# THE OIL SPILL IN THE GULF OF MEXICO

## Introduction

**Focus**
In late April, an explosion rocked an oil-drilling platform in the Gulf of Mexico. A pipe near the seabed broke, and oil started gushing into the water. It took almost three months to cap the leaking well; over the 86-day period, about 720 million litres of oil leaked into the waters of the Gulf. This *News in Review* story looks at how and why the spill happened, its impact, and some possible lessons for Canada.

Twenty-first-century society tends to place a lot of trust in technology. Sometimes that trust is misplaced.

On April 20, 2010, an oil-drilling rig operating in the Gulf of Mexico, called the *Deepwater Horizon*, suddenly exploded. The explosion and subsequent fire killed 11 workers and destroyed the rig, valued at over $700-million. It left behind an open hole in the sea floor, spewing millions of litres of oil every day into the waters of the Gulf. It took almost 86 days for BP, the company operating the rig, to find a solution to stop the flow of oil.

While the leak continued, BP's efforts to stop it were met with setback after setback. At the same time, a massive clean-up effort involving more than 30 000 people was underway. At the time this *News in Review* story was being prepared large areas of the Gulf remained closed to fishing, and the full effect of the spill on underwater life was unclear. An assessment of damage to wetlands along the coast was incomplete.

What went wrong is hard to determine because, since the accident, the finger pointing has been non-stop. Blame has been assigned to BP, the rig's operator; Transocean, the owner of the rig leased by BP; Cameron, the manufacturer of the blowout preventer that failed to operate as expected; Halliburton, responsible for pumping the well's cement casing; the U.S. Minerals Management Service (or MMS), which oversees offshore drilling safety; the Obama administration, for failing to deal with conflict-of-interest problems at the MMS; and you and me, for depending so heavily on oil to support our lifestyle.

It will likely be years before all the factors that led to the explosion and subsequent spill are identified. But the dangers and potential costs of deepwater offshore drilling for oil and gas certainly have been brought to public attention. In the meantime, all offshore deepwater drilling was placed under a six-month moratorium while an expert panel looked into the causes of the blowout and related safety issues.

For Canadians, the *Deepwater Horizon* disaster should have special resonance. International oil giant Chevron has just begun drilling a deepwater well in the Orphan Basin off the coast of Newfoundland. And the National Energy Board is about to accept lease applications from oil companies who wish to drill in one of the most unforgiving landscapes, the Beaufort Sea in Canada's Arctic. A blowout in its waters would pose clean-up challenges of staggering complexity.

Our addiction to oil has led us to look for it in some very scary places. The *Deepwater Horizon* disaster brings home the lesson that we need to use great caution in those places or we may end up paying an unacceptably high price for our dependence on oil.

## To Consider

Some environmentalists have argued that the *Deepwater Horizon* disaster is proof that we need to stop oil exploration in difficult environments and concentrate on finding new sources of renewable energy. But are we so addicted to oil that we need to continue the search anywhere we might find it?

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## *Video Review*

**Did you know . . .**
The *Deepwater Horizon* spill is now the largest oil spill in U.S. history. It breaks the record set by the 1989 *Exxon Valdez* spill.

**FYI**
The video consistently refers to U.S. gallons when describing the amount of oil leaking from the well. One U.S. gallon is the equivalent of 3.78 litres.

### Pre-viewing Discussion

Make notes in response to the following questions and then discuss with a partner.

1. What kind of media coverage did you see, hear, or read about the *Deepwater Horizon* explosion and oil spill in the Gulf of Mexico?

2. What was the focus of the coverage: environmental damage, human impact, economic aspects of the disaster?

3. Were you surprised by how long it took for BP, the company who operated the oil rig, to stop the flow of oil? Explain.

### Viewing Questions

As you watch the video respond to the questions in the spaces provided.

1. How many workers were killed in the *Deepwater Horizon* explosion?

2. How serious was the oil leak first believed to be?

3. How far under water was the oil well?

4. How many U.S. gallons of oil per day were first believed to be leaking from the well?

5. How many U.S. gallons of oil leaked from the *Exxon Valdez?*

6. Why does Lorna Bourg argue that fishers should refuse the contracts offered by BP?

7. Currently, how many offshore oil and gas projects are there in Canadian waters?

8. Where are these projects located?

9. Which major oil company is drilling a deepwater well off the coast of Newfoundland?

10. How many gallons of dispersant were used to treat the *Deepwater Horizon* leak?

11. When was the wellhead finally plugged with mud and concrete?

## Post-viewing Discussion

Working with your partner, discuss and respond to the following questions.

1. What do you believe will be the likely impact of the *Deepwater Horizon* disaster on the future of oil exploration? Will it be significant or quickly forgotten? Might it have a special impact on work in difficult environments like Canada's Arctic?

2. In the video, Senator Mikyulski refers to the use of chemical dispersants to break up the spill as potentially similar to the use of Agent Orange in Vietnam. What does she mean by this? (You may have to Google this to understand the reference.) Do you think BP has used enormous amounts of a chemical whose full effects are unknown? Explain.

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## YV *Disaster Strikes*

**Further Research**
Learn more about BP and the company's perspective on the spill and the clean-up at www.bp.com/bodycopyarticle.do?categoryId=1&contentId=7052055.

### Focus for Reading

In general do you hold the opinion that in this high-tech age technology can solve most problems? As you read the following information think about what surprises you about the disaster in the Gulf and whether or not your feelings about the power of technology are changing.

On April 20, 2010, a massive explosion rocked the *Deepwater Horizon*, one of the world's most advanced offshore oil-drilling rigs. The rig was designed to operate in over 2 400 metres of water. It had recently set a new record by drilling more than 9 750 metres into the seabed under the Gulf of Mexico. The *Deepwater Horizon*—owned by Transocean of Houston, Texas—was leased for exploration by BP, one of the world's largest energy companies. The *Deepwater Horizon* was considered the cutting edge in deepwater drilling rigs, the key to opening vast new areas of oil reserves for the North American market.

At the time of the explosion, the rig was operating in the Gulf about 70 kilometres off the coast of Louisiana. The well it was drilling is called the Macondo well. The explosion caused a fire that raged for two days before the rig sank into the depths, taking with it 11 workers whose bodies were never recovered.

### Catastrophic Results

It soon became apparent that the explosion would have a serious environmental impact. A major piece of safety equipment, the blowout preventer, had failed, and oil was gushing uncontrolled into the Gulf. Initially it was believed that about 160 000 litres per day were escaping, but by April 29 the U.S. Coast Guard had raised their estimate to 800 000 litres per day. The oil was now spread over 7 000 square kilometres and expected to move toward the mouth of the Mississippi River. It threatened to pollute an area that is the source of one-third of the seafood catch in the United States.

### Mitigation Attempts

Initially, BP tried to use robot submarines to close the fail-safe valve, but this attempt was a failure. As the oil continued to flow, BP announced that it would bring out a massive Pollution Control Dome to place over the wellhead to contain the oil so it could be pumped to container ships on the surface. This massive concrete and metal box weighed 74 tonnes. Unfortunately the dome became clogged by slushy methane gas and failed to stop the flow of oil.

Meanwhile, BP was trying a number of different methods for dealing with the escaping oil. They deployed two types of inflatable booms, some of which would surround and absorb the oil, others that were designed to keep it from reaching shore. In some cases fireproof booms were used to surround smaller pockets of oil on the surface. These pockets were then burned off in controlled burns, a technique that had been developed in Canada's North Atlantic oil fields.

BP also used skimmer boats to pick up some of the floating oil. The boats actually took in a combination of seawater and oil that was later separated at an onshore facility.

The most controversial method used to control the oil that spewed into the Gulf was chemical dispersant spraying. BP used nearly 7.5 million litres of dispersant in an attempt to break the oil down into droplets that would be more readily digested by bacteria. Usually dispersant is sprayed on

oil at the surface. In this case, BP chose to spray most of it right at the oil as it poured from the wellhead. The effects and effectiveness of this technique are still being debated by observers.

## The Crisis Deepens

For almost three weeks the oil stayed away from shore, and the slick was broken up by heavy winds. By May 11, however, oil was starting to come ashore as far away as Alabama. Venice, Louisiana, one of the area's fishing centres, was also being hit, and a major wildlife refuge was threatened.

It was becoming apparent that the only permanent solution was going to be the drilling of a relief well, and this would take at least 80 days to accomplish. In the meantime, BP discussed other possibilities including a "top hat," a smaller dome that would contain oil so it could be siphoned to a surface tanker. Other procedures included a "top kill," where mud and cement are pumped into the well from the top to seal it; and a "junk shot," in which shredded tires, old golf balls and other junk would be fired into the well in the hope of clogging it from above.

Meanwhile, BP inserted a siphon directly into the well, believing they could bring at least 20 per cent of the oil to a tanker on the surface. On May 17 they captured 160 000 litres; two days later it was 320 000 litres. But scientists now reported that they were finding huge, multi-kilometre underwater plumes of oil droplets. This was an unexpected phenomenon with an unknown impact on marine life.

By the end of May the Gulf spill had become the worst oil spill in U.S. history. Experts estimated that between 1.9 million and 3.8 million litres of oil were pouring from the well every day. The most conservative estimate was that 72 million litres had polluted the Gulf since the explosion; that figure might be as high as 142 million.

## Attempts Fail and Succeed, but the Oil Spreads

As June began, environmentalists were predicting that the oil slick might travel as far as Europe. Oil was coming ashore on the beaches in Gulf Shores, Alabama, and was on its way to Pensacola, Florida. Huge areas of the Gulf of Mexico—35 per cent of its waters—were closed to commercial and sport fishing. There were 25 000 to 30 000 people in 17 staging areas working on shoreline protection in the Gulf, but rough waters and not enough booms were hampering their efforts.

Both the "junk shot" and "top kill" attempts had failed. BP now announced a new plan. It would sever the broken pipe above the seabed and attach a cap that could be used to funnel at least 25 to 50 per cent of the oil to tankers on the surface. On June 7 BP was able to capture 1.7 million litres. Scientists now revised their pre-June flow estimates to between 3.8 million and 7.7 million litres per day. BP was able to add a second collection vessel, and scientists increased their flow estimate to between 5.56 million and 9.54 million litres daily.

On June 16 BP announced it had reached an agreement with the government that it would create a USD$20-billion fund to compensate those whose lives and incomes were impacted by the Gulf oil spill. By the time of this announcement, 561 kilometres of shoreline along the Gulf of Mexico had been affected by the spill. Thanks to the efforts of the shoreline protection crew, only 145 kilometres were believed to have been moderately to severely affected.

## The End Is Near

Although BP was now managing to capture a great deal of the escaping oil, some continued to foul the Gulf. Efforts were hampered on June 23 when a robot submarine accidently dislodged the cap and it had to be reinstalled. The

resumption of the unhampered flow of oil was a taste of what might happen if, as BP feared, the well had to remain uncapped during part of hurricane season. Container vessels would have to leave the well site because of the gale-force winds. No oil would be captured during this time.

By the last week in June oil was hitting some of Florida's beaches. In early July tar balls washed up on beaches in Texas.

In early July BP announced it would install a new and improved cap for the well. It hoped that this one would have a better seal and make it possible to capture all the oil and bring it to the surface.

Once again the robot submarines went into action. On July 10 they removed the old cap, and oil once again flowed freely into the Gulf. The robots then reconfigured the outlet for the new cap, which was fitted on July 12. Careful testing confirmed that the seal was tight and pressure was holding. On July 14 at 2:25 p.m. EDT—after "85 days, 16 hours and 25 minutes," in the words of a *Globe and Mail* headline (July 15, 2010)—the oil stopped flowing.

### Static Kill

A few days later BP announced that it would use a procedure called "static kill" to permanently seal the well. Essentially, this is the same procedure that BP attempted in May, the "top kill." Through pipes from ships on the surface of the Gulf, drilling mud would be pumped through the blowout preventer into the well. The procedure failed the first time because the mud shot out of the top of the uncapped well. This time, however, the well was capped and sealed, so the procedure was expected to succeed.

In all, 2 300 barrels of mud were slowly pumped into the well over eight hours. On August 4 BP announced that the well had successfully been plugged, and that it would now proceed to cement the top of the well. The U.S. government announced it was satisfied that oil would never leak from the well again.

### A Final Step

From the beginning, many experts argued that only a procedure called a "bottom kill" would guarantee a permanent seal on the Macondo well. This requires a relief well, drilled to intersect with the original well as deeply as possible. Once this intersection takes place, a liquid denser than oil is pumped into the well to suppress the flow. Cement is then pumped into the well to plug it permanently. In the case of the Macondo well, cement will now cap both ends of the well.

If the weather co-operates, BP expects to complete the relief well by the middle of September. With luck, by the time you read this, the Macondo well will be truly, permanently sealed.

## Follow-up

On September 2, 2010, another oil-drilling platform in the Gulf of Mexico suffered a major explosion and fire. No lives were lost and no oil or gas leaked into the Gulf. The U.S. Mines Management Service, which oversees drilling in the area, reports that there were 858 fires and explosions and 69 deaths on offshore drilling platforms in the Gulf between 2001 and 2010. The National Oceanic and Atmospheric Administration counted 3 858 active drilling rigs in the Gulf in 2006.

1. Looking at these statistics, how would you describe the industry's safety record: good, bad, or average? Would you be willing to take a job on one of the rigs? Why or why not?
2. Having reviewed the story of the development of the *Deepwater Horizon* disaster, can you identify any steps that could be taken to make offshore drilling safer for both the workers and the environment?

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## YV *The Impact*

**Did you know . . .**
The October 2010 issue of *National Geographic* will be devoted to putting the Gulf of Mexico oil spill into context, providing an in-depth analysis of oil exploration and its impact on the ecosystem. Check it out.

The overall impact of an environmental disaster the size of the *Deepwater Horizon* oil spill is staggering. As you read the following information, think about the ways in which the spill has already had an impact on the Gulf of Mexico and the surrounding area. And consider how the fallout extends well beyond the environmental damage caused by the spill.

### The Gulf Coastlands

Oil has come ashore along the coasts of five Gulf states: Texas, Louisiana, Mississippi, Alabama, and Florida. Oil on the beaches has been the visual focus of many news broadcasts, but it is in the wetlands where the largest potential for damage exists.

Most of the coastline is made up of sand and sediment, which soak up oil like a sponge. Many of the areas suffering the worst effects are estuaries that are difficult for remediation workers to get to because there are no roads in the area.

The wetlands of the Mississippi Delta have already been stressed by human impact and major storms, and have been disappearing at a rate of about 62 square kilometres per year. The entire ecosystem in the area is held together by its grasses, which the locals refer to as Roseau cane. These grasses are tough. If only the part of the plant above ground is damaged, it recovers fully. If the roots are killed, however, the plant dies and the soil it grows on is lost, taking an entire habitat with it.

"'This is America's great coastal wetlands,' said Larry Schweiger, president and chief executive officer of the National Wildlife Federation, noting that 90 per cent of all life forms in the Gulf of Mexico spend part of their life cycle in the marshes of Louisiana" (*The Globe and Mail,* May 5, 2010).

### Animal Life

The most obvious victims of the oil spill were seabirds. Pictures of pelicans, their feathers covered with oil, became an iconic image of the devastating effects of the oil. But all kinds of marine life were endangered. The blowout took place during the birthing period for dolphins, threatening the babies. Whales, blue fin tuna, and sharks were all seen swimming in the oil-polluted waters.

*Globe and Mail* correspondent Barrie McKenna spoke with Doug Rader, chief oceans scientist at the New York-based Environmental Defense Fund (June 5, 2010). He summarized Rader's comments as follows:

"The oil that doesn't come to shore is already mixing with powerful currents that run through the northern Gulf. These currents act as superhighways that move sought-after eating fish, such as grouper, snapper and tuna, from where they spawn to where they feed—sometimes hundreds of kilometres away. Studies have shown red snappers in the Gulf may travel as far north as North Carolina.

"Moving down through the water column to the sea floor, larger predator fish dive deep to feed on jellyfish, squid, shrimp, and other prey. If the oil affects any of these species, it hits the fish that dine on them. Exposed to enough oil, generations of fish could be wiped out, with potentially devastating ripple effects through the food chain. . . . .

"Oil that that doesn't evaporate may sink to the bottom as it travels along the current to Florida and beyond. Studies have shown crude oil, laced with dispersants, can eat away at coral within hours."

Canadians, however, have a special interest in what might happen to the Gulf's birds. Over 60 species of migratory birds make an annual trip south from Canada, stopping or staying in the Gulf of Mexico, with flights beginning as early as July. "Loons, pelicans, ducks, geese, cormorants, gannets, herons, and grebes are among the many species that could be harmed during their migrations. In all, one billion birds could be threatened, Greg Butcher, director of bird conservation for the U.S. National Audubon Society, told *The Miami Herald*" *(Toronto Star*, July 7, 2010).

## Commercial Fisheries

The offshore oil industry provides thousands of jobs to residents along the Gulf coast; so does the commercial fishery. About one-third of the seafood marketed in the U.S. comes from this area. The U.S. and Louisiana governments were quick to shut down commercial fishing in parts of the Gulf—totalling 200 000 square kilometres—throwing thousands of fishers out of work. Towns like Venice, Louisiana—where hundreds of fishers make their living along the coast—were especially hard hit.

Louisiana alone produces USD$3.4-billion per year worth of seafood, and most of this seafood fishery had to be shut down. If oil enters the food chain, the industry could be damaged for years to come.

Even if vulnerable seafood species like shrimp and oysters are unaffected by the spill, fishers worry that consumers will believe all Gulf seafood is tainted and refuse to purchase it.

## Tourism

The oil spill had an immediate impact on tourism. Many people cancelled holidays, believing that beaches would be fouled and swimming would be impossible. As the clean-up has proceeded, much of this tourist traffic has returned. The tourism operators most affected—and who may be affected for some time to come—are those who spend the most time in and on the Gulf waters. These include sport fishing boats and diving companies who have seen their tourist business disappear almost overnight.

## The U.S. Federal Government

President Barack Obama's administration has been criticized by some political commentators for being slow to act in dealing with the oil spill, leaving the job of clean-up in BP's grimy hands. Many of these people have called the oil spill "Obama's Katrina," comparing it to the failure of the Bush administration to deal effectively with the aftermath of Hurricane Katrina.

In response, the government sent 6 000 troops to Louisiana to assist with the clean-up. The president also ordered a halt to the issuing of new offshore drilling leases until a government panel reviews the *Deepwater Horizon* spill and ensures that regulations are in place to prevent future massive spills.

Just before the disaster, the administration had risked its standing with environmentalists by announcing plans to end an almost 30-year moratorium on oil exploration on the Outer Continental Shelf.

The federal government was also forced to admit that oversight of the offshore activities of the oil industry had been deficient. The Minerals Management Service (MMS) of the Department of the Interior had conflicting responsibilities. It both supervised drilling safety and awarded the lucrative leases to drill to the oil companies. The MMS will now be divided into independent components.

### The Oil Industry

The oil spill has also had a negative impact on the oil industry itself. The Gulf of Mexico produces more oil daily than even Alberta's oil sands. Current production is 1.6 million barrels per day. This output is expected to rise to 1.9 million barrels per day by 2025, thanks to the replacement of older oil fields by new deepwater sources.

The federally imposed moratorium on deepwater drilling in the Gulf alarmed the industry and area politicians and residents. Local politicians begged the administration to allow the resumption of deepwater drilling, arguing that the moratorium only worsened the local economic situation. A report from the International Energy Agency (www.iea.org) said "delays to new projects have already shaved 30 000 barrels per day off U.S. production for this year and 2011. Extended production delays could cut expected production in the Gulf of Mexico by up to 300 000 barrels per day by 2015. . . . The Gulf accounts for 30 per cent of the U.S.'s crude oil output, and the deepwater represents 80 per cent of that total" (*The Globe and Mail,* July 14, 2010).

A federal judge subsequently rejected the moratorium as being too wide reaching. The administration is appealing this ruling. The September 2, 2010, explosion of a shallow-water oil rig in the Gulf has strengthened the Obama administration's resolve to prevent further exploratory drilling until the safety of the methods being used can be demonstrated.

The *Deepwater Horizon* explosion also had an impact on the oil industry in Canada. Chevron has been permitted to continue with its deepwater exploratory drilling off the coast of Newfoundland, but the Canada-Newfoundland and Labrador Offshore Petroleum Board is also reviewing its supervisory procedures for guaranteeing safety at the well.

The greatest impact, however, will likely be in Canada's Arctic. Several major oil companies— including BP—are seeking licences to drill exploratory wells in the Beaufort Sea. They have asked the National Energy Board (NEB) to relax some of its regulations—especially one regulation that insists that companies be able to drill a relief well during the same season as they drill their main well. BP's problems in the Gulf make it highly unlikely that this requirement will soon be changed. If this is indeed the case, Arctic oil exploration will remain an especially expensive undertaking.

The full impact of the *Deepwater Horizon* blowout remains to be seen, and many observers believe it will be years before we know its full effects — economic, political, and environmental. Almost certainly, however, the blowout has forever changed the way in which offshore oil exploration will take place.

## Follow-Up

The *Deepwater Horizon* disaster's impact has been especially far-reaching, and dealing with that impact will be a major challenge for governments and industry alike. Where would you begin?

In small groups, choose two or three areas or groups—for example, marshlands, commercial fishers, or oil companies—that you believe should receive priority attention from those charged with responding to the disaster. Once you have reached a consensus, make a list of steps that should be taken as quickly as possible to deal with the crisis in that area or among that group.

Compare your list with those of the other small groups in your class. Is there any consensus on which areas should have priority in dealing with the disaster's aftermath?

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## *Why did this happen?*

Exactly why an explosion and fire on the *Deepwater Horizon* oil rig turned into a major ecological catastrophe will probably not be known for some time. Establishing the exact sequence of events likely awaits the raising of the rig and its examination by experts. Meanwhile, speculation is ongoing, and commentators have not hesitated to suggest a variety of reasons.

### Hubris?

In classical Greek tragedy, *hubris* was the term used to describe a character's excessive pride, which invited punishment by the gods. Currently the term is used to describe arrogant pride or presumption on the part of individuals or groups—a presumption that can invite disaster.

Following the explosion, many commentators were quick to argue that BP's exploration plan and environmental impact analysis for deepwater drilling in the Gulf of Mexico was a fine example of hubris. The *Toronto Star* (May 1, 2010) noted that the plan repeatedly stated that it was "unlikely that an accidental surface or subsurface oil spill would occur from the proposed activities." And, even were there a spill, "due to the distance to shore (48 miles [77 kilometres]) and the response capabilities that would be implemented, no significant adverse impacts are expected."

The article continues to say that "Robert Wiygul, a Mississippi-based environmental lawyer and board member for the Gulf Restoration Network, said he doesn't see anything in the document that suggests BP addressed the kind of technology needed to control a spill 1.5 kilometres below the sea surface."

### BP's Safety Record

Many observers of the oil industry also noted BP's less-than-stellar safety record. BP had often been accused of reckless behaviour in its attempts to make record profits.

In 2005, an explosion at BP's Texas City refinery killed 15 people and injured another 170. As a result, in addition to paying $2-billion to settle a civil law suit, BP received the largest fine ever handed out under the U.S.'s Clean Air Act. In 2009, the Occupational Health and Safety Administration imposed another $87-million fine for deficiencies that BP failed to correct at the same refinery. (BP is appealing this ruling.)

BP was also levied another substantial fine when its Prudhoe Bay pipeline in Alaska leaked more than 800 000 litres of crude oil in 2006.

Perhaps even more telling is the following information from *Fast Company* magazine: "Between June 2007 and February 2010, the Occupational Health and Safety Administration (OSHA) checked 55 oil refineries operating in the U.S. Two are owned by BP, and those racked up 760 citations for 'egregiously wilful' safety violations—defined as committed with plain indifference to or intentional disregard for employee safety and health. The other 53 refineries—put together—only received *one* such violation"

(www.fastcompany.com/1658137/infographic-of-the-day-bps-horrifying-safety-record).

### Poor Regulation

Fingers have also been pointed at the U.S. Minerals Management Service (MMS), an agency of the Department of the Interior that oversees offshore

drilling. According to *Time* (June 21, 2010): "Regulatory capture—the tendency of too many government overseers to get too friendly with the industry they're supposed to be monitoring—has been especially acute in MMS. The agency is responsible both for the safety of energy exploration and for leasing federal territory for drilling, which brings in billions to the government. That inherent conflict—selling to the industry even while supposedly overseeing it—undermines MMS, which has been exposed as both ineffective and corrupt. A 2008 report by the Interior Department's inspector general found that MMS employees had used drugs, accepted gifts from and had sexual relationships with energy-company representatives. Another report, issued last month, found similar practices were still occurring, with at least one MMS worker negotiating for a job with an energy company while simultaneously inspecting its Gulf platforms."

*Time* goes on to argue that BP's disaster response plan was both outdated and flawed, but MMS allowed them to drill anyway, did not require that BP have response equipment nearby, and required no back-up system for the blowout preventer that failed and caused the leak. The U.S. government is breaking up the MMS into different departments in hopes of better supervising the oil-drilling industry.

### Engineering and Equipment Problems

The explosion on the *Deepwater Horizon* caused the oil leak when it severed the large pipe—called a riser—that connected the rig to the well on the ocean floor.

It has become increasingly apparent that BP had advanced warning that there were problems with its deepwater well. As early as June 2009, engineers had warned the company that the metal well casing it was planning to use could collapse under pressure (*Toronto Star*, May 30, 2010). BP's senior drilling engineer, Mark Hafle, wrote in his report: "This would certainly be a worst-case scenario. However, I have seen it happen so know it can occur." Despite this assessment, and the fact that the casing failed to meet the company's safety policies, BP went ahead with its plans. Furthermore, well before the explosion, BP was also having problems with unexpected eruptions of methane gas (called "kicks"), and admitted to U.S. regulators that they were having problems with "well control."

It was the failure of one piece of equipment—the blowout preventer—that made the disaster inevitable. This is a large safety valve—as big as a boxcar—that is placed at the top of the well on the ocean floor. It is designed to shut off the flow of oil in an emergency. This time it failed to function properly; why this happened is not yet clear.

What is clear, however, is that BP had asked the manufacturer to modify the device to make it easier and more cost-effective to test. The valve, on at least three occasions, developed hydraulic leaks. The manufacturer has indicated that this would affect its ability to perform properly.

The above items are likely just some of the reasons that will be identified for what has become the largest oil spill in U.S. history.

## For Discussion

On the *Today* show, President Obama expressed his unhappiness with the *Deepwater Horizon* explosion and oil leak. He said he was eager to determine "whose ass to kick." If you were the President, whose ass would you kick first?

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## YV *Could it happen here?*

**Quote**
"This rig explosion amplifies the risk for us and really drives home that modern technology doesn't stop environmental disasters from happening. . . . It reinforces that it's not a question of if, it's a question of when there's going to be an environmental disaster." — Stephanie Goodwin, a senior campaigner for Greenpeace in Vancouver (*The Globe and Mail,* April 30, 2010)

**Further Research**
Excellent information on the *Ocean Ranger* disaster is available from the CBC archives on its Web site at archives.cbc.ca/environment/extreme_weather/topics/349/.

Canadian waters host a number of offshore oil and gas wells, and several companies hope to expand that number in the not-too-distant future. Existing wells are located off the east coast of Canada. For example, the Sable Offshore Energy Project, located near Sable Island and Nova Scotia, is a significant producer of natural gas. Three major producing oil fields—Hibernia, Terra Nova, and White Rose—are located off the coast of Newfoundland. Exploratory drilling continues in these and other areas along the east coast.

### The *Ocean Ranger*

Canada has already lost a major oil rig in the Hibernia oil field. In February 1982, the *Ocean Ranger,* a large, self-propelled rig, was lost when a major storm hit the area. The loss was especially tragic; 84 workers were killed.

While the loss of the *Ocean Ranger* did not result in the blowout of an underwater well, it did bring home to Canadians the fact that offshore drilling has real risks. A Royal Commission into the cause of the disaster blamed a combination of design problems and poor training for the crew.

The rigs currently working in the Atlantic oil fields are very different from the *Ocean Ranger*. But, as the *Deepwater Horizon* disaster has demonstrated, even the most technologically advanced rigs can be compromised.

### Canadian Regulators

Three major agencies are currently involved in regulating the exploration for and mining of offshore oil and natural gas. These include the National Energy Board (www.neb-one.gc.ca/clf-nsi/rcmmn/hm-eng.html), with responsibility for areas not regulated under joint federal-provincial agreements; the Canada-Newfoundland and Labrador Offshore Petroleum Board (www.cnlopb.nl.ca); and the Canada-Nova Scotia Offshore Petroleum Board (www.cnsopb.ns.ca). All of these regulators argue that a *Deepwater Horizon* disaster is unlikely under their jurisdiction.

Unlikely, perhaps, but not impossible. Canada's East Coast is currently the only area of North America where deepwater exploratory drilling (similar to the work of the *Deepwater Horizon*) is permitted. Chevron is currently drilling in 2 600 metres of water in the Orphan Basin, about 430 kilometres off the coast.

Environmentalists have urged the Canada-Newfoundland Offshore Petroleum Board to tighten regulations for Chevron and other oil companies working in deep water. They worry that equipment to deal with major problems like blowouts would take days to reach the site of the problem. They would especially like to see companies drill a relief well along with their main well, which would guarantee a quick, effective response to a blowout.

Giving a rather peculiar twist to the controversy, Premier Danny Williams of Newfoundland and Labrador has said that a major oil spill in the area would pose little danger to Newfoundland's shores, because the oil would stay out at sea. No new regulatory measures are required. The C-NLOPB has suggested that it is unlikely that more than five per cent of a spill in the Orphan Basin could be cleaned up, and that chemical dispersants would probably be a better solution. But Chevron has said that

a blowout in the area is a potential disaster threatening seabird populations and even the Atlantic fisheries.

### Arctic Exploration

No regulator is currently under greater pressure than the National Energy Board (NEB), which has jurisdiction over energy exploration in Canada's Arctic. The NEB is currently pondering awarding exploration licences permitting drilling in the Beaufort Sea. Several major corporations, including BP, have been trying to get the NEB to relax its drilling regulations in the Arctic.

The NEB currently has a rule that "stipulates that any company drilling an offshore well must also be able to drill a relief well in the same season. Relief wells are used in an emergency to stop an out-of-control well by using a drill to pierce the leaking well and stop its flow. The ability to drill a relief well in the same season is especially important in the Arctic, where thickening ice typically forces a halt to all drilling by December. If a relief well can't be completed by then, oil could continue to leak into the ocean for months—possibly years—until the problem is fixed" (*The Globe and Mail*, April 30, 2010).

The oil companies argue that technological advances, including extra blowout preventers, would provide an equivalent level of safety to a relief well. Not so, says Mike Miller, CEO of the well-control company SafetyBoss. "I would have a problem with removing the same-season relief well rule," he said. "It's the only sure shot" (*The Globe and Mail*, April 30, 2010).

Prime Minister Stephen Harper has said in Parliament that Canada should not relax its rules for offshore drilling. The NEB, looking at the *Deepwater Horizon* disaster, also seems to be digging in its heels. It has notified the oil industry that it will be including questions about the disaster in its future hearings on drilling in the Arctic.

## Analysis

The *Toronto Star* has suggested that an NEB review may not go far enough in safeguarding Canada's Arctic waters during offshore drilling. In an editorial (May 30, 2010), the editor wrote: "Yes, the Gulf spill is happening in American, not Canadian, waters. But the Gulf spill is also a wake-up call to the world, not just to Americans, that offshore drilling can go disastrously wrong. Our government should respond to that wake-up call more aggressively. The appointment of our own external panel to look at offshore drilling rules and regulations, rather than solely an in-house NEB review, would be a good place to start."

Do you agree that an outside, expert panel should examine this issue? Or can we continue to rely with confidence on our existing regulatory mechanisms? Why or why not?

# THE OIL SPILL IN THE GULF OF MEXICO

## YV *Activity: Consider Possible Changes*

Now that you have had a chance to review the video and material in this guide, how do you think Canada should proceed in licensing deepwater drilling in Canadian waters? Is it full speed ahead—pretty much the attitude of the Canada-Newfoundland and Labrador Offshore Petroleum Board? Or would you prefer to see a moratorium similar to the one in effect in the United States and a full review of safety procedures on drilling rigs? Do you have special concerns about drilling in Arctic waters? Are there modifications to current practices that you would like to see made?

Whatever your opinion, don't hesitate to express it. Speak up. Go right to the top. Write a one-page letter telling the chairperson of the appropriate regulatory agency exactly what you believe about the future of offshore drilling in Canada.

For drilling in the Canadian Arctic, write to:

Mr. Gaétan Caron
Chair and CEO
National Energy Board of Canada
444 Seventh Avenue SW
Calgary, Alberta
T2P 0X8

The NEB URL is www.neb-one.gc.ca/clf-nsi/index.html.

For drilling in deep water off the coast of Newfoundland, write to:

Mr. Max Ruelokke
Chairman and CEO
Canada-Newfoundland and Labrador Offshore Petroleum Board
5th Floor, TD Place
140 Water Street
St. John's, NL
A1C 6H6

The C-NLOPB URL is www.cnlopb.nl.ca.

Be sure to give a copy of your letter to your teacher.