

# **AD642 Individual Assignment 2**

## **The BP Macondo Well Case**

Xavier Bogaerts

Boston University – MET College

AD642 A1 Project Management

Spring 2019

## Executive Summary

The BP deepwater Horizon is one of the worst industrial catastrophes ever due to the oil rig explosion on April 20, 2010, in the Gulf of Mexico. Eleven people died in what has become the worst oil spill in the United States lasting 87 days with 507 million liters of oil spilled in the sea (US Environmental Protection Agency, 2017). Multiple failing went right up to the top management of the companies involved and multiple points at which it could have been averted. In this report we addressed three of their major issues:

- *BP's safety culture*
- *BP's risk-seeking culture*
- *The lack of ethics values*

Issues will be identified then practical solutions to these issues will be presented. Finally, recommendations will be made based on the pros and cons of each solution and thanks to the solution ranking matrix.

## Background

The BP deepwater Horizon is one of the worst industrial catastrophes ever due to the oil rig explosion on April 20, 2010, in the Gulf of Mexico. Eleven people died in what has become the worst oil spill in the United States lasting 87 days with 507 million liters of oil spilled in the sea (US Environmental Protection Agency, 2017).

A single cause is not at the origin of the tragedy of the Macondo well. It is rather a 'collection' of errors that led to the explosion and the fire of the platform. The leak was indisputably caused by technical failures, but those –in turn - could have been avoided or at least lessened in impact and probability if they had not had deeper organizational and systemic failures within BP. The US Federal investigation identified the technical failures that led to the blow out, it includes: the cement failing to seal the bottom of the well, lack of centralizers in order to center the pipe when pouring the cement, the blowout preventer malfunction, the high pressure in the drill and the cement formula that was not certified to function properly, etc.

However, multiple failure causes, in this author's opinion, are traceable to project management issues, which in turn can be linked to the top management of the companies involved and multiple points at which it could have been averted. The three top issues that we can identify are **BP's safety culture**, **BP's risk-seeking culture** and the **lack of ethics values**.

I will discuss three major project issues that have been identified within the "BP and the Deepwater Horizon Disaster of 2010" that led up to the explosion and oil spill. Solutions and their pros and cons will then be introduced along with recommendations of how the disaster could have been avoided.

## Issues Identification

### Issue 1

The first issue and the most important concerns **BP's safety culture**. In fact, despite the fact that BP had publicly declared its commitment for safety, BP had multiple issues with safety breaches. In a previous accident in BP's Texas City refinery which killed 15 persons, the investigation report that they purposely cut back the maintenance and safety measures in order to limit costs.

Even after trying to improve personal safety, BP misunderstood that by decreasing and having a lower personal injury rates do not mean that safety process is well implemented. According to Ingersoll C. and al. (2012) U.S. refinery workforce believe that process safety is not a core value at BP. Meaning that in BP the workforce is not able to perceive a clear corporate message coming from BP's executive.

In BP's 18 values, only one concerns health and safety, it claims: "no accidents, no harm to people, and no harm to the environment" But nothing clear is stated concerning safety process and it has never been a real commitment for BP. They never tried to implement new safety policies and processes, it has been seen more as a way to communicate and articulate a "safety" message to maintain a respectable corporate image than a real way to establish long-term change into their safety process.

### Issue 2

The second issue is BP's **corporate risk management appetite** which is very risk-seeking. It has been stated that BP's culture is one that values doing as much as they can for a minimum budget. It was expected that the Macondo well project had a budget of \$96.2 billion and was scheduled to take place in 51 days. In addition, the well started to be functional in January of 2010 and the explosion occurred in April, so less than 3 months after the effort began.

Indeed, the project was six weeks behind schedule and \$58 million over budget (National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, 2011), with such time and cost constraints we can surely imagine that decisions had been made in alacrity.

Moreover, with the technical issues that happen previously the blowout of Deep-Water Horizon, we can affirm that with a proper risk management it would have unquestionably reduced, if not eliminated, the probability of the blowout. In the conclusion stated in the National Commission's report (2011), the explosive loss of the Macondo well could have been prevented. In fact, decisions made before and during the disaster were never subject to an official risk assessment.

Furthermore, BP was conscious that they needed to provide maintenance to their machinery in order to be in compliance. Indeed, a week before the accident, the blowout preventer (BOP) was accidentally deteriorating (Greene-Blose, 2015). As an example, one of the sensors of the control pod was not working due to an emptied battery and the other was not working due to a defective solenoid valve (National Commission, 2011). In fact, no one in the Deepwater horizon workforce and executive took the necessary actions to solve this problem. According to Hillson R. & Webster M. (2005) what characterizes risk seekers' is that they tend to downplay threats.

One week prior to the blowout, the project team had actually failed to identify risk triggers resulting in an extreme threat. Consequently, both the probability and impact of this risk has become more important, it is then too late for preventive action, the risk is accepted.

### Issue 3

The third issue concerns the **lack of ethics in BP's core values..** Or at least the conveyance of those values to project team members. According to Jennings M. (2010): "BP's management principles, business plans, and codes of ethics focused on safety and compliance, [but] something was

lost in translation between words and actions. The message in the written materials was not the message that the employees heard or followed.

There was a long-standing cultural disconnect between outward appearances and internal behaviors.” In fact, corporate ethics were sacrificed when it came to catch up their delay.

Moreover, Mr. Reilly, the former president of the United States environmental protection agency, denounced "a culture of complacency" among BP corporations, resulting in "bad decisions" as they were preparing to complete the drilling of the "Macondo" well at 1,500 meters below the sea surface. In fact, there has been precipitation in the realization of the well because on site asset managers were rushing in order to meet performance targets. Furthermore, they extended this practice among all employees working on the site, so employee compensation was tied to asset performance and the overall performance of the site. We can easily imagine how this manner to behave can impact the project quality and push employees to question the respect of ethics.

Leadership responsibility, which is receiving more attention, has been widely discussed in the context of large corporations that are suffering the consequences of their actions (or inaction). Managers are often accused of acting selfishly and sacrificing the company's bottom line for their own benefit. Already in the 1970s, Jensen and Meckling (1976) were suggested ways to counter such behavior or to encourage managers to act in the interest of the company and the society.

In a general way, the CEO needs to enhance shareholder value, in line with the expectations of the shareholders and, respectively, the management committee. However, what we do not know is how it is supposed to achieve that goal, that is to say, what risks he must take. The CEO must therefore improve the security aspect so as to minimize operational risks and limit potential liabilities. In the case of BP, during the trial, Tony Hayward emphasized the \$14 billion invested in security since his appointment as CEO, but he was not able to say how it was spent. That's why it is important spending

the time needed in order to investigate even the most minor failure and then implementing the appropriate changes.

### **Proposed Solutions Table**

| <b>Issues # - Solution #</b> | <b>Solution</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1-1</b>                   | Create a company-wide initiative safety program that states clear safety practices and standards that must be respected, with sanctions in case of safety violation.                                                                                                                                                                                                                                                                                                                 |
| <b>1-2</b>                   | Training in order to educate the employee properly concerning the safety practices to be in compliance.                                                                                                                                                                                                                                                                                                                                                                              |
| <b>2-1</b>                   | Value scope by shifting from a risk-seeking company to a risk-adverse company, this strategic change will impact positively BP company in a long-term vision.                                                                                                                                                                                                                                                                                                                        |
| <b>2-2</b>                   | Establish a thorough risk management by providing a Plan Risk Management in order to decrease the risk tolerance level, according to Greene-Blose, J. M. (2015): “A simple cause and effect diagram (also known as a fishbone or Ishikawa diagram), useful for identifying, assessing, and understanding the root cause of risks (Project Management Institute, 2013, p. 236), may have provided the necessary insight into the appropriate risk quantification and response at BP.” |
| <b>2-3</b>                   | Establish thorough ERM throughout organization in order to reduce the risk of regulatory non-compliance and allow BP to provide maintenance for their equipment when it is needed.                                                                                                                                                                                                                                                                                                   |
| <b>3-1</b>                   | Modify the policy concerning the asset federation model for meeting performance targets in order to not sacrifice quality and ethics over budget and time constraints.                                                                                                                                                                                                                                                                                                               |
| <b>3-2</b>                   | Create a monitoring program and ethical training for all BP employees resulting in leadership empowerment.                                                                                                                                                                                                                                                                                                                                                                           |
| <b>3-3</b>                   | Implement a company-wide communication plan and encourage whistleblower in order to push employees to report unethical behavior.                                                                                                                                                                                                                                                                                                                                                     |

## Pros and Cons Matrix

| Solution                                                           | Pros                                                                                                                                                              | Cons                                                                                                                                                     |
|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1-1 Create a company-wide initiative safety program                | <ul style="list-style-type: none"> <li>• Impact future profit by reducing repair costs for major disaster</li> </ul>                                              | <ul style="list-style-type: none"> <li>• Take time to be integrated in every employees' behavior</li> </ul>                                              |
| 1-2 Implement safety training and practices                        | <ul style="list-style-type: none"> <li>• Fewer workplace incidents/ employees have better responses and behavior</li> </ul>                                       | <ul style="list-style-type: none"> <li>• Take time to create those kinds of a training</li> <li>• Very costly to establish</li> </ul>                    |
| 2-1 Shifting from a risk-seeking company to a risk-adverse company | <ul style="list-style-type: none"> <li>• Value and quality over cost and time constraints</li> <li>• A better long-term vision</li> </ul>                         | <ul style="list-style-type: none"> <li>• Take time to realign corporate strategy</li> <li>• Change is difficult to adopt</li> </ul>                      |
| 2-2 Build a strong risk management                                 | <ul style="list-style-type: none"> <li>• Risk quantification</li> <li>• Better responses in case of occurring</li> </ul>                                          | <ul style="list-style-type: none"> <li>• Take time before the project execution</li> </ul>                                                               |
| 2-3 Establish thorough ERM through BP company                      | <ul style="list-style-type: none"> <li>• Limit the risk to be in non-compliance</li> <li>• Investments are made on purpose when needed</li> </ul>                 | <ul style="list-style-type: none"> <li>• Can be expensive to implement though the company</li> </ul>                                                     |
| 3-1 Modify asset federation model policy                           | <ul style="list-style-type: none"> <li>• Limit the pressure for asset managers to meet the performance target</li> <li>• Quality over Cost constraints</li> </ul> | <ul style="list-style-type: none"> <li>• Less decision making for the asset managers, limit their actions</li> </ul>                                     |
| 3-2 Create a monitoring program and ethical training               | <ul style="list-style-type: none"> <li>• Improve leadership empowerment</li> <li>• Encourage good behavior and positive management</li> </ul>                     | <ul style="list-style-type: none"> <li>• It is costly to create training all over the company</li> <li>• Employees can be reluctant to change</li> </ul> |

|                                                 |                                                                                                                                                |                                                                                                                                                  |
|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 3-3 Implement a company-wide communication plan | <ul style="list-style-type: none"> <li>• Encourages open exchange of information and viewpoints</li> <li>• Limit unethical behavior</li> </ul> | <ul style="list-style-type: none"> <li>• Whistle-blower may be misunderstood and seen as oppressive</li> <li>• Take time to implement</li> </ul> |
|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|

### Solution Ranking Table **[NOTE: NOT REQUIRED]**

| Solution                                                           | Likelihood of Success | Difficulty Implementing | Solution Score | Solution Rank |
|--------------------------------------------------------------------|-----------------------|-------------------------|----------------|---------------|
| 1-1 Create a company-wide initiative safety program                | 5                     | 5                       | 25             | 1             |
| 1-2 Implement safety training and practices                        | 4                     | 4                       | 16             | 3             |
| 2-1 Shifting from a risk-seeking company to a risk-adverse company | 4                     | 5                       | 20             | 2             |
| 2-2 Build a strong risk management                                 | 4                     | 3                       | 12             | 5             |
| 2-3 Establish thorough ERM through BP company                      | 3                     | 5                       | 15             | 4             |
| 3-1 Modify asset federation model policy                           | 2                     | 2                       | 4              | 6             |
| 3-2 Create a monitoring program and ethical training               | 3                     | 4                       | 12             | 5             |
| 3-3 Implement a company-wide communication plan                    | 3                     | 3                       | 9              | 7             |

### Recommendations

As a recommendation we can focus on the proposed solutions table and pros/cons matrix cross results. In the solution ranking table above, we can see that the solution with the highest likelihood of success (Create a company-wide initiative safety program) is also the most difficult challenging to achieve. However, it will allow BP to implement an efficient and durable vision in order to provide the necessary measures to prevent from future disaster. Moreover, if other major accidents happen in the upcoming years, BP will not be able to recover the important monetary debt and its reputation will be severely damaged. Furthermore, based on the solution ranking table, BP should focus, first of all, in some solutions that have priority for the reinstate their credibility. First of all, they have to create a

company-wide initiative safety program, secondly, they need to shift from a risk-seeking company to a risk adverse one and finally they need to implement safety practices and training for their employee. These three solutions, if prioritized immediately can really decrease and mitigate upcoming potential disasters.

## References

- Beever, J., & Hess, J. L. (2016). Deepwater Horizon oil spill: An ethics case study in environmental engineering. American Society for Engineering Education.
- Graham, B., Reilly, W. K., Beinecke, F., Boesch, D. F., Garcia, T. D., Murray, C. A., & Ulmer, F. (2011). *The National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. Deep Water. The Gulf Oil Disaster and the Future of Offshore Drilling*. Report to the President.
- Greene-Blouse, J. M. (2015). *Deepwater horizon: lessons in probabilities*. Paper presented at PMI® Global Congress 2015—EMEA, London, England. Newtown Square, PA: Project Management Institute.
- Hillson, D. A., & Murray-Webster, R. (2006). *Understanding risk attitude*. Association for Project Management (APM) Yearbook 2006/2007, 25-27.
- Ingersoll, C., Locke, R. M., & Reavis, C. (2012). *BP and the Deepwater Horizon Disaster of 2010*. MIT Sloan School of Management, Case Study.
- Jennings, Marianne M. *WHAT BP TEACHES US ABOUT ETHICS, RISK, AND BUSINESS MANAGEMENT*. Corporate Finance Review 15.2 (2010): 38-42. ProQuest. Web. 21 Apr. 2019.
- Jensen, M. C., & Meckling, W. H. (1976). *Theory of the firm: Managerial behavior, agency costs and ownership structure*. Journal of financial economics, 3(4), 305-360.
- Julie, C., (2016). *A Case Study in Engineering Ethics: The Deepwater Horizon Disaster*. A SunCam online continuing education course, Case Study. Retrieved 4/16/2019 from: <https://s3.amazonaws.com/suncam/docs/257.pdf?1527836384>
- O'Connor, E. O. H. (2011). Organizational apologies: BP as a case study. Vand. L. Rev., 64, 1957.
- US Environmental Protection Agency. (2017). *Deepwater Horizon – BP Gulf of Mexico Oil Spill*. Retrieved 4/15/2019 from: <https://www.epa.gov/enforcement/deepwater-horizon-bp-gulf-mexico-oil-spill>