

# [An ethical case study engineering essay](https://assignbuster.com/an-ethical-case-study-engineering-essay/)

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## Part 1: Ethical Case Study

## Section 1: Introductory Background

24 April 2010, United State Gulf of Mexico case of oil spill leads to the world's attention. According to the report, The U. S. premature opening of deep-sea oil exploration as well as the British Petroleum busy to catch up period is the main cause of the Gulf oil spill. These artificial and engineering mistakes causes 11 people were dead. On the night of April 20 2010, in the Gulf of Mexico deepwater horizon drilling platform was exploded and caused the fire. This platform is belongs to a Swiss Transocean Drilling Company which was lease by British Petroleum (BP). The report shows that the Gulf of Mexico Deepwater Horizon rig explosion triggered by a bubble of methane and Oil spill last line of defense " blowout preventer valve" failure condition previously occurred. While Workers set up and test a cement seal at the bottom of the drilling, then decreased the pressure inside the drill pipe, trying to set up a cement sealing. In this time, set the seal caused by the chemical reaction to generate heat, led to a methane bubble generation, leading to destruction at sealing. The rig workers observed a sudden jet of the drill pipe, followed by gas and crude oil to take up, gas flock to a combustible material room followed by a series of explosions occurred. The sinking of the " Deepwater Horizon" lead a large number of oil spills; this has been resulted in pollution of the surrounding environment. As the last bulwark to prevent oil leakage, the blowout preventer valve installed at the wellhead, in the event of an oil spill off the tubing. Deepwater Horizon blowout preventer valve does not start properly. The oil spill caused huge economic losses and environmental pollution.

## Section 2: Problem Presentation

All through the BP internal investigate Gulf of Mexico Deepwater Horizon rig explosion triggered by a methane bubble. In addition, the oil spill last line of defence " blowout preventer valve failure condition previously occurred. Workers at the bottom of the drilling set up and test cement seal, then reduce the underwater oil spill scene within the drill pipe pressure, trying to set up a cement sealing. In this case, the chemical reaction caused when the seal is set to generate heat, and contribute to a methane bubble generation, resulting in the destruction of this sealing at. Methane at the bottom of the sea is usually in the crystalline state. Methane crystals often encountered in deep-sea drilling platforms. The methane bubbles rose from the bottom of the drill pipe high pressure to low pressure at the break through several security barriers. The rig workers observed a sudden jet of the drill pipe, followed by gas and crude oil to take up. Gas flock to combustible room, the first blast occurred. Followed explosions lit to take up the crude oil. Then rise to a " gas cloud" hooded " Deepwater Horizon". The drilling platform large engine immediately explosion fire everywhere. The sinking of the " Deepwater Horizon" a large number of oil spills, the threat to the surrounding ecological environment. This rig is equipped with the " blowout preventer valve" has become the focus of investigation. A " blowout preventer valve weighs 290 tons. As the last bulwark to prevent oil leakage, the blowout preventer valve installed at the wellhead, in the event of an oil spill off the tubing. Deepwater Horizon blowout preventer valve does not start properly." Deepwater Horizon" equipped with an automated backup system. The system should be activated when workers failed to start the blowout preventer valve, but it was not functioning. After the incident, BP try to rely on underwater robots start the blowout preventer valve did not work. The Associated Press reported that, since the federal government regulators to relax after the device detects a few years, the number of Block drilling platform blowout preventer valve failed to play its due role.

## Section 3: Problem Analysis

The oil spill at Gulf of Mexico is the largest oil spill in history. The explosion underground causes an oil leakage underground. At that time, there was a lot of way to remove the oil spill around the Gulf of Mexico. But all the ways can’t totally remove the oil spill. The companies that operate this oil driller already use many ways to control the oil spill no matter it was very difficult. But at last, this company also can’t repair the leakage underground. On 24th April 2010, U. S coast guard state those 2 days after the explosion, the damaged wells in the sea began to spills. The detector probe under the sea state that there is already began oil spill underground. Estimate that the amount of oil spills is around 1000 tank. On 28th April, U. S coast guard also say that, the sinking of the offshore drilling platform spill out around 5000 tank of oil and it is 5 times compare to 24th of April 2010. Wells continue spill oil and on the days, engineers found another new leakage. To prevent the floating oil flow to the U. S coast, U. S relief agencies round up the floating oil and burn it. Estimate the burned oil is up to thousand of liters of oil. On 5th of July, engineer of the company sink a large-scale reinforcement of concrete into the sea to close the leakage and allow the oil spill to goes into the tankers. But the way, the leakage also spill natural gasses encounter with cold water and cause a condensation. At last, this method also can’t works. The oil keep leak underground and it’s easy to mix with the sea water and form viscous mixture that very hard to clear up. High wind and waves cause the floating oil flow to some sensitive coastal area. There are three type of seaside: sandy beaches, rocky beaches and marshes beaches. The most difficult cleaning seaside is marshes beaches. On 15th July 2010, 3 month after oil spill at Gulf of Mexico. The company announce that new technology that use to stop the leakage underground already success and no more oil spill around Gulf of Mexico.

## Section 4: Conclusions and Suggestions

This Gulf disaster has caused significant impact on both economic and environment issues. These impacts are still going on until now. There is no doubt that British Petroleum Oil Company should take full responsibility on this case but also US government. Development permits of petroleum are given too frequently. The security issues on building oil rig are getting less concern compare to the profit that it can earn. Furthermore, after the incident happen, US government reflect slow and its crisis management capabilities are being doubted. After the oil leak incident become worse, the government is still giving full authorities to British Petroleum Oil Company to do the recovering jobs. This is a full range ecological disaster; it is difficult to absolve the responsibility of US government in terms of power and principle of fairness. Environment pollution that caused by this crude oil leaked is difficult to bring the area to its original state. The plugging and collection of crude oil and the ecological, financial and personal compensation matters are a long way to go; these can’t be bear up by BP independently, the US government should also take the subsequent responsibility, instead of financial compensation but also deal with the future ecological restoration issues and provide appropriate aids.

## Part 2: Code of Ethics Development

I) Being honest and impartial when servicing with fidelity the public, employers and client. In the article shown that Gulf of Mexico had occurs the oil spill news, this accident can be prevented if the particular engineers giving the truth that if rush to finish the project that may occurs some technical and environmental problem. Engineers also need to prove the study of the land construct to their employers, advise them to follow the schedule of the project to prevent the accident. II) Cooperation between engineer and employer who’s willing to accept the professional advice from engineers. As a professional engineer, he/ she must be truthful and objective. Engineers can not break the rule or ethics to sign any contract or project that may happen unexpected. As a legal company, they must follow the advice from engineer if they state the project had problem. Company listened to the professional advice from engineer that will not explosion and let the oil spills into the sea. III) Should hold paramount the safety, health and welfare of the public in the performance of their professional duties. Engineers should responsible to the safety of the public and worker. He/ She cannot approve the project that may occur accident for the employer. Explosion that may sacrifice many lives, if the project do not rush to finish and followed the contract period that will not happen. Employer and engineer should take care of the live that hold in their hand. IV) Should protect the environment that around the project development and healthy of the resident. Although, engineer give the image to public is destruct the environment natural but they had a responsibility to protect the environment issues. In this case, Engineer should try to persuade employers do not rush to finish the project in order to prevent to explosion and oil spill. If the engineer and employer follow the schedule and the step to build the oil tank, explosion might not happen and the oil spill also. This security measure is taken, the sea will not be polluted by the oil. V) Using their knowledge and skill for enhancement of human welfareEngineer should using their knowledge and skill to enhance of human welfare. They must receive particular education and apply their knowledge to build a safe and good environment for human. They had to take responsible to their decision. In this topic of the assignment, the Engineer is apply their knowledge and skill for enhancement for human welfare but thy haven take the security measure to make sure that the project was not problem. If their can carefully read and study of the land and environment status, the explosion and oil spill will be prevented.