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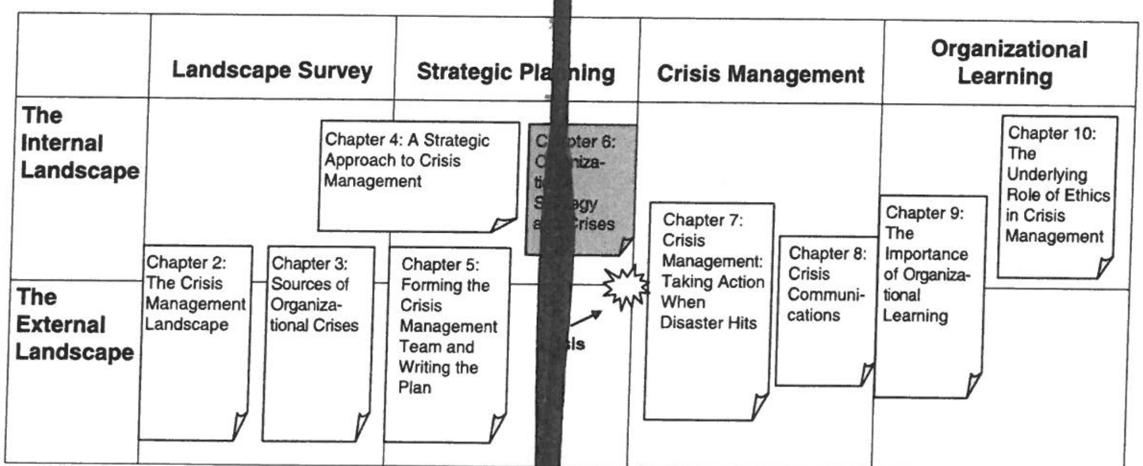
CHAPTER 6

Organizational [redacted]rategy and Crises



Opening Case, Part 1[redacted]The BP Gulf of Mexico Oil Spill

On April 20, 2010, British Petroleum's (BP) [redacted]fshore drilling rig, the *Deepwater Horizon*, exploded in the Gulf of Mexico and c[redacted]used the largest accidental marine oil spill in history. The ruptured oil well spewe[redacted]nearly 5 million barrels of oil into the sea over three months (Friedman & Fried[redacted]n, 2010). Eleven men working on the project were fatally injured, and 17 othe[redacted] were severely injured. This crisis resulted in major destruction to marine wild[redacted]fe, and extensive economic harm was inflicted on the fishing and tourism indust[redacted]s. For BP, it was a public relations crisis nightmare.

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Offshore Versus Deep-Water Drilling

Starting in the 1980s, the United States looked for a solution to its energy and national security needs through offshore oil production. Since World War II, the Gulf of Mexico has been a major area for offshore drilling. Most of the wells in this area were in shallower waters with depths around 200 feet or less (Schneider, 2011). However, as these wells were depleted, oil companies moved their efforts to deeper waters that were several thousand feet in depth. At the time of the BP oil spill, the Gulf of Mexico was estimated to hold 19 percent of the U.S. oil reserves (Griggs, 2011).

Deep-water drilling is a promising alternative for extracting oil reserves, but there are drawbacks. The most obvious difficulty is to drill and operate a well at such tremendous depths. The U.S. government defines a deep-water well as one that involves drilling in excess of 500 feet. In 2010, there were about 600 deep-water wells in the Gulf of Mexico (Tankersley, 2010). Because of the excessive depths of the wells, they are not accessible by human divers and must be reached by robots if there is a maintenance problem.

A special drilling rig is needed to bore an oil well in deep waters. Two types exist: the drillship and the semi-submersible (Cook, 2010). A drillship resembles an actual ship, with the drilling apparatus located in the center. The semi-submersible rig has large pontoons that can be filled with ballast so the rig can be partially submerged. This feature also helps the rig remain more stable amid the waves (Cook, 2010). The *Deepwater Horizon* was a semi-submersible rig that was used to dig the well on the Macondo slope of the Gulf of Mexico. Once the well was dug and capped, the rig would move on to a different site to dig another well. A different rig would arrive afterward at the Macondo well and extract the oil. Companies like BP do not own or operate these rigs; instead, they lease them from specialized companies such as Transocean, the largest offshore drilling contractor in the world (Barrett, 2011).

The Deepwater Horizon

The *Deepwater Horizon* was built in Korea and literally sailed to the United States, arriving for service in the Gulf of Mexico in 2001. The original price tag was $365 million and included a 2[illegible]000-ton drilling package (Elkind, Whitford, & Burke, 2011). But the rig was also designed for the use of its employees who would be working there on an extended basis. Amenities such as a movie room, a gym, maid service, a smoking cave, berths with carpeting, in-room Internet, and a 24-hour mess hall were all provided. When one is out at sea, a workplace needs to resemble home as much as possible.

The rig was a multi-use facility that included the drilling apparatus, monitoring facilities, a heliport, and accommodations for the employees. The most important function, however, was to drill for oil. Extracting the oil would be performed by a different rig; hence the *Deepwater Horizon* was better termed a drilling rig.

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Understanding the Macondo Well

The Macondo oil well in the Gulf of Mexico was sunk 18,360 feet below sea level. BP leased the *Deepwater Horizon* at a cost of $533,000 a day from Transocean (Crooks, Pfeifer, & McNulty, 2010). Since the accident, critics have questioned BP's cost-cutting efforts. At a charge of a half a million dollars a day, it is easy to see why the company was concerned about expenses. Moreover, drilling the Macondo well had been fraught with problems, causing the project to fall behind schedule by some 45 days and resulting in a $58 million overrun of the budget (Elkind et al., 2011).

The Blowout Preventor

One of the key devices on a deepwater well is the blowout preventer (BOP). The BOP is a 40-foot stack of valves that sits on top of the well on the sea bed (McNulty & Crooks, 2010). It is designed to stop the flow of oil and gas from the well in the event of an emergency. If the BOP were to fail, dangerous oil and gases could spew from the well and move up the riser, which is located in the water and serves as the connection tube between the rig and the well. Once the gases have moved up the riser, they are emitted at the oil rig itself, which creates a volatile situation because the gases are highly flammable. A sufficient amount of gas and an ignition source could ignite an explosion. Because oil is rising up uncontrollably as well, the resulting fire would be fueled by the oil, creating a burning inferno that could last as long as the fire has a fuel source.

Because of the importance of the BOP, it must be built well and checked periodically. The maker of the BOP for the Macondo well was Cameron International, a company known for reliability. Indeed, the BOP must work perfectly because it is the main barrier protecting human life, capital equipment, and the environment (Hoyos, 2010). However, there was an incident involving the BOP after it had been installed. Four weeks before the night of the explosion, a worker had accidently bumped a control switch that moved a portion of pipe through the BOP. Later, chunks of rubber were found in the drilling fluid, indicating that "something" had been compromised in the BOP. However, no further action was taken on the matter (Cook, 2010).

Cementing the Drill Casing

The process of drilling a well involves boring a hole first, then inserting a metal casing into the hole so that the shaft has structural integrity. In other words, the metal casing keeps the bored hole from falling in on itself. Before a well can be capped, the area between the bored hole and the outside of the casing must be filled with cement. Filling this gap helps to center the casing in the hole, and it prevents dangerous hydrocarbon gases from entering the shaft (Cook, 2010). In addition, the bottom of the well where the shaft is still open is filled with cement to keep these gases from entering. Thus, the shaft is now protected with cement from the sides and the bottom. The goal is to seal the shaft tightly so nothing can enter it until the next oil rig arrives to extract the oil. At that point, the shaft is reopened to allow oil to flow up to the rig. Until then, the shaft must not become a conduit for hydrocarbon gases and oil.

The cementing process also accomplishes another goal, to keep the metal casing of the drill shaft completely centered in the bore. However, cement alone is not enough to keep the long shaft in place. Carbon-steel liners are also used to correctly position the metal casing in the hole. The design of the well called for 21 centralizers, but only six were available for installation. Instead of waiting for more to arrive, BP decided to work with six. It should be noted BP officials made this decision, although another company, Halliburton, was contracted to do the cement work. Although a Halliburton official warned that not using the full 21 centralizers could cause a problem with the integrity of the shaft, the work proceeded with only six (Elkind et al., 2011).

The Negative Pressure Test

Before the *Deepwater Horizon* was allowed to move to its next job, a negative pressure test had to be conducted on the well. This test measures whether or not the well is sealed completely. If the well has a good seal, then no change in pressure should occur. An increase in pressure from the well indicates that a good seal has not been attained, meaning that hydrocarbon gases and oil could leak into the shaft. When the test was conducted, the results were confusing. What added to the problem was that BP did not have a standard procedure in place on how to conduct the negative pressure test, nor was there guidance on how to interpret the results (Cook, 2010).

When the test was first run, the well was exerting pressure on the drill pipe, indicating that hydrocarbons were leaking into the pipe. The test was run again just to make sure it was not a mistake, but the same results occurred—pressure was occurring, which meant a good seal was not attained. Somewhere, the cement had not done its job. Or had it? A discussion ensued among BP, Halliburton, and Transocean staff. One engineer suggested that it might be a false reading. A third test was run, this time a line that connected to the main drill shaft. The crew theorized that this line should also show an increase in pressure if there was indeed a leak because the entire setup was a closed system (Elkind et al., 2011). The feeder line showed normal pressure. The BP staff concluded the system was not leaking, a decision that would prove to be fatal in just a few hours.

Opening Case Part 1 Discussion Questions

1. Even though BP did not directly own the oil rig in question, why do you think it received the most blame in the media?
2. What are the advantages and disadvantages of outsourcing?
3. This case illustrates that a testing procedure may not always produce reliable results. Have you experienced problems at work where established testing procedures were not adequate and led to problems?