University of Stavanger

Faculty of Science and Technology

MASTER'S THESIS

Study program/ Specialization: Social Security (M-TESSIK)	**Spring semester, 2014** **Restricted access**
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Thesis title:

The Way to Zero harm.
"A case study of practicing "**Zero Philosophy**" in one of the petroleum companies in, Norway oil & gas capital; Stavanger."

Key words: HSE, Zero Philosophy, Safety Culture, Organization Culture, Safety Barriers, Incident, HSE Management, High Reliability Organizations.	**Pages**: 83 + **enclosure**: 7 **Stavanger, 13.Jun. 2014** Date/year

Preface

Studying the social safety in a new language and with engineering background was a challenging process for me. It has been challenging to manage the time between family, job, friends and higher education. And it feels good to put an end for this part of my life and be ready for the next new challenges.

This work would not have been completed without help and support of many individuals. In the first place I would like to express my appreciation to Professor Preben Lindø at the University of Stavanger, for his supervision and guidance through this thesis.

Thanks also to the company who have put their business at their disposal. They have shown great openness and commitment and it has been an enjoyable and interesting collaboration. My appreciation and respect to my informants who just let me to interview them. Especially thanks to Mrs. E.B for all her kindness and advice, who has taken me in and provided me with the necessary information, thanks to Mr. B.B who just inspired the idea and share his expertise and guide me throw this process and another thanks to Mrs. R.B.A for all her kind advice and all brilliant ideas for completing this thesis.

Many especial thanks go in particular to my friends Azi and Babi who helped me too much; I could not have done this without their advice, guidance and crucial contribution.

Finally, I want to thanks my family, my mam and especially my love, Iman for their kindness and patience, for all long nights and weekend that I should worked. Thanks for at you always be there for me.

I hoped that this study will inspire others and may be useful for the better way and improvement of Health, Environment and Safety in our society and life.

Thank you

Pouyeh Moshirian
Stavanger 13-June- 2014

Abstract

All activities involve some kind of risk. The petroleum industry handles a large number of risky situations; some of these situations may lead to incidents that with serious consequences for the whole society. Safety in this industry is therefore highly dependent on the behavior of individuals working in the organizations to act responsibly and safely. The organizations may also be under pressure from the authorities and environmental institutions to improve their safety. “Zero philosophy” is a response to this need.

The research study focuses on safety culture and the use of zero philosophy. We use a company in the oil and gas industry as the case study. This company located at Stavanger.

Continually working with HSE is very important for safe operations in the petroleum industry. Success in this area will be both a competitive advantage and a way to create a positive reputation.

The discussed company focuses strongly on this goal and it is interesting to see how exactly zero philosophy is established, what could the effects be, and if there exists any negative effects besides striving towards such goals. A company’s continuing success depends on the integrity and professionalism that the employees show in their everyday handling of risks. Business will prosper only so long as customers trust the company in delivering excellent and safe services. Their reputation for safety, honesty, and ethical conduct is one of the most important assets. Therefore, the company is absolutely committed to complying with the law and conducting the business to the highest standards.

When the new policy of zero harm was accepted by the organization, the safety culture and organization culture also changed in a good way. Based on the empirical results, the introduction of zero philosophy has a beneficial effect for company and their employees. Zero philosophy becomes a symbol for a safer work–place, and by setting zero as a goal, it shows that they place safety at the first priority.

The cause of accident according to Reason (1997) can be attributed to the organization, management or management priorities. He also points out that the reason for accident can be justified by defects in the organization, such as procedures and routines that are not followed or cannot be implemented. So the cause of accidents is not always attributed to missing or deficient practices by employees. It can also be a wrong focus from management team due to a poor safety culture.

It is important for the organizations, that their management sees the internal deficiencies and defects soon enough and takes action before it starts to be a larger catastrophe with many internal and external effects.

With zero philosophy, the company has obvious goals and a strong focus on internal reporting system. The system shows the results of all incidents, damage, losses, etc. to gain knowledge of how the real situations are.
After interviewing a number of employees, almost all informants agreed upon the issue that reporting all incidents and keeping track of these records is time consuming, effortful, and costly. Furthermore, none of the informants believed that under-reporting is a serious issue.
The result of the study shows that the safety culture of the company has improved significantly since zero philosophy has been implemented. The measures of safety show an overall trend towards accepting and applying the zero philosophy principles.

It appears that the majority of employees are not misunderstanding "zero philosophy" with "zero tolerance"; a major cause of under-reporting could be a direct consequence of zero tolerance due to monetary or non-monetary penalties involved.

Communication is one of the enabling factors of a safety culture, and obstacles in transparent and timely communication would lead to less feedbacks and a distorted view of problems. Observations and interviews reveal some weak links in communication, which are not necessarily critical, but may become roots of larger problems in the future if not dealt with properly.

In this thesis we emphasize that zero harm is an achievable goal and it mainly relies on a good safety culture. Some considerations may arise due to the number of interviewed employees in the studied company, and if they are really a representative group of the whole organization. However, the author believes that the results from interviews combined with careful observations over many months of co-working, generates a realistic picture of the safety culture and practice in this company.

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1 Introduction

1.1 Health, Safety and Environment, HSE

In today's society most activities and operations involves more or less to some form of risk. The cause of the accident is often a complex interaction between technology, organizational and human factors (Aven et al., 2004)

It is proved that technical equipment is the cause of many work related accidents; many accidents should therefore be prevented by ensuring that equipment is in correct order and be used correctly. The human and organizations factors can also be defined as a lack of leadership, management, training and other organizational matters. Accidents happened and loss of human life is something that should not be accepted. Many organizations therefore work with a zero vision. Accidents can cause the affected impaired quality of life physically and mentally, but also financially. Although a human life cannot be compared or applied toward economic consequences, the huge economic losses course have an impact on a business. High accident statistics can also lead to loss of a good reputation. In today's society, therefore, good security practices into a competitive advantage. It's hard to run a business with a bad HSE result. It should therefore be profitable to invest in safety.

There are a lot of factors influencing safety in an organization, plans, risk assessments, laws and regulations, internal control, procedures and supervision, and informal relationships such as leadership; communication system/process (like a reporting system, information) are some of them. All of them together, are the foundation for how safety and safety culture work in an organization.

1.2 History of the “Zero Philosophy” in Petroleum Industry

Health, safety and environmental (HSE) rules and regulations have been written to lead the working and living area safer and to minimize the hazards to the environment and people. HSE rules can be found based on the real events, the lessons learnt from the incident and it may also come from the assessment of the total situation in a place. Accidents and near miss in the petroleum industry have three dimensions of human, social and environmental (The Petroleum Safety Authority Norway, 2002).

“With the Ekofisk discovery in 1969, the Norwegian oil adventure really began. The petroleum activities on the Norwegian Continental Shelf (NCS) has been an important contributor to value creation in the Norwegian society over last decades (in 2012, it was more than twice of the value creation of the manufacturing industry and around 15 times the total value creation of the primary industries). Therefore, setting high standards for health and safety in all phases of the oil business seems to be crucial for Norwegian government (Norwegian Ministry of Petroleum and Energy, 2011).

In 1972, the Norwegian Petroleum Directorate (NPD) is established, it is a governmental specialist directorate and administrative. NPD has a national responsibility for data from the Norwegian continental shelf. The NPD's data, overview and analyses constitute a crucial factual basis on which the activities are founded. The NPD sets frameworks, stipulates regulations and makes decisions in areas where it has been delegated authority. The NPD is responsible for conducting metering audits and collecting fees from the petroleum industry effect. In 2004, the government decided to split the NPD into two new independent bodies; the NPD and the Petroleum Safety Authority of Norway (PSA). PSA is in-charge of establishing regulation for the petroleum industry, conduction total safety assessment (establishing the appropriate collaboration with other HSE regulators nationally and internationally), and to contribute actively to conveying HSE knowledge to society in general, and deciding on consents, sanctions and exemptions (Norwegian Petroleum Directorate, 2011)

As said earlier, companies reputation in oil industry can surly be influenced by their long-term perspective on quality and HSE issues. The Norwegian government has also given a signal to the industry showing clearly that a high safety level is an important factor affecting company's reputation. It is a very important for the government that the petroleum sector will continue to be a pioneer industry that creates value for society by strategically focusing on quality, knowledge and creativity, and do business based on a policy of continuous improvement. The human and social consequences of the accidents may occur, makes it necessary to have a strong and continuous focus on health and safety in all phases of the business.

> "The principal objective of the Norwegian Petroleum Directorate is to contribute to creating the greatest possible values for society from the oil and gas activities by means of prudent resource management based on safety, emergency preparedness and safeguarding of the external environment." (Norwegian Petroleum Directorate, 2011)

The word "Zero vision" has originally come from road safety and become popular in other part of society. The aim of this vision in road traffic was to achieve a highway system with no fatalities or serious injuries in road traffic. This has been a significant step changing the transport policy at the European level, which was initiated in Sweden in 1997 (Langeland, 2009)

The zero vision was, for the first time, mentioned in a government document in Norway in a report from the Transport Committee concerning the Norwegian Road Traffic Plan for 1998-2007 and the Norwegian parliament introduced the zero vision policy to road safety at the same year in 1998 (Langeland, 2009).

According to the zero philosophy all accidents can be prevented, so that the goal will be

zero accidents and injuries. The Norwegian Ministry of Labour and Social Affairs sums up this mindset in the statement that accidents do not happen, but are caused. This, of course, requires great responsibilities at all levels and a continuous focus on risk management, prevention and learning/education. (Norwegian Ministry of Petroleum and Energy, 2011)

However, there is an important difference between the road traffic and the oil industry. Oil industry is a closed system, while road traffic is not (Langeland, 2009). For example, an oil-rig is a closed off area, only accessible to people who have taken relevant safety course, trained not only in retrieving oil and gas, but also in avoiding hazardous incidents that might cause death, injury or damage to property. In an oil industry people are at work, performing a task for an employer, which is completely different compared road traffic where a zero vision deals with spare-time activities like driving a car, walking down the road or riding a bicycle. It is believed to be easier to gain acceptance for such a philosophy under such circumstances. There is also more control on the people working in an oil industry compared to those who are in road traffic.

This vision is described by Adams (1995) as "a picture of a desired future state that appeals to the creative forces in society, and which plots out the future course". The oil and gas industry is known as an area where creativity is quite thriving. The basic idea behind this vision is that accidents do not just happen; they have a cause that can be prevented (Langeland, 2009).

1.3 Problem statement and thesis strategy

The zero philosophy is particularly a controversial and challenging topic as it says that all accidents and injuries can be prevented. In this study I will focus on HSE culture and the use of zero philosophy in a company who has delivered more than 100 years of continuous service to the maritime and offshore and onshore oil and gas industries including providing high quality solutions engineered and fabricated at its facilities in Norway's oil capital, Stavanger. This company focuses strongly on this goal of zero injuries and accidents, making them appropriate for studying how it works to have this philosophy as a form of regulation.

In this thesis I will study generally the safety culture and specifically the zero philosophy through this case study. Safety culture is the term that is used in various contexts to describe how different organizations perceive, practice, communicate and manage conditions such as safety, risk, and emergency. Many of these conditions can be controlled by the organization's HSE management team through different safety strategic choices.

When "Zero vision" as a new line was added to the HSE rules, it has received some positive and negative feedbacks from companies and their operators. These feedbacks vary during

years and between companies. This will be discussed qualitatively in the current research study. It has been interesting subject to find out how the “Zero” works in a company and what are the consequences.

Research design elements are essential elements for a good and effective analysis and in my research. Research questions are one of the key elements in the design. According to Blaikie (2000) starting point of a research is to define a clear problem or question. This step represents the first challenge related to any research project. Questions express more clearly what the study wants to achieve. Generally a research design must answer three basic questions. WHAT will be studied, WHY will it be studied, and HOW will it be studied (Blaikie, 2000).

In order to examine how zero philosophy works in practice in the oil and gas industry, the following questions are define to be addressed in the current research:

- *How is zero philosophy practicing by the chosen company?*
- *What is the effect of zero philosophy at the company´s safety?*
- *Can the goal of zero philosophy have the negative consequences?*

This study examines why this company introduced such a goal and what it has meant to their work with HSE. Furthermore, it placed special emphasis on whether there are negative aspects to have such a goal. It is important to investigate how employees understand zero philosophy, is there any stress for employees to achieve the goals, and what is the challenges with zero philosophy. When it comes to the negative effects, the human, technology or organizations faults should be discussed. The company may have different procedure to have an overview of the accident, but the main tool is their reporting system. The reporting attitude and process can be considered as one of the main area for improvement to achieve the goals of “Zero”. This topic is the major part of the interview guide.

This research is a qualitative based and it is conducted through a detailed analysis of the public and company’s internal documents. Some interviews have also conducted with company’s employees holding different positions. Therefore, the main focuses of this project are on evidences and collective data from this company to find out the best possible answer to the research questions.

1.4 Thesis structure

This thesis is structured in the following way:

- Chapter 1, introduction: explaining the theme of the study and clarified the research topics and strategy that will be studied in the thesis.
- Chapter 2, Background and Context: Background and some brief explanation of the fact, tools and program those are using in the company and will be used further on the empirical chapter as well.
- Chapter 3, theory: This chapter describes the theoretical aspects that will be used in this study with respect to the research questions. The HRO and safety culture theories are discussed in this chapter. The main focus of the HRO theory is on mindfulness and organizational culture. Barriers are also discussed.
- Chapter 4, methods: describing the study's methodological framework and explains the practical implementation of the study. There is an argument around the chosen method to answer the research questions. The qualitative case study is explained and explanations about the expression used in this study are given. Limitations of this research are also addressed in this chapter. This chapter ends up with a summary of the study's validity and reliability.
- Chapter 5, empirical data In this chapter, the study's background will be discussed. How and why zero philosophy is established in this company and the negative consequents of this policy will describe.
- Chapter 6, Analysis result and discussion: The results of observation, document review and interviews will be presented here.
- Chapter 7, conclusions: This chapter shows the relation between the company, the theories and empirical findings. Based on previous chapter, there will be a conclusion to answer the research study problems. And finally, the suggestions for further research will be presented.

1.5 Abbreviation and Concepts Explanation

ALARP: As Low As Reasonably Practicable

AMU: Working Environment Committee (Arbeidsmiljøutvalg)

BTH: Bedrift tjeneste helse (Company´s Doctor)

CPR: Cardiopulmonary resuscitation

HRO: High reliability Organization

HSE: Health, Safety and Environment

IK: Intern Kontroll (Internal control)

ISO: International Organization for Standardization

MTO: Menneskelige, Tekniske and Organisatoriske (Human, Technical, Organization)

NAT: Normal Accident Theory

NCS: Norwegian continental shelf

O3: Prepare system, response and recovery system.

OW: is an integrity framework to provide assurance that a company is delivering high quality outcomes Synergi: Electronic follow-up system

PPE: Personal Protect Equipment

PSA: The Petroleum Safety Authority

RNNP: Risikonivå i norsk petroleumsvirksomhet (The Petroleum Safety Authority Norway annual report risk in Norwegian petroleum Activitys)

RPH: Reporting positive event. (Rapport Positive Hendelse)

RUH: Reporting unwanted event. (Rapport Uønsket Hendelse)

SAZ: Serious about zero

SDI: Stepwise Deductive Induction

STS: Sociotechnical Systems

SJA: Safety Job Analysis

Synergi: Company´s reporting system

Zero harm: the zero harm is the other expression for zero philosophy that using in the company

2 Background and Context

This chapter is presenting the context and background, which is the base for this research study. By presenting this chapter, I will put a frame around my research study and point out the important facts that I will focus on and try to find the possible answer during my study times in this company.

The main area for this study will be a company´s plan and activities according to zero philosophy.

2.1 History of petroleum industry in Norway

Finding oil on the Norwegian continental shelf at 1962 was the unforgettable year for Norwegian history and especially for petroleum branches.

HSE and the way of its improvement in petroleum industry were, and still is a popular subject. This will lead to increased focus on HSE and more effective methods of improvement. Focusing on HSE helps both company and petroleum activities to grow up progressively. From 1967 until 2009, 261 people died on NCS according to different activities (Schiefloe & Vikland, 2006). The American drill deck worker was the first who lose his life at the work accident on a platform (Hans Petter Aass, 2012). The first uncontrolled blowout on the NCS occurred on April 1977, at Ekofisk Bravo platform in the North Sea, laid the basis for the strict safety and environmental regulations enforced on the NCS. Alexander L Kielland disaster in the Ekofisk area on 1980 was the biggest disaster in Norway's oil history. One of the five support columns on the rig broke off because of fatigue cracking in a steel brace, and 123 people died. The last major accident in the petroleum activities on the NCS was the helicopter accident in 1997, where 12 people died (Schiefloe & Vikland, 2006).

From 2004, the safety regulation was moved from NPD to a new organization, the Petroleum Safety Authority (PSA). Now has PSA a managing responsibility for more than one hundred companies both onshore and offshore. The PSA is an actor who has the authority's liability to all petroleum industry company. PSA has an important role in the petroleum industry. It is PSA that regulates the HSE requests followed by companies. In addition they have a control system like inspection. All companies will report the incidents to PSA and they make statistical report to show the HSE development and the gaps of the system. PSA inventory is like a guide for all companies (Lindøe & Olsen, 2009).

The Regulations for Health, Safety and Environment in the Petroleum activities states that:

> Den ansvarlige skal etablere, følge opp og videreutvikle et styringssystem for å sikre etterlevelse av krav som er gitt i helse-, miljø- og sikkerhetslovgivningen. Rettighetshaveren skal etablere, følge opp og videreutvikle et styringssystem for å sikre etterlevelse av krav gitt i helse miljø- og sikkerhetslovgivningen som er rettet mot rettighetshavere (Arbeidsmiljøloven, 2007).

This lows described very clearly the governmental requirements and the worker's responsibility. This allows everyone who is a part of petroleum activities; try to develop the system to the better and safer one. Part of this will involve a system for reporting of unwanted accident, which is one of the main topics for this research.

The whole research study was actually presented in the " (St.meld. nr. 7 , 2001-2002)".

> Innføring av «Nullfilosofien» er en milepæl rent holdningsmessig. «Nullfilosofien» kan oppsummeres som at ulykker ikke skjer, men forår sakes. Alle ulykker kan derfor forebygges, slik at målet vil være null skader og ulykker. Dette forutsetter ansvarliggjøring i alle ledd og et kontinuerlig fokus på risikostyring, forebygging og læring. Fra enkelte hold blir det pekt på at den praktiske anvendelsen av denne tilnærmingen bidrar til underrapportering av uønskede hendelser og setter press på den enkelte arbeidstaker som blir skadet, om å holde dette skjult. Dette er i så tilfelle i strid med den grunnleggende ideen og det er partenes ansvar å følge opp at dette ikke blir en konsekvens .

2.2 Why this Company

This company has delivered more than 100 years of continuous service to the maritime, offshore and onshore as well as providing high quality solutions engineered and fabricated at its facilities in Norway's oil capital, Stavanger.

The company´s history is older than Norway petroleum history, so during the first fifty years, the company was working with some other business. After the Second World War, the marked was slowly decreasing and they start to join with other companies, which was a good way to develop an advanced technology related to oil and gas. During this period the contracts changed from fabrication contracts to engineering, procurement and construction contracts, and company was further developed to undertake complex technological contracts related to engineering and construction of large installations for fields in the North Sea. Now they are one of the world's leading providers of professional services to the resources and energy branch, and complex process industries.

During the last years, the company has continuously improved the work processes and made necessary adjustments to meet the changing market challenges, expectations and requirements; and today, this company is a modern company with high competence fit for management contracts within petroleum business area.

Every single employee who works for this company is responsible for his own safety as well as the safety of their colleagues. All employees shall include HSE values in their daily work routines, in order to achieve safety all the time.

Zero philosophy is a result of good HSE culture and good HSE culture shows active, responsible and engaged employees.

As a new member of this huge family, it is interesting to study how employees at this company understand zero philosophy, and how is zero philosophy practicing here.

Company´s Values

Here is company´s vision (Figure 1) and it shows that zero philosophy or "zero harm" is one of company´s goals. ("Zero harm " is the other expression for zero philosophy, which is common in this company)

Figure 1 Company´s Values

Zero Philosophy

The company has adopted a zero philosophy where the objective is to avoid accidents, harm to people, property, and environment. To achieve these goals, they have to work systematically and keep continuous focus on improvements.

Zero philosophy conceptions are an important tool to improve the well-established HSE standard within industry. The philosophy is the fundamental statement for all written procedures and values. Through the years the company developed a strong HSE management system that defines the way they work.

Here is the company´s Health, Safety, Environmental Policy.

Figure 2 Company´s Health, Safety, Environmental Policy

"We believe all incidents are preventable. Our vision is zero harm to people and assets and zero environmental incidents.
The company has adapted a zero philosophy where the objectives are to avoid accident, harm to people and damage to property or the environment.
To achieve these goals, we have to work systematically and keep continuous focus on improvements within health, safety, security and environmental care. Our manager shall be inspiring and enthusiastic and shall demonstrate an active HSE leadership. Our managers are continuously measured on behavior, attitude and performance related to HSE. Every employee has a responsibility to act to secure their own and other safety and have an obligation to report situations that might involve a safety risk, in order to have this corrected. We do our business in accordance with our ethical principles, and work actively to create a safe and good working environment.
Company shall work actively to comply with relevant laws and regulations that will follow the highest standards within health, safety, security and environment."

2.3 HSE culture and practicing the "Zero philosophy"

The company is working continuously to achieve the goal of zero philosophy and the way to reveal this goal is to see faults, take action and find the reason of those faults, so everyone can learn from previous mistakes. The company is working actively to prevent any accident; therefore they use necessary barriers to avoid the same mistake happen again. Internal control, reporting system and many others program and tools are using to help the organization achieving their goal. Here will some of the programs, ethics, and barriers that have been used by this company be presented.

2.3.1 HSE Management

Effective HSE management is an integral part of the success for the company and the way they do business. HSE management process is systematic and concrete. It communicates with the risk level of business operations and tries to supports and authorized the local and global business model.

The HSE function assists company to achieve and support their differentiator industry leadership in HSE performance and the vision "zero harm".

Responsible manager has primary responsibility for everything that relates to health, environment and safety in a company.

All activities in this company are developing a HSE management system in compliance with governing rules and regulations and in line with the corporate policy.

Here are some main responsibilities for different people and departments according to health, safety and environment related activities in the company. Most of these key personnel have been interviewed during this study.

CEO/ Director

Establishing goals, policies and being sure that action plans for achieving related goals have been developed. Being sure that a HSE has been understood by all. Follow up and ensure that line managers have honest commitment to HSE. Most important, having the overall responsibility for HSE preparedness in the company.

Line Manager

Have to familiarize with the company's HSE regulations and ensure that safety training and safety information is given in the proper way. Line Managers are responsible for the health, environment and safety of their employees. Responsible to have active observation of their employees who are on sick leave, and workers who are at risk of being sick. Line Managers should be sure that their employees are aware of and comply with the requirements, regulations and standards that apply to HSE and ensure that incidents are reported and that corrective measures to prevent recurrence implemented.

HSE- Department

HSE Department is company’s advisor according to health, environmental and safety and all formal correspondence in this regard will go through this department.

In general all systematic efforts to fulfill HSE goals and requirements will be done through them. HSE department is management’s support to perform the most appropriate safety system in the company. Those who work in this department are responsible to contact with the relevant authority in case of laws, regulations that company must deal with. They are responsible for safety and environmental reporting, coordinating and monitoring RUH reporting, conducting analysis of relevant data and identifying improvement areas. They are responsible for implementation of best practices due to HSE activities, holding corporate management updated on HSE related issues, establish and maintain documentation for HSE activities and coordination HSE works, are all HSE department responsibility.

Main Safety Delegate (Hovedverneombud)

Coordinate safety delegate service in the company; confirm the selected Safety Delegate for each working area and participating in Working Environment Committee (AMU) is Main Safety Delegate responsibility.

Main Safety Delegate generally has not authority to control or determine the individual safety activities.

Safety Delegate (Verneombud)

Safety delegate is interested to all environmental works and have the right information to take action for all jobs relating to environment.

Quality Management

Quality Management is responsible for planning and monitoring audits and verifications.

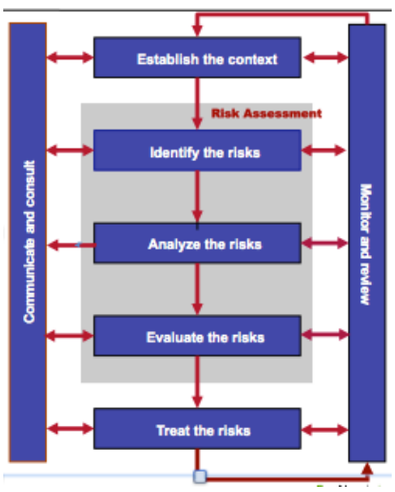
The Employees

All employees have to follow the constitutional requirements and internal rules and regulations, take responsibility for their own and others' safety and make sure that the work that cannot be carried safely shall be stopped. They should report all incidents and take immediate corrective action when it's necessary and will participate in prescribed safety training and even help with constructive suggestions (Company´s procedures).

Risk management

Risk is the effect of uncertainty in business objectives. Risk management is not about eliminating all risks in the business. It is about understanding, prioritizing and managing risks and opportunities to support successful business consequences.

Figure 3 Risk management process



Risk Management is "business as usual" and seen as value adding rather than a compliance task. The goals in the company are to have an effective and systematic risk management process in place across the whole business. Having risk management plans at all levels in the organisation in necessary to support project delivery and business decisions, to train employees to recognise and manage risks and opportunities, and to facilitate the increased maturity of risk management throughout the organisation, leadership and support. The first step in risk management is to recognise and understand the risk.

2.3.2 "OW"

The company is adapt the program or as they call it "Framework" by the name "OW" (This is not a real name of the program due to confidentially issue). This program is coming after their migration on 2012. The program evolved to become a comprehensive tool for improving safety and achieve the goal of zero philosophy.

"OW" is an integrity framework to provide assurance that the company is delivering high quality outcomes. It starts with understanding customer expectations and extends through all their delivery streams. It helps to understand the performance expectations and achieve them in everything they do, and all the employees understand "OW" expectations. The expectations have direct relation to their business processes that control the important areas of company´s business. The areas contain health, safety, leadership, risk management, environment, engineering, procurement, construction services and quality.

This framework contains twelve elements; Leadership and governance, Risk management, Caring for our people and the environment, Selection and competency, Working with our costumers, Engineering, Working with the supply chain, Field activities, Management of change, Critical incident avoidance, Response and Recovery, Incident and behavior analysis and Assessment and improvement (Company´s Internal documents).

2.3.3 Safety Barriers

Barriers are planned and implemented to break especially unwanted events. Barriers are necessary to reduce the chance of accident and to avoid the same mistakes in the future. Barriers are a function to prevent the understanding of a hazard cause, or limit the damage by breaking an unwanted event. Barriers can be "MTO"(Human, Technical or Organizational) in Norwegian and stand for Menneskelige, Tekniske and Organisatoriske. Barrier can be "soft", human related or "hard", technical related. The three elements of the MTO model are equally dependent of each other and they are:

Human, means the experience, knowledge, skills and abilities.

Technical, technical solution should usually join with those two other barriers.

Organizational, means procedures, specifications, checklists, etc. These systems can also use for job preparation, like Safe Job Analysis or toolbox conversation that helps to establish systematic and permanent barriers.

It is too challenging to 100 percent prevent people from making mistakes; so all focus is, on reducing the consequences of barriers error.

Here it will present some of the barriers that used by the company to improve the HSE culture and achieving the zero harm philosophy and they will also be presented later at the empirical chapter. (Company´s Internal documents).

2.3.3.1 Internal control

Internal Control Regulations issued on December 1996.

> *§ 1.*Gjennom krav om systematisk gjennomføring av tiltak, skal denne forskrift fremme et forbedringsarbeid i virksomhetene innen; arbeidsmiljø og sikkerhet, forebygging av helseskade eller miljøforstyrrelse fra produkter eller forbrukertjenester, vern av det ytre miljø mot forurensing og en bedre behandling av avfall. slik at målene i helse-, miljø- og sikkerhetslovgivningen oppnås.
>
> "§ 3. Internkontroll betyr: Systematiske tiltak som skal sikre at virksomhetens aktiviteter planlegges, organiseres, utføres og vedlikeholdes i samsvar med krav fastsatt i eller i medhold av helse-, miljø- og sikkerhetslovgivningen (Forskrift om systematisk helse-, miljø- og sikkerhetsarbeid i virksomheter, 1996).

The goal with internal control is to promote an improvement in the businesses, working environment and safety and to prevent a health or environmental incident. According to the internal control regulation, the government gives all responsibility to companies themselves. And it is company's responsibility to find a way and system to assure the quality in all activities according to HSE. They will be able to prove that the HSE system works at any time as described to the authorities. The result will prepare as a report and will send to the PSA.

The 2014´s plans for PSA is,

> … The industry acquires a better understanding of the interaction between operational, organizational and technical elements in barriers. We will help to strengthen the industry's work on producing-life extensions, and contribute to industry collaboration and experience transfer between the players (PSA, 2013).

And their requirement to the petroleum industry companies is at,

> The industry must comply with the requirements in the management regulations so that relationships between risk assessments and barrier management are made clear, and so that these have a clear place in managing the enterprise. Robust and specific barrier strategies and performance requirements must be developed. Operational, organizational and technical barrier elements must be made clear in the risk assessments (PSA, 2013)

Working Environment low has clear guidelines for all responsibilities related to HSE, and indicates employee´s duty to cooperate. Employees, who have responsibility for leading or supervising other workers, should ensure that all considerations of health and safety are covered. The Management team has more responsibility for safety and quality improvement.

2.3.3.2 Safety Job Analysis

Safety Job Analysis (SJA) is a barrier, especially when we talk about production jobs.

Safe Job Analysis is carried out in a small group of those familiar with job process, and those who shall carry out the job regarding the analysis. Forman, Safety delegate and related operator are always participate in the execution of SJA and When is necessary, the HSE representative will involve to give professional assistance in executing the analysis, possibly in addition for other technical personnel.

The analysis contends of three steps. The first one is identification of unwanted incidents for each task. Possible incidents that can lead to dangerous situations for people, environment and equipment or that can lead to economical loss are identified and noted in the SJA. Decision according to action and improvements is the second steps. One can take action against the incident occurring and/or one can implement increased preparation. The last part is about evaluation of consequences and probability of incidents caused by be exposed identified unwanted incidents. Forman is responsible to execute SJA and to ensure that actions described in the analysis is implemented and signed by the responsible person. The filled SJA form shall always be visible in the work place.

2.3.3.3 Company´s Handbook

The handbook is a very helpful tool for all employees, especially for the operators. It gives a good information and overview as the basis for the safe conduct of the work.

Good knowledge is the basis for understanding the risk and has the ability to implement appropriate measures to reduce risk to an acceptable level. The handbook is an active reference in everyday work. Everyone has a responsibility to contribute a safe working conditions. The management has an important responsibility to ensure that the company has the necessary knowledge and skills and it is his responsibility to arrange for the safe conduct of operations, ask for and follow up planning and implementation and be sure that best practices are implemented.

2.3.3.4 Toolbox talk

The use of “Toolbox Talk" or "Toolbox Conversation" is an effective way and easy method to set focus on any hazard in operations and be sure about using the correct personal protective equipment. It takes a couple of minutes before starting a job and go throw it and let everyone in the team express an opinion, so the team will be agree about what they will do.

Some examples for the toolbox conversation are:

- What do we do?
- Can we do that? Do we need more support?
- Do we have procedures, instructions or verbal routine task? Are we following them?

- Do we use barriers, which one?
- Have we thought of what could go wrong?
- Is there a risk of "collisions" with other operations?
- Are we ready? Do we have emergency tools in place?
- Is it necessary to carry out a simple risk assessment?

As mentioned the Toolbox talk is especial for the operators but the company has the same principal called “Self checks questions” that can be used by both operators and office employee.

Some of the self-checks questions are;

Check your work during the work execution

- Are you complying with relevant requirements and methods?
- Has the risk picture changed?
- Do you need to make changes?
- Do a «buddy check»!

You shall also check your work when the job is competed

- Have you checked that the work is completed?
- Have you learned or discovered something that should be shared with others?

It is important that every one understands and believes that the next level depends on the quality of his/her work. These self-checks questions awarded after the HSE course.

2.3.3.5 Order and Tidiness

"Order and tidiness is the foundation for being able to work safely!" This sentence is from the company’s handbook. I think it’s really true. It is one of the most important and basic routines that has more effect on others activities, and actually well done in this company.

Order and tidiness are affecting all fields of employment; it's about tidiness in relation to our work practices, procedures, etc.

It´s company´s routine to keeping track of their working equipment and regularly check that the equipment and tool is approved. This is an essential safety factor barrier.

2.3.3.6 Personal Protection Equipment

Personnel, equipment and systems are referred to or described not as barriers, but as fundamental elements. Performance requirements must be set for the technical, operational or organization elements required for individual barrier to be effective.

All employees who is working or visiting field here in the company’s area or where ever, they are acting as a represent of the company and PPE are the minimum safety items they should have; hardhat with attached hearing protection, eye protection, gloves, protective footwear and coverall are includes in personal protection equipment.

2.3.3.7 Safety delegate

The safety delegates at company are expected to endure a particularly view on safety and environment at the workplace. They are there, for accountable in issues regarding alcohol and drug abuse, and to endure that these issues are in connection with company's regulations. Safety delegate is interested and protected all environmental works and take an action to all jobs relating to environment.

A safety delegates system is well established at company. One safety delegate is elected for each department and as a routine they have a monthly meetings chaired by head safety delegate.

2.3.4 Response plan

When barriers do not work and an accident happen, it's a time to act. "O3" (as mentioned, this is not a real name of the program due to confidentially issue) is a general risk based system. It focuses on low likelihood, high consequence risks and basically anything that could be risky for people or business. Ready, response and recovery are the core elements in the system. The ready factor of the system highlights that "O3" is very much about incident avoidance. Ready is another way of saying prevention and preparation. The company wants to consider, what could possibly go wrong and what can be done to avoid it happening. Preparation includes ensuring that company has complete response and recovery plans documented, responsible teams appointed and trained and ready to performance. The response and recovery parts of the "O3"; are when company is dealing live with a critical issue. It applies the plans to react and make the situation safe. Then start with recovering and back to business as usual.

Emergency response plan is the first step when the company faces the critical situation.

2.3.4.1 Emergency response diagram

An emergency response diagram, which defines the process for handling an emergency situation, shows a diagram over what should be done from the receiving call, to the assessment of the situation, notification of relevant personnel and gathering of the response team. The senior manager will assume the role of the emergency coordinator and manage the situation. When the incident is concluded the senior manager has the responsibility to ensure that all information is registered in Synergi (Company reporting system), ensure that all lessons learned are documented and passed to the HSE responsible, and arrange a debrief with all relevant members of staff.

Emergency response plan can be found at the different places; Intranet, information board, etc. All project also have their own emergency plan, procedures. In addition to these, there are folders placed strategically around offices and workshop place that describe how to proceed if there is a crisis situation. They are available in both Norwegian and English and depend on the different project requirement; the plan can be translate to other language as

well. This folder contains a copy of the company's procedures for emergency response, a chart of the emergency response team, an overview of those who have participated in First Aid and CPR courses, and who can manage the defibrillator. The phone numbers of key personnel of the company are also included, highlighted and in an order who should be contacted if the previous is not reachable.

2.3.4.2 Industrial defense

Industrial defense is a vital part of company´s emergency organization preparation.
The main responsibility is to prevent and reduce damage to personnel and equipment in the company. They should assist and act as local guides to the fire brigade and paramedic service.

> § 1. Forskriftet skal sikre at virksomheter har et robust industrivern som forsvarlig og effektivt er i stand til å begrense de konsekvenser uønskede hendelser kan få for liv, helse, miljø og materielle verdier og å bidra til rask normalisering." (Forskrift om industrivern,2011)

3 Theory

The different theoretical perspectives and concepts that can help to clarify the research problem will be studied and presented in this chapter. The theoretical chapter starts with a description of safety and organization culture.

Systematic HSE work helps the organizations to develop. This is not something that can be achieved over the night. It's continuously and systematically working. Regulations and customer requirements are powerful tools for organizations development according to systematic HSE and quality work. Reason´s theory about a good safety culture, with focusing on reporting, justice, flexibility and learning will presents.

Reliability is essential for all organizations that provide services and are reliable on income to be able to maintain production. The elements for reliability and Perrow's Normal Accident theory as complement for this will describe in High Reliability Organization theory sections. And finally some argues about mindfulness and the theory's strengths and weaknesses will also be discussed.

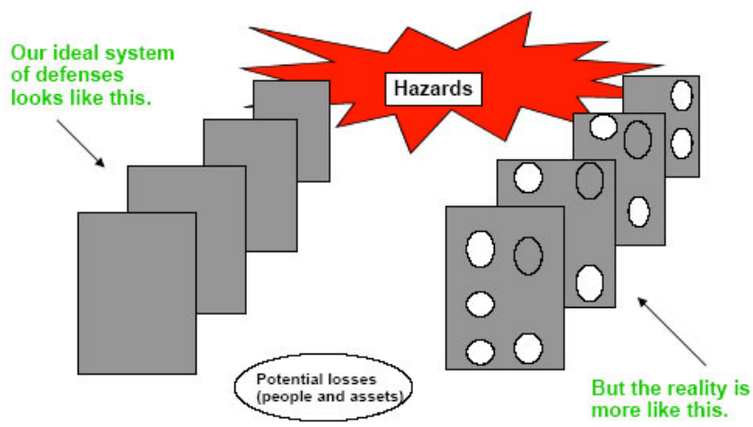
3.1 Accident and Barriers

According to Reason (1997) accidents happen when the defences were broken down by inadequate barriers.

For the people on the spot they happen just "out of the blue" (Reason, 1997)

The Reasons model (see Figure 4) describe that accidents occur when latent pathogens are associated with active failures and failed defenses by operators at the "sharp end" Ordinarily, this represented by a "Swiss cheese model" in which accident occur when enough "holes" in the chees slide overlap. However this can also be represented by the "human envelope" model (Westrum & Adamski, 2009).

Figure 4 The ideal and the reality for defenses-in-depth (Reason, 1997, p. 9)



The human envelope is a supportive and nurturing context for a technological system.
Around a complex operation there is a human envelop that develops, operates, maintains, interfaces and evaluates the functioning of the sociotechnical systems (STS).
Westrum (2009) highlights several issues that are necessary to develop the human envelope. One of these is education. One must have the necessary information to do the job properly, and lack of exercise is something that is associated with errors and accidents. The team that will handle such an event is shaped by the quality of the training they have received, and it must be intensive and realistic.
The development of the human envelope is not the purpose of trying to anticipate what might go wrong, but to prepare members to be able to handle whatever might happen. Another criterion for the development of human envelope is the need to ensure the free flow of information that people share information and to dare to say what they think or have experienced. This is closely related to the feeling of being part of a team. This makes it critical to define and clarify who is part of the team. This does not seem to hinder information sharing. Importance of talking is closely related to the importance of listening. The ability to process all weak signals, regardless of who provides them is the important point. (Westrum & Adamski, 2009)
As mentioned earlier, there are two different types of barriers that are intended to protect an organization against accident. Hard barriers are defined as technical elements such as security, personal protective equipment and other physical barriers. And the other kind is Soft barriers such as management expertise, procedures, routines and exercises.
Barrier management is about ensuring a systematic and continuous basis, that barriers are relevant, effective and robust. The main purpose of barrier management is to establish and maintain barriers so the risk can be handled by preventing an undesirable incident from occurring or by limiting the consequences at any time. As the HSE regulations make clear, barriers represent a key element due to risk reduction. Barrier management cannot cover all considerations for achieving practical operation. It should therefore be seen together with other management's organization parameters, like a culture, contracts, efficiency and improvement processes (Reason, 1997).

3.2 Safety Culture and Management

> Culture can be defined as the knowledge, values, norms, ideas and attitudes, which characterize a group of people. We can gain an insight into this culture by listening to what people say and by looking at the way they behave. The relationship between words and deeds is precisely the point at which an understanding of the HSE culture in an enterprise can be gained. Words and deeds must correspond. (The Health and Safety Commission in England, 2009)

The way we think and collaborate over HSE will influence by different facets how we understanding people's knowledge, values, norms, ideas, attitudes and frame conditions. The concept of safety culture has become more interesting issue after the Chernobyl accident. Some other disasters also helped to increase this interest. For example, Vaughan (1996) tries to show how a poor safety culture at NASA led to the space shuttle exploded. (Bieder & Bourrier, 2013, p. 225). Culture deals with things we choice to have, and it influence the way we behave. Many factors can cause cultural change in an enterprise, as in the wider community.

Culture can be defined as knowledge, values, norms, ideas and attitudes that characterize a group of people. We can gain an insight into this culture by listening to what people say and by looking at the way they behave. The relationship between words and acts is precisely the point of understanding HSE culture and creativity gained it. Words and acts should be parallel. Culture is not only a matter of knowledge, values and attitudes; it is also about technology, economics, law and regulations, etc. This influences everyone's daily life. (Reason, 1997)

Understanding how people's knowledge, values, norms, ideas, attitudes and frame conditions interact is important to make a HSE culture. All these aspects will influence the way we think and collaborate via HSE (Bieder & Bourrier, 2013).

Safety culture is about the common understanding of what is risky and hazardous and how to reduce those risks. To choose the safety culture often be considered against the financial and time considerations. Organization's safety culture may seem critical for selecting the "easy way" or "quick solutions" of the goals of safety (The Petroleum Safety Authority Norway, 2002).

According to Reason (1997), "the safety culture of an organization is the product of individual and group values and attitudes, competence and behaviour patterns that show commitment and skill in relation to the organization's health and safety programs.

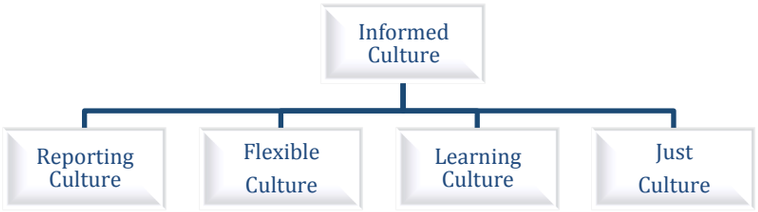
Organizations with a good safety culture are characterized by a communication built on mutual trust, common understanding of the importance of safety and with confidence that the organization's security functions effectively" (Reason, 1997, p. 194).

Reason has identified four critical elements of safety culture. When these interact, they form an informed culture, which corresponds to a good safety culture (Reason, 1997). The figure 7 shows that, the Reason understands safety culture with an informed culture, which is dependent on four subcultures. These subcultures or components also affect each other.

In a safety system, a culture, which collects any data from all accidents and near misses, is named as informed culture. These data will combine in the system with all information

coming from proactive processes. There are several ways that man can define informed culture as a safety culture.

Figure 5 Reason Safety culture



Safety system can improve by those who participate in the system. It needs a real active and honest people who can participate in near miss reporting, having attitude of any safety survey and managing the system if needed. Having these kinds of people and attitude can develop the safety system in an organization. This is called a reporting culture. A system which has reporting culture, always characterized with the organization which all employees feel free to contribute any reporting (Reason, 1997).

The goal with the reporting culture is to be able to prepare a picture of the risks at the business in the fastest way. Collected and analysed data constitutes an important root for evaluating measures to improve safety.

For achieving the goal in any system there are some essential factors that should be done and reported on a safety system. All and any kind of events in the system should be reported. This will also be valid if the system´s rules broken according to perform and achieve the safety tasks (Reason, 1997). What will make the reporting culture little hard to handle completely are the too many different actors with the defence background and role that were involved when the accidents occur. On the other hand there is a fact that most of those who are working in the system will not be happy to put extra time for reporting and evaluation (Reason, 1997).

To successfully develop a reporting culture, is appropriate to ensure that it can be done anonymously and employees who report the case are protected against disciplinary sanctions. Reporting must therefore be viewed in the context of justice (Reason, 1997).

A just culture requires that the business is able to distinguish between accidents and unintended deviation bride. What is very important in any business is the trust between those who are working in the system and the organization. Nobody is being unfairly sanctioned because of reporting.

To achieve this, organization can use an independent management team for the safety department. System and its management should be able to view and analysis the event and develop the just culture and trust. (Reason, 1997).

Developing flexible culture can also be the effective way to prevent accidents in the system. Flexible culture is necessary in the system to ensure that the system can change rules and standards with needed from the safety perspective. This will give system the possibility to develop. These kinds of abilities can be achieved only if the system has a discipline and hierarchical orientation. Flexible culture can help the system to take action very fast. Flexible culture will let others from other hierarchical position to take action if they have the relevant experience (Reason, 1997).

In practice, this means that all employees have this power that stop the operation if the safety is not prioritised.

Learning means ability to draw correct conclusions from safety information, and to make changes if needed. In the easy word it means using of the knowledge and experiences in the system. Developing this culture will give system a possibility to stop the system to experiencing the same failure or accident again and again. Learning culture will give the ability to the system to search for any failure and errors and learn them as an experience. By having an information flow in the system, learning culture can be very easily followed. The system will develop well, if it actively searching for failure and errors. All systems are eager to increase their profits. This can be achieved by doing necessary changes in the system. Applying these changes in the system can be a great challenge in the system. Those organization that wants to perform changes, is consider the time and money to invest. These systems usually have no time or money to invest for the safety training. So in these kinds of organizations receiving more profits will take precedence over the environment (Westrum & Adamski, 2009).

Safety culture is a collective phenomenon in which each employee carries its expression. Organization should have a HSE cultural management for development in the right direction and provide the right motivation (Karlsen, 2004).

Systematic safety work and improvement of preparing a situation analysis is to develop internal security and solutions, consider these solutions against each other, take the necessary measures and evaluate the effectiveness of the implementation of the measures and evaluate the effectiveness of the implementation of the measures. Safety work is therefore to plan, execute, control and correct safety (Karlsen, 2004).

Safety management can be very difficult process, both at society level and organizational level. Safety Management concerns about relationships between management and employee and between different departments in organizations and how different actors, and the norms and values prevailing in the organization will interpret the information. In other words, it is important to focus on technical and organizational relation, individual and interpersonal relationship between the organization's management and employees.

The management plays a key role as the provider of the company's values and visions in the HSE area. It is important that the management takes these in a well-considered manner, and observed in daily work (St.meld. nr. 7 , 2001-2002).

> Knowledge about the development of an organisational culture builds on the recognition that whatever is given systematic attention and priority by management becomes culture. So management responsibility and behaviour are central elements in the work of building an HSE culture." (St.meld. nr. 7 , 2001-2002)

3.3 Organisational culture

HSE is to be integrated in an organisation's shared values, established attitudes, expertise and behaviour.

> Organizational culture is defined as the basic assumptions and beliefs shared by members of an organization. These are learned, operate unconsciously, and essentially define an organization's view of itself and its environment. Though cultural differences are reflected in companies, each company also has an individual culture that modifies local or national cultures. (Schein, Organizational Culture and Leadership, 1985)

Schein (2010) believe at, developing an organizational culture depending on the employees' communication with each other and the organizations. The culture is developing as a result of employee interaction, working methods, coordination, control and responsibility. It is about finding the place in the market, to be familiar with customers wishes and how to have a competition with others organization.

Culture is like a series of assumptions that people can makes for the team that they are participate. The assumptions can categorize into three levels.

First one is Artefacts, they are visible factors in organization culture and very easy to identifying even by those who is not a part of the organization culture. Espoused beliefs (Norms) and values like strategies, philosophies and goal are about how the employees represent the organization. It can be a problem, when the ethics and values adapted by management team, are not in the same plant with the general norm of the culture. Basic assumptions as the last one, are usually unconscious, but constitute the essence of culture (Schein, 2010). According to Schein, we can obtain a valid description of an organizational culture with through an understanding of the basic assumptions.

Organizational culture can be shown as an iceberg where it is clearly visible above the water surface gives an immediate impression of the iceberg size. So what is appears now and then is the represent of a deeper layer of culture, which is hard to describe. In the depths of the sea dominates the invisible part of the iceberg, is a "basic assumptions",

cultural roots that exist in the organization. The invisible parts of the iceberg act as control tools for the organization, like the employees' behaviour in the organization.

3.4 High Reliability Organization

In1984 a research group from University of California at Berkeley began to study organizations errors. Their focus has been initially been on organizations that seemed to behave very reliably, which they called high reliability organizations (HRO) (Aven et al., 2004). Another group at the University of Michigan began also addressing similar issues almost at the same time.

According to HRO perspective, the accidents can be prevented if all necessary principles exist. This means that organization should have the safety as a top priority and have focus on reliability through decentralized control, create a strong organizational culture and have a continuous learning process. It is very important that the employees learn from each other and have that responsibility to stop and correct each other (Aven et al., 2004).

Decentralized decision-making means, safety decisions can be taken quickly by those who are closest to the situation and this gives them a significantly of decision-making. Decentralized decision-making is about, quick and locally responses, those who are near to accident should have enough information and knowledge to help and see the risk and manage it as soon as possible. The effective planning will give a safer system and a safer organization and this is what HRO means (Aven et al., 2004).

The effective planning will give a safer system and a safer organization and this is what HRO means. The total goal for these organizations is, be able to managed and handle the unexpected situations and improve their process. The way to catch this goal is to be “Mindfulness".

3.4.1 Mindfulness

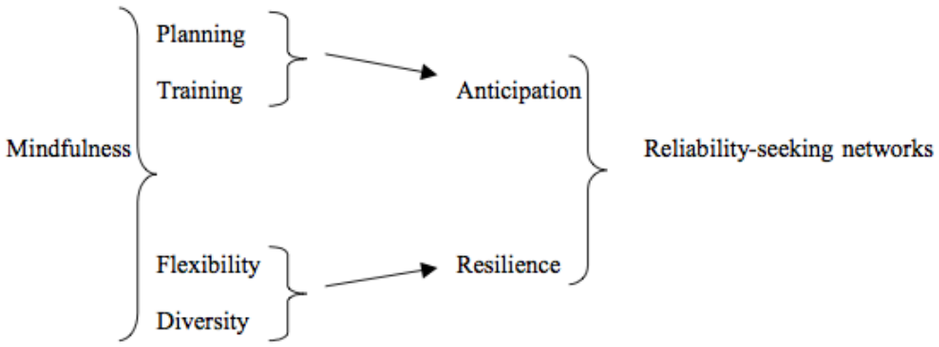
Mindfulness is one of the central elements of the HRO theory and developed by Weick. According to the HRO theory, the organizations can be able to handle complex and demanding technologies problem without causing major accidents.

The organization is mindfulness if they focus be on the unsafe and uncomfortable, and not the safe and comfortable situations. It is the Organization's ability to see the error signals and take the action before they change into a disaster. It’s an ability to see all the risk signs and provide a response to signals (Weick et al., 1999).

To have a plan and be trained, help the organizations to be prepared at the risky situation. Organization needs to be flexible and diverse in order to be considered as a conscious organization. Enabling to have the effective and successful managing in emergency situations can create a mindfulness organization. Resilience and anticipation together can

be a base of "mindfulness" (Kruke & Olsen, 2005).

Figure 6 A foundation for reliability seeking networks in complex emergencies (Kruke and Olsen, 2005, p. 286)

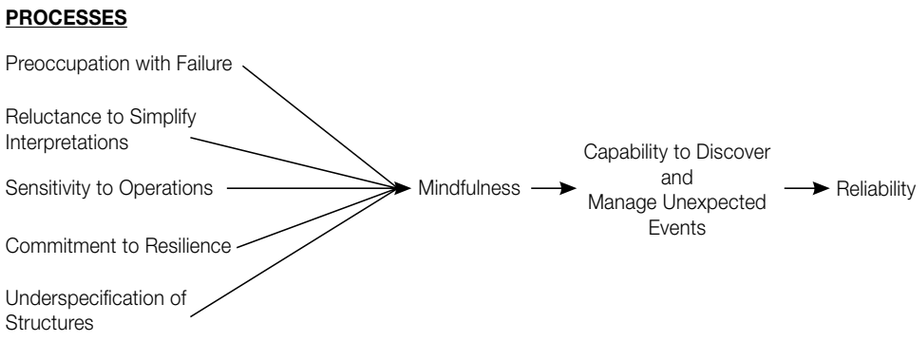


Asking for resilience and anticipation can occur in any crisis management. Having the skill to manage the situation and handle the crisis is one of the management team's requirements. The management should have the ability to see and understand any kind of weak signals and make the correct action. Anticipation can refer to organization's expecting ability to see and understand weak signals and the way to avoid them. This also refers to the ability to be prepared for a crisis. Resilience refers to the ability of organization to adapt the critical structure after the crisis. The organization should also be able to maintain the structure. All organizations should have the ability to adapting unwanted situation and return back to the normal situation in any crisis and as soon as possible. This can be achieved by flexibility and strong management in the system (Kruke & Olsen, 2005).

Experience sharing, team building and practicing are some basics for the organization to have the resilience (Weick et al., 1999).

According to Weick et al. (1993), there are five characteristics for a resilience organization. These characteristics will refer to organizations ability regarding the crisis´s safety. The first ability is improvised. Improvise ability means that the organization has the ability to use what is available when the normal or defined solutions do not work. Second one is about the ability and virtually of organization's role, which have an important meaning to, flexible structure for decision-making. Third one is about understanding and knowledge. These are complementary in a resilient organization, and someone at the organization should have a control over information and lack of knowledge that can be exists in crisis situations. Uncertainties as the fourth element should be included in order to make the right decisions at the unknown situations. The last one is about having respect for competence and experience. Resilience and adaptation of plans with experienced person is like the jazz improvisation. It builds on old experience and taking advantage of new opportunities.

Figure 7 Mindfulness (Weick et al., 1999, p.37).



A condition of such collective consciousness and the awareness generated by at least five processes:

Preoccupation with Failure and Reluctance to simplify interpretations

The first two processes are preoccupation with failure. These concepts highlight the importance of being proactive. Totally it's about that organization aware about signals that sent when the problem starting so be prepared for the coming crises and be able to arrange a complex situation.

Sensitivity to operations

> "Organizations strive to create and maintain an integrated big picture of the moment though ongoing attention to real-time information" (Kruke & Olsen, 2005, p. 285)

This is a concept that emphasizes the necessity of having a long-term perspective on the production of an organization. It is important to collect different information and take multiple perspectives to get sufficient information and knowledge about potential threats.

Commitment to resilience

We must be aware that not all accidents can be detected and prevented. Therefore, it is important to have an existing strategy that can handle an accident in the best way. It's important to be aware that, to manage the unexpected with hence in to individual knowledge and responsibility.

Under specification of structures

The last process in the collective mindfulness is how businesses are organized to deal with accidents.

Structure specification should emphasize that the people in the lower lever of the organization could use their experience in emergency cases. The best choices for making

decision are those who have relevant experiences, regardless of their hierarchical position. It is about having that capacity to move from centralized to decentralized authority when is required (Weick et al., 1999).

3.4.2 HRO versus NAT

The theory of high-reliability organizations came as a counterweight to Perrow's theory of normal accidents. For Perrow accidents arise from incidents or localized failures that spread to disrupt or damage the larger system. Perrow's theory of normal accidents has some differences from the high reliability theory. It is more structural and political. NAT focuses are on some structural categories described organizations that handle hazardous technologies. These categories make them more exposed to accidents, independent of management competences and intentions.

Both HRO and NAT have made important contributions to theory by focusing on a variety of industries that deal with hazardous situations, developing concepts such as complexity and coupling, and by focusing attention on the role of organizational factors and safety culture in accidents. Both theories are progress and can achieving highly safe systems (Leveson et al., 2009).

According to HRO, safety and reliability should be given top priority in the organization. Using intelligent organizational design and good management can prevent accidents in high technical systems. Redundancy increases security. Decentralized decision-making is necessary to allow for a rapid and flexible response to surprises at operation level. A reliability culture will improve the safety, and continuous implementation of tasks, training and simulations can create and maintain 'high reliability' organization.

But according to NAT, accidents are inevitable in complex and tightly coupled systems. Safety is just one of several goals of the organization. Redundancy can often cause accidents, increased interactive complexity and encourages risk-taking.

Both theories provide many hypothetical and empirical examples to illustrate and support their arguments. Further it will be a discussion about which one is more relevant and useful for this company.

4 Method

The method is a tool to provide a description of the reality and is one way to go forward to collect empirical data (Jacobsen, 2005).

This is a case study of safety culture at one of the petroleum related company in Stavanger. This chapter will describe the study's methodological framework and explains the practical implementation of the study. There is an argument around the chosen method to answer the research questions. The qualitative case study is explained and explanations about the expression used in this study are given. Limitations of this research are also addressed in this chapter. This chapter ends up with a summary of the study's validity and reliability.

4.1 Research Strategy

According to Blaikie (2010), the choice of research strategy is the second most important decision in the research design. He provides the logic of research strategy or a set of procedures used to answer the research questions. His distinguishes between four different research strategies: inductive, deductive, retroductive and abductive. These four research strategies have different logical approach to answer the research questions and offer alternative start points, conclusion and different steps between them (Blaikie, 2000). In the inductive strategy, concepts need to be selected, defined and operationalized. In the deductive strategy, hypotheses are deduced from a theory, and concepts in a hypothesis are measured in order to test whether or not a hypothesized relationship exists. While it is possible to test hypotheses using other methods, this research strategy has been dominated by the operationalizing tradition. It worth noting than the sensitizing tradition can also be used in these two research strategies. The deductive strategy can use qualitative methods, in which hypothesis testing is more in terms of a discursive argument from evidence. It is stated "to hypothesize the existence of a structure or mechanism requires the use of language" and "this may involve adopting or adapting an existing concept" (Blaikie, 2000)

The deductive strategy mostly used in cautious realist ontology and epistemology of falsifications strategies can be criticized for being positivist, if the collected data does not interact with the expected results it is important to be open to discard or change the theory and instead seek intelligent truth should any deductive explanation be regarded as one among other possible explanations. For example, we know that each HSE regulation is defined and set to prevent a certain incident or to improve a certain condition. The abductiv research strategy will be start with theory or empirical phenomena, which can be re-contextualized and interpreted as anything from a particular theoretical perspective. This study will practically follow the logic of a deductive strategy.

4.2 Qualitative method

Qualitative and quantitative methods are two main types of research methods in social science;

> Qualitative and quantitative approaches, fundamentally, stands in complementary, not a competitive relation to one another. Rarely can the own of the two approaches replace the other. Most often they can mutually supplement each other. (Jacobsen, 2005, p. 41)

According to Jacobsen (2005), the qualitative methods take the researcher too close to the informant, while quantitative is works opposite and makes a distance. Depth interviews, participant observations, review of internal procedure and documentation and meeting facilities are the basis for the empirical thesis like this. The qualitative method is a practical approach that gives credibility. It has provided the opportunity for different perspectives and unexpected information.

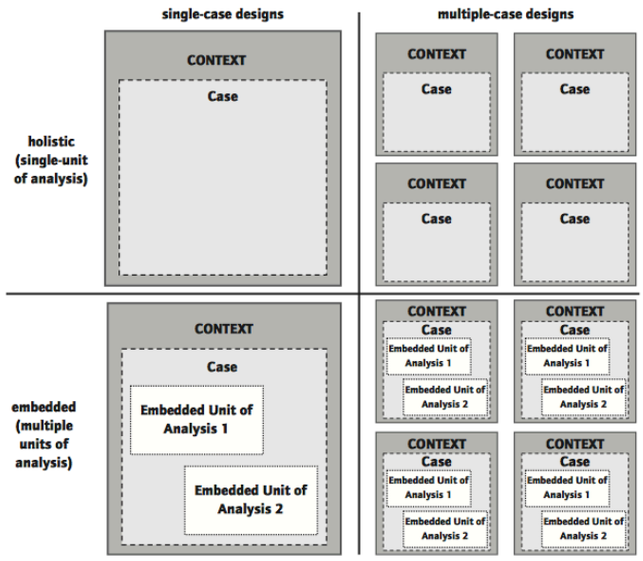
The qualitative methods will be the central point of this research.

4.3 Research Design

According to the Yin (2003) the case studies is obvious when the question like " how " and " why" is asked and since the research questions for this study are "how" zero philosophy understood and practiced in this company and "how" and "why" the zero philosophy effected employees, will the case study be a good choice for this thesis. Case study is a research method that is prevalent within many different social sciences area. The case studies unique strength is, the ability to deal with a full variety of evidence documents, objects, interviews, and observation (Yin, 2003). The case studies are one of the hardest studies that can be done. It requires clear personal qualities like, be a good listener, good analyzer, good questioner, be flexible some can interpret large amounts of data and be a good investigator are some of them (Yin, 2003).

The general forms of research designs that make as a background for considering the specific designs for case studies will be argued in four different parts (see Figure 8) (Yin, 2003).

Figure 8 Basic type of designs for case studies (Yin, 2003, p. 46)



Every type of design is including the desire to analyze the background of the situations in relation to the "case". The matrix shows that single and multiple case studies reflect different design situations. Four types of designs for case studies are; single case (holistic) designs, single case (embedded) designs, multiple case (holistic) designs, and multiple case (embedded) designs. The holistic single case design is the one that most researchers see at the case study. When the research study is a unique case, this type of study can be used successfully (Yin, 2003).

In this research study the multiple methods used for collecting data. Both interviews and document analysis are used, to follow the research study and give a description of the reality of the organization. Being present in the organization during the studying process has provided a unique opportunity to improve an understanding the organization's culture and employee attitudes and behaviors in depth.

4.4 Interview

The most common data generating method in qualitative research is interviewing. Interviews can be done in several types. The most popular interviews are particularly semi-structured interviews or depth interviews. The goal with depth interviews is basically creating a situation for a relatively free conversation that revolves around some specific issues that researchers have determined in advance (Tjorna, 2010). This is a method that is more open to new suggestions and unexpected information. Therefore qualitative methods are well suited when I want to find out what the staff at this company thinks about safety methods and especially about zero philosophy.

Generally depth interviews uses where we will study the opinions, attitudes and experiences

or where we are trying to understand the life history. Depth interview method is based on a phenomenological perspective; the researcher wants to understand informants' experiences and how the informant reflects over this (Kvale, 1997). One of the reason for choosing this company as a case was their prolific commitment to HSE and theirs extremely focus on Zero harm. The research tries to give a description of the reality of the organization and be able to say something about company's safety, safety management and safety culture.

4.4.1 Implementation of depth interviews

To be sure that all the topic of the research question is covered by the interview, the interview guide was prepared for all the interviews. Interview guide contained several questions, which were listed under different topics help us to initiate the thought process (Jacobsen, 2005).

The interview guide for depth interviews is usually long. It was important to create a relatively detailed interview guide. (Tjorna, 2010).

The interview guide that used for this study is divided up in eight themes; General information, Zero Philosophy, reporting and negative consequences, flexibility justice, learning and HSE culture and management team, to make it easier for both interviewers and interviewees to have a focus on questions. This gives the participant a framework for the topic as well.

As a general rule, usually some kind of tape recordings is used; in this case the type recorder used at the interviews. Before starting the interviews all the informants were clearly ask if it's fine that the type recorder be used.

Using the type recorder gives a confidence and more time for concentrate. (Tjorna, 2010).

In this study two different interview guide created. The first one was for management personal and the second one was for all other employee who do not have management position. In detail there was a little different question between the people who work at the fabrication and the engineer who just sitting at the office (see Appendix A1 & A2).

4.4.2 Informants

The research questions are clarified with an abductiv strategy. The challenge is to get the right informants who have sufficient knowledge of the zero philosophy and HSE culture. These will provide the most informative and updated answer.

Some strategic used for choosing the informants. Since the company is big, with more than seven hundred employees and I am not familiar with all of them, I got the help from the HSE manager to prepare the list of informants, the list send to supervisor for evaluation and approved. Total sixteen persons interviewed. (see Table 1)

Table 1 Informant's positions at the company

	Position		Position
1	Senior working Environment Engineer	9	Quality Manager
2	HSE project manager	10	Installation lead
3	Project Manager	11	Line Manager
4	Welder/ plan	12	Safety delegate
5	HSE Manager	13	Technical safety Engineer
6	HSE Advisor	14	Safety Engineer
7	Senior HSE Advisor	15	Project lead
8	Line Manager (Driftsdirektør)	16	Safety delegate

To cover all the research questions, it was necessary at both management personals and "regular" employees be involve. The largest group of informants was from HSE department of the company. Totally I had interviews five people with HSE related position, two with technical safety background, six as a lead or manager position from different department, two safety delegate and two engineers and one operator. All interviewees except four were men. Most of my informants were Norwegian, or grew up with the Norwegian culture.

It is demanded anonymity of documents from the company. All information and names from company will keep confidential. The informants were informed that the data would be treated anonymously and all of them signed the consent form (see Appendix B) before the interview began. The interviewees are also informed that the interviews are recorded on tape with the promise of deletion after getting the result. The complete consent form present to the supervisor as part of the documentation.

To create a more relational view of the informant´s opinion and be able to flow the text easier and respect to anonymity, I tried to collect and show all the information in a table (see Table 2). According to confidential agreement, the full positions of informant are not written in this table and shows separately.

Table 2 Informant detail information

		Age	Position Manager (M) Employee (E)	Total experience years at this company	Total experience years within oil and gas branch	Gender Male (M) Female (F)
1	Informant "A"	64	E	1,5	33	M
2	Informant "B"	49	E	31	31	M
3	Informant "C"	55	E	32	32	M
4	Informant "D"	46	E	29	29	M
5	Informant "E"	39	M	3,5	10	F
6	Informant "F"	32	E	3	3	F
7	Informant "G"	33	E	15	15	F
8	Informant "H"	45	M	28	28	M
9	Informant "I"	34	M	5	10	F
10	Informant "J"	50	E	30	31	M
11	Informant "K"	47	E	30	30	M
12	Informant "L"	46	M	25	27	M
13	Informant "M"	39	E	2	10	M
14	Informant "N"	27	E	3	5	M
15	Informant "O"	47	E	4,5	15	M
16	Informant "P"	51	E	30	30	M

All interviews took in Norwegian language according to informants' request. There for, all the direct statement of informants has been written in Norwegian according to the supervisor's advice. All the regulation also has been written in Norwegian, due to avoid all the possible wrong translation.

4.4.3 Interview condition

All sixteen interviews were conducted face to face. All the informants were informed in advance about the interview's theme; this was done so that the informants should be prepared to defuse the conversation.

The interviews took place at the informant's office or meeting/silence room at the company. Each interview took about20 minutes to 45 minutes. The interview started with the consent form and some general information about the study´s theme. Interviews arranged quite well and without any problems. It just took a little more extra time to arrange the interview time due to the busy management team and some offshore trips.

Another type of data collection that actually is a part of the interview guide is an evaluation form or “survey form” (see Appendix C), which, informants were also asked to spend a few minutes to answer. Polls answered right after each interview.

4.5 Observation

According to Jacobsen (2005), observation is definitely different from an interview situation. When we are interested and want to know, what actually people do in the different situations or when we are more interested in action and not just listening to the story we are talking about observation.

The observation in this research was done at different situation, like the weekly inspection of production site or some HSE meetings. Be present at the research place, minimum eight hours a day give the good opportunely to have the wide observation.

4.6 Data Analysis / Incremental deductive induction

According Tjorna (2010) stepwise deductive induction method (SDI) is used to process data. SDI is a schematic model of qualitative research in which the basic principle is an inductive development. The SDI shows all the steps works from raw data into concepts or theories. In the other word it’s the data generating, processing, encoding, categorizing, concepts developing and discussing the theories. The model can give the impression that the research process is completely linear and is a good starting point for systematic and progress in work (Tjorna, 2010). More interviews will make the research study extensive to analysis.

But according to Kvale (1997), it’s also important that the interviews not got a result as "qualitative positivism" some be impassable and confusing way to understanding a given phenomenon. When we try to understand and define how someone thinks and/or behaves, we first need to familiarize ourselves with the way he/she defines him/herself. But the understanding that we have from other people is highly dependent on our perception of ourselves and the sort of experiences that we have during the time.

The way a human being describes and perceives is by using one of his most important tools called language. Based on hermeneutics, when we interpret a text, at the first step, it is broken down into its components (words, paragraphs...). But eventually the new interpretation must make sense in terms of the whole text and its entirety. Hermeneutics is relative to social sciences because most of the data and materials that includes are meaningful phenomena and texts (Alvensson & Sköldberg, 1994).

To clarify something, it is necessary to try to find an underlying meaning. It means to

clarify something when another person does not fully understand it or has questions regarding true interpretation and meaning. Interpretations are meaningful when there is a risk of misunderstanding or hardly understand (Krogh, 2009).

Interpretation is an important identity or building process. People can be a “self-interpreter being”; this means that we trust on a listener who can give us the response. Interpretation can therefore be as a hermeneutic necessary for the narrator’s self-perception (Krogh, 2009).

The hermeneutic circle is describe a continuous process between some parts and the whole picture, it means that the interpreting of all informants out of context and a coherent theoretical perspective. This provides new information that affects our understanding of the whole picture, which can increase the understanding of the informant’s meanings (Kvale, 1997). This means that, understanding the collected material through a process in which the meaning of the individual parts is determined by the project's entirety. This is something that the researcher should be aware, according to the informants' interpretations.

4.7 Transcription of data

The problem with transcription is that you do not always know what are the important issues and what's appropriate level of detail, since it initiates the transcription. So it would be better to be more detailed that man think is necessary (Tjorna, 2010). Transcription involves more than a spoken language; we do not speak in paragraphs, tittle or symbols. It has an own rules, it’s a written language with completely different rules (Kvale, 1997).

According to Kvale, it is impossible to choose the correct transcription. In this study, interviewer was the same as transcriber and this might help the research process to avoid losing important information. The interviews were reviewed to ensure that all relevant information were used. The empirical data is categorized thematically similar to the theoretical topics and interview guide as designed.

"Transcription can change into a research project itself" (Kvale, 1997).

4.8 Ethics

The confidentially was the priority in this study, this means that no one should be able to recognize people and the information that have been gained from interviews, and nothing will damage or disadvantage to any of the informants. This is ensured by the fact that no one is named in the study paper, as it was written at consent form which signed before the interview (see Appendix B). Hoped the confidentially could help, that informants be more open to speak.

It was the wish of the company´s CEO that all the information and informants will be anonym in some ways. All public documents, which have been used, are easily accessible. Internet sites that are visited in connection with the collection of data are referenced and available. An exception is information from company´s internal document that according to confidentially; will not be shown in reference list; but they listed and showed to the supervisor in a separate document.

It is company's goal that all employees show respect to each other and create a common HSE culture. The company´s "Ethics program"; sets out the standards for professional behavior across the business. It explains what these standards apply to, why they are important, how you can seek guidance on ethical issues and what happens if it breached. It is a web based course and mandatory for all employees. However the "ethics" cannot address every situation that the employee might face. It is important that the entire employees also understand these policies, and set a requirement that if they are ever in doubt about whether they are 'doing the right thing'. Everyone have an obligation to report gaps and potential breaches of the "ethics". Nobody would be afraid to report any ethical concern. No retaliation will be permitted against those who report gaps of the "ethics" or who raise ethical concerns.

My position during my study, as a new member of this family and be a student at the same time, was not easy at all. By choosing "My" company as my case study in one side, I have a lot of open doors and also easier ways to find and get information; but in the other hand I can be "color" with the company´s policy, which I really chose to avoid. I chose to be a critical student and not a company representative during this research study.

4.9 Validity and reliability

Validity and reliability are important facts that should consider when we conducting case studies (Yin, 2003). Two terms are commonly used in research study with qualitatively oriented methods. Study´s goal is to compare the interviewees' opinions, observations and put in the investigations into the problem context. It is important to obtain reliability in the interview phase, transcription phase and the analysis phase. Validation of information and

data is a continuous process throughout thesis processes.

Be at the organization will have an impact to interprets and reflects. It's easy to be effected by what goes on in the organization, and therefore will be difficult to be objective and critical. You know the staff quite well after a while, which can set limits on how critical man should be, and it’s very challenging.

"Truth" in a meaning-creating perspective and as a social or social-scientific construction of reality. Knowledge is subjective and it is formed by the socialization process based on the organization's cultural values, and is maintained and developed in the social organization of communication and interaction (Schultz, 1994). Validity of interview surveys depends on the quality of the questions that were asked, and the common understanding that interviewer manages to create, as well as thier ability to understand and interpret the answers that were given. My task in this study will be to get as close as possible to "truth". According to Kvale (1998), pragmatic validation is perhaps the closest thing regarding validation in organizational context; the theory will be tested in reality. A pragmatic validity goes further than communication. Pragmatic validation depends on the observations and interpretations, where one undertakes to act on the basis of interpretations "actions speak louder than words" (Kvale, 1998).

It would be difficult to determine at the interview whether the informants telling the truth or not, or whether they simply dare to speak the truth. Even if we promise of anonymity, it can be difficult for many of us to talk about the closest colleagues or managers. The reliability of what we get as a result of the interviews will therefore depend on how honest informants were.

5 Empirical

In this chapter, the study's background is discussed. The result of observations, data collection and depth interviews is presenting in this chapter. At empirical chapter tries to shows a complete picture of company´s priorities and practices process of safety culture and zero philosophy in the best way. How and why zero philosophy established in this company and negative consequents of this policy are also described.

Chapter is divided in three main parts according to the research questions.

5.1 How dose zero philosophy practiced by the company?

For achieving the zero harm, all administrative and technical resources will be used. Zero philosophy is a goal for both work structure and a way of thinking. Some important zero philosophy activities according to company´s policy are: leadership and management responsibilities, active and visible leadership and their responsibility at the critical situation, organization´s HSE culture, training program, etc.

Here is some unique description of Zero philosophy from informant´s perspective:

> Det er den filosofien vi jobbet etter. Det ligger som grunnlag for styringen av systemet, for måten vi tenker på, måten vi legger opp strategiene våres på. Intensjonen er at vi skal sørge for å minske skader. Målet er null når det gjelder folk, materiale og ytre miljø. (Informant E)

> Når nullfilosofien kommer inn, bidrar det til et strukturert arbeid rundt HMS som vi ikke hadde tidligere. Og statistisk sett har den bidratt positivt. Den nullfilosofien har passivisert en del grupper i bedriften som tidligere kanskje var mer aktive i og med at det er satt opp noen faste regler mer enn det som vi har hatt og gir kanskje mindre rom til fri tenking. (Informant B)

> Dette er bibelen vår, nullfilosofien er nesten som en religion. Den passer på at alle som går hjem er like friske og glade som når de kom på jobb.
> (Informant F)

> Nullfilosofien betyr at vi alltid kan forberede oss. Nullfilosofien i bedriften betyr kontinuerlig forbedring. Man må hele tiden jobbe for å bli bedre. (Informant M)

> Nullfilosofi for oss gjelder både HMS og kvalitet, der HMS-delen er viktigere enn kvalitetsdelen. Det handler om å gå hjem like friske som man kom på jobb, med det mener jeg uten skade. Dette er noe som henger på kontorveggen min. Det er en HMS-forpliktelse, dette er noe vi snakker om hver eneste dag. Store deler av møtene med mine ansatte går på HMS. (Informant K)

> Nullfilosofien betyr at jeg må planlegge jobben. Jeg må utføre mitt daglige arbeid for å unngå skade på miljø, mennesker og material. Det gjør jeg kontinuerlig. (Informant J)

> Å skape en trygg arbeidsplass; nullfilosofien gir en trygghet til familien som sitter hjemme og venter på sin kjære. (Informant H)

> Det skaper åpenhet i bedriften. I forhold til hvorfor bedriften setter seg et sånt mål, så tror jeg at det handler om flere ting. Den ene tingen er forventingen fra kunden, det tror jeg nok er det viktigste bidraget. Myndighetene setter kravene i forhold til internkontrollforskriften om at vi har kontroll over systemet vårt. (Informant B)

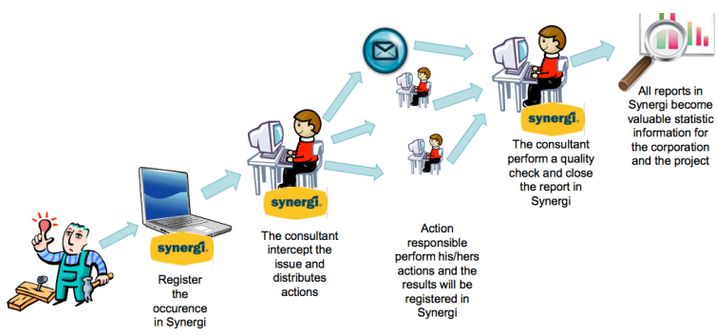
5.1.1 Reporting system/process

The reporting culture is an important issue in this business; it is an important component of safety culture. It is a key element in HRO theory, and is one of the four critical aspects of Reason`s safety culture as well. Reporting culture is an important part of a system to achieve the zero philosophy and in the other hand is the most reliable cause for the negative consequences of zero philosophy.

Synergi is a reporting system in this company. It is a database for reporting of non-conformances, unwanted incidents, improvement proposals and positive occurrences. Each report can be catogorized with the different color sysstem according to their hight risk possibility, they are red , yellow and green. Red have the highest severity and the green have the acceptable one. (See Figur 9)

> En hver ulykke med potensiale vil bli gransket, det er tre forskjellige granskningsnivåer; 1,2 og 3 og det er ulike alvorlighetsgrader. Men både nivå 1 og 2 fungerer på samme måte. Du bruker ikke så mye tid på dem. Du bruker ikke eksterne parter, ikke parter fra andre deler av bedriften og heller ikke fra kunder. Men enhver medisinsk hendelse må for eksempel granskes og hver gul hendelse må granskes, og også de røde selvfølgelig. (Informant E)

Figure 9 Synergi process at the company



All incidents, which involve injury to personnel or damage to material and environment, should be reported. The incidents such as, incident with involving obligatory reporting to "the authorities" and company, incidents and dangerous conditions demanding the initiation

of long-term steps, incidents which is important for others to know about, incidents and dangerous situations which can be traced to defective systems and guide lines and incidents which are verbally reported to nearest superior without corrective action being initiated will be reported according to company´s procedures.
Actions will be identified, followed up and closed within a reasonable time and reasonable time will be depends on the scope of situation.
Everyone can report everything that occurs in an organization, either by using the STOP cards (Paper card that can use for writing the report. It is available everywhere in a company and is especially using by operator who has not access to computer), RUH form or direct reporting system, Synergi. By reporting incidents, it will be possible to find the fundamental reasons of why the incident occurred. When the knowledge of the basic reasons is visible, it will be possible to implement the right action for reducing the risk to the acceptable levels. Some opinions of some informants about, "what and why should everyone report? And why they think, it is so important that all incidents be reported, are gathered here:

> Vi vil ikke ha rapportering når det har skjedd noe, det viktigste med rapporteringen er når ting nesten skjer, for det er da vi kan jobbe proaktivt og det er det som gjør HMS spennende. (Informant F)

> Nå for tiden er vi veldig interessert i å få alt inn, slik at man kan se for seg hvor en trenger å gå og for å kunne bremse ned. Rapportering har høy verdi, hvi man ser på HAZARD-trekanten. Jo mer man rapporterer, jo bedre indikasjon har man på hva som skjer. Rapportering er til for å få informasjon, og å sette inn tiltak. (Informant A)

> Det er først og fremst for å kartlegge. Vi har HMS-kvartalsmøter med ledelsen der kvalitetsavdelingen og HMS presenterer alle rapporter for kartlegging, da kan vi se hvor vi har spesielle utfordringer, hva som er mest vanlig og mange andre ting som kommer opp. Rapportering er noe som vi ønsker. Vi ønsker flest mulig rapporter inn. Så hvis vi har en uke med mindre antall rapporter, reagerer vi mot dette og kontakter prosjektene og organisasjonene om hvorfor det ikke kommer rapporter inn. Hva skjedde? (Informant H)

The RUH and stop card will be delivered to leader or management of the department who reviews, quality controls and registers the incident in Synergi.
According to company's procedure, the incidents will be registered and approved in Synergi, maximum after two working days after the incident. It will be the HES department responsibility to ensure that all actions are followed up and establish the unit responsible executes steps, which then gives feedback on status to HES department.

All incidents will be documented with photographs, if available, and if it is not possible to obtain relevant pictures of the incident, the incident will be reconstructed and documented with photographs. The incidents history will be documented with a short PowerPoint presentation (one slide) with pictures and descriptive text, all this presentation will be available in company´s intranet.

When it comes to personnel injuries, it will be registered in the especial registration form. All fields should be filled in completely. If some information is missing it will be possible to obtained from the injured person or his/her responsible manager.

Qualified personnel are evaluating all incidents when it concerns most probable recurrence frequency and most probable loss potential. A reason analysis in Synergi is executing for all incidents. Qualified personnel are always executing this analysis and carry out a quality control.

All employees in land have the Synergi as an installed program on their computer or laptop. Access to Synergi is also possible from intranet.

When some incident occur it's a lot of people in organization that be involved and depends on their positions, they have a different responsibility, the most key person in this company according reporting and Synergi is HSE manager.

HSE manager has the responsibility for routines and requirements that being established and followed with all activities at the working area. HSE manager will qualify, assure, approve and close all the reports that come to systems, (especially the red category).

All managers in the company receive the weekly Synergi report from the HSE department. The report is included all incidents, near misses, suggestions and positive reports that been registered last weeks. All will present as a short report, description, with total sum and the Synergi number, so it will be easier to find them for the further necessary actions.

> Vi bruker et synergisystem for registrering av hendelser, tilstander og tiltak og alle ledere får tilsendt lister på alle rapporteringene ukentlig. Så hver mandag morgen går jeg gjennom alle rapporter, noen har jeg en reaksjon til, noen ligger kanskje og må besvares, andre er bare informasjon og læring fra andre prosjekter. Jeg presenterer alle relevante rapporter i mitt ukentlige møte med mitt personell for å gå igjennom det aktuelle for mitt prosjekt og mitt område. (Informant C)

As an example, the report for week 22 shows, that totally 41 reports registered. The numbers of the reports are totally dependent on the activities level. How many projects going on at the same time, onshore or offshore, how big is the project and how many people working with them and what is the background of the operators, all can influence the result strongly. The history shows that they had total registered reports from 10 till 150 for a week. So it is really depends on the volume of work and number of the people who were involved. All informants believe that RUH or stop card theoretically are a great tools, but

some times it is difficult to get people to report, it needs an impression and push to get people to write.

If the employees misunderstand the message of zero philosophy as a zero tolerance then they are in a problem. If zero philosophy understood as a fault or zero tolerance means that, it is prohibited to make mistakes, this may means that employees hide accident or incident, and they be afraid to report (Tinmannsvik, 2008).

Underreporting is a difficult topic to document; so it is not easy to find the exactly cause of it. From my sixteen informants, only one says at there is no under-reporting in this organization. All others believe that it is a underreporting in the company. Almost 94% of informants believe that there is underreporting of incidents according the small tasks in this organization, but all serious accidents will be reported. They believe that employees in the company are totally responsible for the reporting and this is something that, they have constant focus on. They agreed also, that it has been less under-reporting in recent years.

Informant "E" explained that it is often underreported by minor injuries.

> "Når det gjelder skade så tror jeg ikke det er under-rapportering. Vi er ganske flinke på dette. Men når det gjelder småting kan det sikker bli bedre." (Informant E)

> "Det hender at det er under-rapportering. Man ønsker å ha alt på border for å kunne analysere og hindre at noe ikke skal skje igjen."(Informant A)

The HSE management explains the relationship between the reporting of incidents, injuries, and how to work towards zero harm with the iceberg model.

> Jeg tror på isfjell-teorien. Jo flinkere du er til å unngå de mindre skadene og fokusere på dem, jo mindre sannsynlighet er det for at større ulykke inntreffer. Det at du er observant på de små tingene gjør at du klarer å sikte bedriften inn på det rette sporet tror jeg, og får oppmerksomhet.
> (Informant E)

Near misses (Tilløp) are the events that show the lack at the system and are working as an alarm. As mention before, they are really important and valuable for company. To know exactly what happen and the reason of that can help the company to improve the barriers and avoid the same or bigger accident and catastrophically situation. These recently years the company tried hard to increase the number of near miss reports. The reports from Synergi show the near miss history from 2010 till 2013 (See Table 3).

Table 3 Total HSE report, Near miss & Incident reports from 2010 till 2013

	2010	2011	2012	2013
HSE Reported (Total HMS Hendelse)	315	530	1843	3383
Near miss (Tilløp)	**70**	**126**	**132**	**25**
Incident (Tilstand)	163	258	1302	2540

This result show at, the number of reports for (Tilstand) has increased significantly from 2010 to 2013, which shows that the reporting culture has a good effect in a company. On the other hand the number of the near miss decreasing during the last year, that is the good result as well. The number of the near miss reports increased from 2010 till 2012 and this is something that can be discussed. 2012 was a busy year in this company with a lot of activities, two big projects running at the same time and too many foreign operators working in the company, maybe these can be an explanation for the high near misses.
2013 was not the low activity year for this company, maybe not like 2012, but it was more than 2011, so according to informant "I", this can be the result of the new program "OW" after the migrating.

> " "OW" er vår vei til bedre HMS og null skade. Dette kommer til å hjelpe oss til å få bedre resultat og mindre skade." Informant I.

The decline of near miss events will be positive point for the company. It shows good HSE result, and it means a safer working area and more aware employees. Reporting becomes a fixed routine and this is a good signal for the zero harm.

5.1.2 Learning

Company´s goal and wish is to have a continuous improvement and a decreasing numbers for injuries and losses.
Focus on learning is one of the base activities that the company may concentrate on it.
Further, how the company gets knowledge of possibly risk, and how spreads the knowledge and information to the different part of organization are an important. Learning is an important factor for both HRO theory and safety culture.

Training process

The requirement for HSE training includes all employees at this company, and all others who work, resides in areas, or participating in projects where the company is responsible for accomplishment. A full training will be reviewed during the first 14 working days.

No one is allowed to walk on their owns in company´s areas without the mandatory HSE training. If completing the training in accordance with this regulation is not possible before the actual person is put in the work, the superior will review the items in the ”checklist for safety information”, ensuring that they have understood the contents of the listed and send the fully completed list to the HSE department. But this review is only a temporary training, and as mentioned above, a full HSE training must be completed within 14 working days.

To ensure the systematic work with HSE, based on Internal Control Regulations (1994) all employees will take a HSE refreshment course every five years. This will be based on company´s internal HSE course.

The HSE course is include; the company´s HSE statement, safety areas, use of protective equipment, evacuation, escape routes, muster areas and registration placing and use of emergency phones, emergency preparedness, first aid equipment, placing and use of fire extinguishers, industrial defense, rules for order and tidiness, chemicals and secure handling, reporting of accidents, special traffic and parking regulations, presentations for supervisors and safety delegates, etc.

Including the HSE course, which is mandatory for all employees, the management team have also some extra course that should be passed; which includes basic work environment course, observation of dangerous acts, accident investigation, special area based courses for example for chemicals, solvents and waste treatment, organization and responsibilities regarding HSE regulations on internal control and common provisions, first aid kit, noise, etc. All HSE training documents register at the company’s archive system.

Here describes some of the mandatory course in this company. (show as Table 4)

Table 4 List of some mandatory course in this company

Relevant courses	Supervisor	Department Construction	Department Engineering & Basic	Project managers, Installation Division Leaders
HSE Course	M	M	M	M
Mandatory safety training for managers	M	M	M	M
Chemical Handling	M	M	B	B
Safety Inspection Course	P	P	P	P
Open Safety talk	P	P	B	M
Work permit /Safe Job Analysis	R	R	R	R
Management System	R	R	R	R
Synergi – HSEQ reporting	M	M	M	M

M= Mandatory, P = Prioritized, B = Based on evaluation, R= required offshore/land facility.

All the informants are agreed that the training program and the learning process are working well in the company and the management team has a good overview.

IKAZ

The IKAZ campaign is designed as the company behavior and is based on safety initiative to reinforce the importance of human interactions about safety. IKAZ is observing and discussing with everybody, in their actual work place, any issue focused on achieving Zero Harm to their health and safety or that of others and achieving zero environment incidents.

The new program will be practicing at the company very soon. This is all about the zero philosophy and the way to the zero harm. Now at this point it is not too many employees that know about it, but the HSE department and the management team are working on it.

5.1.3 Justice

All the informants agreed about the possibility of anonymously reporting and performing in the company. Both the intranet, RUH and stop cards can be used for anonymously reporting. Those who wish to report anonymously can also go to HSE department, department manager / Forman or people who are responsible for reporting system and ask for writing the report. But this one will not be 100% anonymous but it is a opportunity that employees have. Some times it can be a problem for those who are working in a small group. It will be easy to find out, who dose reports the case, told informant “L”. But as mention before, reporting is not a big problem here.

> ”Jeg tror ikke at anonymisering har en stor påvirkning, men det har nok hjulpet litt. Men det er åpenhet her i forhold til rapportering.”(Informant C)

None of the informants believes that someone will be punished due to reporting of any case. On the other hand, informant ”G” told about some projects that, the company and HSE department tried with some encouragement and competition atmosphere. Every two weeks they had the lottery with all stop cards that came in, and some gift cards or voucher for the nice restaurant awarded. The goal was to increase the case reporting and spread the safety and reporting culture.

5.1.4 Flexibility

It is not always easy to tell colleague that what he or she does, is wrong, specially if you are younger than them and they have a long experience. It is challenging dealing with this group.

It was questioned about, “If the employee has the power to stop an operation according to safety principal”; and all informants agreed that this is exactly, what they do in this company.

> ”Det kan være en utfordring siden det er noen vi jobber med.” (Informant C)

> Det finnes både folk som har jobbet her i 25-30 år og nye folk som er lærlinger i denne bedriften. Han som har vært her i 30 år kan stoppe noen i et arbeid som han tenker er feil, men hvis en lærling sier stopp kan det komme to situasjoner ut av det; 1) han sier at dette har jeg gjort i 30 år, eller 2) han sier obs, tusen takk for at du gir beskjed. Jeg tenker at de fleste sier tusen takk. (Informant K)

5.1.5 Barriers

Barriers are methods to improve safety. The company believes that it is possible to change the human behavior, but it is a challenging process. Here is the result that I get from my poll schema that informants filled during the interview time. (see Table 5)

Table 5 Check, which one you think we can reduce in this industry/ company

None	Human errors	Technological errors	Organizational error	All
	x			15x

As the result showed, almost 95% believe that all three types of barrier can worked and help us to create the safer business.

Here is some of the barriers that the company creates and use for preventing and handling the accident. Some of them are already being presented in the chapter two.

5.1.5.1 Internal control

Internal Control is the most important barrier in all business; with having the internal control, the system can be managed in the better way.

Internal Audit

A safety inspection is also a part of the internal control and is a tool of systematic health, environment and safety. Safety inspections will identify the potential hazards and will take action against them. HSE department has a fixed plan over company´s area. Some places check weekly. Some general inspection with the manager participation takes place every three months. It calls managers inspection. The HSE department tries always to participate

in all inspections over the company´s area. It is a good opportunity to see and discuss things with the responsible lead and HSE delegate.

5.1.5.2 OW

"OW" framework focuses is, to achieving zero harm and consistently high quality output from company´s projects. If the company can achieve this, all employees will be safe and so will their customers, when they operate the equipment they have built.

OW is implemented as part of everyday business. Each month a responsible manager presents a new element in the HSE monthly meeting.

Every formal meeting of four or more people is started with some short presentation of a single element or multiple elements of OW. It can also be just a discussion and not a presentation, on topic relating to zero harm at the start of any meeting. It points to take a holistic approach to dealing with factors that could cause harm to people, assets or environment. It considers steps that can take well before an incident might occur. It can be lessons learnt in operations and projects, recently published news items, personal stories or historical events provide the basis for many presentations. The goal is making employees to think about their actions, challenge them to modify their behavior and motivate them to influence others to create an environment that promotes zero harm. From January 2014 the monthly HSE topic comes from the "OW" twelve elements.

5.1.5.3 Monthly HSE Meeting

Managers from all disciplines included CEO and HSE department personnel will have the HSE meeting every second Monday of each month. During my research period, I participated to some of these meeting.

Each month they have a new HSE topic, which will be presented in this meeting. Usually is the HSE manager that presents the month´s HSE topic. After the presentation it's a room for discussion and improvement, and for brainstorming; everyone can come with idea or adjustment for the better result or to find the best solution for issues that pops up during the meetings. Language barrier was the subject that raised and discuss recently. These meeting are valuable for the company according to HSE and quality.

5.1.5.4 Risk assessment

Risk is associated with all human activities and risk assessments are used extensively to provide the information to identify the impacts and inform decision-making processes. Preparedness is the only things that company can do before any accidents happen. Risk assessments do not need to be complicated. Some times, assessing risk requires not more

than a common sense. These can show in a risk matrix of the company. The definition of risk in this company is: The probability x consequence = Risk

Figure 10 Risk Matrix

				Probability				
		Occupational	Environment	seldom	1 - 5 years	6 month. - 1 year	14 days - 6 month	0 - 14 days
	Grade			1	2	3	4	5
Consequence	5	Death	Very large pollution	75	150	225	300	375
	4	Serious personal injury, permanent impairment	Large pollution	25	50	75	100	125
	3	Serious injury	Moderate pollution	10	20	30	40	50
	2	Medical Treatment	Less pollution	5	10	15	20	25
	1	First aid	insignificant pollution	1	2	3	4	5

The company has an overall management tool for risk analysis.

Most activities we do at work, home or vacation, are involves risks and hazards. Activities in the company are associated with numerous and relatively large risks. Risk analysis is one of the main basics for developing effective procedures and instructions so that the company can carry out their activities safely and securely.

In a busy working day, they will be faced the situations that require preparedness that is not necessarily covered well enough with the procedures or instructions that company have in their management system. So a simple risk analysis before and during an operation can be used.

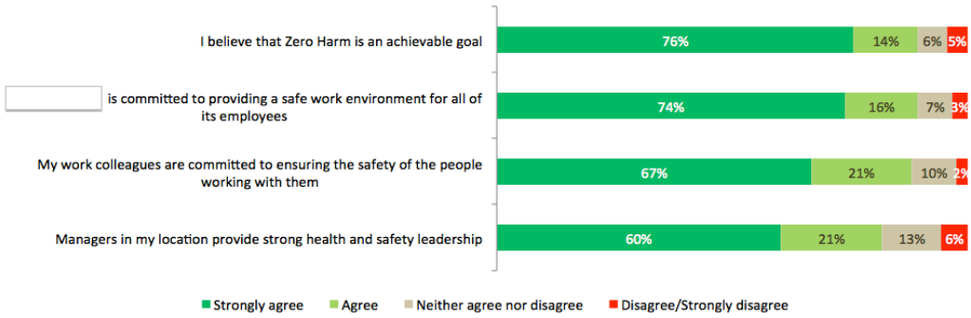
> Vi gjør dette på mange møter. Det beror på hvilken type arbeid vi har. Vi gjør risikovurderinger ut fra mengde og type arbeid. Vi har ulike erfaringsoverføringer fra kunder, fra samarbeidspartnere og selvfølgelig fra selve bedriften. Så vi forstår risikoen gjennom mange risikoanalyseprosesser. (Informant E)

5.2 What is the effect of zero philosophy at the company´s safety

According to my informants, one of the most important changes brought by the introduction of zero philosophy is more focusing on safety. (see Figure 11)

Believing the achievability of zero philosophy as a company´s goal and plan is 90%and according to my interviews, the result of this is more than 95% for the Stavanger. But totally it is a very good result that shows the safety improvement of the company. According to providing the safe working environment, it shows that the company doing the good job and most of the employees are satisfied. According to leaderships job is also shows a good result, but this part have more space for improvement.

Figure 11 Global result of employee agreement about safety and zero philosophy



Both result from figure 11, and the RNNP 2013 (Staveli, 2014), show that the company as a part of the petroleum industry family are at the wright way and doing a good job.

> "…The overall level of risk in 2013 is at its lowest ever. There have been positive developments in the helicopter incidents, ship collisions and long-term trends in fatal injuries. This is the central theme in the risk of major accidents."
> (Staveli, 2014)

About 90% of employees agreed or strongly agreed with the statement: "I believe that Zero Harm is an achievable goal". Approximately 5% (one in twenty) of employee disagrees with this statement. When asked why, they will say things like "Well, it's not realistic to expect that accidents won't happen".

The company´s management teams are visible and active. They will ensure that all staff understand that working safely and in an environmentally responsible, is a compulsory requirement and that everybody is responsible for their own safety first and then others safety. They do not accept a deviation from the procedures implicitly overlooked. Everyone has a responsibility to intervene to correct or correcting undesirable practice or behavior.

The management system contains all the necessary information that employees need to know at the first step. They provides the basis for; effective operation, understanding roles and responsibilities, compliance with regulatory requirements, satisfaction of customer requirements and expectations, good control at procedures and standards to ensure quality

of work and ensure that requirements of both the company and government compliance. The HSE Management plan does provide references and links to company´s management system processes and other documents, and it provides office specific expansion that will comply with company's requirements as defined in management system.

If we look around, a lot of things we see at the different part of society are an example of the way to zero harm philosophy. The checklists are progressively rising within health care. The safe surgery checklists were implemented before and in the operating room and are a suitable implement for communication of serious information. The lists are use systematically in all surgical procedures. Now a day the checklists are not just for health care community; it uses at all high risked industry (Bieder & Bourrier, 2013, pp. 123-131).
If we come back to the source of zero philosophy history, the road traffic, it shows the result of the zero philosophy was not something incredibly good and there is an important difference between the road traffic and the oil industry (Langeland, 2009). As mention before the oil industry is a closed system, while road traffic is not. When we talk about people at the road traffic, we talk about the "not skilled people" compare with the people who are working at the petroleum industry. When the people started working within petroleum industry they are trained with the different safety course. At the road traffic the driving license is everything. There is more control on the people working in a petroleum industry compared to those who are in road traffic. The other difference between the petroleum and traffic industry according to zero philosophy is at the zero philosophy is not the zero tolerance at the petroleum industry but it can be actual for the road safety;

> Most states have a "zero-tolerance" policy … if the driver is under 21. That means the legal limit is lower than what is permitted for drivers who are of legal drinking age. Some states put the under-21 blood alcohol limit at 0.01% or 0.02% to account for too much mouthwash, rum-soaked cake, or whatever your excuse is… (Katz, 2013)

So maybe here in this situation the zero philosophy is a zero tolerance as well.
The zero philosophy showed a better result and agreement from petroleum industry than road traffic industry.

5.3 Can the goal of zero philosophy have the negative consequences?

Mixing the zero tolerance with the zero philosophy is an issued that ends to some negative consequence as under reporting. It means that, it is prohibited to make mistakes. This may mean that employees hide accident or incident. And when the incidents are hidden, it will not be possible to figure out where is the problem and nobody can learn about it so it might be repeated again. But according to informants, the under reporting is not a big issued here. According to my informants there are some other negative consequences with zero philosophy than the zero tolerance, which can cause to under reporting as well.

”Det eneste negative kan være at folk ikke tror på den ” (Informant G)

”Det koster penger og tid. Dårlig produktivitet og korttidseffektivt.” (Informant K og F)

Ja, hvis man går 10 år tilbake i tid, eller kanskje enda litt lengre, aksepterte vi mye i forhold til at folk skadet seg og dersom bedriften da hadde satt seg et høyt mål som null, kunne det ha oppstått under-rapportering og de ville blitt redde for å gi beskjed. I dag tror jeg at vi har kommet oss forbi denne bølgen, og jeg håper og tror og mener med hele mitt hjerte at selv om vi har en nullfilosofi så er vi åpne for rapportering og det er ikke et hinder for oss, men det kan det selvfølgelig være. Og det at de kanskje satte et sånt mål, for så å si at det ikke er et realistisk mål, vil i så fall gjøre det til et helt feil mål. Vi kan likevel ha en intensjon, men den kan ha klare delmål under seg.
En av årsakene til at vi kan bli bedre og kan ha et mål om å oppnå null skader er at vi har en engasjert gjeng på jobb. De rapporterer de minste hendelser som skjer både på kvalitet og på HMS. Slik kan vi, ved hele veien å ta tak i ting, unngå større, alvorlige hendelser. (Informant E)

According to most of my informants this goal is achievable.

Ja absolutt. Hvis vi går tilbake 20 år så hadde det sikkert vært umulig tenker de fleste, men etter hvert satt vi mange ting i system og innførte en del nye rutiner og krav spesielt rettet mot en nullfilosofi til skade og personell. Så ble det bevist etter flere år der vi ikke har hatt noen farlige skader. Vi har hatt mindre førstehjelpsskader, men ingen alvorlige ting.
(Informant H)

Ja, jeg tror at det er et oppnåelig mål. Hvis alle gjør ting på den rette måten så er det et oppnåelig mål. Jeg tror også at bedriften er på god vei, men i forhold til HMS er det alltid noen forbedringspotensialer. Vi er alle avhengig av de andre og alle må gjøre det de må. (Informant P)

Ja, jeg tror det er oppnåelig mål, hvis alle gjør ting på rette måten så det er et oppnåelig mål, jeg tror også at bedriften er på god vei, men med HMS er det alltid noen forbedrings. Vi alle er avhengig av de andre og alle må gjøre hva de må. Informant “K”

”Jo, men husk at i forhold til HMS og sikkerhet er det aldri noe man lærer helt ferdig. Man kan ikke gå ut å si at nå har jeg lært og nå er jeg ferdig. ” (Informant D)

According to Fugelli (2003), zero philosophy has a twin; which is 100% perfection vision. Actually it is the other version of zero tolerance. Zero philosophy will have nothing and hundred percent visions will have everything. The zero philosophy in a social perspective that will have zero defects and zero weakness and at the same time, being a hundred percent perfection and performance culture. He thinks that both go to the extreme, and both suffer because they never can be reach 100%!

> “Zero philosophy makes people severe, the programmer them that not to speak other than gloss image. To create zero philosophy a form of cultural sensitization, make us weary; zero philosophy will too much and forbids us to rest. It makes us sad; never good enough”. (Fugelli, 2003)

There were just some damages that Fugelli (2003) think the zero philosophy can cause the human and health community and could be consequences for the company as well.

6 Discussion

In this chapter, the most important results that described in empirical chapter will be discussed. Empirical data evaluated against the applied theory and research questions are answered in the best way.

With the help of existing theories in chapter two, it tries to explain how and why the company is focusing on zero philosophy and how it practiced, and perhaps the effect and potential negative consequences about zero philosophy.

It is important to be noted that the company's HSE scope is much wider than what is described in this study.

6.1 Discussion of the research theories

According to the result from the empirical chapter and the theories that presented on chapter three, this part described the theoretical aspects that be used in this study with respect to research questions.

6.1.1 Safety culture and Management

After some accidents in the eighty-century, Safety culture theory started to help the industry to avoid the accident and make a safer working place (Bieder & Bourrier, 2013).

Build a good safety culture is not a one-time activity. It requires a long-term perspective to achieve the goals.

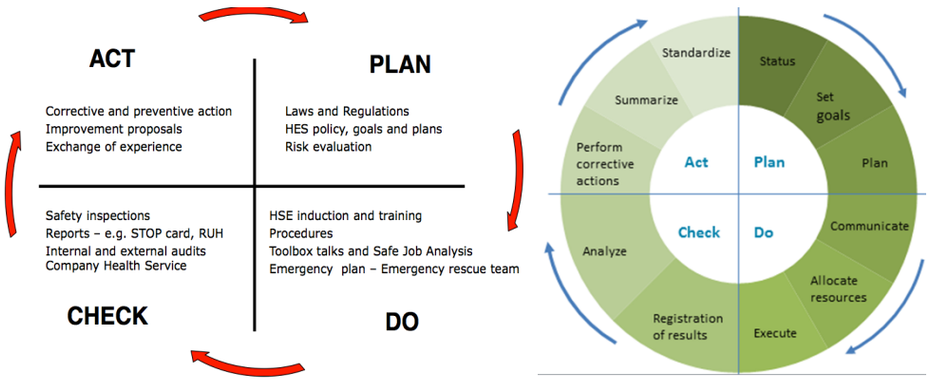
According to one of company's HSE topic, the safety culture is not separate from organizational culture. It is not a "thing" with an objective existence and it is not a policy, program or procedure. It is about culture; leadership, structure and competence. All of these together build a good safety culture. All of them are important issues for creating the culture. The company is working with the safety culture continuously. Company´s intranet has been updated every day and the monthly HSE theme and news contributions from employees, customers, regulation and etc. are regularly added.

All meeting started with a short HSE presentation, the HSE is an obligatory agenda item. Safety quarters, monthly HSE theme meetings, morning meetings (at projects and fabrication), management meetings and revision day/ meeting, all are for the exchange of experiences and make a safer working environment at the company.

The lesson learned document with real or stimulate picture are publishing after each accident. It helps the company to avoid the similar mistake and it is the part of learning progress. To see others fault, help employee to think that "This one could happened to me as well", to share experiences, help the company to the better way; the way to the zero harm and the better safety culture. These are the good evidences for a safety culture in this

company. Figure 13 shows the company´s HSE management system. It is the improvement system, and it´s like a circle, never end.

Figure 12 Company´s HSE management systems



According to Reason (2005) to reach a good safety culture needs to develop a reporting, justice, flexible and learning culture. Culture is a tool for management to succeed and reach their goals. They need to develop cooperation, communication and mutual understanding.

6.1.1.1 Reporting culture

The company has established the good routines for reporting system, it's something that they have focus on and it improving every day. Most part of the reports from the employees is from offshore activities and coming to the system through Stop cards or RUH schema. Employee who work at the workshop, reporting all incident, accident or suggestions with stop card or reporting them orally to safety delegate or responsible manager. For employees who are working at the office in more relevant to write them direct in Synergi or inform their manager orally.

The Synergi reports from 2010 till 2013 clearly show the increasing the reporting case. (see Table 6)

Table 6 *Total HSE report, Near miss & Incident, suggestion reports from 2010 till 2013*

	2010	2011	2012	2013
HSE Reported	**315**	**530**	**1843**	**3383**
Near miss (Tilløp)	70	126	132	25
Incident (Tilstand)	163	258	1302	2540
Suggestion	28	36	99	193
Positive Reports	-	93	270	581

Management team will make the analysis and clarification of the all reported cases.

All the report will be categorized; it is easy to find the type of accident, what type of damage, which level of acceptability and when and where it happened and alternative which project it's belonged to. This information will be used for further investigation, risk assessments and risk analysis. It helps to determine the focus area, have the better compensatory measure and even led to an increased awareness. Reports of unwanted incidents are used both in the preparation, risk evaluation and assessment, in the same way as suggested in the theoretical chapter.

One of the obvious examples for this company, which most of the mangers and HSE personal named at the interviews is the hands and finger accident. According to the recorded report at Synergi, the most of the medical accident cases are about, leak of PPE, and especially gloves. After increasing the reported cases, the management team started wandering why it's happen too many times and what they can do, so the company started the new campaign according to different types of gloves, highlight more finger and hand injures. After several months, they started to use the most popular gloves "anti-cut" with different color. The color is "reflex yellow" and it´s really visible. This is just the small example, but it shows very clear that, how useful and importance the reporting culture can be. It shows that constitutes reporting by the employee is an important issue for the company´s management team to see the defects and take action.

Reporting is a part of the culture and some time is difficult to implement to others, especially with diverse nationalities, cultures, language and attitudes.

Reporting of incidents potentially provide as much information as actual accidents.

It is difficult to get an overview of under reported cases. But the under reporting is a part of the reporting culture, so if the focus on developing and improving the reporting culture increase, the sum of the under reporting will be go down automatically.

As informants "E" mentioned, "Jeg tro på Isfjell modellen"; more near misses are a sign for more probability that a major accident will be occurring. The whole idea about iceberg model is to show that all these incident that are lies under the surface can be bigger than we think, and at the end they will be cause a serious accident. They are just an warning to wake up us to see the whole picture, see the errors at the system and do something to solve it, before it become too late. A model is trying to explain the relation between the reporting of incidents, injuries, and how to work towards zero. The goal with using the iceberg model is to increase reporting of incidents, that can implement a preventive measures, and reduce the risk of major accidents. As the informant "E" told, it is valuable that the company believing iceberg model. More reports come in, more chance to learn about the fault and prevention and believing, there is a link between accidents and incidents, fewer incident so the less chance of accidents. The logic of the iceberg model is an important part of the Zero philosophy.

Totally all the informants were agree, that incident reporting has a positive value. But at the same time it can also have negative consequences associated with the use of strategies to measure employee performance; when the zero philosophy recognize as a zero tolerance.
The result from 2013 result shows (see Table 6) that over the last 12 months, the company has achieved an improvement in their total recordable case. Whilst this compares with most of their competitors and customers, it also shows that they still have plenty of room for improvement; especially their HSE performance in offices, where injury rates actually worsened.

6.1.1.2 Justice culture

A justice culture is a culture where employees are encouraged and in some cases also rewarded to inform and report safety related information. Justice culture is important for reporting culture. It is difficult to gain knowledge and information of potentially incident, if the employees have the fear for job security. Confidence and justice is the way against this feeling (Reason, 1997).
The basics for a good business are the trust and protection from both sides, the employee and employer. They are, together can running organization and have the good and creative working environment. According to Reason (1997) anonymity emphasizes as a basic condition for a just culture. This gives the employees who have been involved in accidents, be able to stand up without fear (of course as long as they have not broken routines or regulations).
Through HSE course, that all employees and workers from other company should attend, they learn about company´s safety culture and the company´s requirement to how they act at the organization. At this company as all the informants were agreeing, the employees can report incidents anonymously, through RUH, stop card and also with the common username for Synergi reporting system.
But the problem raise when the employee and operators working at a small group, and it will notice if someone reports something. But this is not a big issue in this company.
By improving the reporting culture and increasing the employee´s understanding about how actually important is reporting and practicing, can be a better situation as well. At the same time is also show that the anonymity is very important.
Reward or punishment is not a big deal in this company. None of my informants think that the reward is the reason for reporting or underreporting; and nobody point out that they are familiar with at, the employees have been sanctioned because of the reporting or under reporting. But of course the serious situations are an exception.
It's all about creating common trust that contributes to increased the safety and better working condition (Reason, 1997).

Overall carries company's culture certainly signs of being a justice culture, but they are consciously working on it to clarify the boundaries between acceptable and unacceptable behavior and similarity between managers and employees in relation to not acceptable behavior.

6.1.1.3 Flexibility culture

According to Reason (1997), flexibility is one of the tradition properties of HRO theory.
To prevent and managed the accident, the knowledge, experience and information is needed and they can be used in a company in a best effective way, if a flexibility culture is developing. One of the best ways to evaluate a company's flexibility is that if the employees can stop the operation according to the safety reasons. It also can reflect the employee's overall contribution. The company believes at most of the employee can and do this but sometimes is challenging. Especially, when the situation is about expertise and new staff.

> "Jeg har gjort den i 30 år, hvor gammel er du? du har ikke født når vi har …"
> (Informant O)

All employees at the company have an opportunity that go to his/her manager and easily speak up, but sometimes it is difficult and intensive to change some old attitude and arguing with.
Everyone is talking with each other and generally there is a good atmosphere among the employees in the organization. The company has a routine for emergency situation like a case of fire, in which those responsible people for the various situations have real training, where they think through, considering and discussing the consequences of potential accidents. Cases like the industrial defense as mention are match well with Reason's theories, and I would say that the company basically has what it takes to hold a flexible culture.

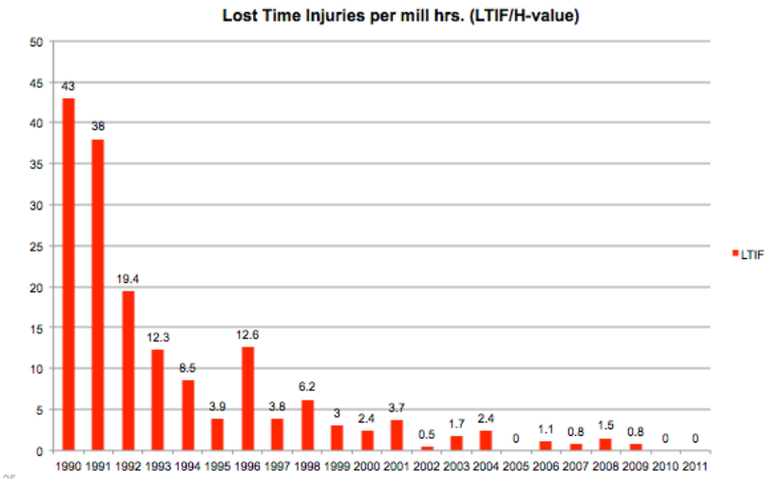
6.1.1.4 Learning culture

Regarding learning, Reason (1997) says that an organization must have a learning culture, the ability and willingness to extract lessons and transform and implement these in the form of new reforms and changes where necessary. Learning culture according to Reason (1997), is one of several factors that affect the overall safety culture.
All data and information that company receives from all accident or near miss are very valuable to prevent the next accident. The relation between, reporting, justice, flexibility and learning culture is very important for the company´s improvement. Justice and flexibility approves the reporting culture that is contributing to learning culture.

To solve the problem, go through the adjustment and suggestion or all lesson learned be discuss at the different HSE and safety meeting at the company. The management team goes throw the result and discuss about, what can they do to improve safety and develop a learning culture. And the result can be presented as a new procedure, new campaign or even new policy.

The best example from the company that shows the learning culture is present here. (see Figure 14) . It is not a last update one, but at 2012 was one person that have bad injures and 2013 was zero, this shows at just one new regulation can have the huge reflex and good result just after several months.

Figure 13 Shows the medic injuries from 1990 till 2011 at the company



In 1990, they had 78 eye injuries. 1991 the eye protective introduced as a mandatory PPE, which resulted in near to none eye injuries. People learn to use the protection and the systematic HSE work gives a good result. This will help the company to create an interest to safety, which is important for the company to show their focus on learning as well.

After the all interviews, observation and the internal document study, I can say learning culture has a strong base here and it's practicing well at the company. All the training courses, HSE course, SJA, toolbox talk, etc. are about learning new thing, get a information, learn from each other and share the experience. And, it's not to be forgotten that, the purpose of developing a culture focused on reporting, justice and flexibility are mostly depend on developing a learning cultures.

6.1.2 High reliability organizations and Normal accidents theory

The HRO theory is completely relevant for this company, according to all data that found during this study. This petroleum business and all the company that work within this branch are characterized by a high degree of risk that even a small accident will have serious consequences. So the argument between NAT and HRO theory is a relevant issue for whole petroleum industry as well.

According to Aven et al. (2004) four factors are necessary for a safe and reliable organization; manager´s first priority at this company is safety. They have a focus on reliability through decentralized control, a strong organizational culture and continuous learning. It is very important for the company that the employees learn from each other and from all accident that happened. The majority of informants agreed that, most of the employees know and understand about the responsibility to stop the work and correct each other.

The managers are aware of HSE threat and have a long-term plan for them. The plan gives a safer system and a safer organization and this is what HRO means. Decentralized decision-making is about, those who are closest to the situation and can take a quick decisions, and this is something that we can see in many different plans in this company; industrial defense can be one of them.

According to NAT, accidents are inevitable in complex systems and the safety is just one of several goals of the organization so the zero philosophy cannot be a part of NAT. NAT believes at the under reporting and strategic reporting is the result of too much control. So the company with so much focus on reporting cannot be able to fallow the Perrow´s theory. The zero philosophy believes that the zero harm is an achievable goal and all the activities are fallowing the same principles. So it is obvious that the NAT cannot be relevant for a company with the zero philosophy policy. Both theories have the common meaning about that the strong organization culture is very important because, it is the organization culture that inspires the safety culture.

6.1.2.1 Mindfulness

Mindfulness contains five different types of processes. The mindful and reliable organization should to achieve these processes (Weick et al., 1999).

Preoccupation with Failure and Reluctance to simplify interpretations

All the HSE relater meeting contains the discussion and analysis of the leak, defect or possible compensatory processes. Monthly HSE theme, SJA, toolbox conversation, and risk analysis can be a good example for this type of process. The participators for these meeting are from different department, the mixing of manager, safety delegates, HSE personnel and employees. These form of the meeting or generally most of the HSE or safety related meetings contain a large group of people so they have a reluctance to simplify

interpretations.

Sensitivity to operations

There is a good work team at the company. The close relation between the engineering department and the operators is a good example for this. The engineer can just go to check and see the model that he or she designs, in a real. Both side have this opportunity to learn about each other's area. Actually this is good for safety as well.

Commitment to resilience

To be aware and manage the unexpected events with thus in to individual knowledge and responsibility is the meaning of commitment to resilience. The company has a good and safe working environment. Having a emergency plan and system, complete and update procedures, "O" program, industrial defense, BHT and etc. is the prove for "commitment to resilience".

Under specification of structures

The best choices for making decision are those who have relevant experiences, regardless of their hierarchical position. It is about having that capacity to move from centralized to decentralized authority when is required (Weick et al., 1999). We can see it at SJA, the operators who has a experience and know about the job and the possible hazards, go through the progress and if something happened there are there.

The industrial defence also can be a good example, all of them are the employees who are working in this company and are familiar whit both environment and company's culture and people.

Totally I can say at this company is a mindful organization.

6.1.3 Barrier

People make mistakes and human judgment and behavior are influenced by contextual factors. As Reason (1997) discusses, there are two types of barriers to prevent the accident and improve the safety; First, the "Hard barrier" such as technical and physical facilities as PPE; and second, the "Soft barrier" such as training programs or company´s procedures. There is a common relationship between the hard and soft barriers.

The process of controlling and checking mechanisms is an example of soft barrier in this company. According to this company one of the basic elements, as a barrier is "Self check and Buddy check". Most of the employees have their own colleagues as direct "clients" to their work. Self−check and buddy–check is really the most fundamental, easiest, and the cheapest way to find the mistake that can cause a catastrophic situation. Self–check is basically composed of the following; understanding of employee contribution to the overall

delivery, worker's ownership to the delivery, taking pride in one's own work, and awareness of the employees that they can influence the quality of their own work.
Overall, checking your own work is the most important barrier to prevent unwanted incidents. It is all about motivation and enabling others to deliver their best.

6.2 Discussion of the research questions

The aim of this research work is to discuss and explain how zero philosophy is applied to the work process of an individual company. In order to discuss this matter in an organized way, we aimed to answer the following questions

- *How does zero philosophy practiced by the chosen company?*
- *What is the effect of zero philosophy at the company´s safety?*
- *Can the goal of zero philosophy have the negative consequences?*

The answer to above questions determines the extent of acceptance of zero philosophy in this company, the impacts of this philosophy on the way the company works, and the unwanted side effects (if any) of applying this way of work.

Observations show that the safety culture of the company has improved significantly since zero philosophy has been implemented. The measures of safety show an overall trend towards accepting and applying the zero philosophy principles. For example, the number of HSE reports in the company has increased from 315 in 2010 to over 3300 in 2013. This dramatic increase can be attributed to an improvement in the safety culture. Other qualitative and quantitative observations also point to this improvement.

Furthermore, it appears that the majority of employees are not misunderstanding "zero philosophy" with "zero tolerance"; a major cause of under-reporting. As the government report of … discusses, under-reporting (failing to report an incident either intentionally or unintentionally) could be a direct consequence of zero tolerance due to monetary or non-monetary penalties involved. The report continues to highlight the negative effect of misunderstanding zero philosophy with zero tolerance. The interviews performed with a sample of company employees, carefully chosen to represent a range of experiences and disciplines, revealed that the level of safety culture is higher than expectation.

What could be improved in the company under investigation is, however, the way various disciplines and employees communicate. Communication is one of the enabling factors of a safety culture, and obstacles in transparent and timely communication would lead to less feedbacks and a distorted view of problems. Observations and interviews reveal some weak

links in communication, which are not necessarily critical, but may become roots of larger problems in the future if not dealt with properly.

In this thesis we emphasize that zero harm is an achievable goal and it mainly relies on a good safety culture. Some considerations may arise due to the number of interviewed employees, and if they are really a representative group of the whole organization. Our take is that the interviewed group, although small, was carefully chosen to represent all walks of life, from senior management positions with high experience, to engineer, safety delegates, and operators. The following sections address the details of research highlighted in the research questions.

6.2.1 How dose zero philosophy practiced by the chosen company?

The company has invested on a series of tools and programs to increase the safety culture. These provisions range from safety courses, internal controls, personal protection equipment, and risk analysis methods. The zero philosophy has specifically resulted in development and implementation of two major frameworks; “OW” (an integrity program for achieving high quality outcomes) and “IKAZ” (A basis for achieving zero harm behavior).

The empirical results show clearly why and how the company presented zero philosophy. When the company joined another worldwide company, they were aware that the HSE culture can be change; they were considered the one of the best in safety. The company plans are not changing, it just getting better. They are aware about the high risky business and working continuously toward the zero harm and use all their knowledge and experience to reach the goal of their policy of zero philosophy.

When the company adapts and planned the “OW” or the new program “IKAZ,” they were aware that they want to achieve the goal of zero harm 100 percent. The company intends to make changes in their HSE culture was getting better and more effective. One can say that the motive for presenting zero philosophy at the company was characterized by goal of rationality, which increased management focus and HSE performance will contribute to achievement goal. With focusing on at, all injuries and accidents can be prevented; the company can be connected to the logic of the high-reliability organizations theory.

The company´s program “OW” is one of the steps of practicing zero philosophy. The goal of zero harm is connected to all employees. The employees at the company were also very

positive about this initiative and believe it will have a positive effect on how employees relate to safety. The program believes this goal as an absolute achievable.

The company has approved standards, procedures; their processes are documented, regularly reviewed and continuously improved to ensure their ongoing effectiveness.

Another measure that helps achieving the zero–harm goal is a group of safety barriers. These barriers are designed primarily to avoid harmful accidents. For example, weekly HSE inspections of the various parts of the organization, ensures a safe work environment and could reveal potential instances of accidents. Other safety barriers include, SJA (an analysis of job safety, possibilities, and an evaluation of the consequences), company's handbook, toolbox talk (an effective and easy method of hazard identification), Order and tidiness, PPE (personal protection equipment), and delegating safety personnel.[1]

The management teams are responsible for maintaining and reinforcing the use of ethical practices and company approved processes through training, awareness programs and mentoring. They are trained and demonstrate the leadership behaviors required to fulfill their roles. The company´s leaders coach the employees and encourage their self-development; the employees are responsible for developing their skills and experience to effectively meet company´s vision and expectations.

All personnel working at the company shall be competent to perform their job without harm to people, assets or the environment. The competency of all personnel working for the company is ensured through the following course and as defined in company's HSE competency and training standard. The HSE Induction course; All personnel working in the company shall attend an HSE induction prior to commencement of work, this induction is include, the company´s HSE policy, company HSE rules and procedures, programs and safe systems of work to be followed relating to the activities to be performed, Health, safety and environmental awareness, Hazard reporting and incident reporting, Emergency response and evacuation, Site access and egress, Site amenities including their locations. Records of site inductions for all employees and contractors, detailing the content of the induction, are kept and maintained by the HR & HSE department and been digitally archived in the company´s personnel system.

In accordance with the HSE for visitors to company sites standard, all visitors should be accompanied though on site and instructed in: Specific health, safety and environmental requirements, Emergency response and evacuation, " no go" areas, Hazard reporting and incident reporting and site amenities. Responsible Managers ensure that all personnel

[1] However, if accidents occur, there are still some measures to mitigate the unwanted outcomes. For example, emergency response plans (such as emergency diagrams and industrial defense) can be designed for such a purpose. The "O3" program in this company is an integrated business resilience system that helps the company, to be prepared, when problems do arise and also to ensure that they can rapidly fix problems and bounce back with the least amount of damage.

receive health, safety and environmental awareness training as appropriate to their tasks and responsibility.
The employees understand and are committed to the organization's vision of zero harm and meeting OW expectations. They understand and meet the standards and behaviors outlined in their standard ethics. Management team also communicates and consults with their employee on health, safety and the environment. The employee understand their role and the requirements regarding HSE issues at workplace including the work hazards and the risks that may impact them, or that their activities may affect how changes in workplace arrangements might affect HSE outcomes.

All activities like, proposals, projects, operations, mergers and acquisitions, divestments, joint ventures, alliances, as well as office selection and management, and all phases of any major business transaction the risk management process been used. They consider both threats and opportunities. The manager team ensures that risks and actions are reviewed with the level of management appropriate to the nature and magnitude of the risk. Within the organization, this is established through an approved delegation of Authority.
All projects are responsible for taking part in the overall company HSE programmed and Campaigns to ensure that the HSE goal and targets are communicated well out to all involved.
The company uses the reporting culture as a tool to say something about safety and risk, and manage itself internally by all the lessons learned from incident reports. The reason that the company is focusing on incident reporting is that they see the relationship between the number of reported incidents and the likelihood of a major accident. According to some of the interviewees, the report should be followed up and should give feedback in a reasonable and timely manner. Focusing on the reporting of all incidents, and trying to see what the underlying causes of the accident are, just reminds of the iceberg model.

The iceberg model is a well-established procedure for looking into safety issues. The whole idea about this model is that the underlying elements of an incident lie under the surface and can be much bigger than we think. We did not observe any reference of this model in the company; however, an interview with the head of HSE department revealed that the thinking behind safety issues follows the iceberg model.

The sign of the communication can be the fact that facilities managers and HSE department personnel/manager could take the time to be out in the field and talk to other employee at the other levels, could have contributed to a better communication and common understanding of each other's work. This is something that company has planned to have more often. The HSE brochure highlights

> To get the best result from all these facts, it is important to identify and categorized all critical incidents.it is important to establish a reporting culture where employees will see the benefit and value by reporting the incidents. The reporting culture is a high degree of confidence essential to avoid under-reporting. Employees must understand that the purpose of the report is to learn from experience and avoid falling into similar situations again. (The Petroleum Safety Authority Norway , 2002)

I conclude that communication is the most important tool to promote the company's values and attitude towards HSE. Specific HSE information meetings, monthly department HSE meetings, company newsletter at the intranet, company HSE campaigns, notice / information boards, screens and intranet are all instances of HSE culture. These are all the different ways of communication between management and employee beside the direct communication.

We hope that the company's vision is achievement of zero harm its regular work. The most important lesson is that even the smallest tasks and chores can have serious consequences.

"Nothing is so urgent or important that you cannot take the time to do it safely and in an environmentally conscious way."

6.2.2 What is the effect of zero philosophy at the company´s safety?

The company's safety culture has improved significantly since the zero philosophy was implemented. This could be seen from, for example, the number of accidents reported. Observations show that 163 incidents were reported in 2010, however, this number increased to 2540 by 2013. Such a dramatic increase is partly due to increase in operations. However, it is also contributable to an increase in the safety culture of the company.

The response to zero philosophy has improved by time, after a while the employees also believe that there have been positive developments in the safety culture, a culture better and safer than they had.

The company believes that, it is possible to achieve zero injuries and accidents. At the same time they are also aware that, there is a possibility that these principles as the basis for company´s zero philosophy proves difficulty to enforce in practice precisely because it is something that human are participated and have the main roll and as an obvious, human make mistakes. They also affected easily by the circumstances around them, which can lead to conflicting; cultural differences can be a cause of differences in underreporting or the

employees whose attitudes are contrary with the company's goals can be some of these conflicting.
A recent poll shows that the majority of employees think positively about their company's safety measures and especially the zero philosophy. The results are shown in Figure 11. It is important to note that, understanding the concept of this goal is equally important from the side of management team as well as the employees in the bigger perspective. The trends shown in figure 11 depict a huge success.

The management team responsibility here is to define the problems and prioritizing them according to company´s safety and organization culture, and this is something that approves that, they will to invest time and money to make this happen. Top management involvement is a valuable and effective for employees.
All informants believe that they think more about their own and others safety now than before. This means the management successfully is at the right way to achieve their goal about zero harm. As the table 6 shows, it is great difference between some years ago and now, according to total accident and losses.

The meaning that the operators are conscious about the risk and the company´s visions is a good effect for a better safety culture. When employees care about safety, the possibility that they want to change the "wrong" behavior is also bigger.
The relationship between organizational culture and safety that called HSE culture, observed at the highly level. According to interviews, all employees feel and see the good and structural HSE culture at the company. They all are agreed that the management team doing the good job and they have the complete overview and safety at the company.

> "JA, HMS ble prioritert fra ledelsen i denne bedrift, Men Aldri nok. HMS og sikkerhet er det ikke noen som man lære. Man kan ikke gå ut og sier nu jeg har lært og nu er jeg ferdig. ." Informant "D"

A positive report (RPH) is shown below; this was actually a report from the observer security and safety inspections that show a good safety culture.

> Bra arbeidsmiljø: Vi jobber og kommuniserer bra sammen og så med dem som er utenfor arbeidslaget. Det er veldig bra teamwork og alle er veldig hjelpsomme. Stor trivsel på jobb! Godt miljø, stort fokus på sikkerhet, godt humør blant ledere, HMS og arbeidskamerater. Merker på meg selv og andre at vi trives veldig bra her på "Offshore plattform navn". Jeg synes det er godt å gå på jobb. Vi snakker sammen på tvers av disiplinene og er på hils når vi passerer hverandre. Stor trives her! Fortsett det gode samholdet og vær positive.

At the same time it gives a good opportunity for starting a communication and increasing the misunderstanding. It should be noted that, the safety work is the everyday concern; however it is mainly the management's responsibility (Hovden, 2001). The adaption of zero philosophy encounters significant challenges in HSE area.

6.2.3 Can the goal of zero philosophy have the negative consequences?

Some part of the achievability of zero harm is depending on the practical effect of all employees reporting culture**.** Underreporting has conflicts with the zero philosophy. Underreporting get a false inscription of what safety situation is. Reporting of the accident or near miss can have negative consequences. That underreporting occurs at the company, it can have the different causes, it could be, lack knowledge of reporting system, not familiar with the rules, procedures and unfortunately everyone have to accept that, it could be just that someone purposely choose to do not report an incident.

To avoid the problem of underreporting and ensure a common understanding of the goal of zero harm the company is aware that the employee see the values of the reporting from the same way that they see and do not have a concern for sanctions; can say that the company is success with the setting a goal as, zero philosophy. The results from table 6, shows that employees become better at reporting, which be a result of the better HSE and safety culture. It also can be a positive practical effect of zero philosophy.

Safety take time or "*Jeg vil bare gjør ... har ikke tid for ...*" is an issue that constantly mentioned in the interviews as a zero philosophy´s negative consequence.

The fact that people do not have enough time, can also be a sign that the organization does not have enough people employed, or that the individual employee takes on too many responsibilities. So it can end to "take a short way!"

But this is not something that we can see in this company often. As almost all the informants mention, it is not just about, the "Be done with job", first of all is about "Går hjemme på ettermiddag like friske og glede som man kom på morgenen."

At a big organization like this, can be difficult to get all employees to accept and understand the management's meaning and purpose of hundred percent. Although the company´s HSE culture is not something new didn't start with the zero philosophy, it has been highlighted even more with the zero philosophy. This approved, sometimes the employees may act against the company´s norm or miss understand the concept. For example, do not report an incident or not pay attention to the safety rules.

To have a good HSE performance is a positive and strong sign for company in contract negotiations. Bad HSE results may have negative consequences for contractual relations as well. That employee is permanently damaged or at worst case death case is very detrimental to the company's reputation.

This is something important that, the management team is aware about.
As the informant “B” told;

> I dag alle de man forhandla med ønsker ikke å handles med ett selskap med dårlig resultat på HMS. Her i Norge finns en database som heter Achilis. Folk må registrere in, uhell og nesten uhell slik att andra selskap som ønsker å kjøpe tjeneste i fra , kan se resultatet som er oppnå. Så det betyr veldig mye. Men på andre side rapportering er bare for å se informasjon og situasjon , viktigste er tiltakene som har stor verdi.(Informant B)

This shows that, in spite of informants saying that the reporting of accidents is not affecting the company’s performance, such reports actually affect the success and failure of the companies in the real world.

In zero philosophy, the company has obvious goals and a strong focus on internal reporting system. As mentioned earlier the system shows the results of all incidents, damage, losses, etc. to gain knowledge of how the real situations are. Almost all informants agreed upon the issue that reporting all incidents and keeping track of these records is time consuming, effortful, and costly. Furthermore, none of the informants believed that under-reporting is a serious issue.

A usual mistake on the employee’s side is to confuse zero philosophy with zero tolerance. Zero tolerance is not necessarily related to zero philosophy. For example the PhD research by … on traffic roads revealed that although zero tolerance is practiced in traffic regulations (such as putting a hard limit on blood alcohol or speed levels) zero harm was never achieved. In the oil and gas industry, zero harm is potentially more achievable, although a zero tolerance strategy is not in place. A negative outcome of confusing zero tolerance and zero philosophy in the oil and gas industry is very conservative behavior and under-reporting of mistakes.

6.3 Summary of the dissuasion

Safety on the Norwegian continental shelf has been the subject of many attentions the past years. Health, safety and the environment in a few years become a part of the industry's daily work. It is no longer focused on issues of importance, if it is to be initiated preventive measures, but how it should be done.
Over 100 years, the company has been grown into an international company. During this period there have been continual new and revised laws, regulations and operational frameworks, both national and international, that company had to deal with. They experienced several accidents that have characterized the focus and strategy regarding safety and security. By dealing with all these changes, it has shown a great and necessary

adaptability in terms of organizational issues surrounding the creation, modification, production and operation, and also in terms of overall safety and HSE. The company has a certain structure and organization regarding the establishment of new measures, where these are based on risk analysis, evaluations and risk assessments, exercises, and etc.
HSE structure is about too many characters and fragmented responsibility and the solution seems simple structurally by collecting roles and responsibilities for HSE to fewer people and features.

The zero philosophy is to join a new way of thinking. The zero philosophy changed the staff´s conception. One important aspect of the zero vision is that it gives many different public associations and can be viewed from many different angles. Presenting and arguing for the zero vision is a challenging task, and in reality, this means putting safety first.
The company has adapted zero philosophy with the goal, to prevent accidents, injuries and damage to property or the environment. To achieve this, everyone should work systematically and have continuous focus on improvement in health, environment, safety and protection of values. The leaders should be inspirational and enthusiastic and shall exercise an active HSE leadership. The leaders are continually measured on behavior, attitudes and performance in HSE context.
To achieve company´s relevant HSE requirements; standards, procedures and guidelines can be obtained from the internal network site. HSE objectives and targets have been established and periodically reviewed and been always updated. The key inputs in establishing the objectives and targets are: The HSE Policy, customer's requirements, and any significant health and safety risks. All HSE risks are managed using the hierarchy of controls to achieve a tolerable level of risk that has been reduced to ALARP. Personnel shall be advised and educated regarding those HSE risks that are present together with the appropriate control and mitigation measures that are implemented.

The observation, reporting and recording of hazards to the health and safety of personnel or to the environment in the office are strongly encouraged by company management. The observer of the hazard will be reported to the supervisor. Significant hazards are reported formally into the Synergi database in accordance with company's incident recording procedure. The recording and reporting of hazards following the transition will be in accordance with the HSE incident and near miss reporting. The HSE department and/or the HSE committee/team members to ensure that the hazard is investigated and assessed to ensure effective remedial action is taken review the report.

Through the empirical results from company, I can say that the zero philosophy has a positive effect on safety and HSE culture and employee attitudes to safety. It´s still some conflicts related to the meaning of zero philosophy and its consequences as an

underreporting. But the result shows that they are improving in a good way. They HSE culture are being better every day, it's becoming more accepted to stop work in order to be able to work safely, better teamwork and the numbers of reported cases all are the sign of better safety culture.

The majority named the coast and time as negative consequences of the zero philosophy at the company.

Communication is the case that can be more improved than other perspective for a better safety culture and to achieve the goals of zero harm, according to my observation.

7 Conclusion

When the company joined another worldwide company, they were aware that the HSE culture could be change. The company plans are not changing, it just getting better. They are aware about the high risky business and working continuously toward the zero harm and use all their knowledge and experience to reach the goal of their zero philosophy of policy.

To answer the research questions determines the level of acceptance of zero philosophy in this company, the effects of this philosophy on the way the company works, and the possible unwanted consequences of applying this way of work.

The result show that the safety culture of the company has improved since zero philosophy has been implemented, and the employee are satisfied with the management safety efforts as the poll shows in table 5 or the enormous increasing of the total reports to the system are the prove of good culture or the other qualitative and quantitative observations also point to this improvement. All these good result can be attributed to an improvement in the safety culture.

According to the company´s policy, the research study emphasize that zero harm is an achievable goal and it principally relies to the good safety culture. Some considerations may arise due to the number of interviewed employees, and if they are really a representative collection of the whole organization. But it tries to chose from all levels and main positions at the company so hey can cover the research questions area.

The company has invested on a series of tools and programs to increase the safety culture. These provisions range from safety courses, internal controls, personal protection equipment, risk analysis methods and etc. But zero philosophy has specifically resulted in development and implementation of two major frameworks; “OW” and “IKAZ”. When the company adapts these two programs, they were aware that they want to achieve the goal of zero harm. One can say that the motive for presenting zero philosophy at the company was characterized by goal of rationality, which increased management focus and HSE performance will contribute to achievement goal. With focusing on at, all injuries and accidents can be prevented; the company can be connected to the logic of the high-reliability organizations theory.

Reporting is an important part of a system to achieve the zero philosophy´s goal and in the other hand is the most reliable cause for the negative consequences of zero philosophy.

Most of the time the employees are misunderstanding the “zero philosophy” goal and understand it as a “zero tolerance”, this is the major consequence of zero philosophy, but According to interviewees and observations, fortunately this is not a issue in this company.

According to informants the only bi-effect of zero philosophy is time consuming and costly.

Communication is the other important factors for having a good safety culture. The poor communication, would for example lead to fewer feedbacks, which can be a cause of under reporting. Research study shows some weak links in communication, which are not necessarily critical, but may become roots of larger problems if it's continuous.

7.1 Further research

This study has focused on practicing and under reporting as a cause of zero philosophy in this company in 2014, but as mentions before the company has migrated, and it will be very interesting to see the result of it. It could be interesting to do a comparative study to provide more knowledge about how zero philosophy is perceived and practiced after some years.

The study was just focused on this company, how common underreporting and practicing of zero philosophy is at other companies it could be interesting topic as well.

When we talk about HSE, the environment is also an important part of it. According to time and size of this research study, I couldn't go deeply to the environmental concern. During the research study I got to know a bout zero emissions "Nullutslipp" from ministry of climate and environment, and I think is very interesting topic for further research; What is the NCS standard and requirement to the petroleum business and what dose the petroleum industry do to reduce their emissions; can be also an interesting subject for the future research study.

There is several interesting issue relating to safety that may be the basis for further research. The research study was a qualitative method based on lands facilities, so it could be possible to compare both onshore and offshore facilities, and also possible to do a study that focused more quantitatively methods.

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Appendix A1

Interview Guide / Management

Tusen takk for din deltakelse

Jeg heter Pouyeh, jobber på teknisksikkerhet avdeling , og skriver min master oppgave på UIS.
Jeg har valgt tema for oppgaven utfra et HMS perspektiv, hvor ønsker jeg å se nærmere på Nullfilosofien i praksis samt dens påvirkning på HMS resultatene i denne bedriften.
Skal undersøker hvorfor bedriften introduserte dette målet, og hva det har betydd for deres arbeid med HMS. Og videre er det lagt spesiell vekt på om det er negative aspekter å ha et slikt mål. Har valgt Kvalitativ metode for innsamling av data så i hovedsak ønsker å innhente via intervjuer.

Bakgrunnsinformasjon

1. Antall år i bedriften / Hvor lenge har du erfaring gjennom denne bransjen?
2. Stilling:
3. Utdanning:
4. Kan du gi en beskrivelse av dine viktigste arbeidsoppgaver?

Nullfilosofien:

5. Hva vet du om Nullfilosofien? Kan du forklare denne filosofien i detalj?

6. At setta seg en sånn mål som nullfilosofi er krevende og viktig for bedrifter i olje og gas industri, hvorfor er det sånn? Tror du dette er et realistisk mål? Er det oppnåelig?

7. Alle måler har noen positive eller negative konsekvenser. Hva kan være negative konsekvenser for dette målet?

8. Forskjeller folk kan jobbe i samme firma. De kan være folk fra kunder eller bedriftens ansatt. Tror du at de har samme tanke og oppfatter av nullfilosofien? Hvorfor eller hvorfor ikke?

Trusselbildet:
I 2013 så oppnådde bedriften ikke 0, vi hadde … antall rapporteringspliktige…

9. Vet du hvor mange skade vi hadde i de siste 12 mnd. i bedriften?

10. Har du tenk om årsaker? kan du beskrive litt om hva du tenker?

Rapportering

11. Hvordan man rapportere i denne bedriften? Kan du forklare systemet.

12. Hvorfor er det så viktig å rapportere?

13. Hva kan bli galt når under rapportering bli stor?
14. Er det noen for skilnad mellom bedriften og kunden når snakker man om HMS resultat?

Rettferdighet

15. Er det mulig å rapportere uønskede hendelser anonymt?

16. Hvordan belønner/straffer bedriften sikker atferd?

Læring og informasjon

17. Hvilken plan har bedriften for at ulykka skal ikke skje igjen?

18. I hvilken måte deler du HMS informasjon med din avdeling?

19. Hva tenker du om kvalitet av HMS informasjon i bedriften?

20. Kan du beskrive de muligheter at bedriften kan få informasjon av potensielle trusler og farekilder?

21. Kan du fortelle litt om granskning av ulykker her i bedriften?

Sikkerhetsledelse

22. Kan du navne noen spesielle tiltak gjennom HMS i bedriften?

23. Hvem har ansvar om sikkerhetsproblemer i bedriften?

Takk for at du tok deg tid til å stille opp. Ønsker du å tilføye noe!

APPENDIX A2

Interview Guide / Employee

Tusen takk for din deltakelse
Jeg heter Pouyeh , jobber på teknisksikkerhet avdeling , og skriver min master oppgave på UIS.
Jeg har valgt tema for oppgaven utfra et HMS perspektiv, hvor ønsker jeg å se nærmere på Nullfilosofien i praksis samt dens påvirkning på HMS resultatene i denne bedriften.
Skal undersøker hvorfor bedriften introduserte dette målet, og hva det har betydd for deres arbeid med HMS. Og videre er det lagt spesiell vekt på om det er negative aspekter å ha et slikt mål.
Har valgt Kvalitativ metode for innsamling av data så i hovedsak ønsker å innhente via intervjuer.

Bakgrunnsinformasjon

1. Antall år i bedriften / Hvor lenge har du erfaring gjennom denne bransjen?
2. Stilling:
3. Kan du gi en beskrivelse av dine viktigste arbeidsoppgaver?

Generelt om arbeidshverdagen

4. Har du noen erfaring av en ulykke? kan du beskrive?
5. Kan du gi noen eksempler av HMS i hverdags arbeide?

Nullfilosofien:

6. Er du kjent med Nullfilosofien? Nullfilosofien sier at ulykker ikke skjer men forårsakes og kan dermed forebygges. Hva mener du om dette?
7. Har null filosofien betyr mye i dine oppgaver?
8. Tror du at den er bra for bedriften å ha ett mål med nullfilosofi?
9. Er du veklingen tror på nullfilosofi? Er det oppnåelig?
10. Alle måler har noen positive eller negative konsekvenser. Hva kan være negative konsekvenser for dette målet?
11. Forskjeller folk kan jobbe i samme firma. De kan være folk fra kunder eller bedriftens ansatt. Tror du at de har samme tanke og oppfatter av nullfilosofien? Hvorfor eller hvorfor ikke?

Rapportering

12. Kan du gi oss noen tall om farlige situasjoner som kan hende her i bedriften i løpet av en uke?
13. Tror du at alle hendelser som skjedd blev rapportert?
14. Hvor viktig er hendelsesrapportering?
15. Hva tenker du om hendelse rapportering her i bedriften?
16. Vet du om vi har noen underrapportering her?
17. Hvor stor kan underrapportering være her i bedriften? Kan du gi en prosent tal?
18. Hva er skilnaden mellom bedriften og kunden når vi snakke om HMS kultur?

Rettferdighet

19. Kan man rapportere uønskede hendelser anonymt her i bedriften?
20. Det er et behov å ha sikker atferd i bedriften. Hvor viktig er dette for bedriften?
21. Hvordan kontrolleres atferd i bedriften? Er det noen belønning eller straff?

Fleksibilitet , Involvering

22. Hvordan kan de som arbeider i bedriften kan vurdere en farlig situasjon?
23. Hvordan kan de informere andre av en risiko?
24. Hvordan rapportere man risiko eller hendelse til de som har relatert ansvar i ledelsen?

Læring

25. Hvordan er opplæring prosessen i bedriften? Er det nok?
26. Virksomheten trenger kontinuerlig informasjon om potensielle trusler og farer. Hvor kommer de informasjoner fra?
27. Alle HMS kunnskaper må informeres til alle som jobbe i bedriften. Kan du beskrive litt om dette i bedriften?
28. Den er så viktig for alle bedrifter å ha ingen skade eller ulykke, Hvordan bedriften oppnå denne mål?
29. Virksomheten må arbeide kontinuerlig for å øke sikkerheten. Kan du gi noen eksempel om de arbeider?

Generelle inntrykk av sikkerhet / ledelsens sikkerhetsarbeid

30. Har dere en feles sikkerhetskultur i bedriften?
31. Hva tenker du om HMS statistikk her i bedriften
32. Alle aktiviteter i en bedrift er kostbar. Hvordan vurdere du viktigheten av HMS mot økonomi i en bedrift?
33. Er det mulig å diskutere farlige situasjonen med andre kolleger? Kan man stanse andre hvis det er noen fare eller risiko?
34. Hva synes du om den risikoforståelse for hver person? Kan hver ansatte evaluere risikofylt situasjon?
35. Når vi snakker om organisasjonen, tror du at alle i diagrammet prioritere HMS på samme nivå?
36. Hva syns du om HMS vurdering i selskapet?

Takk for at du tok deg tid til å stille opp. Ønsker du å tilføye noe!

APPENDIX B

Consent form

Samtykkeerklæring

I forbindelse med denne Masteroppgaven i Samfunnssikkerhet ved Universitetet i Stavanger, ønsker jeg å gjennomføre noen intervjuer.

Oppgaven fokuserer bedriftens sikkerhetskultur.

For å sikre at jeg som intervjuer får med meg det som blir sagt, vil jeg bruke en båndopptaker. Alle opplysningene som blir gitt under intervjuet vil likevel bli anonymisert i oppgaven, og behandles fortrolig og skal slettes i slutten av året.

Denne erklæringen vil gi samtykke til at dine opplysninger kan brukes i denne masteroppgaven.

_____	_____
Pouyeh Moshirian	
Student i Samfunnssikkerhet	Informant

APPENDIX C

Some Safety survey

What kinds of accident and safety threat you think can reduce?

None	Human Fault	Technological	Organization	All

Do you believe at, the risks and accidents are preventable?

Never	Always	Some of them are preventable	Most of them are preventable	All of them are preventable

Check!

	Disagree	Partly agree	Agree
Sometimes I break safety rolls to just get the job done			
I do not always report accidents			
I consider the risk situations even if it is a routine task			
I consider the risk situations even if I have not too much time			
I tell my colleagues about the risk and danger of the job			
I am satisfied with my own safety efforts			
I am satisfied with management's safety efforts			
I am concerned about safety in my working days			