



جامعة الجميع الذكية
EVERYONE'S SMART UNIVERSITY

Everyone's Smart University

Project (Spring 2021)

Project Risk Management

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Project Name: Field Development Plan

1. INTRODUCTION

The objective of this project is to develop the oil and gas field by constructing new static and dynamic models to perform the following:

- Calculate the Original Oil & Gas in Place (OOIP & OGIO)
- Estimate the Oil & Gas reserve
- Production strategy to achieve the sustainable target rate.
- Develop the oil and gas facilities

I have assigned as a project manager and I will be the responsible for the successful completion and final results of this project by submit the required deliverables with time, budget and specifications. This project/research will address on the following issues:

- Identify the sources of risks
- Assess risks in terms of severity of impact and likelihood of occurring
- Indicators or triggers that would be monitored to help identify the risk
- Risk response strategies
- Expected Monetary Value (EMV) Calculation for all risks

Risk is often defined in terms of uncertainty or deviation from the expected/required outcomes. Risk management helps and supports an organization to identify, evaluate, analyze, monitor, and mitigate the risks that threaten the achievement of the organization's strategic objectives in a disciplined and systematic way. Risk management is intentionally proactive, not reactive. It can be as simple as one crew member mentioning that a coworker needs to wear her safety glasses, or it may involve something as complex as a full asset allocation modeling of all of your organization's capital assets. Risk management practices can even be applied to events as broad and far-reaching as the loss of a major employer in the community. Different situations and events can simultaneously result in both good and bad consequences. Each

consequence may require a different risk management strategy. The following are the most benefit of the risk management:

- A proactive rather than reactive approach.
- Reduces surprises and negative consequences.
- Prepares the project manager to take advantage of appropriate risks.
- Provides better control over the future.
- Improves chances of reaching project performance objectives within budget and on time.

2. LITERATURE REVIEW

There are many studies of cases to manage the risk for any projects to reduce the likelihood and the impact of any risks occurred. The following are case studies for how to manage the risks in oil and gas companies:

2.1 Risk Management of Oil and Gas Company in Terms of Strategic Transformations

Lenkova (2017) explained the urgency of the use of risk management in the oil and gas industry. The author explained the risk management functions of Russian oil and gas companies. Lenkova demonstrated and distinguished the major risks. Political, socioeconomic, environmental, and scientific-technical external risks are identified. However; the author proposed to prepare the internal risks as well; risks of production activity, risks of the support activity, risks in the reproductive sphere, risks in the sphere of circulation, and risks in the sphere of management [1].

2.2 Necessity to Study of Risk Management in Oil and Gas Industries (Case Study: Oil Projects)

Karami (2020) explained the need to study the risk management in oil and gas related projects as many projects experience operational failures and issues and this

could be prevented by risk management methods. The author also explained the advancement of the software and hardware methods in risk assessment approaches. The authors also explained the importance of risk management in Iranian companies and how the implementation of such methods will aid project managers in succeeding in their projects [2].

3. METHODOLOGY

The risk management process begins by trying to generate a list of all the possible risks through brainstorming, problem identification and risk profiling that could affect the project. Typically, the project manager pulls together, during the planning phase, a risk management team consisting of core team members and other relevant stakeholders. Research has demonstrated that groups make more accurate judgments about risks than individuals do. Figure 1 shows the risk breakdown structures (RBS) to support and help the management teams to identify and eventually the analyze risks.

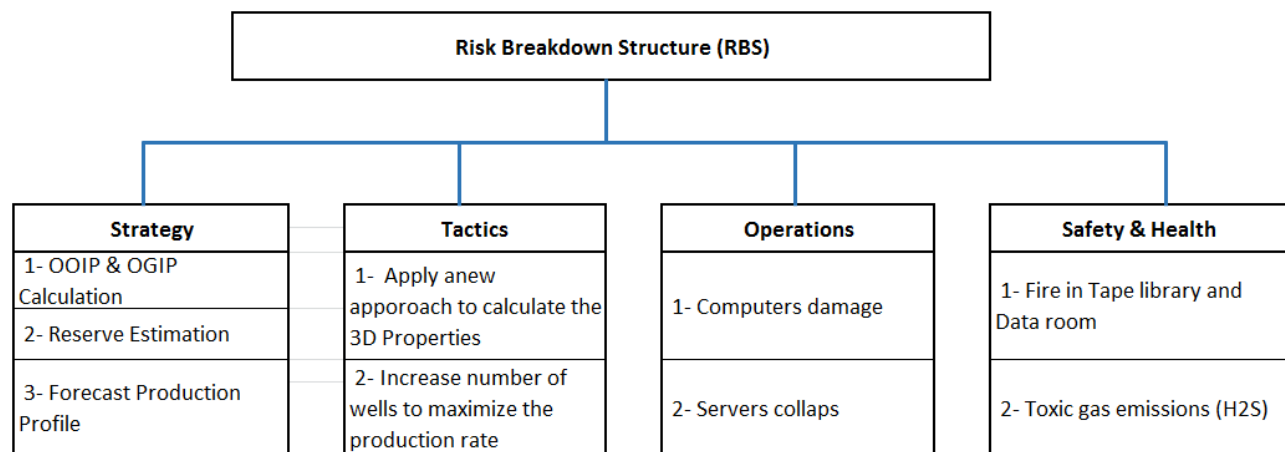


Figure 1: Risk Breakdown Structure (RBS)

After submitted the RBS, the Risk Register was defined to present the risk type, risk level, the strategy of response to deal with the risk, control measure and action to the risk. Table 1 shows the risk register.

Item No.	Risk Name	Risk Type	Risk level		Strategy of Respons	Control Masure	Action to the risk
			Likelihood	Impact			
1	OOIP & OGIP Calculation	opportunity	High	Low	Treat	Corrective	Adopt
2	Reserve Estimation	opportunity	High	Low	Treat	Corrective	Adopt
3	Forecast Production Profile	opportunity	High	Low	Treat	Corrective	Adopt
4	Apply anew approach to calculate the 3D Properties	control	Low	Low	Tolerate	Detective	Accept
5	Increase number of wells to maximize the production rate	control	Low	Low	Tolerate	Detective	Accept
6	Computers damage	hazard	Low	High	Transfer	Directive	Adapt
7	Servers collaps	hazard	Low	High	Transfer	Directive	Adapt
8	Fire in Tape library and Data room	hazard	High	High	Terminate	Preventive	Avoid
9	Toxic gas emissions (H2S)	Compliance	High	High	Terminate	Preventive	Avoid

Table 1: Risk Register

After defined the risk register, the risk matrix was used to simplify the risk register as shown in figure 2.

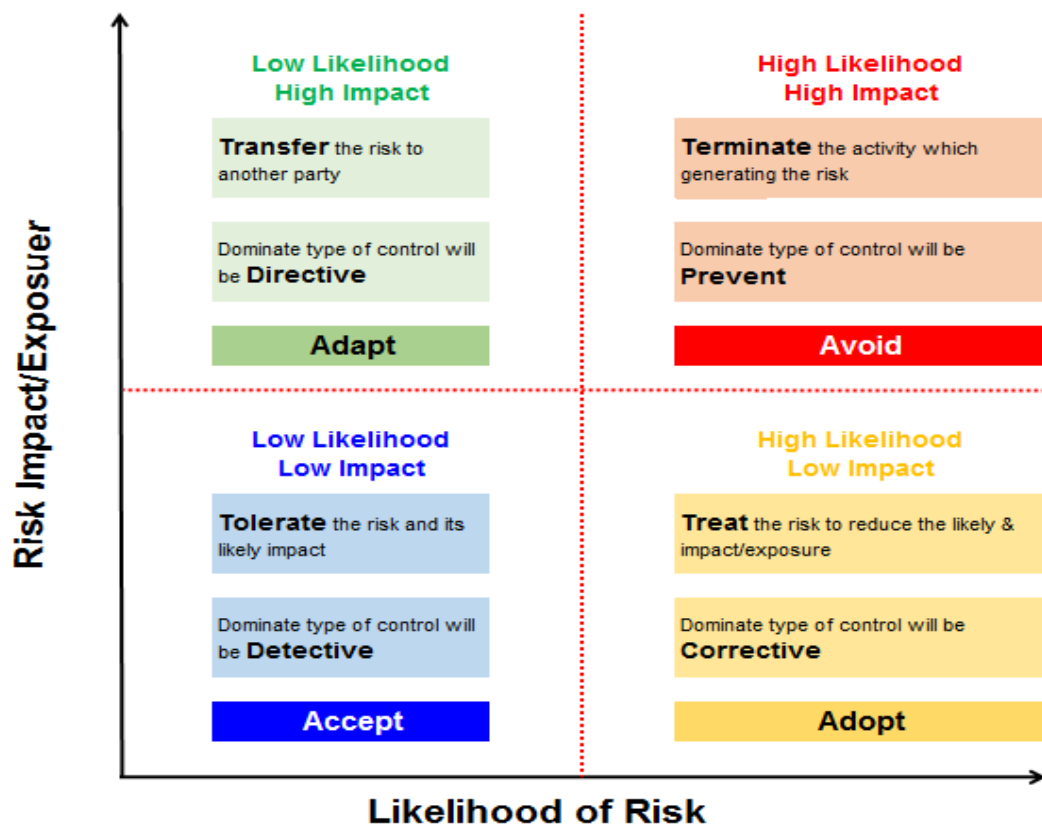


Figure 2: Risk Matrix

The Risk Matrix is a matrix that is used during risk assessment to define the level of risk by considering the category of probability or likelihood against the category of consequence severity. Also, used to show the strategy of response and the controls measures to the risk. This is a simple mechanism to increase visibility of risks and assist management decision making.

When the risk materialize at **High likelihood and High impact**, the strategy of response to this risk will be **Terminate** the activity which generating the risk and the dominate type of control measure will be **Preventive controls** and the organization should decide to **Avoid** this risk.

For the risk occurred at **High likelihood and Low impact**, the strategy of response to this risk will be **Treat** the risk to reduce the likely & impact/exposure and the dominate type of control measure will be **Corrective controls** and the organization should decide to **adopt** contingency plans and responses.

For the risk materialize at **Low likelihood and High impact**, the strategy of response to this risk will be **Transfer** the risk to another party and the dominate type of control measure will be **Directive controls** and the organization should decide to **adapt** the activities and procedures.

Finally, When the risk materialize at **Low likelihood and Low impact**, the strategy of response to this risk will be **Tolerate** the risk and its likely impact and the dominate type of control measure will be **Detective controls** and the organization should decide to **Accept** this risk.

4. RESULTS AND DISCUSSION

After defined and submitted the risk register and risk matrix, the risk contingency budget should be calculated to cover the impact of risks on project by using Expected Monetary Value technique (EMV). EMV is a quantitative analysis by multiplying the risk probability with the cost impact [3]. Table 2 shows the calculation of total risk contingency which will be added to the 5 budget as a risk contingency budget.

Item No.	Risk Name	Risk Probability (P)	Cost Impact (I) \$	Risk Contingency (P*I) \$
1	OOIP & OGIP Calculation	0.6	30,000	18,000
2	Reserve Estimation	0.7	25,000	17,500
3	Forecast Production Profile	0.8	20,000	16,000
4	Apply anew apporoach to calculate the 3D Properties	0.2	15,000	3,000
5	Increase number of wells to maximize the production rate	0.2	10,000	2,000
6	Computers damage	0.25	50,000	12,500
7	Servers collaps	0.2	80,000	16,000
8	Fire in Tape library and Data room	0.4	100,000	40,000
9	Toxic gas emissions (H2S)	0.5	150,000	75,000
Total			480,000	200,000

Table 2: Expected Monetary Value (EMV)

Based on the identification of nine risks, the cost impact to the project is 480,000 \$ and it is difficult to ask for that level of risk contingency budget. The total risk contingency for the project is **200,000 \$**.

5. REFERENCES

- 1- Lenkova O. (2017). Risk Management of Oil and Gas Company in Terms of Strategic Transformations.
- 2- Karami M. and Samimi A. and Ja'fari M. (2020). Necessity to Study of Risk Management in Oil and Gas Industries (Case Study: Oil Projects). Progress in Chemical and Biochemical Research.
- 3- Hopkin P. (2010). Fundamentals of risk management: understanding, evaluating, and implementing effective risk management.