management, Regulation, and Enforcement, No. 3302 (June 18, 2010), <http://www.doi.gov/deepwaterhorizon/loader.cfm?csModule=security/getfile&PageID=35872>.

⁴ 42 U.S.C. § 4331(a).

⁵ U.S. Department of the Interior, "Statement by Secretary of the Interior James Watt Instituting Changes in the Mineral Royalty Management Program – July 21, 1982," Commission on Fiscal Accountability of the Nation's Energy Resources: Subject Files, 1981–1982, RG 48, Entry 994, Box 1 (National Archives and Records Administration, Washington, DC).

⁶ U.S. Constitution, Art IV, § 3, cl. 2.

⁷ *Kleppe v. New Mexico*, 426 U.S. 529, 539 (1976), quoting *United States v. San Francisco*, 310 U.S. 16, 29 (1940).

⁸ *Utah Power & Light Co. v. United States*, 243 U.S. 389, 405 (1917); *Kleppe v. New Mexico*, 426 U.S. at 540 ("Congress exercises the powers of both a proprietor and of a legislature over the public domain.").

⁹ *United States v. Midwest Oil*, 236 U.S. 459, 466–68, 474–83 (1915). (Upholding authority of the president to withdraw unilaterally from private disposition valuable energy resources located on public lands in order to protect those resources while Congress considers legislation for their retention in national ownership).

¹⁰ Outer Continental Shelf Lands Act, 42 U.S.C. §§ 1331–1356a.

¹¹ E.R. Bartley, *The Tidelands Oil Controversy: A Legal and Historical Analysis* (Austin: University of Texas Press, 1953); Tyler Priest, "Claiming the Coastal Sea: The Battle for the Tidelands, 1937–1953," *History of the Offshore Oil and Gas Industry in Southern Louisiana: Vol. 1: Papers on the Evolving Offshore Industry*, MMS OCS Study 2004-049 (New Orleans: U.S. Department of the Interior, Minerals Management Service, 2008), 67–90, <https://www.gomr.mms.gov/homepg/espis/espisfront.asp>.

¹² See *United States v. California*, 332 U.S. 19, 35 (1947); *United States v. Louisiana*, 339 U.S. 699 (1950); *United States v. Texas*, 339 U.S. 707 (1950).

¹³ Priest, "Claiming the Coastal Sea: The Battle for the Tidelands, 1937–1953."

¹⁴ Other states petitioned for the 9-nautical-mile boundary in the federal courts, but failed to prevail.

¹⁵ "Oil Shelf Bill Enacted; President Reaffirms U.S. Title to Outer Offshore Deposits," *New York Times*, August 8, 1953, 27.

¹⁶ Richard Vietor, *Energy Policy in America since 1945: A Study of Business–Government Relations* (New York: Cambridge University Press, 1984), 19.

¹⁷ E.R. Bartley, *The Tidelands Oil Controversy: A Legal and Historical Analysis*.

¹⁸ "Interior Expects Big Things from . . . Offshore Lease Sale," *Oil and Gas Journal*, September 13, 1954, 96.

¹⁹ Diane Austin et al., *History of the Offshore Oil and Gas Industry in Southern Louisiana, Volume 1: Papers on the Evolving Offshore Industry*, OCS Study MMS 2008-042 (New Orleans: U.S. Department of the Interior, Minerals Management Service, September 2008), 97–98, <http://www.gomr.boemre.gov/PI/PDFImages/ESPIS/4/4530.pdf>.

²⁰ 43 U.S.C. § 1334.

²¹ "Oil and Gas Leases Bow to Rare Wildlife Species," *New York Times*, December 9, 1955.

- ²² John C. Whitaker, *Striking a Balance: Environment and Natural Resources Policy in the Nixon-Ford Years* (Washington, D.C.: American Enterprise Institute, 1976), 267–268; Russell Wayland, “The New Federal OCS Regulations in the Light of Santa Barbara” (Society of Petroleum Engineers [SPE] Paper 2780, San Francisco, CA, November 1969); Richard B. Krahl and David W. Moody, “Gulf Coast Lease Management Inspection Program,” (Offshore Technology Conference [OTC] Paper 1714, 1972), 846.
- ²³ National Environmental Policy Act of 1969, 42 U.S.C. § 4321–4370h.
- ²⁴ Richard J. Lazarus, *The Making of Environmental Law*, (Chicago: University of Chicago Press, 2004), 70.
- ²⁵ 42 U.S.C. § 4332(c).
- ²⁶ Calvert Cliffs Coordinating Committee v. Atomic Energy Commission, 449 F.2d 1109 (D.C. Cir. 1971).
- ²⁷ National Research Council, *Assessment of the U.S. Outer Continental Shelf Environmental Studies Program: III. Social and Economic Studies* (The National Academies Press: Washington, DC, 1992), http://www.nap.edu/catalog.php?record_id=2062.
- ²⁸ U.S. Department of the Interior, *Leasing Oil and Natural Gas Resources: Outer Continental Shelf* (Washington, D.C.: U.S. Department of the Interior, 2005), 12, <http://www.boemre.gov/ld/PDFs/GreenBook-LeasingDocument.pdf>.
- ²⁹ Lazarus, *The Making of Environmental Law*, 70 (listing 18 statutes, and not including several such as the Magnuson Fishery Management and Conservation Act of 1976).
- ³⁰ The five laws included the Public Utility Regulatory Policies Act, Pub. L. No. 95–617, Energy Tax Act, Pub. L. No. 95–618, National Energy Conservation Policy Act, Pub. L. No. 95–619, Power Plant and Industrial Fuel Use Act, Pub. L. No. 95–620, and Natural Gas Policy Act, Pub. L. No. 95–621.
- ³¹ Natural Resources Defense Council v. Morton, 458 F.2d 827 (D.C. Cir. 1972).
- ³² Outer Continental Shelf Leasing Program: Hearings before the H. Comm. on Appropriations, 93rd Cong., 2d Sess. (1974).
- ³³ Outer Continental Shelf Lands Act, Pub. L. No. 95–372, 92 Stat. 629 (1978).
- ³⁴ 43 U.S.C. § 1801.
- ³⁵ 43 U.S.C. § 1802.
- ³⁶ 43 U.S.C. § 1344.
- ³⁷ 43 U.S.C. § 1340.
- ³⁸ 43 U.S.C. § 1351.
- ³⁹ 43 U.S.C. § 1344(a)(3).
- ⁴⁰ 43 U.S.C. § 1346.
- ⁴¹ 43 U.S.C. § 1347(c).
- ⁴² 43 U.S.C. § 1347(b).
- ⁴³ 43 U.S.C. § 1347(b).
- ⁴⁴ 43 U.S.C. § 1351.
- ⁴⁵ 43 U.S.C. § 1340.
- ⁴⁶ 43 U.S.C. § 1351(e)(3).
- ⁴⁷ 43 U.S.C. § 1351(e)(1).
- ⁴⁸ 43 U.S.C. § 1351(e)(1).
- ⁴⁹ 43 U.S.C. § 1531(l).
- ⁵⁰ See S. Rep. No. 95–285, at 154–5 (reprinting letter from Secretary of the Interior Cecil Andrus).
- ⁵¹ See S. Rep. No. 95–285, at 50, 62, 82, 144–5.
- ⁵² Robert Gramling, *Oil on the Edge: Offshore Development, Conflict, Gridlock* (Albany: SUNY Press, 1996), 121.
- ⁵³ Charles Babcock, “Watt Defies Critics of Plan for Oil Leases,” *Washington Post*, July 7, 1981, A3.
- ⁵⁴ “Problems with Government,” *Ocean Industry* (April 1982): 21.
- ⁵⁵ Commission on Fiscal Accountability of the Nation’s Energy Resources, *Fiscal Accountability of the Nation’s Energy Resources* (Washington, D.C.: January 1982), xv, http://www.onrr.gov/Laws_R_D/frnotices/PDFDocs/linowes-rpt1-5.pdf.
- ⁵⁶ Don E. Kash, *Lease Management Activities in the Geological Survey*, Commission on Fiscal Accountability of the Nation’s Energy Resources: Technical Reports, 1981–1982, RG 48, Entry 998, Box 10, File 239, National Archives and Records Administration, 8, 9, 27.
- ⁵⁷ “Industry Warning Watt Against Transfer of BLM Leasing Functions to MMS,” *Inside Energy/with Federal Lands*, November 1, 1982, 11.

- ⁵⁸ G. Kevin Jones, "Outer Continental Shelf Oil and Gas Development During the Reagan Administration—Part 1," *Western New England Law Review* 12, 1, (1990):8–13.
- ⁵⁹ "Interior Denies Oil Leasing Plan Will Cost \$77 Billion," *Associated Press*, September 28, 1982.
- ⁶⁰ 43 U.S.C. § 1337.
- ⁶¹ Charles Lester, "Contemporary Federalism and New Regimes of Ocean Governance: Lessons from the Case of Outer Continental Shelf Oil Development," *Ocean & Coastal Management* 23 (1994), 14.
- ⁶² National Research Council Committee on Marine Area Governance and Management, *Striking a Balance: Improving Stewardship of Marine Areas* (Washington, D.C.: National Academy of Sciences, 1997), 37, http://www.nap.edu/openbook.php?record_id=5797&page=37.
- ⁶³ President George H.W. Bush, "Statement on Outer Continental Shelf Oil and Gas Development," (June 26, 1990), http://bushlibrary.tamu.edu/research/public_papers.php?id=2035&year=1990&month=6.
- ⁶⁴ 30 C.F.R. pt. 250.
- ⁶⁵ U.S. Department of the Interior, Documents pertaining to offshore inspection types and practices produced to the Oil Spill Commission, August 2010.
- ⁶⁶ Jan Erik Vinnem, *Offshore Risk Assessment: Principles, Modelling and Applications of QRA Studies*, 2nd ed. (London: Springer Studies in Reliability Engineering, 2007), 91, 100, 102.
- ⁶⁷ Petroleum Safety Authority of Norway, "From Prescription to Performance in Petroleum Supervision," March 12, 2010, <http://www.ptil.no/news/from-prescription-to-performance-in-petroleum-supervision-article6696-79.html>.
- ⁶⁸ Magne Ognedal, interview with Commission staff, November 10, 2010.
- ⁶⁹ E.P. Danenberger et al., *Investigation of March 19, 1989 Fire, South Pass Block 60 Platform B, Lease OCS-G 1608*, OCS Report MMS 90-0016 (New Orleans: U.S. Department of the Interior, Minerals Management Service, April 1990): 15, <http://www.gomr.boemre.gov/PDFs/1990/90-0016.pdf>.
- ⁷⁰ Marine Board of the National Research Council Committee on Alternatives for Inspection of Outer Continental Shelf Operations, *Alternatives for Inspecting Outer Continental Shelf Operations* (Washington: National Academy Press, 1990): 3, http://www.nap.edu/openbook.php?record_id=1517&page=1.
- ⁷¹ Minerals Management Service, *Final Report, Findings and Recommendations, MMS Task Force on OCS Inspection and Enforcement* (Washington, D.C.: U.S. Department of the Interior, Minerals Management Service, February 1990), 1-3.
- ⁷² Marine Board, *Alternatives for Inspecting Outer Continental Shelf Operations*, 80.
- ⁷³ *Ibid.*, 82.
- ⁷⁴ Exec. Order No. 12,777, 56 Fed. Reg. 54,757 (October 22, 1991).
- ⁷⁵ E.P. Danenberger, "Changes in the Minerals Management Service Offshore Regulatory Programs Resulting From the Oil Pollution Act of 1990" (Offshore Technology Conference [OTC] Paper 6823, May 1992), 150.
- ⁷⁶ Oil and Gas and Sulphur Operations in the Outer Continental Shelf, 56 Fed. Reg. 30,400 (July 2, 1991).
- ⁷⁷ *Ibid.*
- ⁷⁸ Salient differences were, as MMS noted, that "Platforms in the GOM are typically smaller, technically less sophisticated, produce fewer hydrocarbons, and operate in less severe environmental conditions [than North Sea platforms]. The number of personnel on OCS platforms is significantly smaller than on North Sea platforms. There is, however, a substantially greater number of OCS platforms in the GOM, over 3,800." Marshall Courtois, William Hauser, and Paul Schneider, "Minerals Management Service Safety and Environmental Management Program: Evolution of the Concept," (Offshore Technology Conference [OTC] Paper 6822, May 1992), 145.
- ⁷⁹ Oil and Gas and Sulphur Operations in the Outer Continental Shelf, 56 Fed. Reg. 30,400 (July 2, 1991).
- ⁸⁰ Former senior MMS officials, interviews with Commission staff, August and September 2010; Offshore Operators Committee, "Oil, Gas, and Sulphur Operations in the Outer Continental Shelf (OCS)—Safety and Environmental Management Systems," Public Comment (May 22, 2006), <http://www.boemre.gov/federalregister/PDFs/AD15-OOCcomments5-22-06.pdf>.
- ⁸¹ T.A.F. Powell, "US Voluntary SEMP Initiative: Holy Grail or Poisoned Chalice?" (Offshore Technology Conference [OTC] Paper 8111, May 1996): 828.
- ⁸² E.O. Redd, Jean Chevallier, and Ian Paterson, "Preparing a Safety Case: A Drilling Contractor's Experience" (Society of Petroleum Engineers [SPE] Paper 27293, January 1994): 799.
- ⁸³ L.D. Easley, J.E. Stark, and R.A. Bradford, "Implementing API RP 75 'Recommended Practice for Development of a Safety and Environmental Program for Outer Continental Shelf (OCS) Operations and Facilities'" (Offshore Technology Conference [OTC] Paper 7384, May 1994): 130.
- ⁸⁴ American Petroleum Institute, *Recommended Practices for Development of a Safety and Environmental Management Program for Outer Continental Shelf (OCS) Operations and Facilities, Recommended Practice 75*, 1st ed. (Dallas, TX: May 15, 1993).
- ⁸⁵ Oil and Gas and Sulphur Operations in the Outer Continental Shelf, 59 Fed. Reg. 33,779 (June 30, 1994).

- ⁸⁶ Safety and Environmental Management Program (SEMP) on the Outer Continental Shelf (OCS), 61 Fed. Reg. 37,493 (July 18, 1996).
- ⁸⁷ *Ibid.*
- ⁸⁸ Patrick Crow, "New slant on safety," *Oil & Gas Journal* (July 22, 1996): 23.
- ⁸⁹ T.A.F. Powell, "US Voluntary SEMP Initiative: Holy Grail or Poisoned Chalice?" (Offshore Technology Conference [OTC] Paper 8111, 1996).
- ⁹⁰ E.P. Danenberger, interview with Commission staff, September 2, 2010; E.P. Danenberger, e-mail message to Commission staff, October 25, 2010.
- ⁹¹ Oil and Gas and Sulphur Operations in the Outer Continental Shelf—Incident Reporting Requirements, 68 Fed. Reg. 40,585 (July 8, 2003).
- ⁹² E.P. Danenberger, interview with Commission staff, September 2, 2010; E.P. Danenberger, e-mail message to Commission staff, October 25, 2010.
- ⁹³ Oil and Gas and Sulphur Operations in the Outer Continental Shelf—Incident Reporting Requirements, 71 Fed. Reg. 19,640 (April 17, 2006).
- ⁹⁴ Commission staff analysis of Bureau of Ocean Energy Management, Regulation and Enforcement data. See <http://www.boemre.gov/adm/budget.html>.
- ⁹⁵ Jim Morris, "Lost at Sea/OFFSHORE RISKS/Safety concerns return with rise of oil, gas boom," *Houston Chronicle*, December 22, 1996, http://www.chron.com/CDA/archives/archive.mpl?id=1996_1384981.
- ⁹⁶ Commission staff analysis of Bureau of Ocean Energy Management, Regulation and Enforcement data. See <http://www.gomr.boemre.gov/homepg/fastfacts/WaterDepth/wdmaster.asp>.
- ⁹⁷ Commission staff analysis of Bureau of Ocean Energy Management, Regulation and Enforcement data; Minerals Management Service, *U.S. Offshore Milestones* (as of August 2006): 5. See <http://www.boemre.gov/stats/PDFs/milestonesAUG2006.pdf>.
- ⁹⁸ Commission staff analysis of Bureau of Ocean Energy Management, Regulation and Enforcement and U.S. Energy Information Administration data. See <http://www.gomr.boemre.gov/PDFs/2009/2009-016.pdf>, 71–72; <http://www.eia.gov/oog/info/twip/twiparch/100526/twipprint.html>.
- ⁹⁹ Commission staff analysis of MMS yearly budget request and enactments, by nominal and real (2005) dollars.
- ¹⁰⁰ Tetrahedron, Inc., *Reliability of Blowout Preventers Tested Under Fourteen and Seven Days Time Interval: Study Report, Submitted to Minerals Management Service, Department of the Interior*, MMS Technology Assessment & Research Project 253, "Blowout Preventer Study" (December 20, 1996), <http://www.boemre.gov/tarprojects/253/AA.PDF>; Blowout Preventer (BOP) Testing Requirements for Drilling and Completion Operations, 63 Fed. Reg. 29,604 (June 1, 1998).
- ¹⁰¹ Per Holand, *Reliability of Subsea BOP Systems for Deepwater Application, Phase II DW, SINTEF Report STF38 A99426* (November 7, 1999); Per Holand, *Deepwater Kicks and BOP Performance*, SINTEF Report STF38 A01419 (July 24, 2001); WEST Engineering Services, Inc., *Mini Shear Study for U.S. Minerals Management Service*, Requisition No. 2–1011–1003 (December 2002); WEST Engineering Services, Inc., *Shear Ram Capabilities Study for U.S. Minerals Management Service*, Requisition No. 3–4025–1001 (September 2004).
- ¹⁰² WEST Engineering Services, Inc., "Comments by WEST Engineering Services, Houston, Texas, to The National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling" (November 12, 2010): 3.
- ¹⁰³ David Barstow and others, "Regulators Failed to Address Risks in Oil Rig Fail-Safe Device," *New York Times*, June 20, 2010, www.nytimes.com/2010/06/21/us/21blowout.html.
- ¹⁰⁴ U.S. Department of the Interior, Outer Continental Shelf Safety Oversight Board, *Report to the Secretary of the Interior* (September 1, 2010), 6.
- ¹⁰⁵ *Ibid.*
- ¹⁰⁶ *Ibid.*
- ¹⁰⁷ U.S. Department of the Interior, Office of Inspector General, *Survey Report: Offshore Civil Penalties Program, Minerals Management Service* (March 30, 1999), <http://www.doi.gov/images/stories/reports/pdf/99-I-374.pdf>.
- ¹⁰⁸ Commission staff analysis of Bureau of Ocean Energy Management, Regulation and Enforcement data provided to the Commission by the Department of the Interior of unannounced MMS inspections of MODUs/drilling rigs, 1990 (1,985 inspections) to 2009 (85 inspections). The pivotal change occurs in 1998–1999, as the numbers drop from 864 to 41 in the span of one year.
- ¹⁰⁹ Yearly MMS Incident Summary Reports are available at <http://www.boemre.gov/incidents/IncidentStatisticsSummaries.htm>.
- ¹¹⁰ "Deepwater Gulf of Mexico production rising," *Oil & Gas Journal* (November 1, 1999): 34 ("In 1999, 11 more deepwater development production projects in the gulf have already begun producing or are on the verge of doing so"); Michael Davis, "LEARNING THE DRILL/The oil patch rebound brought with it a need for drilling companies to find, train and keep people to work the rigs," *Houston Chronicle* (February 1, 1998): 1 ("A shortage of qualified personnel has been a nagging problem since the oil patch has come back in the past year. But over the next two years some 50 new offshore jack-up rigs, semi-submersibles and drill ships currently being built or converted will

go into operation. Finding qualified crews to operate these increasingly high tech drilling rigs is a major worry for drilling companies.”).

¹¹¹ 33 C.F.R. § 140.1.

¹¹² 46 C.F.R. pt. 2.

¹¹³ Curry L. Hagerty and Jonathan L. Ramseur, *Deepwater Horizon Oil Spill: Selected Issues for Congress*, (Washington, D.C.: Congressional Research Service, July 15, 2010): 37. The Coast Guard proposed new safety rules in 1999, which triggered significant industry opposition, and has not since made those rules final. Outer Continental Shelf Activities, Notice of Proposed Rulemaking, 64 Fed. Reg. 68,416 (December 7, 1999).

¹¹⁴ Inspection Under, and Enforcement of, Coast Guard Regulations for Fixed Facilities on the Outer Continental Shelf by the Minerals Management Service, 67 Fed. Reg. 5912 (February 7, 2002).

¹¹⁵ The MMS and the United States Coast Guard have signed three governing Memoranda of Understanding (in 1989, 1999, and 2004, with supporting Memoranda of Agreement) in order to clarify roles and responsibilities related to workplace safety and the approval of technical systems and equipment that are applicable to both drilling and marine systems on offshore oil and gas facilities. See <http://www.boemre.gov/regcompliance/MOU/MOUindex.htm>.

¹¹⁶ S. Elizabeth Birnbaum, interview with Commission staff, August 2010; Randall B. Luthi, interview with Commission staff, August 2010; Thomas R. Kitsos, interview with Commission staff, August 2010.

¹¹⁷ Deepwater Royalty Relief Act of 1995, Pub. L. 104–58, 109 Stat. 563 (1995).

¹¹⁸ Press Release, U.S. Department of the Interior, Secretary Salazar Launches Ethics Reform Initiative in Meeting with Minerals Management Service Employees, January 29, 2009, http://www.doi.gov/news/pressreleases/2009_01_29_release.cfm.

¹¹⁹ For example, in 2006, Congress responded to Gulf state demands for greater revenues by enacting the Gulf of Mexico Energy Security Act, which provides that Alabama, Louisiana, Mississippi, and Texas and the coastal political subdivisions will receive 37.5 percent of all revenue (bonus bids, rentals, and royalty production) for new leases in the 5 million acres in the Eastern Gulf and the 5.8 million acres in the Central Gulf. See <http://www.boemre.gov/ooc/press/2008/FactSheet-MMSGOMSecurityActMARCH202008.htm>. The Fiscal Year 2010 allocation to the four Gulf States and their political subdivisions was approximately \$866 million. See <http://www.boemre.gov/offshore/PDFs/GOMESAFY2010Final.pdf>.

¹²⁰ U.S. Department of the Interior, Outer Continental Shelf Safety Oversight Board, *Report to the Secretary of the Interior* (September 1, 2010), 11.

¹²¹ U.S. Department of the Interior, Office of the Inspector General, *MMS Oil Marketing Group–Lakewood*, September 10, 2008.

¹²² U.S. Department of the Interior, Office of the Inspector General, *MMS Oil Marketing Group–Lakewood*, Report Transmittal Letter, September 9, 2008, 3, <http://www.doiig.gov/images/stories/reports/pdf/RIKInvestigation.pdf>.

¹²³ Department of the Interior Office of the Inspector General, Minerals Management Service, *Island Operating Company, et al.*, (May 25, 2010), 7, <http://www.doiig.gov/images/stories/reports/pdf/IslandOperatingCo.pdf>.

¹²⁴ *Ibid.*

¹²⁵ Press Release, U.S. Department of the Interior, Secretary Salazar Launches Ethics Reform Initiative in Meeting with Minerals Management Service Employees, January 29, 2009, http://www.doi.gov/news/pressreleases/2009_01_29_release.cfm.

¹²⁶ U.S. Department of the Interior, Outer Continental Shelf Safety Oversight Board, *Report to the Secretary of the Interior* (September 1, 2010), 8.

¹²⁷ *Ibid.*, 13.

¹²⁸ *Ibid.*, 8, 13.

¹²⁹ *Ibid.*, 13.

¹³⁰ *Ibid.*, 6.

¹³¹ Don E. Kash, *Lease Management Activities in the Geological Survey*, Commission on Fiscal Accountability of the Nation’s Energy Resources: Technical Reports, 1981–1982, RG 48, Entry 998, Box 10, File 239, National Archives and Records Administration, 27.

¹³² U.S. Department of the Interior, Outer Continental Shelf Safety Oversight Board, *Report to the Secretary of the Interior* (September 1, 2010), 11–12.

¹³³ *Ibid.*, 11.

¹³⁴ 43 U.S.C. § 1344.

¹³⁵ 43 U.S.C. § 1344.

¹³⁶ 43 U.S.C. § 1344(a)(3).

¹³⁷ 42 U.S.C. § 4332.

¹³⁸ 40 C.F.R. § 1508.8 (“Effects includes ecological . . . , aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative”).

- ¹³⁹ 16 U.S.C. §§ 1801-1891d.
- ¹⁴⁰ 16 U.S.C. §§ 1531-1544.
- ¹⁴¹ 16 U.S.C. §§ 1361-1423h.
- ¹⁴² 16 U.S.C. §§ 1431-1445c-1.
- ¹⁴³ 33 U.S.C. §§ 1251-1387.
- ¹⁴⁴ 33 U.S.C. §§ 2701-2762.
- ¹⁴⁵ Exec. Order No. 12,777, 56 Fed. Reg. 54,757 (October 22, 1991).
- ¹⁴⁶ 43 U.S.C. §1344.
- ¹⁴⁷ 43 U.S.C. §1340(c)(1).
- ¹⁴⁸ It appears to be understood that the meaning of this language is that an environmental impact statement is not required for the Gulf of Mexico, but it should be pointed out that is not the compelled or obvious reading of the language. The provision can also be fairly read to say no more than at least one impact statement has to be prepared for areas outside the Gulf and not address the issue, one way or another, concerning the application of NEPA within the Gulf. That potentially significant nuance, however, is beyond the scope of this report's inquiry.
- ¹⁴⁹ National Environmental Policy Act; Revised Implementing Procedures, 45 Fed. Reg. 75336 (proposed Nov. 14, 1980) (proposed NEPA rules); National Environmental Policy Act; Revised Implementing Procedures, 46 Fed. Reg. 7485 (Jan. 23, 1981) (final NEPA rules); see 516 Departmental Manual, 2.3.A(2) (1980).
- ¹⁵⁰ 43 C.F.R. § 46.215
- ¹⁵¹ U.S. Department of the Interior, Outer Continental Shelf Safety Oversight Board, *Report to the Secretary of the Interior* (September 1, 2010), 20.
- ¹⁵² *Ibid.*
- ¹⁵³ 516 Departmental Manual 15.4.C (providing for exceptions from categorical exclusion in certain "extraordinary circumstances," including when there are highly uncertain and potentially significant environmental effects).
- ¹⁵⁴ 51 Fed. Reg. 15,624 (1986).
- ¹⁵⁵ NOAA Fisheries Service, Southeast Regional Office, letter to MMS dated July 1, 1999 (subsequently updated in 2006, 2007, and 2008).
- ¹⁵⁶ *Essential Fish Habitat Assessment for the Minerals Management Service Programmatic Consultation for Gulf of Mexico Outer Continental Shelf (OCS) Oil and Gas Activities* (June 4, 1999).
- ¹⁵⁷ NOAA Fisheries Service, Southeast Regional Office, letter to MMS dated July 1, 1999 (subsequently updated in 2006, 2007, and 2008).
- ¹⁵⁸ 30 C.F.R. § 254.21.
- ¹⁵⁹ 30 C.F.R. § 254.23.
- ¹⁶⁰ The Response Group on behalf of ExxonMobil, *Gulf of Mexico Regional Oil Spill Response Plan* (August 2009), Rev. 5; The Response Group on behalf of ConocoPhillips, *Gulf of Mexico Regional Oil Spill Response Plan* (April 2010), Rev. 6; The Response Group on behalf of Chevron, *Gulf of Mexico Regional Oil Spill Response Plan* (February 2010), Version 3; The Response Group on behalf of Shell Offshore Inc., *Gulf of Mexico Regional Oil Spill Response Plan*, (June 2010), Rev. 6.1.
- ¹⁶¹ The Response Group on behalf of BP, *Regional Oil Spill Response Plan-Gulf of Mexico* (June 30, 2009), App. H: 5, 17, and 32.

Chapter Four

- ¹ John Guide (BP), interview with Commission staff, September 17, 2010.
- ² Internal Transocean document (TRN-HEC 90686). Internal documents are identified by their document production serial numbers when available, which were assigned by the entity that provided them.
- ³ Internal BP document (BP-HZN-MBI 126338).
- ⁴ Internal Transocean document (TRN-USCG-MMS 11597).
- ⁵ Internal BP document (BP-HZN-MBI 126338).
- ⁶ *Ibid.*
- ⁷ *Ibid.* Three companies own the Macondo well. BP has a 65 percent share, Anadarko Petroleum Corporation has a 25 percent share, and MOEX Offshore has a 10 percent share. BP maintained regular contact with Anadarko and MOEX throughout the drilling of the well.

- ⁸ Internal Transocean documents (TRN-USCG-MMS 11600, 11605, 11609, 11613, 11617, 11621, 11625).
- ⁹ Brett Clanton, "New tactic might seal leaking well sooner, BP CEO says," *Houston Chronicle*, May 5, 2010.
- ¹⁰ Gregory Walz (BP), interview with Commission staff, October 6, 2010.
- ¹¹ Testimony of Gregory Walz, Hearing before the Deepwater Horizon Joint Investigation Team, October 7, 2010, 157–59.
- ¹² Internal BP document (BP-HZN-MBI 143300) (emphasis added).
- ¹³ Internal BP documents (BP-HZN-MBI 136937, 136941).
- ¹⁴ Internal BP document (BP-HZN-CEC 8848-58).
- ¹⁵ Internal BP document (BP-HZN-MBI 129238-39).
- ¹⁶ Guide, interview. Indeed, just days before the running of the long string at Macondo, another well drilled by Transocean's DD3 suffered just such a complication. *Ibid.*
- ¹⁷ Testimony of Jesse Gagliano, Hearing before the Deepwater Horizon Joint Investigation Team, August 24, 2010, 320.
- ¹⁸ Internal BP document (BP-HZN-CEC 22433). Walz also noted that the flight carrying centralizers would not increase costs. *Ibid.*
- ¹⁹ Guide, interview. BP had special one-piece bolt-on centralizers made for the Thunder Horse project. *Ibid.*
- ²⁰ Internal BP document (BP-HZN-MBI 128379).
- ²¹ Internal BP document (BP-HZN-CEC 22669).
- ²² Internal BP document (BP-HZN-CEC 22433).
- ²³ Testimony of Steve Lewis, Hearing before the National Commission, November 9, 2010, 93–94; Internal BP document (BP-HZN-MBI 129226). Prior to conversion, a small ball drops from the top of the float valves to block the main path through the auto-fill tube, leaving only two small holes on the side of the tube through which mud can flow. *Ibid.*
- ²⁴ The Well Site Leaders—Bob Kaluza and Don Vidrine—would normally have been on the rig. Morel, a relatively junior BP engineer, had flown to the rig out of a professional interest in learning more about the cementing process. Guide, interview.
- ²⁵ Bryan Clawson (Weatherford), interview with Commission staff, October 28, 2010; BP, *Deepwater Horizon Accident Investigation Report* (September 8, 2010), 70.
- ²⁶ Testimony of Steve Lewis, 96; Internal Transocean document (TRN-USCG_MMS 11638).
- ²⁷ Internal BP document (BP-HZN-MBI 137367).
- ²⁸ *Ibid.*; Testimony of Nathaniel Chaisson, Hearing before the Deepwater Horizon Joint Investigation Team, August 24, 2010, 432.
- ²⁹ Internal BP documents (BP-HZN-MBI 137367, 21304). Since the incident, BP has argued that the M-I SWACO models predicted an erroneously high circulation pressure, and that the readings the crew observed were proper. This may ultimately explain the readings, but it does not explain why the BP Macondo team dismissed them as the result of a broken pressure gauge.
- ³⁰ David Izon, E.P. Danenberger, and Melinda Mayes, "Absence of fatalities in blowouts encouraging in MMS study of OCS incidents 1992–2006," *Well Control* July/August (2007), 84.
- ³¹ Testimony of John Guide, Hearing before the Deepwater Horizon Joint Investigation Team, July 22, 2010, 87.
- ³² John Gisclair, Sperry Sun data, April 20, 2010 (annotations, September 20, 2010). Commission calculation based on internal Halliburton document (HAL_10994).
- ³³ Internal BP document (BP-HZN-MBI 127537-39); Internal Halliburton document (HAL_11196).
- ³⁴ 30 C.F.R. § 250.421.
- ³⁵ Internal BP document (BP-HZN-MBI 193549). BP's internal guidelines further specify that centralization should extend 100 feet above any such hydrocarbon-bearing zones. If either the top of cement or centralization requirements are not met, the guidelines require that the actual top of cement should be confirmed by a "proven cement evaluation technique." *Ibid.*
- ³⁶ Internal BP documents (BP-HZN-MBI 143295, BP-HZN-CEC 22663); BP, *Deepwater Horizon Accident Investigation Report*, 34.
- ³⁷ Document provided to the Commission by Halliburton entitled "Halliburton GoM Foam Jobs 2002–2010."
- ³⁸ S.L. Pickett and S.W. Cole, "Foamed Cementing Technique for Liners Yields Cost-Effective Results" (Society of Petroleum Engineers SPE Paper #27679, Midland, Texas, March 1994), 523–24.
- ³⁹ Halliburton had delivered the slurry blend to the *Deepwater Horizon* several months earlier. It had developed the blend to match the temperature and pressure profile of the well that *Deepwater Horizon* had drilled immediately prior to Macondo—another BP well called Kodiak. Jesse Gagliano (Halliburton), interview with Commission staff, September 10, 2010.

- ⁴⁰ At this point, it appears that lab personnel replicated the dry blend recipe that was on the rig using off-the-shelf materials from their lab. For later tests, Halliburton sent samples of the cement that was actually on the *Horizon* back to the lab and directly tested those materials.
- ⁴¹ Internal BP document (BP-HZN-MBI 109218).
- ⁴² Internal Halliburton document (HAL_DOJ 68).
- ⁴³ Internal Halliburton document (HAL_DOJ 36).
- ⁴⁴ Internal Halliburton document (HAL_DOJ 43).
- ⁴⁵ *Ibid.*
- ⁴⁶ Internal BP document (BP-HZN-MBI 136946-47).
- ⁴⁷ Internal BP document (BP-HZN-MBI 171151).
- ⁴⁸ Internal BP document (BP-HZN-MBI 136946-47).
- ⁴⁹ Internal BP document (BP-HZN-CEC 20234).
- ⁵⁰ *Ibid.*
- ⁵¹ Testimony of Vincent Tabler, Hearing before the Deepwater Horizon Joint Investigation Team, August 25, 2010, 22–23, 36.
- ⁵² Internal Halliburton document (HAL_0011208).
- ⁵³ Internal BP document (BP-HZN-MBI 137370).
- ⁵⁴ Internal BP document (BP-HZN-MBI 129141).
- ⁵⁵ Internal Transocean document (TRN-USCG_MMS 30422); Internal Schlumberger document (SLB-EC-2).
- ⁵⁶ Testimony of John Guide, 44–45.
- ⁵⁷ Internal BP document (BP-HZN-MBI 143304).
- ⁵⁸ Testimony of John Guide, 298 (the cement plug was “deeper than normal”); Testimony of Ronald Sepulvado, Hearing before the Deepwater Horizon Joint Investigation Team, July 20, 2010, 145 (“the top of the surface plug is normally at 500 feet below the wellhead”).
- ⁵⁹ Internal BP document (BP-HZN-CEC 8574).
- ⁶⁰ Testimony of Jimmy Harrell, Hearing before the Deepwater Horizon Joint Investigation Team, May 27, 2010, 118.
- ⁶¹ Internal BP document (BP-HZN-CEC 8574).
- ⁶² Internal BP document (BP-HZN-CEC 21260-279).
- ⁶³ Internal BP document (BP-HZN-MBI 126928).
- ⁶⁴ Internal BP document (BP-HZN-OSC 1438).
- ⁶⁵ 30 C.F.R. § 250.423.
- ⁶⁶ The blind shear rams closed and sealed as expected during the positive-pressure test. This fact suggests that the rams were capable of sealing the well when the blowout occurred. But the evidence is inconclusive on its own; during the positive-pressure test the crew closed the blind shear rams using a low pressure hydraulic system, rather than the high pressure hydraulic system that would have activated the rams in the event of a blowout.
- ⁶⁷ Internal Transocean document (TRN-HCEC 90).
- ⁶⁸ Testimony of Patrick O’Bryan, Hearing before the Deepwater Horizon Joint Investigation Team, August 26, 2010, 360.
- ⁶⁹ Testimony of David Sims, Hearing before the Deepwater Horizon Joint Investigation Team, August 26, 2010, 204. There were no regulations or industry standards guiding the conduct or interpretation of negative-pressure tests at the time of the Macondo blowout. The absence of any such guidance may have contributed to the failure to conduct and interpret the test correctly here.
- ⁷⁰ This calculation is based on approximate values of the depths and mud weights involved.
- ⁷¹ Testimony of Leo Lindner, Hearing before the Deepwater Horizon Joint Investigation Team, July 19, 2010, 297; BP, Deepwater Horizon *Accident Investigation Report*, app. Q, 1.
- ⁷² BP, Deepwater Horizon *Accident Investigation Report*, 83.
- ⁷³ Testimony of Leo Lindner, 308–11. The exclusion for “[d]rilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil, natural gas or geothermal energy” is found at 40 C.F.R. § 261.4.
- ⁷⁴ Testimony of Leo Lindner, 276–79, 297, 359–60; Internal BP document (BP-HZN-BLY 47100).
- ⁷⁵ Testimony of Randy Ezell, Hearing before the Deepwater Horizon Joint Investigation Team, May 28, 2010, 279–81.
- ⁷⁶ Testimony of Daun Winslow, Hearing before the Deepwater Horizon Joint Investigation Team, August 24, 2010, 219;

- Testimony of Randy Ezell, 279.
- ⁷⁷ Testimony of Randy Ezell, 279.
- ⁷⁸ Testimony of Lee Lambert, Hearing before the Deepwater Horizon Joint Investigation Team, July 20, 2010, 292. Transocean disputes these accounts. It points out that the only individuals who have stated that Anderson advanced the “bladder effect” theory are BP employees.
- ⁷⁹ Testimony of Lee Lambert, 292.
- ⁸⁰ Testimony of Jimmy Harrell, 117; Internal BP documents (BP-HZN-MBI 127909, BP-HZN-CEC 20189-90). While that may have been Mr. Vidrine’s stated reason for running the test on the kill line, the Commission notes that the negative-pressure test performed at Macondo—whether on the drill pipe or kill line—was different from the negative-pressure test described in the Application for Permit to Modify. Testimony of Mark Bly, Hearing before the National Commission, November 8, 2010, 293–95.
- ⁸¹ BP, *Deepwater Horizon Accident Investigation Report*, 86.
- ⁸² There are several possible explanations for the inconsistent readings on the drill pipe and kill line. One possibility is that the viscous spacer that had leaked through the annular preventer migrated into and clogged the kill line. John Smith, *Review of Operational Data Preceding Explosion on Deepwater Horizon in MC252* (July 1, 2010), 20–21. Another possibility is that a valve was inadvertently closed that should have been open. BP, *Deepwater Horizon Accident Investigation Report*, 87. A third, more remote, possibility is that hydrocarbons coming up the well formed solid hydrates when they hit the cold seawater and those hydrates clogged the kill line. Guide, interview.
- ⁸³ Testimony of Christopher Haire, Hearing before the Deepwater Horizon Joint Investigation Team, May 28, 2010, 247.
- ⁸⁴ For example, a bubble of gas, under ideal conditions, would expand approximately 166-fold. This number differs under actual conditions based on fluid properties and flow.
- ⁸⁵ Mudloggers operate systems that collect and transmit real-time data from sensors on the rig. BP employed mudloggers from Sperry Drilling (a Halliburton subsidiary) on the Deepwater Horizon.
- ⁸⁶ The driller first sent mud to pits 9 and 10, then switched to pit 7, and then switched to pit 6. Sperry Sun data, April 20, 2010, 20:10–21:18.
- ⁸⁷ *Ibid.*, 20:28–20:36, 20:58–21:06.
- ⁸⁸ *Ibid.*, 20:20–21:01.
- ⁸⁹ *Ibid.*, 21:01.
- ⁹⁰ *Ibid.*, 21:01–21:08.
- ⁹¹ The Commission believes, based on interviews of the mudloggers on the *Horizon*, that the Hitec system may have shown a more obvious trend because it displays numeric values as opposed to trend lines such as those seen in the Sperry data shown in the text. Joseph Keith (Sperry), interview with Commission staff, October 6, 2010; Cathleen Willis (Sperry), interview with Commission staff, October 21, 2010.
- ⁹² Testimony of Greg Meche, Hearing before the Deepwater Horizon Joint Investigation Team, May 28, 2010, 207–09.
- ⁹³ 40 C.F.R. §§ 261.4, 435.11.
- ⁹⁴ Testimony of Greg Meche, 207–09, 219.
- ⁹⁵ Keith, interview.
- ⁹⁶ Internal BP document (BP-HZN-MBI 21415).
- ⁹⁷ Keith, interview. Given what we now know, it is all but impossible that the well was not flowing as of 9:08 p.m. BP, *Deepwater Horizon Accident Investigation Report*, 25; Smith, *Review of Operational Data Preceding Explosion on Deepwater Horizon*, 22–23. Other than faulty memory, the only apparent explanations for Mr. Keith’s statement are that the crew had already closed off the portion of the flow line Mr. Keith was watching or that Mr. Keith watched for an inadequate period of time. Keith, interview; Darryl Bourgoyne (LSU), interview with Commission staff, November 23, 2010.
- ⁹⁸ Testimony of Greg Meche, 207–09.
- ⁹⁹ *Ibid.*
- ¹⁰⁰ Internal BP document (BP-HZN-MBI 21415).
- ¹⁰¹ Sperry Sun data, April 20, 2010, 21:08–21:14.
- ¹⁰² *Ibid.*, 21:14–21:15.
- ¹⁰³ *Ibid.*, 2010, 21:17–21:18.
- ¹⁰⁴ Testimony of Chad Murray, Hearing before the Deepwater Horizon Joint Investigation Team, May 27, 2010, 335–36.
- ¹⁰⁵ *Ibid.*, 336.
- ¹⁰⁶ Testimony of Randy Ezell, 282.
- ¹⁰⁷ Testimony of Bill Ambrose, Hearing before the National Commission, November 8, 2010, 381.

- ¹⁰⁸ David Young (Transocean), interview with Commission staff, November 19, 2010.
- ¹⁰⁹ Testimony of David Young, Hearing before the Deepwater Horizon Joint Investigation Team, May 27, 2010, 259.
- ¹¹⁰ Young, interview.
- ¹¹¹ Sperry Sun data, April 20, 2010, 21:08–21:14.
- ¹¹² Bill Ambrose (Transocean), interview with Commission staff, September 21, 2010.
- ¹¹³ Sperry Sun data, April 20, 2010, 21:38.
- ¹¹⁴ Young, interview.
- ¹¹⁵ Sperry Sun data, April 20, 2010, 21:38–21:42.
- ¹¹⁶ Testimony of Randy Ezell, 283; Young, interview.
- ¹¹⁷ Testimony of Micah Sandell, Hearing before the Deepwater Horizon Joint Investigation Team, May 29, 2010, 10.
- ¹¹⁸ Testimony of Christopher Pleasant, Hearing before the Deepwater Horizon Joint Investigation Team, May 28, 2010, 173.
- ¹¹⁹ Testimony of Randy Ezell, 283.
- ¹²⁰ Testimony of Bill Ambrose, 244.
- ¹²¹ Smith, *Review of Operational Data Preceding Explosion on Deepwater Horizon*, 14; Testimony of Bill Ambrose, 252–53; BP, *Deepwater Horizon Accident Investigation Report*, 28.
- ¹²² Testimony of Christopher Pleasant, 165.
- ¹²³ *Ibid.*, 123.
- ¹²⁴ *Ibid.*
- ¹²⁵ Various parties have suggested other causes for the deadman’s failure, including leaks, overdue equipment certification, and improper modifications.
- ¹²⁶ Interview with industry expert, September 24, 2010.
- ¹²⁷ After the blowout, some industry CEOs testified they would never have used a long string production casing, suggesting there was a causal connection between BP’s choice of the long string and the blowout. Hearing Before the Subcomm. on Energy and Environment, 111th Cong. 104 (June 15, 2010) (statements of John Watson, Chairman and Chief Executive Officer, Chevron Corporation; and Rex Tillerson, Chairman and Chief Executive Officer, Exxon-Mobil).
- ¹²⁸ First, the long string required the cement to travel through a longer stretch of steel casing—roughly 12,000 feet longer—before reaching its final destination, potentially increasing the risk of cement contamination. Second, because it can require higher cement pumping pressure, a long string design can lead to the selection of lower cement volumes, lower densities, and lower pump rates. Third, the cement job at the bottom of a long string is more difficult to remediate than one at the bottom of a liner.
- ¹²⁹ Internal BP document (BP-HZN-MBI 128489); BP, *Deepwater Horizon Accident Investigation Report*, 64 (“the BP Macondo well team did not ask for the OptiCem model to be re-run”). This may have been because of Mr. Guide’s distrust of the OptiCem model. Testimony of John Guide, 275 (“it’s wrong a lot”). When Halliburton rig personnel eventually informed Gagliano of BP’s decision themselves, he responded by e-mailing BP modeling data suggesting again that more centralizers would be needed to prevent channeling. Internal BP document (BP-HZN-MBI 128708).
- ¹³⁰ Testimony of Jesse Gagliano, 259; Testimony of Nathaniel Chaisson, 415.
- ¹³¹ BP, *Deepwater Horizon Accident Investigation Report*, 35. Mr. Guide disagreed with the BP report’s conclusion in an interview with Commission staff. Guide, interview.
- ¹³² Internal BP document (BP-HZN-CEC 22670).
- ¹³³ Ronald Sepulvado (BP), interview with Commission staff, September 1, 2010.
- ¹³⁴ BP, *Deepwater Horizon Accident Investigation Report*, 66.
- ¹³⁵ Fred Bartlit, letter to the National Commission, October 28, 2010 (reporting the results of cement testing).
- ¹³⁶ If BP were looking, the one February test actually reported to BP could have prompted BP to question the design as well. BP argues that its failure to do so here is understandable given that it had hired one of the world’s leading cementers specifically for purposes of designing and testing the cement slurry.
- ¹³⁷ To the contrary, Halliburton’s selection of conditioning time appears to have been haphazard at best. Lab personnel used different conditioning times (ranging from zero conditioning time to three hours) in each of the four foam stability tests that they conducted.
- ¹³⁸ Internal Halliburton document (HAL_DOJ 43).
- ¹³⁹ Testimony of Daun Winslow, 209; Guide, interview.
- ¹⁴⁰ Moreover, once the BP Well Site Leaders and crew realized that the annular preventer was leaking, they should have circulated out any spacer that had migrated below the annular preventer prior to continuing with the test. Testi-

mony of John Smith, Hearing before the National Commission, November 9, 2010, 140–41.

- ¹⁴¹ The Commission agrees with others that there is no such thing as a “bladder effect” that could account for the pressures the rig crew was observing. There was no apparent explanation for the 1400 psi on the drill pipe other than that the well was flowing.
- ¹⁴² Transocean asserts that its personnel, including the driller and toolpusher, were not “in any way responsible for interpreting the negative pressure test or making the decision that the well was secure and work could properly proceed.” Rachel Clingman, letter to Commission staff, November 16, 2010, 1. As the Commission’s staff made clear at the November 8, 2010 hearing, the Commission is not tasked with deciding legal responsibility. Based on available evidence, however, Revette and Anderson agreed the negative-pressure test was a success and did not stop the job before moving on to the remaining temporary abandonment procedures. Testimony of Lee Lambert, 291; Internal BP documents (BP-HZN-CEC 20347, 20178).
- ¹⁴³ Guide, interview.
- ¹⁴⁴ Benjamin Powell, “BP Response to Presidential Commission’s Preliminary Technical Conclusions,” letter to Commission staff, November 22, 2010, att. 1, 3 (citing Hearing Before the Senate Comm. on Energy and Natural Resources, 111th Cong. (May 11, 2010) (statement of Testimony of Tim Probert, Halliburton President, Global Business Lines, Chief Health, Safety and Environmental Officer)).
- ¹⁴⁵ Testimony of Mark Bly, 213; Testimony of Charlie Williams, Hearing before the National Commission, November 9, 2010, 45.
- ¹⁴⁶ Testimony of Steve Lewis, 54, 124. BP argues that “[t]he use of additional mechanical plugs would have brought its own additional risks.” Powell, letter, att. 1, 6 (citing API, *Recommended Practice 65—Part 2* (May 2010), § 3.1); Guide, interview. However, BP does not present any evidence that the Macondo team in fact evaluated those risks or compared them with the risks of setting a single surface cement plug in seawater 3,300 feet below the mud line.
- ¹⁴⁷ Merrick Kelley (BP), interview with Commission staff, October 22, 2010; Industry expert, interview.
- ¹⁴⁸ BP asserts that “[u]sing drill collars would have required unranking the drill pipe on the rig and then locating and re-racking drill collars—a set of additional operations with attendant risks.” Powell, letter, att. 1, 5. BP does not provide any evidence to substantiate the extent of such “attendant risks” or whether they outweighed the risks of the procedure BP chose. Most significantly, BP offers no evidence that its Macondo team ever considered such risks or performed a rigorous comparative risk analysis.
- ¹⁴⁹ Internal BP document (BP-HZN-CEC 8574).
- ¹⁵⁰ Testimony of Mark Bly, 308. BP has suggested that the float valves provided an additional barrier to flow. BP, Deepwater Horizon Accident Investigation Report, 68. The Commission does not agree that float valves, even when converted, constitute a distinct physical barrier to flow, but instead reinforce the cement in the shoe track. Clawson, interview (indicating that Weatherford does not consider the float collar to be a barrier to hydrocarbons); API, *Recommended Practice 65—Part 2* (May 2010), §§ 3.4, 4.4.3 (float valves not included in the list of subsurface mechanical barriers; float equipment used to prevent cement from flowing back into the casing).
- ¹⁵¹ Testimony of Darryl Bourgoyne, Hearing before the National Commission, November 9, 2010, 133.
- ¹⁵² Testimony of Charlie Williams, 46–53.
- ¹⁵³ Testimony of Bill Ambrose, 380–84.
- ¹⁵⁴ Between 8:00 and 9:49 p.m., the crew was performing a number of other activities that may have further confounded the data or at least distracted the driller. The crew was emptying various tanks on the rig into the active pit system, including “trip tanks” and “sand traps,” which may have masked increased flow out of the well into the active pit system. At 9:18 p.m., a valve on one of the pumps blew, and a number of crew members from the rig floor went to fix it. Finally, the crew was operating one or both of the cranes on the main deck, which could have affected flow-out and volume readings.
- ¹⁵⁵ Internal BP document (BP-HZN-OSC 5420).
- ¹⁵⁶ Guide, interview.
- ¹⁵⁷ *Ibid.*; Internal BP document (BP-HZN-MBI 193529–39).
- ¹⁵⁸ It appears that the chain of command and responsibilities at BP during the execute phase were not well-understood by the Macondo Engineering Team Leader. When asked during an interview who was responsible for designing or amending the temporary abandonment procedures, the Macondo Engineering Team Leader said he would need to look at the company’s chart of roles and responsibilities. Walz, interview.
- ¹⁵⁹ Internal BP document (BP-HZN-MBI 117603).
- ¹⁶⁰ Internal BP document (BP-HZN-MBI 128542).
- ¹⁶¹ Internal BP document (BP-HZN-OSC 6224).
- ¹⁶² There is a dispute as to whether BP personnel called back to shore that evening to discuss the data observed during the negative-pressure test. The Commission staff has to date seen no direct evidence of such a call. The staff’s investigation is ongoing.
- ¹⁶³ Internal BP document (BP-HZN-BLY 38354).
- ¹⁶⁴ Internal BP document (BP-HZN-BLY 38355).

- ¹⁶⁵ Internal BP document (BP-HZN-BLY 38354).
- ¹⁶⁶ Internal BP document (BP-HZN-BLY 38361).
- ¹⁶⁷ *Ibid.*
- ¹⁶⁸ Internal BP document (BP-HZN-BLY 38362).
- ¹⁶⁹ Internal Transocean document (TRN-PC 3227).
- ¹⁷⁰ Transocean states that on April 5, 2010, it posted a short, two-page version of this advisory to an internal electronic document platform, which supervisors on the *Deepwater Horizon* had access to. But the advisory was limited to completion operations, and, as of this writing, Transocean has not offered any evidence that anyone on the rig actually saw or reviewed the advisory.
- ¹⁷¹ The industry and the international community also failed to adequately communicate lessons learned from the Montara blowout, which for ten weeks beginning on August 21, 2009 spewed between 400 and 1500 barrels per day of oil and gas into the Timor Sea approximately 150 miles off the northwest coast of Australia. David Borthwick, *Report of the Montara Commission of Inquiry* (The Montara Commission of Inquiry, Australia, June 2010), 5, 26. According to the *Report of the Montara Commission of Inquiry*, released on November 24, 2010, many of the technical and managerial causes of the Montara blowout track those at Macondo. For instance, the Commission of Inquiry concluded that the cement job in the “9 5/8” casing shoe failed, that there were numerous risk factors surrounding the cement job that went unheeded, and that the cement job was not properly pressure tested. *Ibid.*, 7. According to the Commission of Inquiry:
- The multiple problems in undertaking the cement job—such as the failure of the top and bottom plugs to create a seal after “bumping,” the failure of the float valves and an unexpected rush of fluid—should have raised alarm bells. Those problems necessitated a careful evaluation of what happened, the instigation of pressure testing and, most likely, remedial action. No such careful evaluation was undertaken. The problems were not complicated or unsolvable, and the potential remedies were well known and not costly. This was a failure of “sensible oilfield practice 101.”
- Ibid.* The Commission of Inquiry went on to conclude that while the “absence of tested barriers was a proximate cause of the Blowout,” the deeper failure was a systemic failure of management on the part of the operator, PTTEP Australasia. *Ibid.*, 9.
- ¹⁷² Testimony of Rex Tillerson, Hearing before the National Commission, November 9, 2010, 250–52; Testimony of Marvin Odum, Hearing before the National Commission, November 9, 2010, 278–79.
- ¹⁷³ 30 C.F.R. § 250.1721(d).
- ¹⁷⁴ 30 C.F.R. § 250.141(a).
- ¹⁷⁵ Internal BP document (BP-HZN-OSC 1436).
- ¹⁷⁶ Internal BP document (BP-HZN-MBI 127906). MMS approved a number of other requests by BP for deviations on the Macondo well. None of those other approvals appear to have contributed to the blowout. However, they do suggest that the MMS staff did not spend much time deciding whether to grant the requests, which may have been due to the severe funding and staffing shortages in the New Orleans office.

Chapter Five

- ¹ Brady Dennis and Shailagh Murray, “GOP Changes Tone on Financial Bill,” *Washington Post*, April 21, 2010; Edward Wyatt and David M. Herszenhorn, “Bill on Finance Wins Approval of Senate Panel,” *New York Times*, April 22, 2010; Jim Puzzanghera, “In N.Y., Obama to Push for Financial Overhaul,” *Los Angeles Times*, April 22, 2010; Adam Liptak, “Justices Reject Ban on Depicting Animal Cruelty,” *New York Times*, April 21, 2010; Joan Biskupic, “High Court Negates Animal Cruelty Law as Too Broad, 8–1” *USA Today*, April 21, 2010; Jess Bravin, “Court Voids Law on Animal Cruelty,” *Wall Street Journal*, April 21, 2010; Bart Barnes, “A Movement’s Matriarch,” *Washington Post*, April 21, 2010; Andrew Zajac and Melissa Healy, “FDA Puts the Pinch on Salt,” *Los Angeles Times*, April 21, 2010.
- ² Neil MacFarquhar, “Routine Flights Become Overland Odysseys, Minus Clean Socks,” *New York Times*, April 22, 2010.
- ³ Campbell Robertson, “11 Remain Missing After Oil Rig Explodes Off Louisiana,” *New York Times*, April 22, 2010.
- ⁴ Rick Jervis, “Gulf Blast Appears to be ‘Blowout,’” *USA Today*, April 22, 2010; Ben Casselman, Russell Gold, and Angel Gonzalez, “Blast Jolts Oil World,” *Wall Street Journal*, April 22, 2010.
- ⁵ Jervis, “Gulf Blast Appears to be ‘Blowout.’”
- ⁶ Richard Fausset, “Oil Rig Explodes; 11 Missing,” *Los Angeles Times*, April 22, 2010.
- ⁷ 40 C.F.R. § 300, Subpart D.
- ⁸ Paul Purpura et al., “Search continues for 11 missing in rig blast,” *Times-Picayune*, April 22, 2010.
- ⁹ Paul Rioux and Chris Kirkham, “Search for 11 Workers Missing After Oil Rig Explosion Is Expected To Be Called Off Friday,” *Times-Picayune*, April 22, 2010.
- ¹⁰ Testimony of Captain James Hanzalik, Hearing Before the Deepwater Joint Investigation Team, October 4, 2010, 29–30.

- 11 40 C.F.R. § 300.305(c).
- 12 Press Release, White House, Statement by the Press Secretary on the President's Oval Office Meeting to Discuss the Situation in the Gulf of Mexico, April 22, 2010.
- 13 40 C.F.R. § 300.175(b).
- 14 Leslie Kaufman, "Search Ends for Missing Oil Rig Workers," *New York Times*, April 23, 2010.
- 15 Press Release, Unified Command, Unified Command Continues to Respond to Deepwater Horizon, April 25, 2010.
- 16 Interview with Coast Guard official, August 27, 2010.
- 17 BP, *Initial Exploration Plan*, Mississippi Canyon Block 252 (February 23, 2009), § 2.6.
- 18 Doug Suttles, interview with Commission staff, October 13, 2010; Interviews with Minerals Management Service officials, October 15, 2010; Interview with well control expert, October 14, 2010.
- 19 Press Release, BP Work Begins To Drill Relief Well To Stop Oil Spill, May 4, 2010; White House, Ongoing Response Timeline, May 17, 2010; David Hayes, memo to Commission staff, November 12, 2010.
- 20 Joe Stephens and Mary Pat Flaherty, "Oil Industry Cleanup Organization Swamped by BP Spill," *Washington Post*, June 29, 2010.
- 21 The Response Group on behalf of BP, *Regional Oil Spill Response Plan-Gulf of Mexico* (June 30, 2009), App. H: 40.
- 22 Jonathan Ramseur, *Oil Spills in U.S. Coastal Waters: Background, Governance, and Issues for Congress* (Congressional Research Service, 2008), 2.
- 23 Joint Industry Oil Spill Preparedness and Response Task Force, *Joint Industry Recommendations to Improve Oil Spill Preparedness and Response* (September 3, 2010), V-3, V-5; Henry Fountain, "Advances in Oil Spill Cleanup Lag Since Valdez," *New York Times*, June 24, 2010.
- 24 Sarah L. Milton et al., "Obituary Peter L. Lutz," *Journal of Experimental Biology* 208 (2005): 2817-18; *Regional Oil Spill Response Plan-Gulf of Mexico* App. F:19, § 11:7, App. E.
- 25 Opening Statement of Chairman Edward Markey, "Drilling Down on America's Energy Future: Safety, Security, and Clean Energy," Hearing Before the House Committee on Energy and Commerce, Subcommittee on Energy and Environment, 111th Congress (June 15, 2010).
- 26 Interview with NOAA scientist, August 20, 2010; Interview with NOAA scientist, October 13, 2010.
- 27 NOAA Scientist, *Estimation of the Oil Released from Deepwater Horizon Incident*, April 26, 2010; Mark Miller, e-mail to Martha Garcia, June 14, 2010.
- 28 Interview with NOAA scientist, August 30, 2010; Interview with NOAA scientist, October 13, 2010.
- 29 Press Conference, Admiral Mary Landry and Doug Suttles, New Orleans, LA, April 28, 2010.
- 30 Press Release, Deepwater Horizon Incident Joint Information Center Update: The Ongoing Administration-Wide Response to the BP Deepwater Horizon Oil Spill, July 15, 2010.
- 31 Paul Purpura, "Guard Troops Going Home," *Times-Picayune*, October 21, 2010.
- 32 40 C.F.R. § 300.322(b).
- 33 40 C.F.R. § 300.305(d).
- 34 Clifford Krauss, "Oil Spill's Blow to BP's Image May Eclipse Its Cost," *New York Times*, April 29, 2010.
- 35 Office of Science and Technology, *First Report of the President's Panel on Oil Spills* (1969), 9.
- 36 Interview with well control expert, October 14, 2010.
- 37 Transcript, Office of the Press Secretary, Press Briefing on the BP Oil Spill in the Gulf Coast, April 29, 2010.
- 38 Transcript, State of the Union with Candy Crowley, CNN, May 2, 2010.
- 39 40 C.F.R. § 300.323; Campbell Robertson, "White House Takes a Bigger Role in the Oil Spill Cleanup," *New York Times*, April 29, 2010.
- 40 40 C.F.R. § 300.5.
- 41 40 C.F.R. § 300.323(c).
- 42 Interview with Coast Guard official, November 12, 2010.
- 43 Press Release, Deepwater Horizon Incident Joint Information Center, Coast Guard Commandant Admiral Thad Allen Designated National Incident Commandant For Continued Response To BP Oil Spill, May 1, 2010.
- 44 Thom Shanker, "Commander Accustomed to Scrutiny and Crises," *New York Times*, September 10, 2005; Matthew L. Wald, "A New, Experienced Protector for Navy in Home Waters," *New York Times*, November 9, 2001; Elizabeth Bumiller, "Casualty of Firestorm: Outrage, Bush, and FEMA Chief," *New York Times*, September 10, 2005.
- 45 Editorial, "Allen Candid About Recovery," *Advocate*, December 11, 2005.
- 46 Jim Tankersley, "The Government's 'Rock Star' in Charge of the Oil Spill," *Los Angeles Times*, June 1, 2010.

- ⁴⁷ Testimony of Harry Thierens, Hearing before the Deepwater Horizon Joint Investigation Team, August 25, 2010, 104–5.
- ⁴⁸ Henry Fountain, “Notes from Wake of Blowout Outline Obstacles and Frustration,” *New York Times*, June 21, 2010; Non-public BP document, May 6, 2010.
- ⁴⁹ Testimony of Harry Thierens, 106.
- ⁵⁰ Government science advisor, e-mail to Commission staff, October 7, 2010; Testimony of William Stringfellow, Hearing before the Deepwater Horizon Joint Investigation Team, August 25, 2010, 352.
- ⁵¹ BP, Deepwater Horizon *Accident Investigation Report* (September 8, 2010), 150.
- ⁵² Non-public BP document, May 7, 2010.
- ⁵³ David Barstow et al., “Regulators Failed to Address Risks in Oil Rig Fail-Safe Device,” *New York Times*, June 20, 2010; Interview with senior administration official, November 8, 2010.
- ⁵⁴ FEMA, “Disasters Declared by Year or State,” http://www.fema.gov/news/disaster_totals_annual.fema.
- ⁵⁵ 42 U.S.C. §§ 5121–5206.
- ⁵⁶ 40 C.F.R. § 300.105(c)(3).
- ⁵⁷ Interview with government official, August 24, 2010.
- ⁵⁸ Press Release, Office of the Governor, Governor Jindal Issues State Declaration of Emergency for Oil Leak, April 29, 2010.
- ⁵⁹ Press Release, Governor Barbour Issues State of Emergency for Mississippi Gulf Coast, April 30, 2010; Press Release, Gov. Riley Declares State of Emergency to Prepare for Oil Approaching Alabama Coast, April 30, 2010; State of Florida, Office of the Governor, Executive Order Number 10-99 (Emergency Management—Deepwater Horizon), April 30, 2010.
- ⁶⁰ Interview with government official, August 24, 2010; Interview with government official, September 13, 2010; Interview with government official, September 15, 2010.
- ⁶¹ Interview with Coast Guard official, August 31, 2010.
- ⁶² Interview with BP official, October 22, 2010; Interview with government official, October 5, 2010; Interview with government official, August 24, 2010; Interview with Coast Guard official, August 25, 2010.
- ⁶³ La. Rev. Stat. § 29: 727.
- ⁶⁴ Interview with government official, October 8, 2010.
- ⁶⁵ Interview with Coast Guard official, October 20, 2010.
- ⁶⁶ Interview with government official, October 8, 2010; Interview with government official, October 14, 2010.
- ⁶⁷ Testimony of Admiral Thad Allen, National Incident Commander, Hearing before the National Commission, September 27, 2010.
- ⁶⁸ Press Release, In Precautionary Move, LDWF and DHH Announce Closures Due to Oil Spill, April 30, 2010; Press Release, Alabama Department of Conservation and Natural Resources, Some State Waters Closed to Fishing, June 2, 2010; Press Release, Mississippi Department of Marine Resources, Revised Precautionary Closure: Portions of Mississippi Marine Waters Reopen to Commercial and Recreational Fishing, June 4, 2010; Florida Fish and Wildlife Conservation Commission, Order No. EO 10-29, Emergency Closure of State Waters of the Gulf of Mexico in response to the Deepwater Horizon Oil Spill, June 13, 2010.
- ⁶⁹ NOAA, Office of Response and Restoration, *Oil Forecast Outlook* (April 23, 2010).
- ⁷⁰ Fisheries of the Caribbean, Gulf of Mexico, and South Atlantic; Emergency Fisheries Closure in the Gulf of Mexico Due to the Deepwater Horizon Oil Spill, 75 Fed. Reg. 24,822 (May 6, 2010); NOAA Fisheries Service, *Deepwater Horizon/BP Oil Spill: Size and Percent Coverage of Fishing Closures Due to BP Oil Spill* (November 15, 2010), <http://sero.nmfs.noaa.gov/ClosureSizeandPercentCoverage.htm>.
- ⁷¹ Fisheries of the Caribbean, Gulf of Mexico, and South Atlantic; Amendment to Emergency Fisheries Closure in the Gulf of Mexico Due to the Deepwater Horizon Oil Spill, 75 Fed. Reg. 26,679 (May 12, 2010); NOAA, Deepwater Horizon/BP Oil Spill: Size and Percent Coverage of Fishing Closures Due to BP Oil Spill.
- ⁷² Fisheries of the Caribbean, Gulf of Mexico, and South Atlantic; Emergency Fisheries Closures in the Southeast Region Due to the Deepwater Horizon Oil Spill; Amendment 2, 75 Fed. Reg. 27,217 (May 14, 2010).
- ⁷³ NOAA, *Deepwater Horizon/BP Oil Spill: Size and Percent Coverage of Fishing Closures Due to BP Oil Spill*.
- ⁷⁴ Interview with government official, October 12, 2010.
- ⁷⁵ BP, “Factsheet on BP Vessels of Opportunity Program” (July 7, 2010), 4, http://www.bp.com/liveassets/bp_internet/globalbp/globalbp_uk_english/incident_response/STAGING/local_assets/downloads_pdfs/factsheet_bp_vessels_of_opportunity_program.pdf.
- ⁷⁶ National Incident Command, *National Incident Commander Strategy Implementation Plan Version 5.0* (2010), 474–75.

- 77 BP, Factsheet on BP Vessels of Opportunity Program, 2.
- 78 Bruce Nolan, "Many Vietnamese fishers isolated by language from oil spill aid," *Times-Picayune*, May 7, 2010; Mireya Navarro, "Spill Takes Toll on Gulf Workers' Psyches," *New York Times*, June 16, 2010; Jessica Ravitz, "Vietnamese Fishermen in Gulf Fight to Not Get Lost in Translation," CNN, June 25, 2010.
- 79 BP, Factsheet on BP Vessels of Opportunity Program 5.
- 80 Interview with BP official, October 22, 2010.
- 81 40 C.F.R. § 300.150.
- 82 Rebecca Bratspies et al., *From Ship to Shore: Reforming the National Contingency Plan to Improve Protections for Oil Spill Cleanup Workers* (Center for Progressive Reform, September 2010), 8–9.
- 83 Interview with responder, November 17, 2010; Bryan Walsh, "Assessing the Health Effects of the Oil Spill," *Time*, June 25, 2010.
- 84 Scott Deitchman, interview with Commission staff, November 29, 2010.
- 85 Nicole Lurie, interview with Commission staff, October 6, 2010.
- 86 *Ibid.*
- 87 Deitchman, interview; Lurie, interview; *Strategy Implementation Plan*, 252.
- 88 Molly Reid, "Only One Oil-slicked Bird Rescued so far from Gulf of Mexico Oil Spill," *Times-Picayune*, April 30, 2010.
- 89 U.S. Fish and Wildlife Service, "Cumulative Impacts to Wildlife and Actions to Protect Wildlife in the Gulf of Mexico" (November 25, 2010), <http://www.fws.gov/home/dhoilspill/pdfs/CumulativeImpactsBP.pdf>.
- 90 U.S. Fish and Wildlife Service, "Oil Spill Response" (May 2010), <http://www.fws.gov/home/dhoilspill/pdfs/OilSpill-FactSheet.pdf>.
- 91 Michele Wilson, "Oil Spill Update: Two More Birds Recovering, BP and Other Execs Point Fingers, and More," *Audubonmagazine.org*, May 12, 2010.
- 92 Interview with wildlife responder, October 26, 2010; Interview with representatives of wildlife organizations, October 15, 2010.
- 93 Craig Pittman, "Bird rescue experts kept on sideline after gulf oil spill," *St. Petersburg Times*, September 5, 2010; Interview with wildlife responder, October 26, 2010.
- 94 Testimony of Kevin Costner, "Deluge of Oil Highlights Research and Technology Needs for Effective Cleanup of Oil Spills," Hearing Before the House Committee on Science and Technology, 111th Congress (June 9, 2010); Fountain, "Advances in Oil Spill Cleanup Lag Since Valdez."
- 95 Press Release, Deepwater Horizon Joint Information Center, New Effort to Collect; Review Oil Spill Response Solutions Announced, June 4, 2010.
- 96 Commander Todd Offutt, e-mail to Commission staff, November 17, 2010.
- 97 Interview with Coast Guard official, September 2, 2010.
- 98 White House Office of the Press Secretary, Press Briefing by Press Secretary Robert Gibbs and National Incident Commander Thad Allen, July 1, 2010; U.S. Department of State, Deepwater Horizon Oil Spill Response: International Offers of Assistance from Governments and International Bodies Chart, June 18, 2010.
- 99 46 U.S.C. § 688.
- 100 Interview with Coast Guard officials, August 3, 2010; API Joint Oil Spill Preparedness and Response Task Force, interview with Commission staff, October 12, 2010; Scott Segal and Kevin Ewing, interview with Commission staff, October 14, 2010; H. Clayton Cook Jr., Letter to the Editor, "Don't Blame Delays on Jones Act," *Wall Street Journal*, July 20, 2010; U.S. Department of Homeland Security, Jones Act Fact Sheet (July 6, 2010), <http://www.deepwaterhorizonresponse.com/external/content/document/2931/784459/1/USCG-Jones%20Act.pdf>.
- 101 U.S. Department of Homeland Security, Jones Act Fact Sheet; Press Release, Deepwater Horizon Joint Information Center, Admiral Allen Provides Guidance to Ensure Expedited Jones Act Waiver Processing Should It Be Needed, June 15, 2010.
- 102 Non-public Coast Guard documents, June 29, 2010, June 30, 2010, and July 9, 2010.
- 103 Coastal Response Research Center, *Research & Development Needs for Making Decisions Regarding Dispersing Oil* (April 2006), 1.
- 104 Ramon Antonia Vargas, "Oil is Leaking from Well at Deepwater Horizon Explosion Site," *Times-Picayune*, April 24, 2010.
- 105 Interview with Coast Guard official, October 29, 2010.
- 106 National Research Council, Committee on Understanding Oil Spill Dispersants, *Oil Spill Dispersants: Efficacy and Effects* (2005), 2.
- 107 Coastal Response Research Center, 1.
- 108 National Research Council, *Oil Spill Dispersants*, 196, 274.

- ¹⁰⁹ Merv Fingas, *A Review of Literature Related to Oil Spill Dispersants, 1997–2008* (September 2008), 18 <http://www.pwsrca.org/docs/d0053000.pdf>.
- ¹¹⁰ *Ibid.*, 25.
- ¹¹¹ Non-public Coast Guard document, April 23, 2010.
- ¹¹² RRT-6, *FOSC Dispersant Pre-Approval Guidelines And Checklist* (2001), iii-iv, http://www.losco.state.la.us/pdf_docs/RRT6_Dispersant_Preapproval_2001.pdf; Region IV Regional Response Team Response and Technology Committee Dispersant Workgroup, *Use of Dispersants in Region IV* (1996), ii-1, [http://www.nrt.org/production/NRT/RRTHome.nsf/Resources/DUP/\\$file/1-RRT4DISP.PDF](http://www.nrt.org/production/NRT/RRTHome.nsf/Resources/DUP/$file/1-RRT4DISP.PDF).
- ¹¹³ 40 C.F.R. § 300.910(a).
- ¹¹⁴ S.L. Ross Environmental Research, Ltd., *Technology Assessment of the Use of Dispersants on Spills from Drilling and Production Facilities in the Gulf of Mexico Outer Continental Shelf* (December 2000), Summary-1; Robert J. Fiocco and Alun Lewis, "Oil Spill Dispersants," 1 *Pure Applied Chemistry* (1999): 31.
- ¹¹⁵ 40 C.F.R. § 300.910(b).
- ¹¹⁶ Figures on the volume of dispersant use are either taken directly from, or calculated based on data in, the Operations and Ongoing Response daily reports for the Deepwater Horizon Response, available at www.restorethegulf.gov.
- ¹¹⁷ 40 C.F.R. § 300.915 (a)(8).
- ¹¹⁸ David Biello, "Is Using Dispersants on the BP Gulf Oil Spill Fighting Pollution with Pollution?" *Scientific American*, June 18, 2010.
- ¹¹⁹ 40 C.F.R. § 300.915; 40 C.F.R. Part 300 Appendix C.
- ¹²⁰ National Research Council, *Oil Spill Dispersants*, 68–69; Samuel K. Skinner and William K. Reilly, *The Exxon Valdez Oil Spill: A Report to the President* (May 1989), 17, App. A.
- ¹²¹ David Hammer, "BP Clashes with Critics on Gulf of Mexico Oil Crisis Response," *Times-Picayune*, May 31, 2010.
- ¹²² Elana Schor, "BP Continues to Use Surface Dispersants in Gulf Despite EPA Directive," *New York Times*, June 24, 2010.
- ¹²³ Ernest Scheyder, "Nalco CEO on Gulf Coast to Defend Dispersant," *Reuters*, June 3, 2010.
- ¹²⁴ Interview with NOAA scientist, October 21, 2010; Testimony of Lisa Jackson, Hearing before the National Commission, September 27, 2010.
- ¹²⁵ Dana Tulis and Mathy Stanislaus, interview with Commission staff, October 1, 2010.
- ¹²⁶ Kenneth Meade, e-mail to Commission staff, September 27, 2010.
- ¹²⁷ Tim Webb, "BP Boss Tony Hayward Admits Job is on the Line Over Deepwater Oil Spill," *The Guardian*, May 14, 2010.
- ¹²⁸ Tulis and Stanislaus, interview.
- ¹²⁹ EPA, *Dispersant Monitoring and Assessment Directive for Subsurface Dispersant Application*, May 10, 2010; EPA, *Dispersant Monitoring and Assessment Directive for Subsurface Dispersant Application—Addendum 1*, May 14, 2010; EPA, *Dispersant Monitoring and Assessment Directive*, May 20, 2010; EPA, *Dispersant Monitoring and Assessment Directive—Addendum 3*, May 26, 2010.
- ¹³⁰ Testimony of Lisa Jackson, September 27, 2010.
- ¹³¹ Richard Lynch, interview with Commission staff, October 13, 2010; Suttles, interview.
- ¹³² Press Release, BP, Work Begins to Drill Relief Well to Stop Oil Spill, May 4, 2010.
- ¹³³ Press Release, White House, The Ongoing Administration-Wide Response to the Deepwater BP Oil Spill, May 6, 2010; "Deepwater Team Attempts To Put 100-Tonne Box over Blown-out Oil Well," *Associated Press*, May 7, 2010; Matthew Bigg, "Oil From Gulf Spill Creeps Ashore in Louisiana," *Reuters*, May 6, 2010.
- ¹³⁴ Ian Urbina, Justin Gillis, and Clifford Krauss, "On Defensive, BP Readies Dome to Contain Spill," *New York Times*, May 3, 2010.
- ¹³⁵ Suttles, interview; Lynch, interview.
- ¹³⁶ Non-public BP document, May 7, 2010.
- ¹³⁷ Interview with well control expert, October 14, 2010; Interview with drilling expert, October 1, 2010.
- ¹³⁸ Lynch, interview.
- ¹³⁹ Campbell Robertson, "New Setback in Attempt to Contain Gulf Oil Spill," *New York Times*, May 8, 2010.
- ¹⁴⁰ Lynch, interview.
- ¹⁴¹ Clifford Krauss, Henry Fountain, and John M. Broder, "Acrimony Behind the Scenes of Gulf Oil Spill," *New York Times*, August 26, 2010.
- ¹⁴² Interview with U.S. Geological Survey official, October 21, 2010.

- 143 Suttles, interview.
- 144 Interview with U.S. Geological Survey official, October 21, 2010; Interview with Minerals Management Service official, October 15, 2010; Interview with well control expert, October 14, 2010.
- 145 Sam Dolnick and Henry Fountain, "Unable to Stanch Oil, BP Will Try To Gather It," *New York Times*, May 5, 2010.
- 146 Clifford Krauss and Michael Cooper, "Cap Slows Gulf Oil Leak as Engineers Move Cautiously," *New York Times*, June 5, 2010.
- 147 Lynch, interview.
- 148 Jeremy Hsu, "Why Don't We Just Drop a Nuclear Bomb on the Gulf Oil Spill?" *Christian Science Monitor*, May 13, 2010.
- 149 Testimony of Richard Camilli, "Sizing up the BP Oil Spill: Science and Engineering Measuring Methods," Briefing Before the Subcommittee on Energy and Environment of the House Committee on Energy and Commerce, 111th Congress (May 19, 2010).
- 150 John Amos, "Gulf Oil Spill Rate Must Be Much Higher Than Stated—6 Million Gallons So Far?," Skytruth.org, April 27, 2010, <http://blog.skytruth.org/2010/04/gulf-oil-spill-rate-must-be-much-higher.html>; John Amos, "Gulf Oil Spill—Bigger Than Exxon Valdez," Skytruth.org, April 28, 2010, <http://blog.skytruth.org/2010/04/gulf-oil-spill-bigger-than-exxon-valdez.html>; John Amos, "Gulf Oil Spill—New Spill Calculation—Exxon Valdez Surpassed Today," Skytruth.org, May 1, 2010, <http://blog.skytruth.org/2010/05/gulf-oil-spill-new-spill-rate.html>.
- 151 Richard Harris, "Gulf Spill May Far Exceed Official Estimates," National Public Radio, May 14, 2010, <http://www.npr.org/templates/story/story.php?storyId=126809525>.
- 152 Testimony of Steven Wereley (Professor, Purdue University), "Sizing up the BP Oil Spill: Science and Engineering Measuring Methods," Briefing Before the Subcommittee on Energy and Environment of the House Committee on Energy and Commerce, 111th Congress (May 19, 2010).
- 153 Harris, "Gulf Spill May Far Exceed Official Estimates."
- 154 Transcript, Marcia McNutt, Deepwater Blowout Containment Conference, September 22, 2010.
- 155 Press Release, Deepwater Horizon Incident Joint Information Center, Flow Rate Group Provides Preliminary Best Estimate of Oil Flowing From BP Oil Well, May 27, 2010.
- 156 Marcia McNutt, *Summary Preliminary Report from the Flow Rate Technical Group* (June 2, 2010).
- 157 Admiral Thad Allen, letter to Honorable Edward J. Markey, October 1, 2010, 12.
- 158 Press Release, U.S. Department of Energy, Secretary Salazar and Secretary Chu To Meet with Scientists and Engineers at BP Houston Command Center, May 11, 2010.
- 159 Interview with U.S. Department of Energy official, November 8, 2010; Interview with government science advisor, October 5, 2010; Interview with government science advisor, October 6, 2010.
- 160 Kenneth Chang and Andrew Revkin, "At a Sleek Bioenergy Lab, a Lens on a Cabinet Pick," *New York Times*, December 22, 2008.
- 161 Paul Tooms, interview with Commission staff, October 13, 2010; Interviews with Minerals Management Service officials, October 15, 2010; Interview with Coast Guard official, October 18, 2010.
- 162 Interview with U.S. Department of Energy official, November 8, 2010; Interview with Coast Guard official, October 18, 2010; Interview with government science advisor, October 5, 2010.
- 163 Interview with government science advisor, October 1, 2010; Interview with U.S. Department of Energy scientist, October 26, 2010.
- 164 "Leno: 'Junk Shot,'" *New York Times*, June 1, 2010.
- 165 Campbell Robertson, Clifford Krauss, and John M. Broder, "Oil Hits Home, Spreading Arc of Frustration," *New York Times*, May 24, 2010.
- 166 Lynch, interview.
- 167 Non-public U.S. Department of Energy document, May 17, 2010; Non-public U.S. Department of Energy document, May 19, 2010.
- 168 Tooms, interview.
- 169 Interview with U.S. Department of the Interior official, October 21, 2010.
- 170 Interview with government science advisor, October 6, 2010.
- 171 Non-public BP document, May 31, 2010.
- 172 Suttles, interview.
- 173 Interview with government science advisor, October 6, 2010; Suttles, interview; Tooms, interview.
- 174 Interview with Minerals Management Service official, October 15, 2010; Interview with well control expert, October 14, 2010.

- 175 Robertson, Krauss, and Broder, "Oil Hits Home, Spreading Arc of Frustration."
- 176 Mimi Hall, Rick Jervis, and Allen Levin, "Is Oil Spill Becoming Obama's Katrina?," *USA Today*, May 27, 2010.
- 177 Matthew Daly, "Month After Oil Spill, Why Is BP Still in Charge?," ABC News, May 21, 2010, <http://abcnews.go.com/Business/wireStory?id=10713257>.
- 178 Interview with Coast Guard official, November 12, 2010.
- 179 Frank McCormack, "Privateer Perfection," *Plaquemines Gazette*, June 7, 2010.
- 180 Paul Rioux, "President Barack Obama in Grand Isle after Touring Beach in Port Fourchon," *Times-Picayune*, May 28, 2010.
- 181 Paul Rioux, "President Barack Obama Promises No Retreat from Gulf of Mexico Oil Spill Response," *Times-Picayune*, May 28, 2010.
- 182 Interview with Coast Guard official, August 26, 2010; Interview with Coast Guard official, September 2, 2010; Non-public Coast Guard document, June 14, 2010.
- 183 Jeffrey Ball and Jonathan Weisman, "Slippery Start: U.S. Response to Spill Falters," *Wall Street Journal*, June 16, 2010.
- 184 Interview with Coast Guard official, November 12, 2010.
- 185 Executive Order No. 13543, National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, 75 Fed. Reg. 29,397, May 21, 2010.
- 186 Peter Baker, "Obama Extends Moratorium; Agency Chief Resigns," *New York Times*, May 27, 2010.
- 187 Gardner Harris, "Minerals Management Service Director Resigns Over Spill," *New York Times*, May 27, 2010.
- 188 Mike Allen, "Gulf Commander to Begin Solo Briefings," *Politico*, May 31, 2010.
- 189 Interview with government official, October 8, 2010.
- 190 Interview with NOAA officials, November 18, 2010.
- 191 Interview with Coast Guard official, August 24, 2010; Interview with Coast Guard official, August 30, 2010.
- 192 Interview with Coast Guard official, August 24, 2010; Interview with Coast Guard official, August 31, 2010.
- 193 Non-public Coast Guard document, October 12, 2010.
- 194 Holbrook Mohr, Justin Pritchard, and Tamara Lush, "BP's Gulf Oil Spill Response Plan Lists the Walrus as a Local Species. Louisiana Gov. Bobby Jindal Is Furious.," *Christian Science Monitor*, June 9, 2010; Interview with Coast Guard official, Aug. 31, 2010.
- 195 Campbell Robertson, "Louisiana Officials Threaten Action if Spill Response Proves Inadequate," *New York Times*, May 23, 2010.
- 196 Craig Pittman and Rebecca Catalanello, "BP Plan to Protect Florida From Oil Spill Inadequate, Officials Say," *St. Petersburg Times*, May 3, 2010.
- 197 Interview with government official, October 13, 2010.
- 198 Non-public Coast Guard document, October 12, 2010.
- 199 Interview with government official, October 12, 2010.
- 200 Interview with Coast Guard official, August 30, 2010; Interview with government official, August 24, 2010.
- 201 Liz Robbins and Campbell Robertson, "Tension Among Officials Grows as Storm Nears," *New York Times*, July 23, 2010.
- 202 Angel Gonzalez, "Locals to BP: Don't Leave Town Yet," *Wall Street Journal*, Aug. 1, 2010; Interview with Coast Guard official, August 26, 2010.
- 203 Interview with Coast Guard official, August 25, 2010; Interview with Coast Guard official, October 24, 2010; Non-public Coast Guard document, June 14, 2010.
- 204 U.S. Department of Homeland Security, Summary of Ineligible PWs for Barrier Islands (November 11, 2010); Tod Wells, e-mail to Commission staff, November 8, 2010; Tim Padgett, "Dredge, Baby, Dredge: Can Sand Stop the Oil?," *Time*, June 1, 2010.
- 205 Van Oord and Deltares, *Save the Delta, The Dutch Perspective*, May 6, 2010; Chris Kirkham, "Gov. Bobby Jindal and Plaquemines Officials Float Plan to Rebuild Barrier Islands to Stop Encroaching Oil," *Times-Picayune*, May 8, 2010.
- 206 Interview with Coast Guard official, August 30, 2010; Mark Schleifstein, "Barrier Berm Advocates Not Deterred by Environmental Regulators' Misgivings," *Times-Picayune*, September 20, 2010.
- 207 Kristi Cantu, letter to Pete J. Serio, May 11, 2010.
- 208 Colonel Alvin Lee, interview with Commission staff, October 28, 2010.
- 209 Colonel Lee, interview; Press Release, Governor's Office of Homeland Security and Emergency Preparedness, Governor Jindal & Coastal Parish Leaders Meet with Army Corps of Engineers to Stress Importance of Approving Dredg-

- ing Plan, May 17, 2010.
- 210 Senator Mary Landrieu et al., letter to Colonel Alvin Lee and Admiral Thad Allen, May 20, 2010.
- 211 Senator David Vitter, letter to President Barack Obama, May 21, 2010.
- 212 Press Release, Army Corps of Louisiana, Corps Decision on State's Emergency Permit Request, May 27, 2010; Army Corps of Engineers, "New Orleans District Emergency Permit Request Action," June 1, 2010, <http://www.mvn.usace.army.mil/pao/MVNIPR1June2010Final.pdf>.
- 213 Agency comments were compiled by the Army Corps of Engineers at <http://www.mvn.usace.army.mil/news/Emergency%20Permit%20Documents%20Compressed%20FINAL.pdf>.
- 214 Transcript, Press Briefing by National Incident Commander, June 2, 2010.
- 215 Press Release, Deepwater Horizon Incident Joint Information Center, Admiral Allen Approves One Section of Louisiana Barrier Island Project Proposal as Part of Federal Oil Spill Response, May 27, 2010.
- 216 NIC Decision Support Document Regarding Barrier Island Proposal Based Upon Interagency Solutions Group Discussion and Army Corps of Engineers NOD 20 Permit Discussions, May 17, 2010; Draft, Berm Construction and Spill Response, U.S. Department of Homeland Security, May 19, 2010; Berm Construction and Spill Response, U.S. Department of Homeland Security, May 25, 2010.
- 217 Admiral Thad Allen, e-mail to Captain Mike White, May 22, 2010.
- 218 Mark Schleifstein, "Sand Berm to Protect Barataria Bay Wetlands Gets Federal OK," *Times-Picayune*, May 27, 2010.
- 219 Interview with Coast Guard official, November 12, 2010.
- 220 Press Release, Governor's Office of Homeland Security and Emergency Preparedness, Governor Jindal: President Promised Sand-Boom Plan Progress in Days, Need Swift Action, May 28, 2010.
- 221 Transcript, Anderson Cooper 360 Degrees, "BP Cleanup Sham; President Obama Visits Louisiana; Oystermen in Jeopardy," CNN, May 28, 2010.
- 222 Transcript, Press Briefing by National Incident Commander Admiral Thad Allen, June 2, 2010.
- 223 Bigad Shaban, "Upset Nungesser Walks Out on Coast Guard Meeting," www.ltv.com, June 1, 2010.
- 224 National Incident Command, Summary of NIC Barrier Island Berm Meeting, June 1, 2010.
- 225 Admiral Thad Allen, interview with Commission staff, November 2, 2010; Denise Reed, interview with Commission staff, November 16, 2010; Interview with Coast Guard official, November 12, 2010.
- 226 Glenn Thrush, "Carville Doesn't Regret Ripping W.H.," *Politico*, June 2, 2010.
- 227 Press Release, National Incident Command, National Incident Commander Admiral Allen Directs BP to Pay for Five Additional Barrier Island Projects in Louisiana, June 2, 2010.
- 228 Mark Kaufman, "BP Says More La. Barrier Island Berms Will Cost \$360 Million," *Washington Post*, June 3, 2010.
- 229 William Grawe, e-mail to Admiral Thad Allen, June 2, 2010.
- 230 "Shaw Group Wins Contract to Build Barrier Island Temporary Berms," *Times-Picayune*, June 4, 2010; Jeffrey Ball, "Accusations Fly in Sand-Berm Project," *Wall Street Journal*, October 12, 2010.
- 231 Shaw's Environmental & Infrastructure Group, *Shaw Barrier Berm Project—Daily Report Day 43*, July 14, 2010.
- 232 Sean Smith, e-mail to Juliette Kayyem, Department of Homeland Security, May 27, 2010.
- 233 Tooms, interview.
- 234 Interview with Coast Guard official, October 18, 2010; Interview with Minerals Management Service official, October 15, 2010.
- 235 Internal BP document (BP-HZN-MBI 143338-50).
- 236 Tooms, interview; Non-public BP document, May 31, 2010.
- 237 Non-public BP document, May 29, 2010.
- 238 Tooms, interview.
- 239 Interview with Coast Guard official, October 18, 2010; Interview with U.S. Geological Survey official, October 21, 2010.
- 240 Interview with U.S. Geological Survey official, October 21, 2010; Non-public government document, June 1, 2010.
- 241 Interview with U.S. Geological Survey official, October 21, 2010; Interview with U.S. Department of Energy official, September 17, 2010.
- 242 Non-public BP document, May 23, 2010; Non-public BP document, May 25, 2010; Daniel Squire, letter to Commission staff, November 2, 2010, att. 1, 2.
- 243 Non-public BP document, May 31, 2010; Non-public BP document, May 29, 2010.
- 244 Non-public BP document, May 31, 2010; Non-public BP document, May 29, 2010.

- ²⁴⁵ Lynch, interview.
- ²⁴⁶ Deepwater Horizon Response Joint Information Center, Ongoing Administration-Wide Response to the Deepwater BP Oil Spill, May 29, 2010; Press Release, BP, Update on Gulf of Mexico Oil Spill, May 29, 2010.
- ²⁴⁷ Helene Cooper and Peter Baker, "U.S. Opens Criminal Inquiry into Oil Spill," *New York Times*, June 1, 2010.
- ²⁴⁸ "BP Chief Hopes Cap Will Capture Most of Gulf Oil," *Reuters*, June 6, 2010.
- ²⁴⁹ Doug Suttles, letter to Admiral James Watson, June 9, 2010 (suggesting that with the *Clear Leader* attached to the kill line, BP could collect 5-10,000 barrels per day).
- ²⁵⁰ Lisa Jackson, EPA Conference Call on Dispersant Use in the Gulf of Mexico with U.S. Coast Guard Rear Admiral Landry, May 24, 2010.
- ²⁵¹ EPA, *Dispersant Monitoring and Assessment Directive—Addendum 3*, May 26, 2010.
- ²⁵² Dana Tulis, e-mail to Admiral James Watson, June 7, 2010.
- ²⁵³ Captain James Hanzalik, e-mail to Captain Anthony Lloyd, June 8, 2010.
- ²⁵⁴ Admiral James Watson, e-mail to Dana Tulis, et al., June 7, 2010; Dana Tulis, e-mail to Admiral James Watson, June 7, 2010.
- ²⁵⁵ Captain James Hanzalik, e-mail to Captain Anthony Lloyd, June 8, 2010.
- ²⁵⁶ Dana Tulis, e-mail to Admiral James Watson, June 8, 2010.
- ²⁵⁷ Mathy Stanislaus, e-mail to Admiral James Watson, July 9, 2010, att.
- ²⁵⁸ Stanislaus, interview.
- ²⁵⁹ Charles Huber, e-mail to Commander William Carter and Captain Roger Laferriere, July 13, 2010.
- ²⁶⁰ Mathy Stanislaus, e-mail to Admiral Paul Zukunft, July 13, 2010.
- ²⁶¹ Admiral Paul Zukunft, e-mail to Mathy Stanislaus, July 14, 2010.
- ²⁶² EPA, "July 11-14 Dispersant Request Summary," (provided to Commission staff October 21, 2010).
- ²⁶³ Matthew L. Wald, "Despite Directive, BP Used Dispersant Often, Panel Finds," *New York Times*, July 31, 2010; "Allen 'Satisfied' with Dispersant Use in Gulf Oil Disaster," CNN, August 2, 2010.
- ²⁶⁴ Interview with U.S. Department of Energy official, October 25, 2010; Interview with Coast Guard official, October 18, 2010.
- ²⁶⁵ Interview with U.S. Geological Survey official, October 21, 2010; Interview with U.S. Department of Energy official, October 25, 2010; Interview with U.S. Department of Energy official, October 26, 2010.
- ²⁶⁶ Interview with U.S. Department of Energy official, November 8, 2010.
- ²⁶⁷ Interview with U.S. Geological Survey official, October 21, 2010.
- ²⁶⁸ Tooms, interview.
- ²⁶⁹ Interview with U.S. Department of Energy official, November 8, 2010.
- ²⁷⁰ Interview with industry expert, October 14, 2010.
- ²⁷¹ Interview with U.S. Geological Survey official, October 21, 2010.
- ²⁷² Secretary Steven Chu, e-mail to Arun Majumdar and others, June 18, 2010; Admiral James Watson, letter to Doug Suttles, June 19, 2010.
- ²⁷³ Suttles, interview; Tooms, interview.
- ²⁷⁴ Daniel Squire, letter to Commission staff, November 2, 2010, att. 3; Lynch, interview; Tooms, interview; Non-public U.S. Department of Energy document, July 6, 2010.
- ²⁷⁵ Interview with U.S. Geological Survey official, October 20, 2010; Non-public government science advisor document, July 2, 2010; Interview with industry expert, October 14, 2010.
- ²⁷⁶ Admiral Thad Allen, letter to Bob Dudley, July 9, 2010.
- ²⁷⁷ Suttles, interview.
- ²⁷⁸ Admiral Thad Allen, letter to Bob Dudley, July 12, 2010.
- ²⁷⁹ Interview with U.S. Department of Energy official, October 26, 2010; Interview with industry expert, October 28, 2010.
- ²⁸⁰ Interview with U.S. Department of Energy official, November 8, 2010; Non-public government science advisor document, July 13, 2010.
- ²⁸¹ Statement from National Incident Commander Admiral Thad Allen on Well Integrity Test, July 13, 2010.
- ²⁸² Interview with U.S. Department of Energy official, November 8, 2010.

- 283 Admiral Thad Allen, letter to Bob Dudley, July 14, 2010.
- 284 Interviews with U.S. Geological Survey official, October 20, 2010; Non-public U.S. Department of Energy document, July 11, 2010.
- 285 Non-public government document, July 11, 2010; Interview with U.S. Department of Energy official, October 25, 2010.
- 286 Campbell Robertson and Henry Fountain, "BP Says Oil Flow Has Stopped as Cap Is Tested," *New York Times*, July 15, 2010.
- 287 Interview with U.S. Department of Energy official, November 8, 2010; Non-public U.S. Department of Energy document, July 16, 2010; Non-public government science advisor document, July 15, 2010.
- 288 Interview with U.S. Department of Energy official, October 26, 2010; Interview with Minerals Management Service official, October 15, 2010; Interview with U.S. Department of Energy official, October 21, 2010; Non-public government science document, July 15, 2010.
- 289 Interview with U.S. Department of Energy official, October 25, 2010; Interview with U.S. Department of Energy official, October 26, 2010; Interview with U.S. Geological Survey official, October 21, 2010.
- 290 Interview with Coast Guard official, October 18, 2010; Interview with U.S. Geological Survey official, October 21, 2010.
- 291 Non-public U.S. Department of Energy document, June 30, 2010.
- 292 Interview with U.S. Geological Survey official, October 21, 2010; Interview with U.S. Geological Survey official, October 21, 2010.
- 293 Tooms, interview; Interview with U.S. Geological Survey official, October 21, 2010; Interview with U.S. Geological Survey official, October 21, 2010.
- 294 Interview with U.S. Geological Survey official, October 21, 2010.
- 295 Transcript, Press Briefing by National Incident Commander Admiral Thad Allen and NOAA Administrator Dr. Jane Lubchenco, July 24, 2010.
- 296 Bob Dudley, letter to Admiral Thad Allen, July 19, 2010.
- 297 Pat Campbell, letter to Richard Lynch, July 28, 2010; Henry Fountain, "Expert is Confident about Sealing Oil Well," *New York Times*, May 24, 2010; Interview with industry expert, October 14, 2010.
- 298 Transcript, Press Briefing by National Incident Commander Admiral Thad Allen, August 2, 2010.
- 299 Press Release, BP, Static Kill Injectivity Testing Commences on MC252 Well, August 3, 2010; Non-public U.S. Department of Energy document, August 3, 2010.
- 300 Press Release, BP, MC252 Well Reaches Static Condition; Well Monitoring Underway, August 4, 2010.
- 301 Statement by National Incident Commander Admiral Thad Allen, August 4, 2010.
- 302 Face the Nation, CBS News, August 8, 2010.
- 303 *Deepwater Horizon MC252 Gulf Incident Oil Budget* (August 4, 2010); Jane Lubchenco et al., *BP Deepwater Horizon Oil Budget: What Happened to the Oil?* (August 4, 2010).
- 304 *Deepwater Horizon MC252 Gulf Incident Oil Budget*, 1.
- 305 Heather Zichal, e-mail to Jane Lubchenco, July 29, 2010.
- 306 Jane Lubchenco, e-mail to Sean Smith and others, August 4, 2010.
- 307 Margaret Spring, e-mail to Heather Zichal and others. July 30, 2010.
- 308 Transcript, Press Briefing by Press Secretary Robert Gibbs, Admiral Thad Allen, Carol Browner, and Dr. Lubchenco, August 4, 2010.
- 309 David A. Fahrenthold, "Scientists Question Government Team's Report of Shrinking Gulf Oil Spill," *Washington Post*, August 5, 2010; Katie Howell, "White House, Critics Reach Stalemate in Dispute Over Oil Budget in Gulf," *New York Times*, August 23, 2010.
- 310 Editorial, "Do the Math on the Spill," *Times-Picayune*, August 6, 2010.
- 311 Press Conference, Jane Lubchenco Discusses Federal Peer-Reviewed "Oil Budget" Technical Documentation, November 23, 2010.
- 312 Press Release, NOAA, Federal Interagency Group Issues Peer-Reviewed 'Oil Budget' Technical Documentation, November 23, 2010.
- 313 Federal Interagency Solutions Group, Oil Budget Science and Engineering Team, *Oil Budget Calculator Technical Documentation* (November 2010).
- 314 Interview with Coast Guard official, October 24, 2010.
- 315 Shaw's Environmental & Infrastructure Group, *Shaw Barrier Berm Project—Daily Report Day 44* (July 15, 2010).

- ³¹⁶ Padgett, “Dredge, Baby, Dredge: Can Sand Stop the Oil?”
- ³¹⁷ Press Release, Office of the Governor, Governor Jindal Announces Agreement with BP for Seafood Safety, Coastal Restoration & Tourism Funding, November 1, 2010.
- ³¹⁸ Cain Burdeau, “EPA: Louisiana’s Sand Berms Not Stopping Much Oil,” *Associated Press*, September 10, 2010; Mark Ballard, “EPA Opposes La. Berms,” *Advocate*, September 9, 2010; John Maginnis, “Louisiana’s Sand Berms Challenged,” *Times-Picayune*, September 15, 2010; Interview with government official, September 22, 2010; Transcript, Meet the Press, November 21, 2010 (Governor Jindal stating “[w]e’ve collected thousands of pounds of oily debris off these berms”); *Oil Budget Technical Documentation*, 34 (“Based upon past spills, the oil content of collected debris mass is only a few percent.”).
- ³¹⁹ Bobby Jindal, *Leadership and Crisis* 6 (Washington, D.C.: Regnery Publishing, Inc., 2010).
- ³²⁰ Statement from Admiral Allen on the Successful Completion of the Relief Well, September 19, 2010.
- ³²¹ Press Release, NOAA, NOAA Reopens One-Third of Closed Gulf Fishing Area, July 22, 2010; Press Release, NOAA, NOAA Reopens More Than 8,000 Square Miles in the Gulf of Mexico to Fishing, November 15, 2010.
- ³²² Kim Murphy, “A Poor Appetite for Gulf Seafood,” *Los Angeles Times*, August 26, 2010; Interview with government official, October 15, 2010.
- ³²³ Krissah Thompson, “Waste from BP Oil Spill Cleanup Has Gulf Residents Near Landfills Concerned,” *Washington Post*, August 16, 2010.
- ³²⁴ 40 C.F.R. § 261.4(b)(5).
- ³²⁵ Admiral James Watson and Al Armendariz, *Recovered Oil, Contaminated Materials and Liquid and Solid Wastes Management Directive* (June 29, 2010).
- ³²⁶ Elana Schor, “How Has BP’s Oily Waste Escaped ‘Hazardous’ Label?,” *New York Times*, July 20, 2010.
- ³²⁷ Admiral Paul Zukunft, letter to Doug Suttles, July 24, 2010; BP, “Waste and Recoverable Material Tracking,” <http://www.bp.com/genericarticle.do?categoryId=9034343&contentId=7063466>.
- ³²⁸ Schor, “How Has BP’s Oily Waste Escaped ‘Hazardous’ Label?”; EPA, “Waste Sampling Strategy and Results,” http://www.epa.gov/bpspill/waste.html#waste.html#sampling_strategy; Stanislaus, interview.
- ³²⁹ EPA, “Waste Management on the Gulf Coastline,” <http://www.epa.gov/bpspill/waste.html>.
- ³³⁰ Robert Bullard and Al Huang, “Oil’s Toxic Legacy Not Erased,” *Politico*, August 13, 2010.
- ³³¹ Lesley Clark and Fred Tasker, “Oil-Soaked Waste Worries Gulf Coast Landfills’ Neighbors,” *McClatchy Newspapers*, July 30, 2010; Robert Bullard, “Government Allows BP to Dump Oil-Spill Waste on Black Communities,” *OpEd-News.com*, July 22, 2010.
- ³³² Stanislaus, interview.
- ³³³ Admiral Paul Zukunft, letter to Mike Utsler, August 9, 2010; Stanislaus, interview.
- ³³⁴ “Statement from Admiral Allen on the Transfer of Oversight Responsibilities, October 1, 2010.

Chapter Six

- ¹ President Barack Obama, “Remarks by the President to the Nation on the BP Oil Spill” (June 15, 2010) <http://www.whitehouse.gov/the-press-office/remarks-president-nation-bp-oil-spill>.
- ² Campbell Robertson and Clifford Krauss, “Gulf Spill Is the Largest of Its Kind, Scientists Say,” *New York Times*, August 2, 2010.
- ³ EPA, *Government Response to the BP Oil Spill: Odors from the BP Spill* (June 2010), <http://www.epa.gov/bpspill/reports/odorfactsheet.pdf> (announcing help line for residents experiencing oil-related odors); Press Release, NOAA, Administration Launches Dockside Chats to Promote Gulf Seafood Safety Awareness, August 25, 2010, <http://www.restorethegulf.gov/release/2010/08/25/administration-launches-dockside-chats-promote-gulf-seafood-safety-awareness>; BP, *Claims and Government Payments Gulf of Mexico Oil Spill Public Report* (November 18, 2010).
- ⁴ Testimony of Timothy Ragen, Executive Director of the U.S. Marine Mammal Commission, “The Short and Long-Term Impacts of the Deepwater Horizon Oil Spill,” Hearing Before the House Subcommittee on Insular Affairs, Oceans, and Wildlife, 111th Congress (June 10, 2010); Kim B. Ritchie and Brian D. Keller, eds., *A Scientific Forum on the Gulf of Mexico: The Islands in the Stream Concept* (NOAA, January 23, 2008), 6–8; Elliott A. Norse and John Amos, “Impacts, Perception, and Policy Implications of the Deepwater Horizon Oil and Gas Disaster,” *Environmental Law Reporter* 40, no. 11 (2010): 11071; *Deepwater Horizon Oil Spill: Scientific Symposium Meeting Summary* (Consortium for Ocean Leadership, June 23, 2010), 15–16.
- ⁵ Federal Interagency Solutions Group, Oil Budget Science and Engineering Team, *Oil Budget Calculator Technical Documentation* (November 2010).
- ⁶ Curtis Morgan, “Another sign of oil spill recovery in the Gulf: Oil in the Gulf has dissipated and degraded into barely detectable concentrations, although federal scientists say it’s too soon to say the threat is over,” *Miami Herald*,

- September 8, 2010.
- ⁷ Brian Hamacher, "Wind Keeps Oil From Loop Current & Away From Florida Shores," *Associated Press*, July 19, 2010.
 - ⁸ Richard Camilli et al., "Tracking Hydrocarbon Plume Transport and Biodegradation at Deepwater Horizon," *Science* 330, no. 6001 (2010): 201–204; David Valentine et al., "Propane Respiration Jump-Starts Microbial Response to a Deep Oil Spill," *Science* 330, no. 6001 (2010): 204–208; Terry Hazen et al., "Deep-Sea Oil Plume Enriches Indigenous Oil-Degrading Bacteria," *Science* 330, no. 6001 (2010): 208–211.
 - ⁹ Alan Krupnick et al., "A Framework for Understanding the Costs and Benefits of Deepwater Drilling Regulation" (DRAFT) (Resources for the Future, 2010).
 - ¹⁰ Leslie Kaufman and Shaila Dewan, "Gulf May Avoid Direst Predictions After Oil Spill," *New York Times*, September 13, 2010.
 - ¹¹ NOAA, *Other Significant Oil Spills in the Gulf of Mexico*, http://sero.nmfs.noaa.gov/sf/deepwater_horizon/1890_HistoricalSpillsGulfofMexico.pdf.
 - ¹² Darryl L. Felder and David K. Camp, *Gulf of Mexico Origin, Waters, and Biota: Volume I, Biodiversity* (Corpus Christi, TX: Texas A&M University Press, 2009).
 - ¹³ *Ibid.*
 - ¹⁴ Christine Ribic et al., "Distribution of Seabirds in the Northern Gulf of Mexico in Relation to Mesoscale Features: Initial Observations," *ICES Journal of Marine Science* 54 (1997): 545–551.
 - ¹⁵ S. Heileman and N. Rabalais, *Gulf of Mexico: Large Marine Ecosystem Brief #5* (NOAA, 2009), http://www.lme.noaa.gov/index.php?option=com_content&view=article&id=51:lme5&catid=41:briefs&Itemid=72.
 - ¹⁶ David Biello, "The BP Spill's Growing Toll on the Sea Life of the Gulf," *Yale Environment* 360, June 9, 2010, <http://e360.yale.edu/content/feature.msp?id=2284>.
 - ¹⁷ Holly K. Ober, *Effects of Oil Spills on Marine and Coastal Wildlife* (University of Florida, May 2010).
 - ¹⁸ International Bird Rescue Research Center, *How Oil Affects Birds: Just a little bit of oil can be deadly* (2010), <http://www.ibrrc.org/pdfs/IBRRC-How-oil-affects-birds.pdf>.
 - ¹⁹ Camilli et al., "Tracking Hydrocarbon Plume Transport," 201–204.
 - ²⁰ *Oil Budget Calculator Technical Documentation*.
 - ²¹ White House, *Ongoing Administration-Wide Response to the Deepwater BP Oil Spill: By the Numbers to Date* (August 23, 2010), <http://www.restorethegulf.gov/release/2010/08/23/ongoing-administration-wide-response-deepwater-bp-oil-spill>.
 - ²² Unified Area Command, *Shoreline Clean-up and Assessment Technique (SCAT) Map -- Maximum Oiling by Zone: Florida*, November 11, 2010.
 - ²³ Audubon Society, *Oil and Birds: Too Close for Comfort. Louisiana's Coast Six Months into the BP Disaster* (October 2010).
 - ²⁴ Dr. Holly Bik (University of New Hampshire), interview with Commission staff, October 28, 2010.
 - ²⁵ NOAA, *Environmental Sensitivity Index: Alabama* (August 2007), 1, http://response.restoration.noaa.gov/book_shelf/1458_SampleESI_AL2007.pdf.
 - ²⁶ Joseph Dineen, *Tidal Flat Habitats* (Smithsonian Institution, 2010), http://www.sms.si.edu/irlspec/Tidal_Flats.htm.
 - ²⁷ V. Grossi et al., "Burial, Exportation and Degradation of Acyclic Petroleum Hydrocarbons Following a Simulated Oil Spill in Bioturbated Mediterranean Coastal Sediments," *Chemosphere* 48, no. 9 (2002): 947–954.
 - ²⁸ Qianxin Lin and Irving Mendelsohn, "Evaluation of Tolerance Limits for Restoration and Phytoremediation with *Spartina Alterniflora* in Crude Oil-Contaminated Coastal Salt Marshes," in *Proceedings of the 2008 International Oil Spill Conference* (Washington, D.C.: American Petroleum Institute, 2008), 869–874, <http://www.iosc.org/papers/2008%20148.pdf>.
 - ²⁹ Jeffrey Ball, "Storm-Tossed Boom Complicates Spill Cleanup," *Wall Street Journal*, July 27, 2010.
 - ³⁰ Dr. Eugene Turner (Professor, Louisiana State University), e-mail to Commission staff, November 24, 2010.
 - ³¹ Dr. Eugene Turner (Professor, Louisiana State University), interview with Commission staff, November 4, 2010.
 - ³² Bob Marshall, "Oysters are uniquely sensitive to Gulf of Mexico oil spill," *Times-Picayune*, May 25, 2010.
 - ³³ NOAA, *MC252 Shoreline Current Oiling Situation Map – LA: As of 8/03/2010*; Louisiana Department of Wildlife and Fisheries, *Oil Spill Response: Closure Maps*, <http://www.wlf.louisiana.gov/oilspill>.
 - ³⁴ Nicole Santa Cruz and P.J. Huffstutter, "Effort to Keep Oil Spill at Bay Tips Ecological Balance," *Los Angeles Times*, August 3, 2010.
 - ³⁵ L. Scott Mills, Michael E. Soule and Daniel F. Doak, "The keystone-species concept in ecology and conservation," *BioScience* 43, no. 4 (1993): 219–224.
 - ³⁶ Mississippi Department of Marine Resources, *Rebuilding Mississippi's Oyster Reefs* (Fall 2009).
 - ³⁷ Scott McMillion, *The Reef Makers* (Nature Conservancy, 2010).

- ³⁸ “The effect of the oil spill on Gulf fisheries: An Interview with Harriet Perry,” Mississippi Public Broadcasting, August 17, 2010.
- ³⁹ Harriet Perry, interview with Commission staff, October 28, 2010.
- ⁴⁰ *Ibid.*
- ⁴¹ 16 U.S.C. § 1802(10).
- ⁴² NOAA, *Affected Gulf Resources* (2010), <http://www.gulfspillrestoration.noaa.gov/oil-spill/affected-gulf-resources/>.
- ⁴³ NOAA, *Bioaccumulation of Oil Chemicals in Seafood* (May 2010).
- ⁴⁴ *Ibid.*
- ⁴⁵ Biello, “The BP Spill’s Growing Toll On the Sea Life of the Gulf.”
- ⁴⁶ NOAA, *Affected Gulf Resources*; National Incident Command Joint Analysis Group, *Review of Preliminary Data to Examine Oxygen Levels In the Vicinity of MC252#1: May 8 to August 9, 2010* (August 16, 2010).
- ⁴⁷ NOAA, *Mississippi Canyon 252 Incident: Work Plan for the Collection of Data to Determine Impacts of the Deepwater Horizon Mississippi Canyon 252 Incident on Endangered and Protected Marine Mammals in the Northern Gulf* (June 14, 2010); NOAA, *Mississippi Canyon 252 Incident: Preassessment Plan to Determine Potential Exposure and Injuries of Nesting and Hatchling Loggerhead Sea Turtles* (July 28, 2010); NOAA, *Mississippi Canyon 252: Preassessment plan to Determine Potential Exposure and Injuries of Nesting and Hatchling Kemp’s Ridley Turtles* (August 31, 2010); Testimony of Steve Murawski (NOAA Director of Scientific Programs), Hearing before the National Commission, September 28, 2010.
- ⁴⁸ “Bluefin Tuna Hit Hard by ‘Deepwater Horizon’ Disaster,” *European Space Agency News*, October 18, 2010, http://www.esa.int/esaCP/SEM1K4WO1FG_index_0.html.
- ⁴⁹ Mike Soraghan, “As Spill Drifts Toward Gulf Shores, Oil Companies Brace for Political Whirlwind,” *New York Times*, April 29, 2010.
- ⁵⁰ Unified Area Command, *Deepwater Horizon Response Consolidated Fish and Wildlife Collection Report* (November 1, 2010).
- ⁵¹ Steve Hampton, *Estimating Bird Mortality* (California Department of Fish and Game, November 2004).
- ⁵² Testimony of Jane Lyder, Deputy Assistant Secretary Fish and Wildlife and Parks, Hearing before the National Commission, September 28, 2010.
- ⁵³ Our Natural Resources at Risk: The Short and Long-Term Impacts of the Deepwater Horizon Oil Spill, Before the House Subcommittee on Insular Affairs, Oceans, and Wildlife, 111th Cong. (June 10, 2010) (Statement of Timothy Ragen, Executive Director of the U.S. Marine Mammal Commission).
- ⁵⁴ NOAA, *Affected Gulf Resources*.
- ⁵⁵ Unified Area Command, *Deepwater Horizon Response Consolidated Fish and Wildlife Collection Report*.
- ⁵⁶ NOAA, *Sea Turtles, Dolphins, and Whales and the Gulf of Mexico Oil Spill* (2010), <http://www.nmfs.noaa.gov/pr/health/oilspill.htm>.
- ⁵⁷ Joseph Schuman, “Dead Sperm Whale Found Near BP Oil Spill,” *AOL News*, June 17, 2010.
- ⁵⁸ NOAA, *Sea Turtles, Dolphins, and Whales and the Gulf of Mexico Oil Spill*.
- ⁵⁹ Camilli et al., “Tracking Hydrocarbon Plume Transport”; Valentine et al., “Propane Respiration Jump-Starts Microbial Response to a Deep Oil Spill”; Hazen et al., “Deep-Sea Oil Plume Enriches Indigenous Oil-Degrading Bacteria.”
- ⁶⁰ National Incident Command Joint Analysis Group, *Review of Preliminary Data to Examine Oxygen Levels In the Vicinity of MC252#1: May 8 to August 9, 2010* (August 16, 2010).
- ⁶¹ *Ibid.*
- ⁶² *Ibid.*
- ⁶³ A. Diercks et al., “Characterization of Subsurface Polycyclic Aromatic Hydrocarbons at the Deepwater Horizon Site,” *Geophysical Research Letters* 37 (2010).
- ⁶⁴ *Oil Budget Calculator Technical Documentation*.
- ⁶⁵ Cain Burdeau and Seth Borenstein, “Where’s the oil? On the Gulf floor, scientists say,” *Associated Press*, September 13, 2010; Steve Newborn, “Oil Found Deep in Gulf is Toxic to Tiny Marine Life,” *WUSF News*, August 17, 2010, http://www.wusf.usf.edu/news/2010/08/17/oil_found_deep_in_gulf_is_toxic_to_tiny_marine_life.
- ⁶⁶ Mark Schrope, “Oil spill cruise finds field of dead coral: Scientific Expedition Assesses Deep-Sea Damage in the Gulf of Mexico,” *Nature News*, November 5, 2010, <http://www.nature.com/news/2010/101105/full/news.2010.589.html>.
- ⁶⁷ NOAA, “10 Famous Spills” (NOAA Incident News), <http://www.incidentnews.gov/famous>.
- ⁶⁸ Kim B. Ritchie and Brian D. Keller, eds., *A Scientific Forum on the Gulf of Mexico: The Islands in the Stream Concept* (NOAA, January 23, 2008), 6–8; John Farrington and Judith McDowell, “Mixing Oil and Water: Tracking the Sources and Impacts of Oil Pollution in the Marine Environment,” *Oceanus Magazine* 42, no. 3 (2004): 1–4, <http://www>.

- whoi.edu/cms/files/dfino/2005/4/v42n3-farrington_2285.pdf; Elliott A. Norse and John Amos, "Impacts, Perception, and Policy Implications of the Deepwater Horizon Oil and Gas Disaster," *Environmental Law Reporter* 40, no. 11 (2010): 11071; *Deepwater Horizon Oil Spill: Scientific Symposium Meeting Summary* (Consortium for Ocean Leadership, June 23, 2010), 15–16.
- ⁶⁹ 33 U.S.C. § 2706.
- ⁷⁰ 15 C.F.R. § 990.30; NOAA, *Injury Assessment: Guidance Document for Natural Resource Damage Assessment Under the Oil Pollution Act of 1990* (August 1996).
- ⁷¹ NOAA, *Gulf Spill Restoration: Co-Trustees* (2010), <http://www.gulfspillrestoration.noaa.gov/about-us/co-trustees/>.
- ⁷² Discharge of Oil From Deepwater Horizon/Macondo Well, Gulf of Mexico; Intent to Conduct Restoration Planning, 75 Fed. Reg. 60,800 (Oct. 1, 2010).
- ⁷³ NOAA, *Gulf Spill Restoration: Co-Trustees*.
- ⁷⁴ 15 C.F.R. § 990.10.
- ⁷⁵ 15 C.F.R. § 990.30.
- ⁷⁶ Ritchie and Keller, eds., *A Scientific Forum on the Gulf of Mexico: The Islands in the Stream Concept*, 6–8.
- ⁷⁷ 15 C.F.R. § 990.30; NOAA, *Injury Assessment: Guidance Document for Natural Resource Damage Assessment Under the Oil Pollution Act of 1990*.
- ⁷⁸ S.M. Gagliano, "Canals, Dredging, and Land Reclamation in the Louisiana Coastal Zone" in *Hydrologic and Geologic Studies of Coastal Louisiana*, Report no. 14 (Center for Wetland Studies, Louisiana State University, 1973); Robert A. Morton et al., *Rapid Subsidence and Historical Wetland Loss in the Mississippi Delta Plain: Likely Causes and Future Implications* (U.S. Geological Survey, 2005); Testimony of Senator Mary Landrieu, Louisiana, Hearing before the National Commission, September 28, 2010.
- ⁷⁹ NOAA, *Deepwater BP Oil Spill, Natural Resource Damage Assessment: NRDA by the Numbers*, November 1, 2010, http://www.gulfspillrestoration.noaa.gov/wp-content/uploads/2010/11/FINAL-NRDA_by_the_Numbers_11.03.pdf.pdf.
- ⁸⁰ NOAA, *Mississippi Canyon 252 Incident: Work Plan for the Collection of Data to Determine Impacts of the Deepwater Horizon*; NOAA, *Mississippi Canyon 252 Incident on Endangered and Protected Marine Mammals in the Northern Gulf*; NOAA, *Mississippi Canyon 252 Incident: Preassessment Plan to Determine Potential Exposure and Injuries of Nesting and Hatchling Loggerhead Sea Turtles*; NOAA, *Mississippi Canyon 252: Preassessment Plan to Determine Potential Exposure and Injuries of Nesting and Hatchling Kemp's Ridley Turtles*; Testimony of Steve Murawski, September 28, 2010.
- ⁸¹ Shaaila Dewan, "The Oil Spill's Money Squeeze," *New York Times*, September 12, 2010.
- ⁸² Press Release, National Science Foundation, Gulf Oil Spill: NSF Awards Grant to Study Effects of Oil and Dispersants on Louisiana Salt Marsh Ecosystem, August 16, 2010.
- ⁸³ Phil Taylor (Head, Oceans Section, Division of Ocean Sciences, National Science Foundation), e-mail to Commission staff, December 9, 2010.
- ⁸⁴ Dewan, "The Oil Spill's Money Squeeze."
- ⁸⁵ Press Release, BP, BP and the Gulf of Mexico Alliance Announce Implementation of BP's \$500 Million Independent Research Initiative, September 29, 2010, <http://www.bp.com/genericarticle.do?categoryId=2012968&contentId=7065262>.
- ⁸⁶ Sea Grant, *Oil Spill in the Gulf of Mexico: Deepwater Horizon Oil Spill Research and Monitoring Activities Database* (2010), <http://gulfsagrant.tamu.edu/oilspill/database.htm>.
- ⁸⁷ "Gulf Seafood Industry Works to Wipe Oil Off Image," National Public Radio, August 20, 2010; Louisiana Office of Tourism, *Regional Effects on Perception/BP Oil Spill Survey Wave 1 Results* (June 30, 2010); University of Minnesota Food Industry Center, "Continuous Consumer Confidence in Food Safety/Defense Tracking" (presentation, FDA Symposium, September 16, 2010).
- ⁸⁸ U.S. Census Bureau: 2007 Economic Census, *2007 Summary Tables: Selected Statistics by Economic Sector*.
- ⁸⁹ NOAA, *Deepwater Horizon/BP Oil Spill: Federal Fisheries Closure and Other Information* (2010), http://sero.nmfs.noaa.gov/deepwater_horizon_oil_spill.htm.
- ⁹⁰ Testimony of Timothy Fitzgerald, Environmental Defense Fund, Hearing before the National Commission, September 28, 2010.
- ⁹¹ Testimony of Lt. Gov. Scott Angelle, Louisiana, Hearing before the National Commission, September 28, 2010.
- ⁹² Campbell Robertson, "As Claims for Spill Losses Shift to Administrator, Queries Follow," *New York Times*, August 23, 2010.
- ⁹³ Rob Shaw, "Clearwater BP Office Shells out for Claims," *Tampa Bay Online*, August 8, 2010, <http://www2.tbo.com/content/2010/aug/08/na-clearwater-bp-office-shells-out-for-claims/>.
- ⁹⁴ David Fahrenthold and Kimberly Kindy, "Six Months After the Spill, BP's Money is Changing the Gulf as Much as the Oil," *Washington Post*, October 20, 2010.
- ⁹⁵ *Inter-Agency Economic Report: Estimating the Economic Effects of the Deepwater Drilling Moratorium on the Gulf*

- Coast Economy* (September 16, 2010), http://www.esa.doc.gov/drilling_moratorium.pdf.
- ⁹⁶ Press Release, BP, BP Establishes \$20 Billion Claims Fund for Deepwater Horizon Spill and Outlines Dividend Decisions, June 16, 2010, <http://www.bp.com/genericarticle.do?categoryId=2012968&contentId=7062966>; Steven Mufson, "BP Details Plan for \$20 Billion Claim Fund for Oil Spill in the Gulf of Mexico," *Washington Post*, June 17, 2010.
- ⁹⁷ Gulf Coast Claims Facility, *GCCF Program Statistics - Overall Summary*, November 23, 2010.
- ⁹⁸ Kenneth Feinberg, *Final Report of the Special Master for the September 11th Victim Compensation Fund of 2001, Volume 1* (2010).
- ⁹⁹ 33 U.S.C. § 2702(b)(2)(E). The Oil Pollution Act recognizes the following categories of damages: (1) injury to natural resources (recoverable by federal or state trustees); (2) loss of real or personal property and any resultant economic losses (recoverable by an owner of that property); (3) loss of subsistence use of natural resources (recoverable by a subsistence user); (4) loss of revenues resulting from destruction of property or natural resource injury (recoverable by a government claimant); (5) loss of profits or impairment of earning capacity resulting from property loss or natural resource injury (recoverable by any claimant); and (6) costs of providing extra public services during or after spill response (recoverable by a government claimant); 33 U.S.C. § 2702(b)(2).
- ¹⁰⁰ David Segal, "Should BP's Money Go Where the Oil Didn't?," *New York Times*, October 23, 2010 (noting that Kenneth Feinberg has "hired one of the country's foremost scholars on torts . . . to write a memorandum about the validity and value of proximity claims.").
- ¹⁰¹ John Flesher, "Gold Rush On The Gulf: Researchers Clamor For Cash," ABC News, September 29, 2010.
- ¹⁰² Mary Rickard, "Gulf Coast oil spill chills seafood industry," *Reuters*, May 12, 2010; Kat Kinsman and Sarah LeTrent, "Gulf Coast Chefs, Fishermen Fight Tide of Misinformation," CNN, May 12, 2010.
- ¹⁰³ NOAA, *NOAA's Oil Spill Response: Fish Stocks in the Gulf of Mexico* (May 12, 2010), http://www.response.restoration.noaa.gov/book_shelf/1886_Fish-Stocks-Gulf-fact-sheetv2.pdf.
- ¹⁰⁴ U.S. Energy Information Administration, *Gulf of Mexico Fact Sheet* (October 2010), http://www.eia.doe.gov/special/gulf_of_mexico/index.cfm.
- ¹⁰⁵ EPA, *General Facts about the Gulf of Mexico*, <http://www.epa.gov/gmpo/about/facts.html#resources>.
- ¹⁰⁶ NOAA, *The Gulf of Mexico at a Glance: A Tool for the Gulf of Mexico Alliance and the American Public* (June 2008), http://gulfofmexicoalliance.org/pdfs/gulf_glance_1008.pdf.
- ¹⁰⁷ U.S. Census Bureau: 2007 Economic Census, *Statistics by Economic Sector*. Compiled data from Gulf coast counties using the following industry codes: 451110, 487210, 713990, 114210, 721214, 532292, 721110, 721120, 712190, 721199, 114111, 114112, 114119, 311711, 311712, 424490, 445220, 424420, 424460.
- ¹⁰⁸ NOAA, *NOAA's Oil Spill Response: Fish Stocks in the Gulf of Mexico* (May 12, 2010), http://www.response.restoration.noaa.gov/book_shelf/1886_Fish-Stocks-Gulf-fact-sheetv2.pdf.
- ¹⁰⁹ *Ibid.*
- ¹¹⁰ NOAA, *Deepwater Horizon/BP Oil Spill: Size and Percent Coverage of Fishing Area Closures Due to BP Oil Spill* (2010), <http://sero.nmfs.noaa.gov/ClosureSizeandPercentCoverage.htm>.
- ¹¹¹ NOAA, *Protocol for Interpretation and Use of Sensory Testing and Analytical Chemistry Results for Re-Opening Oil-Impacted Areas Closed to Seafood Harvesting* (June 18, 2010).
- ¹¹² NOAA, *Deepwater Horizon/BP Oil Spill: Size and Percent Coverage of Fishing Area Closures Due to BP Oil Spill*.
- ¹¹³ Rob Holbert, "Spreading the Word about Gulf Seafood," *Lagniappe* 215, October 5, 2010.
- ¹¹⁴ Testimony of William Walker, Executive Director Mississippi Department of Marine Resources, Hearing before the National Commission, September 28, 2010.
- ¹¹⁵ Remarks of Jane Lubchenco, NOAA Administrator, American Bar Association's Section of Environment, Energy, and Resources Law Summit, New Orleans, September 30, 2010, http://www.noanews.noaa.gov/stories2010/20101001_lubchenco_seer.html.
- ¹¹⁶ Brad Jacobson, "Is Gulf Seafood Really Safe to Eat? Government Withholding Key Data on Seafood Testing, Scientists Say," *AlterNet*, October 7, 2010, http://www.alternet.org/food/148433/is_gulf_seafood_really_safe_to_eat_government_withholding_key_data_on_seafood_testing_scientists_say.
- ¹¹⁷ Travis Pillow, "Low Ball Spill Estimates May Have Hurt Florida Tourism," *The Florida Independent*, October 7, 2010.
- ¹¹⁸ Testimony of Timothy Fitzgerald, Environmental Defense Fund, Hearing before the National Commission, September 28, 2010.
- ¹¹⁹ Jean R. Kinsey et al., "Index of Consumer Confidence in the Safety of the Food System," *American Journal of Agricultural Economics* 91, No. 5 (2009): 1470–1476 (citing H.G. Zucker, "The Variable Nature of News Media Influence," in *Communication Yearbook* 2, ed. B.D. Ruben [New Brunswick, NJ: Transaction Books, 1978], 225–40).
- ¹²⁰ Holbert, "Spreading the Word about Gulf Seafood."
- ¹²¹ Wendy Kaufman, "Gulf Seafood Industry Works to Wipe Oil Off Image," National Public Radio, August 20, 2010.
- ¹²² Press Release, NOAA, NOAA and FDA Announce Chemical Test for Dispersant in Gulf Seafood; All Samples Test Within Safety Threshold, October 29, 2010, http://www.noanews.noaa.gov/stories2010/20101029_seafood.html.

- ¹²³ Press Release, BP, Seafood Safety, Tourism and Coastal Restoration Funding Announced, November 1, 2010, <http://www.louisianagulfresponse.com/go/doc/3047/940587/>; Press Release, Florida Department of Agriculture and Consumer Services, Bronson Announces That BP Will Pay \$20 Million To Fund Seafood Inspections, Marketing Efforts In Wake Of Oil Spill, October 25, 2010. http://www.doacs.state.fl.us/press/2010/10252010_2.html.
- ¹²⁴ Paul Quinlan, "Gulf Spill: Ala., La. fighting over potential billions in BP penalties," *Energy & Environment Daily*, November 23, 2010.
- ¹²⁵ U.S. Census Bureau: 2007 Economic Census, *Statistics by Economic Sector*. Compiled data from Gulf coast counties using the following industry codes: 451110, 487210, 713990, 114210, 721214, 532292, 721110, 721120, 712190, 721199.
- ¹²⁶ *Ibid.*
- ¹²⁷ Testimony of Keith Overton, Louisiana Shrimp Association, Hearing before the National Commission, July 12, 2010.
- ¹²⁸ Testimony of Michael Hecht, President Greater New Orleans Inc., Hearing before the National Commission, July 12, 2010.
- ¹²⁹ Louisiana Office of Tourism, *Effects on Perception/BP Oil Spill Survey Wave 2 Results* (August 16, 2010), <http://crt.louisiana.gov/tourism/research/Documents/2010-11/NationalOilSpillReport20100816.pdf>.
- ¹³⁰ Matthew R. Lee and Troy C. Blanchard, *Health Impacts of Deepwater Horizon Oil Disaster on Coastal Louisiana Residents* (Louisiana State University, July 2010), http://www.lsu.edu/pa/mediacenter/tipsheets/spill/publichealthreport_2.pdf.
- ¹³¹ *Ibid.*
- ¹³² Brian Skoloff, "Final Well Sealing Small Comfort to Gulf Residents," ABC News, Sept. 16, 2010.
- ¹³³ Testimony of Grace Scire, Gulf Coast Regional Director, Boat People SOS, Hearing before the National Commission, July 13, 2010.
- ¹³⁴ Administration health officials (Department of Human Health Services, National Institute of Health, National Institute of Environmental Health Sciences, and Occupational Safety and Health Administration), interviews with Commission staff, October 5, 2010.
- ¹³⁵ Dan Witters, "Gulf Coast Residents Worse Off Emotionally after BP Oil Spill," Gallup, September 28, 2010, <http://www.gallup.com/poll/143240/gulf-coast-residents-worse-off-emotionally-oil-spill.aspx>.
- ¹³⁶ Jonathan White (Program policy Analyst, Administration for Children & Families), e-mail to Commission staff, November 16, 2010.
- ¹³⁷ David Abramson et al., *Impact on Children and Families of the Deepwater Horizon Oil Spill: Preliminary Findings of the Coastal Population Impact Study* (National Center for Disaster Preparedness, August 3, 2010).
- ¹³⁸ Matthew Lee et al., *Health Impacts of Deepwater Horizon Oil Disaster on Coastal Louisiana Residents*, (Louisiana State University, July 2010).
- ¹³⁹ Abramson et al., *Impact on Children and Families of the Deepwater Horizon Oil Spill*.
- ¹⁴⁰ *Ibid.*, 9.
- ¹⁴¹ *Ibid.*
- ¹⁴² Testimony of Grace Scire.
- ¹⁴³ Sharon Cohen, "Vietnamese 'Lost' as Gulf Oil Spill Hits Community Hard," *Associated Press*, July 11, 2010.
- ¹⁴⁴ Hearing on Ensuring Justice for Victims of the Gulf Coast Oil Disaster, Before the Committee on the Judiciary, 111th Cong. (2010) (statement of Kenneth Feinberg, Administrator, Gulf Coast Claims Facility).
- ¹⁴⁵ Hearing before the National Commission, Panel 5: Community and Ecological Impacts, July 13, 2010.
- ¹⁴⁶ Brenda Robichaux (Houma Nation), interview with Commission staff, October 2010.
- ¹⁴⁷ Lawrence Palinkas et al., "Community Patterns of Psychiatric Disorders after the Exxon Valdez Oil Spill," *American Journal of Psychiatry* 150 (1993): 1517-1523.
- ¹⁴⁸ *Ibid.*
- ¹⁴⁹ Catalina Arata et al., "Coping with Technological Disaster: An Application of the Conservation of Resources Model to the Exxon Valdez Oil Spill," *International Society for Traumatic Stress* 13, no. 1 (2000): 23-39.
- ¹⁵⁰ Stephen Braud and Jack Kruse, eds., *Synthesis: Three Decades of Research on Socioeconomic Effects Related to Offshore Petroleum Development in Coastal Alaska* (Minerals Management Service, May 2009), 306.
- ¹⁵¹ Gina Solomon and Sarah Janssen, "Health Effects of the Gulf Oil Spill," *Journal of the American Medical Association* 304, no. 10 (2010): 1118-1119.
- ¹⁵² Hearing on Ensuring Justice for Victims of the Gulf Coast Oil Disaster, Before the Committee on the Judiciary, 111th Cong. (2010) (statement of Kenneth Feinberg, Administrator, Gulf Coast Claims Facility).
- ¹⁵³ SAMSA, "Gulf States Receive \$52 Million from BP for Behavioral Health," *SAMSA News* 18, no. 4 (July/August 2010), http://www.samhsa.gov/samhsanewsletter/Volume_18_Number_4/GulfStates.aspx.

- ¹⁵⁴ National Institutes of Health officials, interviews with Commission staff, October 2010.
- ¹⁵⁵ Louisiana Office of Public Health, *State Narrative for Louisiana: Maternal and Child Health Title V Block Grant, Application for 2008/Annual Report for 2006* (October 4, 2007); See also “Agenda, Interagency Meeting – Gulf Oil Spill Workers’ Study” (NIH Campus, Bethesda, Maryland, August 19, 2010), <http://www.niehs.nih.gov/about/od/programs/docs/agenda-aug19-2010.pdf>.
- ¹⁵⁶ Editorial, “Ruling in Charity Hospital case is a significant victory: An editorial,” *Times-Picayune*, April 4, 2010.
- ¹⁵⁷ Robin Rudowitz, Diane Rowland, and Adele Shartzter, “Health Care In New Orleans Before and After Hurricane Katrina,” *Health Affairs* 25, no. 5 (2006): 393–406.
- ¹⁵⁸ *Ibid.*
- ¹⁵⁹ Louisiana Office of Public Health, *State Narrative for Louisiana: Maternal and Child Health Title V Block Grant*.
- ¹⁶⁰ U.S. Government Accountability Office, *Hurricane Katrina: Federal Grants Have Helped Health Care Organizations Provide Primary Care, but Challenges Remain* (July 2009).
- ¹⁶¹ Karen B. DeSalvo, “Community Health Clinics: Bringing Quality Care Closer to New Orleanians,” in *The New Orleans Index at Five*, Amy Liu and Allison Plyer, eds. (Brookings Institution, August 2010).

Chapter Seven

- ¹ Louisiana Coastal Protection and Restoration Authority, *Fiscal Year 2011 Annual Plan: Integrated Ecosystem Restoration and Hurricane Protection in Coastal Louisiana* (April 2010), 2–3.
- ² U.S. Environmental Protection Agency, Mississippi River Gulf of Mexico Watershed Nutrient Task Force, *Hypoxia 101*, http://www.epa.gov/owow_keep/msbasin/hypoxia101.htm.
- ³ Complaint at ¶ 28, *Louisiana v. Triton Asset Leasing GmbH al.*, No. 2:10-cv-03059 (E.D. La. September 14, 2010).
- ⁴ Ray Mabus, *America’s Gulf Coast: A Long Term Recovery Plan after the Deepwater Horizon Oil Spill* (September 28, 2010).
- ⁵ Charles Simenstad et al., “When is Restoration Not? Incorporating Landscape-Scale Processes to Restore Self-Sustaining Ecosystems in Coastal Wetland Restoration,” *Ecological Engineering* 26, no. 1 (2006): 28, 31.
- ⁶ For background about “resiliency,” see C.S. Holling, “Resilience and Stability of Ecological Systems,” *Annual Review of Ecology and Systematics* 24 (1973): 1–23.
- ⁷ Mabus, *America’s Gulf Coast: A Long Term Recovery Plan after the Deepwater Horizon Oil Spill*, 26.
- ⁸ U.S. Geological Survey, *The Gulf of Mexico Hypoxic Zone*, http://toxics.usgs.gov/hypoxia/hypoxic_zone.html.
- ⁹ Mississippi River/Gulf of Mexico Watershed Nutrient Task Force, *Gulf Hypoxia Action Plan 2008—For Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico and Improving Water Quality in the Mississippi River Basin* (2008).
- ¹⁰ Bureau of Ocean Energy Management, Regulation and Enforcement, *Leasing*, <http://www.gomr.boemre.gov/homepg/lseale/lseale.html>.
- ¹¹ Executive Order 13547, Stewardship of the Ocean, Our Coasts, and the Great Lakes, 75 Fed. Reg. 43023, July 22, 2010.
- ¹² White House Council on Environmental Quality, *Final Recommendations of the Interagency Ocean Policy Task Force* (July 19, 2010).
- ¹³ For an overview of issues in Gulf of Mexico marine policy, see Linwood Pendleton, Larry Crowder, Daniel Dunn, Clare Fieseler, Morgan Gopnik, Catherine Latanich, Mike Orbach, Steve Roady, Mary Turnipseed, Cindy van Dover, “Marine Protection in the Gulf of Mexico: Current Policy, Future Options, and Ecosystem Outcomes,” *Policy Brief*, Nicholas Institute for Environmental Policy Solutions, Duke University (October 2010). Elliott Norse (Marine Conservation Biology Institute), interview with Commission staff, October 18, 2010; Larry McKinney (Harte Institute for Gulf of Mexico Studies), interview with Commission staff, October 18; 2010 Sandra Whitehouse (Ocean Conservancy), interview with Commission staff, October 20, 2010; Deerin Babb-Brott (Massachusetts Office of Coastal Zone Management), interview with Commission staff, October 21, 2010; Barry Gold (Moore Foundation), interview with Commission staff, Sept. 13, 2010.
- ¹⁴ NOAA, *Coastal and Marine Spatial Planning Examples*, <http://www.msp.noaa.gov/examples/index.html>.
- ¹⁵ United Nations Educational, Scientific and Cultural Organization (UNESCO), *Marine Spatial Planning Initiative: Norway*, http://www.unesco-ioc-marinesp.be/spatial_management_practice/norway.
- ¹⁶ Bureau of Ocean Energy Management, Regulation and Enforcement, Outer Continental Shelf Lands Act, <http://www.gomr.boemre.gov/homepg/regulate/regs/laws/ocslasht.html>.
- ¹⁷ For geospatial maps on uses of Gulf resources, see NOAA, *Multipurpose Marine Cadastre*, <http://csc-s-web-p.csc.noaa.gov/MMC>.
- ¹⁸ Cornelius Hammer et al., “Framework of stock-recovery strategies: analyses of factors affecting success and failure,”

ICES Journal of Marine Science 67 (2010): 1849–1855.

- ¹⁹ For background overview of deltaic science described in this section, see, e.g., Committee on the Restoration and Protection of Coastal Louisiana, *Drawing Louisiana's New Map: Addressing Land Loss in Coastal Louisiana* (National Research Council, 2006), 29–42; James M. Coleman, Harry H. Roberts, and Gregory W. Stone, "Mississippi River Delta: An Overview," *Journal of Coastal Research* 14, no. 3 (1998): 698–716; John W. Day Jr. et al., "Restoration of the Mississippi Delta: Lessons from Hurricanes Katrina and Rita," *Science* 315, no. 5819 (2007): 1679–1684.
- ²⁰ "Storm Death Toll at 31 as Floodwaters Recede," CNN, May 6, 2010; Paul Kemp, "Use the Mississippi River to stop the oil," CNN, June 13, 2010. The approximate travel time of water along the Ohio and then Mississippi Rivers can be estimated by noting the sequence of peak water levels along the river, in the National Weather Service's Lower Mississippi River Forecast Center, particularly the summary data for weeks ending in May 5, 2010, and May 12, 2010. River Summary Archives for these dates and the rest of 2010 can be found here: <http://www.srh.noaa.gov/lmrfc/?n=riversummaryarchive>.
- ²¹ For description of Atchafalaya diversion, see, e.g., Martin Reuss, *Designing the Bayous: The Control of Water in the Atchafalaya Basin, 1800-1995* (Alexandria, VA: Texas A&M University Press, 2004).
- ²² U.S. Geological Survey, *Northern Gulf of Mexico (NGOM) Ecosystem Change and Hazard Susceptibility Project—Overview* (2010), <http://ngom.usgs.gov/overview/intro.html>.
- ²³ Kevin Kosar, *Disaster Response and Appointment of a Recovery Czar: The Executive Branch's Response to the Flood of 1927* (Congressional Research Service, 2005).
- ²⁴ 33 U.S.C. § 702c (1928).
- ²⁵ U.S. Army Corps of Engineers, *The Mississippi River & Tributaries (Mr&T) Project* (2010), <http://www.mvn.usace.army.mil/bcarre/missproj.asp>.
- ²⁶ Testimony of Senator Mary Landrieu, Louisiana, Hearing before the National Commission, September 28, 2010.
- ²⁷ *Coastal Wetlands Planning, Protection, And Restoration Act: Summary of Wetland Benefits for Priority List Projects* (2010), <http://www.lacoast.gov/reports/wva/CWPPRA%20project%20benefits%202010-06-18.pdf>; U.S. Army Corps of Engineers, *Louisiana Coastal Area Ecosystem Restoration Plan* (2010), <http://www.lca.gov/>.
- ²⁸ Robert H. Meade and John A. Moody, "Causes for the decline of suspended-sediment discharge in the Mississippi River system, 1940–2007," *Hydrological Process* 24 (2010): 35–49; Robert B. Jacobson, Dale W. Blevins and Chance J. Bitner, "Sediment Regime Constraints on River Restoration—An Example from the Lower Missouri River," *Geological Society of America Special Papers* 451 (2009): 1–22.
- ²⁹ Day et al., "Restoration of the Mississippi Delta: Lessons from Hurricanes Katrina and Rita," 1682.
- ³⁰ Robert Morton et al., *Rapid Subsidence and Historical Wetland Loss in the Mississippi Delta Plain: Likely Causes and Future Implications*, (U.S. Geological Survey, 2005).
- ³¹ John Barras et al., *Land Area Change in Coastal Louisiana—a Multidecadal Perspective (from 1956 to 2006)* (U.S. Geological Survey, 2008).
- ³² Torbjorn Tornqvist et al., "Mississippi Delta Subsidence Primarily Caused by Compaction of Holocene Strata," *Nature Geoscience* 1 (2008): 173–176.
- ³³ Roy Dokka, "Modern-Day Tectonic Subsidence in Coastal Louisiana," *Geology* 34, no. 4 (2006): 281–84.
- ³⁴ Robert Morton, "Evidence of Regional Subsidence and Associated Interior Wetland Loss Induced by Hydrocarbon Production, Gulf Coast Region, USA," *Environmental Geology* 50 (2006): 261–74.
- ³⁵ Committee on the Restoration and Protection of Coastal Louisiana, *Drawing Louisiana's New Map: Addressing Land Loss in Coastal Louisiana* (National Research Council, 2006), 48.
- ³⁶ James G. Gosselink, "Comments on 'Wetland Loss in the Northern Gulf of Mexico: Multiple Hardworking Hypotheses,'" *Estuaries* 24, no. 4 (August 2001), 636–651.
- ³⁷ James B. Johnston, Donald R. Cahoon and Megan K. La Peyre, *Outer Continental Shelf (OCS)-Related Pipelines and Navigation Canals in the Western and Central Gulf of Mexico: Relative Impacts on Wetland Habitats and Effectiveness of Mitigation* (Minerals Management Service, 2009), 157.
- ³⁸ Richard Campanella, *Time and Place in New Orleans: Past Geographies in the Present Day* (Gretna, LA: Pelican Publishing Company, Inc., 2002), 78; Panama Canal Authority, *Frequently asked questions*, <http://www.pan canal.com/eng/general/canal-faqs/index.html>.
- ³⁹ U.S. Army Corps of Engineers, *Integrated Final Report to Congress and Legislative Environmental Impact Statement for the Mississippi River—Gulf Outlet Deep-Draft De-Authorization Study* (June 2008), 6.
- ⁴⁰ Gary P. Shaffer et al., "The MRGO Navigation Project: A Massive Human-Induced Environmental, Economic, and Storm Disaster," *Journal of Coastal Research*, Special Issue 54 (2009): 206–224; R.H. Caffey and B. Leblanc, "Closing' the Mississippi River Gulf Outlet: Environmental and Economic Considerations (LACOAST.gov, 2002).
- ⁴¹ Day et al., "Restoration of the Mississippi Delta: Lessons from Hurricanes Katrina and Rita," 1679–1684.
- ⁴² U.S. Army Corps of Engineers, *MRGO Navigation Channel Closure* (2010), http://www.mrgo.gov/MRGO_Closure.aspx.
- ⁴³ James Coleman, "James P. Morgan: Scientific Contributions," *Journal of Coastal Research* 14, no. 3 (1998): 868–69.

- 44 *Avenal v. United States*, 33 Fed. Cl. 778 (1995).
- 45 National Research Council, Panel on River Basin and Coastal Systems Planning, Committee to Assess the U.S. Army Corps of Engineers Methods of Analysis and Peer Review for Water Resources Project Planning, *River Basins and Coastal Systems Planning Within the U.S. Army Corps of Engineers* (2004): 104.
- 46 S.M. Gagliano, "Canals, Dredging, and Land Reclamation in the Louisiana Coastal Zone" in *Hydrologic and Geologic Studies of Coastal Louisiana*, Report no. 14 (Center for Wetland Studies, Louisiana State University, 1973).
- 47 N.J. Craig, R.E. Turner, and J.W. Day Jr., "Land Loss in Coastal Louisiana (U.S.A.)," *Environmental Management* 3, no. 2 (1979): 133–144.
- 48 Paul Kemp, Vice-President, National Audubon Society, interview with Commission staff, October 7, 2010.
- 49 Denise Reed, "Seeing the Future of the Louisiana Coast," in *After the Storm: Restoring America's Gulf Coast Wetlands, A Special Report of the National Wetlands Newsletter* (Washington, D.C.: Environmental Law Institute, 2006), 45.
- 50 Michael Blum and Harry Roberts, "Drowning of the Mississippi Delta due to Insufficient Sediment Supply and Global Sea-Level Rise," *Nature Geoscience* (June 28, 2009): 489–490.
- 51 U.S. General Accountability Office, *Coastal Wetlands: Lessons Learned from Past Efforts in Louisiana Could Help Guide Future Restoration and Protection* (December 14, 2007), 10.
- 52 U.S. Army Corps of Engineers, *Coastal Wetlands Planning, Protection & Restoration Act* (2010), http://www.mvn.usace.army.mil/pd/cwppra_mission.htm.
- 53 Mark Schleifstein, "Breaux Act Anniversary Marks 20 Years of Coastal Restoration Progress," *Times-Picayune*, April 8, 2010; *Caring for Coastal Wetlands: The Coastal Wetlands Planning, Protection and Restoration Act* (LaCoast.gov, November 2007), http://lacoast.gov/new/Pubs/Report_data/Caring.aspx.
- 54 Louisiana Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority, *Coast 2050: Toward a Sustainable Coastal Louisiana, an Executive Summary* (Louisiana Department of Natural Resources, 1998).
- 55 Joel Bourne, "Gone with the Water," *National Geographic*, October 2004; Water Resources Development Act of 2007, Pub. L. No. 110-114, Title VII, 121 Stat. 1041, 1270–1283 (2007).
- 56 State of Louisiana, *Coastal Protection & Restoration: Funding Sources*, <http://www.coastal.la.gov/index.cfm?md=pagebuilder&tmp=home&nid=123&pnid=79&pid=82&catid=0&elid=0>.
- 57 Donald T. Resio and Joannes J. Westerink, "Modeling the physics of storm surges," *Physics Today* 61, no. 9 (September 2008): 32–38.
- 58 Louisiana Office of Coastal Protection and Restoration, Library, *Coastal Initiatives & Programs*, "<http://coastal.la.gov/index.cfm?md=pagebuilder&tmp=home&nid=82&pnid=76&pid=77&catid=0&elid=0>" ("Donaldsonville to the Gulf Panel" and "Morganza to the Gulf Project").
- 59 U.S. Army Corps of Engineers, *Mississippi Coastal Improvement Program (MsCIP) Interim Report* (2006).
- 60 Supplemental Appropriations Act of 2009, H.R. 2346, Title IV.
- 61 U.S. Army Corps of Engineers, *Louisiana Coastal Protection and Restoration (LACPR): Final Technical Report* (June 2009).
- 62 Louisiana Coastal Protection and Restoration Authority, *Fiscal Year 2008 Annual Plan: Ecosystem Restoration and Hurricane Protection in Coastal Louisiana* (April 2007); Coastal Protection and Restoration Authority of Louisiana, *Fiscal Year 2011 Annual Plan: Integrated Ecosystem Restoration and Hurricane Protection in Coastal Louisiana*, (Baton Rouge, 2010): xiii.
- 63 Bureau of Ocean Energy Management, Regulation and Enforcement, *Coastal Impact Assistance Program (CIAP)*, <http://www.boemre.gov/offshore/ciapmain.htm>.
- 64 Bureau of Ocean Energy Management, Regulation and Enforcement, Gulf of Mexico Energy Security Act (GOMESA), <http://www.boemre.gov/offshore/GOMESARevenueSharing.htm>.
- 65 White House Council on Environmental Quality, *Gulf Coast Ecosystem Restoration*, <http://www.whitehouse.gov/administration/eop/ceq/initiatives/gulfcoast>.
- 66 Louisiana-Mississippi Gulf Coast Ecosystem Restoration Working Group, *Roadmap for Restoring Ecosystem Resiliency and Sustainability* (March 2010).
- 67 Mabus, *America's Gulf Coast: A Long Term Recovery Plan after the Deepwater Horizon Oil Spill*.
- 68 Executive Order 13554: Establishing the Gulf Coast Ecosystem Restoration Task Force, 75 Fed. Reg. 62313, October 5, 2010.
- 69 Frank Donze, "Gulf Coast Restoration Chief Ray Mabus has no Oil Spill Answers Just Yet," *Times-Picayune*, June 29, 2010.
- 70 Estimate based on John Barras, *Land Area Change in Coastal Louisiana—a Multidecadal Perspective (from 1956 to 2006)* (U.S. Geological Survey, 2008).
- 71 Louisiana-Mississippi Gulf Coast Ecosystem Restoration Working Group, *Roadmap for Restoring Ecosystem Resiliency and Sustainability*, 2–3.

- ⁷² Testimony of Brian McPeck, Regional Managing Director for North America, The Nature Conservancy, Hearing before the National Commission, September 28, 2010.
- ⁷³ Testimony of James T.B. Tripp, Senior Counsel, Environmental Defense Fund, Hearing before the National Commission, Sept 28, 2010; Testimony of Brian McPeck.
- ⁷⁴ Gulf of Mexico Energy Security Act of 2006, Pub. L. 109-432.
- ⁷⁵ 33 U.S.C. § 2706(e).
- ⁷⁶ 33 U.S.C. § 1321(b)(7); 40 C.F.R. § 19.4. According to the current official government estimate, the Macondo well released approximately 4.9 million barrels of oil over the course of the spill (± 10 percent), roughly 830,000 barrels of which were captured at the wellhead using the top hat and other devices. *Deepwater Horizon MC252 Gulf Incident Oil Budget* (August 1, 2010), <http://www.noaanews.noaa.gov/stories2010/PDFs/DeepwaterHorizonOil-Budget20100801.pdf>; Joel Achenbach and David Fahrenthold, "Oil spill dumped 4.9 million barrels into Gulf of Mexico, latest measure shows," *Washington Post*, August 3, 2010 (range is \$4.5 billion to \$18 billion, based on estimated 4.1 million barrels discharged); Jonathan Tilove, "BP disputes government estimates of volume of Gulf of Mexico oil spill," *Times-Picayune*, December 3, 2010 (penalties could be as high as \$21 billion, based on estimate of 4.9 million barrels discharged). BP has not released its own estimate for the total release from the well, but it disputes the government's figures on the grounds that, among other things, they fail to take into account "significant flow impediments" and "rely on incomplete or inaccurate information, rest in large part on assumptions that have not been validated, and are subject to far greater uncertainties than have been acknowledged." BP, letter to the National Commission, October 21, 2010, 1, 4.
- ⁷⁷ Testimony of Richard Stewart, New York University School of Law, Hearing before the National Commission, September 28, 2010.
- ⁷⁸ 33 U.S.C. § 1319(c)(1).
- ⁷⁹ 33 U.S.C. § 1319(c)(2).
- ⁸⁰ 26 U.S.C. § 9509.
- ⁸¹ Ray Mabus, *America's Gulf Coast: A Long Term Recovery Plan after the Deepwater Horizon Oil Spill*.
- ⁸² Exxon Valdez Oil Spill Trustee Council, *Science Panel*, <http://www.evostc.state.ak.us/people/sp.cfm>.
- ⁸³ Joe Hunt, *Mission Without a Map: The Politics and Policies of Restoration Following the Exxon Valdez Oil Spill: 1989-2002*, Exxon Valdez Oil Spill Trustee Council (Anchorage, 2009): 156-157.
- ⁸⁴ See, e.g., Testimony of Stanley Senner, Director of Conservation Science, Ocean Conservancy, Hearing before the National Commission, September 28, 2010.
- ⁸⁵ President Barack Obama, "Remarks by the President to the Nation on the BP Oil Spill" (June 15, 2010), <http://www.whitehouse.gov/the-press-office/remarks-president-nation-bp-oil-spill>.
- ⁸⁶ Press Release, Office of the Governor, Gov. Jindal Announces "Agenda For Revitalizing Coastal Louisiana," July 15, 2010, http://www.prd.louisiana.gov/LaNews/PublicPages/Dsp_PressRelease_Display.cfm?PressReleaseID=2550&Rec_ID=1.
- ⁸⁷ NOAA, Damage Assessment, *Remediation, and Restoration Program: Glossary*, <http://www.darrp.noaa.gov/glossary/index.htm>.
- ⁸⁸ Testimony of Stanley Senner.

Chapter Eight

- ¹ Magne Ognedal, "Thirty years since Kielland – why are major accidents still happening?" (speech, Petroleum Safety Authority of Norway, August 27, 2010) 3, <http://www.ptil.no/major-accidents/safety-lunch-at-ons-risk-of-a-major-accident-is-always-present-article7202-144.html>.
- ² BP, *Sustainability Review* (2009), 20–21. http://www.bp.com/assets/bp_internet/globalbp/STAGING/global_assets/e_s_assets/e_s_assets_2009/downloads_pdfs/bp_sustainability_review_2009.pdf.
- ³ Health and Safety Executive, *Major Incident Investigation Report, BP Grangemouth Scotland (29th May – 10th June 2000)* (August 18, 2003), 7, <http://www.hse.gov.uk/comah/bpgrange/images/bprgrangemouth.pdf>.
- ⁴ *Ibid.*
- ⁵ *Ibid.*
- ⁶ Health and Safety Executive, *BP Grangemouth Executive Summary—Findings and Recommendations*, <http://www.hse.gov.uk/comah/bpgrange/execsumm/findings.htm>.
- ⁷ Andrew B. Wilson, "BP's Disaster: No Surprise to Folks in the Know," CBS, June 22, 2010, <http://www.cbsnews.com/stories/2010/06/22/opinion/main6605248.shtml>.
- ⁸ Jan Erik Vinnem, *Offshore Risk Assessment: Principles, Modelling and Applications of QRA Studies*, Second Edition (London: Springer Studies in Reliability Engineering, 2007), 91, 100, 102.

- ⁹ Andrew B. Wilson, "BP's Disaster: No Surprise to Folks in the Know," CBS, June 22, 2010, <http://www.cbsnews.com/stories/2010/06/22/opinion/main6605248.shtml>.
- ¹⁰ Oberon Houston, email message to Commission staff.
- ¹¹ *The Report of the BP US Refineries Independent Safety Review Panel*, (January 2007).
- ¹² U.S. Chemical Safety and Hazard Investigation Board, *Investigation Report: Refinery Explosion and Fire* (March 2007), 145, <http://www.csb.gov/assets/document/CSBFinalReportBP.pdf>.
- ¹³ Testimony of Carolyn W. Merritt, Chairman and Chief Executive Officer, U.S. Chemical Safety Board, before the U.S. Senate Committee on Environment and Public Works, Subcommittee on Transportation Safety, Infrastructure Security, and Water Quality, July 10, 2007.
- ¹⁴ *Ibid.*
- ¹⁵ U.S. Chemical Safety and Hazard Investigation Board, *Investigation Report: Refinery Explosion and Fire*, 19–20.
- ¹⁶ *Ibid.*
- ¹⁷ *Ibid.*
- ¹⁸ *The Report of the BP US Refineries Independent Safety Review Panel*.
- ¹⁹ *Ibid.*
- ²⁰ *Ibid.*, 224.
- ²¹ *Ibid.*, 165.
- ²² "BP's Alaskan Oil Spill Triggers Lawsuit," 815 *TCE: The Chemical Engineer* (May 2009): 9.
- ²³ *Ibid.*
- ²⁴ *Ibid.*
- ²⁵ "BP Faces Lawsuits for 2006 Spills," 32 *Oil Spill Intelligence Report*, no. 17 (April 16, 2009); "BP Settles with Royalty Trust," 32 *Oil Spill Intelligence Report*, no. 22 (May 21, 2009).
- ²⁶ *The Report of the BP US Refineries Independent Safety Review Panel*, 1.
- ²⁷ *Ibid.*, XVII.
- ²⁸ L. Duane Wilson, *Independent Expert Third Annual Report, 2001 covering January–December 2009* (March 2010): 4.
- ²⁹ *Ibid.*, 25–26.
- ³⁰ Elmer Danenberger, interview with Commission staff, December 9, 2010.
- ³¹ BP, *Deepwater Horizon Accident Investigation Report* (September 8, 2010).
- ³² "BP Report Attacked," *New Scientist*, 2 October, 2010, 4.
- ³³ Richard Sears, e-mail message to Commission staff, November 23, 2010.
- ³⁴ Consulting Services Lloyd's Register EMEA Aberdeen Energy, *North American Division Summary Report* (March 2010).
- ³⁵ *Ibid.*, App. C, 6.
- ³⁶ *Ibid.*, App. C, 8, 11.
- ³⁷ *Ibid.*, 10–11.
- ³⁸ *Ibid.*, 29.
- ³⁹ Halliburton, *History of Halliburton*, <http://www.halliburton.com/AboutUs/default.aspx?navid=970&pageid=2312>.
- ⁴⁰ *Ibid.*
- ⁴¹ Russell Gold and Ben Casselman, "Drilling Process Attracts Scrutiny in Rig Explosion," *Wall Street Journal*, April 30, 2010.
- ⁴² Montara Commission of Inquiry, *Report of the Montara Commission of Inquiry*, (June 17, 2010), <http://www.ret.gov.au/Department/Documents/MIR/Montara-Report.pdf>.
- ⁴³ *Ibid.*, 63.
- ⁴⁴ *Ibid.*
- ⁴⁵ Commission staff created this map and associated table using loss of well control data available on BOEMRE's Incident Statistics and Summary webpage. Although efforts were made to accurately capture and illustrate every loss of well control from 1996–2009 in the U.S. Gulf of Mexico, the data presented does not purport to be comprehensive, but instead illustrative of the fact that losses of well control, blowouts, potential catastrophes, and near misses are more frequent than commonly reported and publicized.
- ⁴⁶ Commission staff analysis of International Regulators Forum International Association of Drilling Contractors and International Association of Oil and Gas Producers data. See <http://www.irffshoresafety.com/country/performance/>, <http://www.iadc.org/asp.htm>, and <http://www.ogp.org.uk/index.asp?main=publications/main.asp>.

- ⁴⁷ Testimony of Eric Milito, Upstream Director, American Petroleum Institute, "The Deepwater Horizon Incident: Are The Minerals Management Service Regulations Doing The Job?" Hearing Before the Subcommittee on Energy and Mineral Resources of the House Committee on Natural Resources, 111th Congress (2010) ("Since 1924, API has developed industry standards and practices that promote reliability and safety through the use of proven engineering practices. . . . API standards are developed through a collaborative effort among industry experts, technical experts from government, and other interested stakeholders. The industry has helped create more than 500 standards, including some 240 exploration and production standards that address offshore operations.")
- ⁴⁸ American Petroleum Institute, API 2010 Publics Programs and Services Catalog (March 2010), http://www.api.org/Standards/upload/2010_Catalog_web.pdf.
- ⁴⁹ American Petroleum Institute, "Certifications recognized around the world," *Training and Certifications Program brochure* (August 9, 2009), http://www.api.org/certifications/upload/ENGLISH_SUMMARY_BROCH.pdf.
- ⁵⁰ Testimony of Eric Milito ("Seventy-eight of these standards are referenced in Minerals Management Service regulations.") For MMS rulemakings that incorporate industry standards into regulations over time, see Oil and Gas and Sulphur Operations in the Outer Continental Shelf, 61 Fed. Reg. 60,019 (November 26, 1996); Oil and Gas and Sulphur Operations in the Outer Continental Shelf—Pipelines and Pipeline Rights-of-Way, 72 Fed. Reg. 56,442 (October 3, 2007); Press Release, Minerals Management Service, Minerals Management Service to Adopt the Latest Edition of Industry Standard on Fixed Offshore Production Platforms, April 21, 2003, <http://www.boemre.gov/ooc/press/2003/press4-21.htm>.
- ⁵¹ Letter from Allen Verret, Offshore Operators Committee, and Tim Sampson, American Petroleum Institute, to the U.S. Minerals Management Service (September 15, 2009), <http://www.scribd.com/doc/30588089/Joint-API-OOC-Letter-to-MMS>; American Petroleum Institute and Offshore Operators Committee, "Safety and Environmental Management Systems for Outer Continental Shelf Oil and Gas Operations," Public Comment (September 15, 2009), <http://www.boemre.gov/federalregister/PublicComments/AD15SafetyEnvMgmtSysforOCSOilGasOperations/OOCAPICommentLetter9-15-09.pdf>; American Petroleum Institute, "Postlease Operations Safety," Public Comment (July 1, 1998), http://www.boemre.gov/federalregister/PublicComments/Sub_A_Comments/prorule.pdf, http://www.boemre.gov/federalregister/PublicComments/Sub_A_Comments/subacomm.pdf.
- ⁵² Commission staff held several meetings during August and September 2010 with representatives of major oil and gas companies during which the role of API in standard setting processing, including the impact of API's broader advocacy role on those standards, was discussed.
- ⁵³ T.A.F. Powell, "US Voluntary SEMP Initiative: Holy Grail or Poisoned Chalice?" (Offshore Technology Conference [OTC] Paper 8111, May 1996).
- ⁵⁴ Letter from Allen Verret, Offshore Operators Committee, and Tim Sampson, American Petroleum Institute, to the U.S. Minerals Management Service (September 15, 2009), <http://www.scribd.com/doc/30588089/Joint-API-OOC-Letter-to-MMS>; Offshore Operators Committee and American Petroleum Institute, "Oil, Gas, and Sulphur Operations in the Outer Continental Shelf (OCS)—Safety and Environmental Management Systems," Public Comment (May 22, 2006).
- ⁵⁵ T.A.F. Powell, "US Voluntary SEMP Initiative: Holy Grail or Poisoned Chalice?"
- ⁵⁶ Oil and Gas and Sulphur Operations in the Outer Continental Shelf—Safety and Environmental Management Systems, 75 Fed. Reg. 199 (October 15, 2010).
- ⁵⁷ T.A.F. Powell, "US Voluntary SEMP Initiative: Holy Grail or Poisoned Chalice?"
- ⁵⁸ Elmer Danenberger, interview with Commission staff, December 9, 2010.
- ⁵⁹ Testimony of Tad W. Patzek, "Beneath the Surface of the BP Spill: What's Happening Now, What's Needed Next," Briefing Before the Subcommittee on Energy and Environment of the House Committee on Energy and Commerce, 111th Congress (2010): 4.
- ⁶⁰ *Ibid.*
- ⁶¹ *Ibid.*
- ⁶² Testimony of James Ellis, Institute of Nuclear Power Operations, Hearing before the National Commission, August 25, 2010.
- ⁶³ Federal Aviation Administration, "Mission," <http://www.faa.gov/about/mission/>.
- ⁶⁴ Federal Aviation Administration, "Delegation and Designee Background," http://www.faa.gov/about/history/del-des_background/.
- ⁶⁵ Federal Aviation Administration, "Designees and Delegations: Designated Engineering Representative (DER)," http://www.faa.gov/other_visit/aviation_industry/designees_delegations/designee_types/der/; Nancy Leveson (MIT), interview with Commission staff, October 13, 2010.
- ⁶⁶ Federal Aviation Administration, "Delegation and Designee Background," http://www.faa.gov/about/history/del-des_background/.
- ⁶⁷ Leveson, interview.
- ⁶⁸ *Ibid.*
- ⁶⁹ Nancy Leveson, *Safeware: System Safety and Computers* 556 (Boston: Addison-Wesley, 1995).
- ⁷⁰ *Ibid.*

- 71 Nancy Leveson, *Engineering A Safer World: Systems Thinking Applied To Safety* 376–77 (Cambridge, MA: MIT Press, forthcoming in 2011), <http://sunnyday.mit.edu/safer-world>.
- 72 *Ibid.*, 375.
- 73 *Ibid.*, 376.
- 74 *Ibid.*, 376, 378.
- 75 *Ibid.*, 375–6.
- 76 *Ibid.*, 375–6.
- 77 *Ibid.*, 378.
- 78 *Ibid.*, 378.
- 79 *Ibid.*, 379.
- 80 *Ibid.*, 380–1.
- 81 *Ibid.*, 380.
- 82 *Ibid.*, 380.
- 83 *Ibid.*, 380.
- 84 *Ibid.*, 381–2.
- 85 *Ibid.*, 385.
- 86 *Ibid.*, 385–6.
- 87 *Ibid.*, 388.
- 88 Alaska Oil Spill Commission, *Spill: The Wreck of the Exxon Valdez* (Final Report) (February 1990), 1.
- 89 Samuel K. Skinner and William K. Reilly, *The Exxon Valdez Oil Spill: A Report to the President* (May 1989), 1.
- 90 *Ibid.*, 27–8.
- 91 National Transportation Safety Board, *Safety Recommendation* (September 18, 1990), http://www.nts.gov/recs/letters/1990/M90_26_31A.pdf.
- 92 Exxon Valdez Oil Spill Trustee Council, “Settlement,” <http://www.evostc.state.ak.us/facts/settlement.cfm>; Exxon Valdez Oil Spill Trustee Council, “Questions and Answers,” <http://www.evostc.state.ak.us/facts/qanda.cfm>.
- 93 Exxon Mobil, *2009 Corporate Citizenship Report*, 15.
- 94 Testimony of Rex Tillerson, CEO of Exxon Mobil, Hearing before the National Commission, November 9, 2010.
- 95 *Ibid.*
- 96 *Ibid.*
- 97 Exxon Mobil, *2009 Corporate Citizenship Report*, 14.
- 98 *Ibid.*, 13, 19.
- 99 “Shell ‘Ignored Accident Warning,’” BBC online, June 14, 2006, <http://news.bbc.co.uk/2/hi/5077886.stm>; Terry Macalister, “Shell Accused Over Oil Rig Safety,” *The Guardian*, June 23, 2006.
- 100 “Shell ‘Ignored Accident Warning.’”
- 101 Shell, *Sustainability Report 2009*, 16–17, http://sustainabilityreport.shell.com/2009/servicepages/downloads/files/all_shell_sr09.pdf.
- 102 Testimony of Marvin Odum, Shell, Hearing before the National Commission, November 9, 2010.
- 103 *Ibid.*
- 104 *Ibid.*
- 105 *Ibid.*
- 106 *Ibid.*
- 107 Responsible Care, Who We Are, <http://www.responsiblecare.org/page.asp?p=6406>.
- 108 *Ibid.*
- 109 Jody Freeman, “Private Parties, Public Functions and the New Administrative Law” in *Recrafting the Rule of Law: The Limits of Legal Order*, ed. David Dyzenhaus (Toronto: Hart Publishing, 1999), 21.
- 110 *Ibid.*, 33.
- 111 Press Release, Securities and Exchange Commission, Chairman Cox Announces End of Consolidated Supervised Entities Program, September 26, 2008; Stephen Labaton, “Agency’s ‘04 Rule Let Banks Pile Up New Debt,” *New York Times*, October 3, 2008.

- 112 Press Release, Securities and Exchange Commission, Chairman Cox Announces End of Consolidated Supervised Entities Program.
- 113 Edward J. Balleisen and Marc Eisner, "The Promise and Pitfalls of Co-Regulation: How Governments Can Draw on Private Governance for Public Purpose," in *New Perspectives on Regulation*, ed. David Moss and John Cisternino, (Cambridge, UK: Cambridge University Press, 2009), 31.
- 114 *Ibid.*, 130.
- 115 *Ibid.*
- 116 *Ibid.*
- 117 Testimony of Marvin Fertel, President and CEO of Nuclear Energy Institute, "Three Mile Island—Looking Back on Thirty Years of Lessons Learned," Before the Subcommittee on Clean Air and Nuclear Safety, 111th Congress (2009).
- 118 Testimony of James Ellis, Institute of Nuclear Power Operations, Hearing before the National Commission, August 25, 2010.
- 119 John G. Kemeny, *Report of The President's Commission on the Accident at Three Mile Island: The Need for Change: The Legacy of TMI* (1979), 68. The full subsection of the recommendation reads, "The industry should establish a program that specifies appropriate safety standards including those for management, quality assurance, and operating procedures and practices, and that conducts independent evaluations. The recently created Institute of Nuclear Power Operations, or some similar organization, may be an appropriate vehicle for establishing and implementing this program."
- 120 Institute of Nuclear Power Operations, "About Us," <http://www.inpo.info/AboutUs.htm>.
- 121 Joseph V. Rees, *Hostages of Each Other: The Transformation of Nuclear Safety Since Three Mile Island* (Chicago: University of Chicago Press, 1996), 50–51.
- 122 Lee Gard, interview with Commission staff, November 8, 2010.
- 123 Rees, *Hostages of Each Other: The Transformation of Nuclear Safety Since Three Mile Island*, 57–58.
- 124 Rees, *Hostages of Each Other: The Transformation of Nuclear Safety Since Three Mile Island*, 143.
- 125 Lee Gard, interview.
- 126 *Ibid.*
- 127 *Ibid.*
- 128 *Ibid.*
- 129 *Ibid.*
- 130 *Ibid.*
- 131 Lee Gard, e-mail message to Commission Staff, December 6, 2010.
- 132 Lee Gard, interview.
- 133 Testimony of A. C. Tollison Jr., Executive Vice President, Institute of Nuclear Power Operations, "National Energy Policy: Nuclear Energy," Before the Subcommittee on Energy and Air Quality, 107th Congress (2001).
- 134 *Ibid.*
- 135 Rees, *Hostages of Each Other: The Transformation of Nuclear Safety Since Three Mile Island*, 76.
- 136 Alice Camp, "Nuclear: In Pursuit of a Renaissance," *EPRI Journal* (Summer 2007): 20.
- 137 Rees, *Hostages of Each Other: The Transformation of Nuclear Safety Since Three Mile Island*, 81.
- 138 *Ibid.*, 53.
- 139 *Ibid.*, 53
- 140 *Ibid.*, 53–54.
- 141 Lee Gard, e-mail message to Commission Staff, December 1, 2010.
- 142 Rees, *Hostages of Each Other: The Transformation of Nuclear Safety Since Three Mile Island*, 104.
- 143 Lee Gard, interview.
- 144 Michael Golay (MIT), interview with Commission Staff, October 27, 2010.
- 145 Lee Gard, e-mail message to Commission Staff, December 1, 2010.
- 146 Michael Rencheck (AREVA Inc.), interview with Commission staff, November 1, 2010.
- 147 Rees, *Hostages of Each Other: The Transformation of Nuclear Safety Since Three Mile Island*, 104.
- 148 Michael Golay, interview.
- 149 33 U.S.C. § 2210.

- ¹⁵⁰ Lee Gard, e-mail message to Commission Staff, December 1, 2010.
- ¹⁵¹ Lee Gard, e-mail message to Commission Staff, November 15, 2010.
- ¹⁵² Lee Gard, e-mail message to Commission Staff, December 13, 2010.
- ¹⁵³ "Oil Industry Needs Self-Regulation, Says Alternate Energy Holdings Inc. CEO," *Forbes Magazine*, August 26, 2010.
- ¹⁵⁴ Lee Gard, interview.
- ¹⁵⁵ Rees, *Hostages of Each Other: The Transformation of Nuclear Safety Since Three Mile Island*, 57.
- ¹⁵⁶ Lee Gard, interview.
- ¹⁵⁷ *Ibid.*
- ¹⁵⁸ Rees, *Hostages of Each Other: The Transformation of Nuclear Safety Since Three Mile Island*, 96–97.
- ¹⁵⁹ *Ibid.*, 116.
- ¹⁶⁰ *Ibid.*, 111–117.
- ¹⁶¹ Testimony of James Ellis, Institute of Nuclear Power Operations, Hearing before the National Commission, August 25, 2010; Institute of Nuclear Power Operations, *2009 Annual Report*; Institute of Nuclear Power Operations, *1994 Annual Report*.
- ¹⁶² Testimony of James Ellis, Institute of Nuclear Power Operations, Hearing before the National Commission, August 25, 2010.
- ¹⁶³ Institute of Nuclear Power Operations, *Performance Objectives and Criteria* (May 2005); Institute of Nuclear Power Operations, *Principles for Nuclear Safety Culture* (November 2004).
- ¹⁶⁴ Rees, *Hostages of Each Other: The Transformation of Nuclear Safety Since Three Mile Island*, 44.
- ¹⁶⁵ *Ibid.*, 64.
- ¹⁶⁶ U.S. Department of the Interior, Outer Continental Shelf Safety Oversight Board, *Report to the Secretary of the Interior* (September 1, 2010), 11–13.
- ¹⁶⁷ *Ibid.*, 13–14.
- ¹⁶⁸ 10 C.F.R. Parts 1–171.
- ¹⁶⁹ Testimony of Rex Tillerson, Exxon Mobil, Hearing before the National Commission, November 9, 2010.
- ¹⁷⁰ *Ibid.*
- ¹⁷¹ Testimony of Michael Bromwich, Director, Bureau of Ocean Energy Management, Regulation and Enforcement, Department of the Interior, Hearing before the National Commission, November 9, 2010, 228.
- ¹⁷² Oil and Gas and Sulphur Operations in the Outer Continental Shelf – Safety and Environmental Management Systems, 75 Fed. Reg. 199 (October 15, 2010).
- ¹⁷³ National Commission Staff, "Response/Clean-Up Technology Research & Development and the Deepwater Horizon Oil Spill," (staff working paper, 2010)
- ¹⁷⁴ Angel Gonzalez, "Oil Firms Plan Rapid-Response Force," *Wall Street Journal*, July 22, 2010; Daniel Squire, e-mail message to Commission staff, December 1, 2010.
- ¹⁷⁵ Marine Well Containment Company, "Industry Initiatives to Ensure Safe, Protective Drilling Practices in the Deepwater Gulf of Mexico: The Marine Well Containment System" (presentation, Washington, D.C., September 2010).
- ¹⁷⁶ Marine Well Containment Company, "About Us," <http://www.marinewellcontainment.com/index.php>.
- ¹⁷⁷ Helix Energy Solutions Group, "Spill Containment: Fast Response to GOM Subsea Oil Spills" (unpublished document provided to Commission staff by Helix Energy Solutions Group).
- ¹⁷⁸ Independent Deepwater Exploration Coalition, meeting with Commission staff, November, 29, 2010.
- ¹⁷⁹ "Moody's Offshore drilling insurance rates to jump," *BusinessWeek*, June 4, 2010.
- ¹⁸⁰ Julia Kollwe, "Oil Industry Set for Surge in Insurance Premiums after Deepwater Disaster," *The Guardian*, September 20, 2010, <http://www.guardian.co.uk/business/2010/sep/20/deepwater-oil-rigs-insurance-costs>.
- ¹⁸¹ Aspen Re interview with Commission staff, October 19, 2010; Testimony of Dr. Robert Hartwig, President and Economist, Insurance Information Institute, "Liability and Financial Responsibility for Oil Spills under the Oil Pollution Act of 1990 and Related Statutes," Hearing Before the House Committee on Transportation and Infrastructure, 111th Congress (2010).
- ¹⁸² 33 U.S.C. § 2702.
- ¹⁸³ *Ibid.*
- ¹⁸⁴ 33 U.S.C. § 2704.
- ¹⁸⁵ 33 U.S.C. § 2704; 33 U.S.C § 1321 (Clean Water Act civil and criminal penalties); Jonathan Ramseur, *Oil Spills in U.S. Coastal Waters: Background, Governance, and Issues for Congress* (Congressional Research Service, updated September 2, 2008), 26 ("A 2003 study identified 16 states that impose unlimited liability for oil spills.")

- ¹⁸⁶ CLEAR Act, H.R. 3534, 111th Cong. § 702 (2010) (as passed by House); S. 3663, 111th Cong. §102 (2010) (“Reid Clean Energy bill”); RESPOND Act, S. 3763, 111th Cong. § 6 (2010) (“Landrieu bill”); Big Oil Bailout Prevention Act, H.R. 5214, 111th Cong. § 2 (2010).
- ¹⁸⁷ Testimony of Charles Anderson, SKULD North America, “Liability and Financial Responsibility for Oil Spills under the Oil Pollution Act of 1990 and Related Statutes,” Hearing Before the House Committee on Transportation and Infrastructure, 111th Congress (2010), 9.
- ¹⁸⁸ Graeme Wearden, “BP oil spill costs to hit \$40bn,” *The Guardian*, November 2, 2010 (\$39.9 billion estimated costs); 33 U.S.C. §2716 (maximum required financial responsibility for offshore facilities is \$150 million).
- ¹⁸⁹ Rawle King, *Deepwater Horizon Oil Spill Disaster: Risk, Recovery, and Insurance Implications* (Congressional Research Service, July 12, 2010), 16–18.
- ¹⁹⁰ Press Release, Munich Re, Munich Re Develops New Insurance Solution for Oil Catastrophes, September 12, 2010, http://www.munichre.com/en/media_relations/press_releases/2010/2010_09_12_press_release.aspx; Munich Re executives, telephone interview with Commission staff, September 17, 2010.
- ¹⁹¹ RESPOND Act, S. 3763, 111th Cong. § 7 (2010).
- ¹⁹² Graeme Wearden, “BP oil spill costs to hit \$40bn,” *The Guardian*, November 2, 2010.

Chapter Nine

- ¹ Exec. Order No. 13543, 75 Fed. Reg. 29,397 (May 21, 2010).
- ² See 43 U.S.C. § 1337(b)(6) (“An oil and gas lease issued pursuant to this section shall . . . contain such rental and other provisions as the Secretary may prescribe at the time of offering the area for lease.”).
- ³ These terms are taken directly from the Council on Environmental Quality (CEQ) NEPA implementing regulations. 40 C.F.R. § 1508.28.
- ⁴ 40 C.F.R. §1508.4.
- ⁵ A “Development Operations Coordination Document” in the Gulf of Mexico is functionally the same as a “Development and Production Plan” in other LES regions.
- ⁶ Press Release, Department of the Interior, Categorical Exclusions for Gulf Offshore Activity to be Limited While Interior Reviews NEPA Process and Develops Revised Policy, August 16, 2010.
- ⁷ Minerals Management Service, *MMS 2007-018 Gulf of Mexico OSC Oil and Gas Lease Sales: 2007-2010 Final Environmental Impact Statement* (April 2007), Volume I, 2-3 to 2-5.
- ⁸ Minerals Management Service, *MMS 2007-026 Chukchi Sea Planning Area Oil and Gas Lease Sale 193 and Seismic Surveying Activities in the Chukchi Sea Final Environmental Impact Statement* (May 2007), Volume I, 1.
- ⁹ Department of Interior, *Department Manual Part 516: National Environmental Policy Act of 1969* (September 2009), 3.4.
- ¹⁰ Government Accountability Office, *GAO-10-276 Offshore Oil and Gas Development: Additional Guidance Would Help Strengthen the Minerals Management Service’s Assessment of Environmental Impacts in the North Aleutian Basin* (March 2010), 21.
- ¹¹ Council on Environmental Quality, *Final Recommendations of the Interagency Ocean Policy Task Force* (July 19, 2010), 41.
- ¹² 43 U.S.C. § 1346.
- ¹³ Commission staff analysis of MMS yearly budget request and enactments, by nominal and real (2005) dollars. Bureau of Ocean Energy Management, *Office of Administration and Budget: Budget Division*, <http://www.boemre.gov/adm/budget.html>; Herbert Kaufman and Cheryl Anderson, Department of the Interior, *OCS Environmental Studies Contract Projects—Fiscals Years 1973 through 1983* (DOI Minerals Management Service Branch of Environmental Studies, December 1983), II-8.
- ¹⁴ 33 U.S.C. § 1321(j)(5)(D)(i); 40 C.F.R. § 300.211.
- ¹⁵ 30 C.F.R. § 254.2(a).
- ¹⁶ 30 C.F.R. § 254.126
- ¹⁷ 40 C.F.R. § 300.322
- ¹⁸ 23 U.S.C. § 125.
- ¹⁹ Pub. L. No. 107-171, § 2701, 116 Stat. 134, 278-279 (2002).
- ²⁰ Department of the Interior, National Notice to Lessees and Operators of Federal Oil and Gas Leases, Outer Continental Shelf No. 2010-N10 (November 8, 2010), <http://www.gomr.boemre.gov/homepg/regulate/regs/ntls/2010NTLs/10-n10.pdf>.

- ²¹ 30 C.F.R. §§ 250.410–418.
- ²² 30 C.F.R. § 250.418(j).
- ²³ Transcript, Deepwater Blowout Containment Conference (September 22, 2010), <http://www.doi.gov/news/video/Deepwater-Blowout-Containment-Conference.cfm>.
- ²⁴ Doug Suttles, interview with Commission staff, October 13, 2010.
- ²⁵ Response workers generally must be trained pursuant to the Hazardous Waste Operations and Emergency Response (“HAZWOPER”) regulation administered by the Occupational Safety and Health Administration. 29 C.F.R. § 1910.120. This regulation requires specific training and medical surveillance and monitoring for workers dealing with hazardous materials. While this regulation presumably applied to formal response contractors after the Deepwater Horizon spill, it was not applied consistently to citizen responders who also require its protections.
- ²⁶ Public information should further be provided in languages and formats that are understandable to individuals with limited English proficiency and individuals with disabilities. ESF #8—Public Health and Medical Services Annex at 7.
- ²⁷ Indeed, the Public Health and Medical Services Annex provides for long-term monitoring of potentially exposed individuals, requiring the Department of Health and Human Services to “assist[] State, tribal, and local officials in establishing a registry of potentially exposed individuals . . . and conducting long-term monitoring of this population for potential long-term health effects.” ESF #8 – Public Health and Medical Services Annex at 9–10; Rebecca Bratspies, et al., *From Ship to Shore: Reforming the National Contingency Plan to Improve Protections for Oil Spill Cleanup Workers* (Center for Progressive Reform, September 2010).
- ²⁸ Whether or not respirators should be required for cleanup workers emerged as a major controversy in the response.
- ²⁹ Ray Mabus, *America’s Gulf Coast: A Long Term Recovery Plan after the Deepwater Horizon Oil Spill* (September 2010); Exec. Order No. 13554, 75 Fed. Reg. 62313–62317 (October 8, 2010).
- ³⁰ Federal liability for damages is not the only potential liability that could result from an offshore drilling incident. Under the Oil Pollution Act, drillers are strictly liable for removal costs. Companies can also be subject to federal civil and criminal penalties as well as unlimited liability for damages under some state laws. These liabilities presumably drive business to internalize risk and mitigate safety, though not as fully as they might if damages liability were not capped.
- ³¹ Gulf Coast Claims Facility, *Frequently Asked Questions*, http://www.restorethegulf.gov/sites/default/files/imported_pdfs/library/assets/gccf-faqs.pdf.
- ³² Gulf Coast Claims Facility, *Frequently Asked Questions*, <http://www.gulfcoastclaimsfacility.com/faq#Q9>. Government claims for loss of revenue are being handled by BP: <http://www.bp.com/governmentclaims>. A \$60 million BP fund is in place for real estate claims across the five Gulf states and is being administered by National Catastrophe Adjusters, a claims adjustment firm: www.gulfreclaims.com; Kathy Jumper, “Realtors Tap National Catastrophe Adjusters To Administer Oil Spill Claims,” *Press-Register*, August 24, 2010, http://blog.al.com/live/2010/08/realtors_oil_claims.html. BP has set aside \$100 million for rig workers who experience hardship due to the moratorium, to be administered by the Gulf Coast Restoration and Protection Foundation: <http://www.gcrpf.org/>. Claims for repairs or damage to vessels involved in the Vessel of Opportunity program are being handled by BP.
- ³³ Letter from Thomas J. Perrelli, Associate Attorney General, Department of Justice, to Kenneth Feinberg, September 17, 2010.
- ³⁴ “Leader on BP Claims Blames Fraud for Slow Payouts”, *Associated Press*, October 5, 2010.
- ³⁵ Press Release, Gulf Coast Claims Facility, Feinberg Announces Faster and More Generous Payments from GCCF, September 25, 2010, <http://www.gulfcoastclaimsfacility.com/press6.php>; Press Release, Gulf Coast Claims Facility, Feinberg Announces Clarification Regarding Geographic Proximity, October 4, 2010, <http://www.gulfcoastclaimsfacility.com/press7.php>; Editorial, “Are Victims of the Gulf Oil Spill Getting What They Deserve?,” *Washington Post*, November 25, 2010, <http://www.gulfcoastclaimsfacility.com/pressA.php>; Siobhan Hughes and Ryan December, “Feinberg Softens His Stance on Claims From Spill,” *Wall Street Journal*, November 26, 2010.
- ³⁶ Gulf Coast Claims Facility, GCCF Program Statistics—Overall Summary, Gulf Coast Claims Facility, December 11, 2010, http://www.gulfcoastclaimsfacility.com/GCCF_Overall_Status_Report.pdf.
- ³⁷ Minerals Management Service, Budget Justifications and Performance Information Fiscal Year 2011.
- ³⁸ 43 U.S.C. § 1337(b)(6).

Chapter Ten

- ¹ Energy Information Administration, *Annual Energy Review 2009* (August 19, 2010), Table 5.2, 131, http://www.eia.doe.gov/emeu/aer/pdf/pages/sec5_7.pdf.
- ² Energy Information Administration, *Annual Energy Outlook 2010* (April, 2010), 75, [http://www.eia.doe.gov/oiarf/aeo/pdf/0383\(2010\).pdf](http://www.eia.doe.gov/oiarf/aeo/pdf/0383(2010).pdf).
- ³ Technically recoverable reserves, however, are very different from proven reserves, because the former unlike the latter includes reserves that may well be as a practical matter be too expensive to recover.
- ⁴ Energy Information Administration, *Annual Energy Review 2008* (June 26, 2009), Table 4.1, 99, <http://www.eia>.

- gov/FTPROOT/multifuel/038408.pdf.
- ⁵ National Academy of Sciences, *Advancing the Science of Climate Change* (Washington, D.C.: The National Academies Press, 2010).
 - ⁶ Energy Information Administration, *Annual Energy Review 2009* (August 19, 2010), Figure 2.0, 37, <http://www.eia.gov/emeu/aer/pdf/pages/sec2.pdf>. (Most of the remaining transportation fuels came from ethanol and natural gas.)
 - ⁷ National Academy of Sciences, *America's Energy Future: Technology and Transformation* (Washington, D.C.: The National Academies Press, 2010), xi.
 - ⁸ Energy Information Administration, *Annual Energy Review 2009*, Tables 4.2, 5.1, 101, 129 (calculated from tables) <http://www.eia.doe.gov/aer/pdf/aer.pdf>.
 - ⁹ *Ibid.*, Table 11.5, 315.
 - ¹⁰ *Ibid.*, Tables 11.4, 11.10, 313, 325 (calculated based on tables). "Proved reserves" represent only a small part of can be ultimately recovered and are estimated by different standards around the world.
 - ¹¹ *Ibid.*, Table 5.17, 167, http://www.eia.gov/emeu/aer/pdf/pages/sec5_43.pdf.
 - ¹² *Ibid.*, Table 3.5, 77. http://www.eia.gov/emeu/aer/pdf/pages/sec3_11.pdf
 - ¹³ Stephen Brown and Hillard Huntington, "Estimating U.S. Oil Security Premiums: EMF OP 68," September 2009.
 - ¹⁴ Census Bureau, "Trade in Goods (Imports, Exports and Trade Balance) with China 1985-2010," <http://www.census.gov/foreign-trade/balance/c5700.html#2010>.
 - ¹⁵ Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, 75 Fed. Reg. 25,324 (May 7, 2010). The joint rulemaking in 2010 by the Department of Transportation and EPA establishing light duty vehicle greenhouse gas emission standards and corporate average fuel economy standards promises to significantly increase fuel efficiency and reduce greenhouse gas emissions.
 - ¹⁶ Jay Hakes, *A Declaration of Energy Independence: How Freedom from Foreign Oil Can Improve National Security, Our Economy, and the Environment* (Hoboken, New Jersey: John Wiley & Sons, 1978), 68-70, 87-88; Energy Information Administration, *Annual Energy Review 2009* (August 19, 2010), Figure 5.1, 129, http://www.eia.gov/emeu/aer/pdf/pages/sec5_5.pdf.
 - ¹⁷ National Research Council, *America's Energy Future: Technology and Transformation* (Washington D.C.: National Academies Press, 2009); National Research Council, *Limiting the Magnitude of Future Climate Change* (Washington D.C.: National Academies Press, 2010).
 - ¹⁸ President's Council of Advisors on Science and Technology, *Report to the President on Accelerating the Pace of Change in Energy Technologies through an Integrated Federal Energy Policy* (Washington D.C.: Executive Office of the President, 2010).
 - ¹⁹ "Shares," Gazprom, <http://www.gazprom.com/investors/stock/>.
 - ²⁰ "The Other Way Out," *Economist*, November 19, 2010; Energy Information Administration, "Country Analysis Briefs: Mexico," June 2010.
 - ²¹ There are also massive natural gas resources in and off Alaska, but until a pipeline is built to the lower 48 states, the gas cannot be brought to market and used.
 - ²² Department of the Interior, "Estimated Undiscovered, Economically Recoverable Resources," <http://www.doi.gov/whatwedo/energy/ocs/upload/UERR-map-2012-2017-80-NoYear-Note.pdf>.
 - ²³ Bureau of Ocean Energy Management, "Lease Sales," December 2, 2010, http://alaska.boemre.gov/lease/hlease/LeasingTables/lease_sales.pdf; Minerals Management Service, "Summary of Company Bids," February 7, 2008, <http://alaska.boemre.gov/cproject/Chukchi193/193Saleday/Sale%20193%20Sum%20of%20Co%20Bids%20by%20Co%20Code.pdf>.
 - ²⁴ *Energy Information Administration, Annual Energy Review 2009*, Table 5.2, 131.
 - ²⁵ Energy Information Administration, *Annual Energy Outlook 2011*, Table A14.
 - ²⁶ Unpublished information provided to the Commission by the Energy Information Administration.
 - ²⁷ Northern Economics, *Economic Analysis of Future Offshore Oil and Gas Development: Beaufort Sea, Chukchi Sea, North Aleutian Basin* (March 2009), ES-7, 9.
 - ²⁸ Audobon Alaska, "Chukchi Sea," <http://ak.audubon.org/issues-action/chukchi-sea>.
 - ²⁹ Press Release, Department of the Interior, U.S. Fish and Wildlife Service Announces Final Designation of Polar Bear Critical Habitat, November 24, 2010.
 - ³⁰ Lori Quakenbush, "Bowhead Whale," Alaska Department of Fish & Game, September 22, 2010.
 - ³¹ *Ibid.*
 - ³² Ronald O'Rourke, *Changes in the Arctic: Background and Issues for Congress* (Congressional Research Service, October 15, 2010), 31 ("On June 25, 2010, the Coast Guard announced that Polar Sea had suffered an unexpected engine casualty and consequently will likely be unavailable for operation until at least January 2011.")
 - ³³ The Arctic Council is a multinational and intergovernmental group. Members include the governments of Canada,

Denmark (including the Faroe Islands and Greenland), Finland, Iceland, Norway, the Russian Federation, Sweden, and the United States of America. The Permanent Participants of the Arctic Council are: Aleut International Association (AIA), Arctic Athabaskan Council (AAC), Gwich'in Council International (GCI), Inuit Circumpolar Council (ICC), Russian Association of Indigenous Peoples of the North (RAIPON), and the Saami Council.