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## **Good Safety Management**

- **A qualitative study on the practitioner's view on good safety management**

Master's thesis in Work and Organizational Psychology

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## Preface

This master thesis completes my master's degree in Work and Organizational Psychology at the Norwegian University of Science and Technology, (NTNU).

This thesis has looked at the practitioner's view and use of safety systems, and what they would consider good safety management. The study is based on interviews conducted by myself on informants from several organizations that deal with different types of risks on a daily basis.

I would like to thank the organizations for their cooperation and positivity towards my study, and the help they gave me in regards of reaching the right people. I would also like to thank my informants for taking some time off from their rather busy work schedules, to participate in the interviews. Their time and thoughts on this study's topic and questions are much appreciated.

I also wish to direct a big thank you to my supervisor and mentor, Karin Laumann. Thank you for taking of your time to help me, for giving me constructive criticism, for asking the right questions, and for all the rest of the support you have given me during this hectic, but very educational period of my life. I also would like to thank Kristian Gould for his help during this master thesis, I appreciate everything you did to help me.

Last but not least I would like to thank my family for the support and patience they have shown me. My dad for the continual support, my mother for her reminders to eat and drink, my sister for her stimulating conversations, (procrastinations) and my better half for the patience and motivational words. You have all kept me going.

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### **Abstract**

This master thesis takes a look at what practitioners of safety systems think about, and practice when it comes to the safety in organizations. All organizations no matter the size will have some sort of risks and hazards, and they will all experience some sort of accidents. This however, means that they will need some measures as a way to prevent the accidents from happening. The topic of this thesis is: What do practitioners describe as good safety management? The study has used qualitative methods through semi structural interviews to gather the data, nine informants participated in the study, they all worked as managers dealing with safety issues. The analysis produced five themes, “to cope with unforeseen events”, “to set a good example”, “bad things will happen”, “being approachable”, and “distinct communication from the management”.

The results provided some concrete examples on good safety management, for example to create a trusting and respectful environment by listening and learning from each other. The theories presented; the normal accident theory, the barrier theory of James Reason, the migration towards the boundaries theory, and the high reliability organization theory, all presents good ideas and theory on what good safety management is, but they say very little about what an organization should do to get there.



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## Introduction

Every organization will discover that work comes with risks. No matter what company and line of work you are in, there will be risks involved, some bigger than others. How the organization and management deal with these risks can determine how long their company will experience a failure-free environment. If a company do not deal with the risks they are faced with, they might not be able to survive the outcome financially, operationally or environmentally. Therefore, good safety management are a key element to have in place for every organization of any size. A small company might not have their own safety manager, and they might not see any reason for it. There are however advantages to having a designated person as safety manager. The safety field is big, and the potentials for risks and hazards in organizations are difficult to get an overview of, especially if one has other things to manage. Having someone in such a position with knowledge on the field can therefore be an advantage.

Hollnagel (2013) explains safety science as something we know about safety, and something that we have built and keep on building more knowledge about. Safety can be defined as a condition where nothing goes wrong, or if it goes wrong, that the consequences are small, (Hollnagel, 2013). The term safety can be said to contain both accidents, and that which the accidents leads up to, an injury. Safety are mostly defined in an indirect way since a lot of the definitions describe what happens when there is an absence of safety. Therefore, they are more properly definitions of an absence of safety. A consequence from this is that instead of the safety management having measurements that tell them about the presence of safety, it is based on the absence of safety, (Hollnagel, 2013). This means that one can have a lot of information on the absence of safety, but there will not be many measures that can tell you when safety is present. Having a focus on when things go wrong is still not a bad idea though, since knowing this can help you in the work of preventing it from going wrong.

The manager in every organization in Norway are bound by the law to have knowledge about health and safety environment, (Arbeidsmiljøloven, 2005) and to ensure that the company follows the working environment act so that the safety of the organization and the employees are taken care of. The management of an organization can give the responsibility of seeing to it that this is followed to someone else. The important issue in this is that safety is important for every organization, and should not be degraded. Depending on factors like risk, vulnerability and economics/value, the way we look at the word safety will change, and so will the outcome. An important part of safety are the measures that are put up to safeguard and protect the organizations interests. Safety measures are often used as barriers

to prevent anything from happening, but also in the aftermath as a way to deal with what has happened.

In a way safety management can be looked at as just another way to manage, since it is the surrounding factors that change, and not the fact that one is managing. With this I am thinking that management is to lead people in the best possible way, to guide them, to facilitate, to make decisions, and so on. When I think of safety management I see the same things, but the factors surrounding it has slightly changed, it is still about leading people, but in all things that has to do with the safety, to guide the people in a safe direction, to facilitate so that this is possible and to make safety critical decisions to keep people safe.

I mentioned that safety management is important in every organization, and that every organization experiences risks and hazards. Even so, the level of risk and hazards will vary in relation to the type of operations an organization have. Some things are riskier than other things, for example, there is risk involved when an employee climbs a ladder, the employee could fall and hurt themselves, or others could trip over the ladder. In a different organization the employees are maybe scaling buildings, or they work on operations that needs them to rappel up or down from contraptions. In this last example, the circumstances of the risk can easily be perceived as greater. Both of the examples involves work in height though. And even though the difference of risk makes it so that the one might be riskier than the other, there still needs to be measures in place in both of the circumstances.

The above is one example of how safety management involves all organizations no matter its size. This is also why the study in this master thesis is relevant. Safety management can be executed in both good and bad ways like most things in life. People who work in organizations with safety aspects, either they are called safety managers or something else, from here on called the practitioners, can shed some light on what they believe is a good or bad way to do safety management. They are doing it themselves, and as such they have the insight. Also they might have an idea of what would work in practice and what would not when it comes to measures, procedures, systems and operations. Learning from the doers is a good way to develop one's own skills. And so by looking at what is practised out and about, one can pick up some tricks, or simply just learn something new that could work for one's own organization as well.

When every organization has their own risks and safety issues to deal with, there will be both differences and similarities between them. The theories in the field however, try to address these differences, but also the similarities. The theories are developed with the intention that they can be used by all organizations, maybe some are better at some aspects

than other, but all in all one can say that the theories complement each other. They build on different things, but if you miss something in one of them, you can find it in the other. This is important to remember as well, you are not limited to just using one at the time, one should use all things available when needed and if needed. Therefore, when reading the theories this is something one should take into consideration. Many of these theories are in the social sciences, and four of these will be presented in this master thesis; the normal accident theory, the barrier theory of James Reason, the migration towards the boundaries theory, and the high reliability organization theory. These theories shed some insight into different ways to view the safety aspects and the management of them in organizations, (Dekker, Hollnagel, Woods & Cook, 2008; Rasmussen, 1997; Reason, 1997; Weick & Sutcliffe, 2015). These four theories have been chosen since they are some of the most known theories within the safety research in the social sciences. They are both different from each other, and they can be seen as complementing each other, each providing a different view on safety systems and improvements to organizational safety.

Safety culture is a term that is quite new, and the field has not yet structured itself when it comes to this term, both James Reason (1997) and Weick and Sutcliffe (2007) touches in on the aspect of a safety culture, and these views will be presented in the respective presentations of these theories in the theory chapter. These two views will be the foundation for when I speak of a safety culture further on in this thesis.

However, there are some things that have been left out of this thesis, both because of the time issue, and also because of the aim of the thesis. One theory that have been left out is the Resilience Engineering theory, (Dekker et al., 2008). This theory consists of many elements and principles, that is hard to put together and understand. Therefore, it was decided that this theory would not be viewed and presented in this thesis. However, the theory is a part of the system view on safety, which can also be said about the migration towards the boundaries theory, the resilience engineering theory builds to a large extent on Rasmussen's migration towards the boundaries theory and the high reliability organization theory. As such it can be said that the field is represented in this thesis.

Something else that is not represented in this thesis are theories on management in general. In this thesis a choice has been made to focus on the four theories on safety that is mentioned above and the results of the thesis study. This means that even though other management theories would have made an interesting viewpoint, they have been left out to the advantage of more space and time reserved these four theories above. Also the main point of the thesis is to view the practitioner's meanings through the interviews that were conducted

and the results of the analysis. Hopefully the answers from this study can help organizations in their safety management work.

### **The research question**

In this master thesis I aim to answer what the practitioners believe is good safety management. The research question in this master thesis is; “*What do practitioners describe as good safety management?*” I will try to answer this by looking at the analysis of the interviews that were conducted. Then I will try to look at similarities and differences between the findings in this study and the four theories mentioned above. The important part in this thesis is to find what is actually practiced out in the organizations. And to view these findings up against the chosen theories.

### **The structure of the thesis**

This thesis will start by presenting the four theories; normal accident theory, the barrier theory of James Reason, the migration towards the boundaries theory, and the high reliability organization theory. After this the methods will explain the thesis’s study with the following results. Then the discussion will follow, where the results are discussed both on its own and in regards to the theories from the theory chapter. The thesis will conclude with a summary and conclusion.

## Theory

### Normal accident theory

Charles Perrow's normal accident theory, (NAT) is a theory that looks at the organizational aspects of safety. Something that is important when determining the root causes of accidents in hope of preventing it, is to look at the organizational systems, (Marais, Dulac & Leveson, 2004; Martinez & Kim, 2012). After the accident at the Three Mile Island nuclear power plant, Perrow developed the theory of NAT. The foundation for the theory is that the characteristics of the system will determine the inevitability of multiple and unexpected interactions of failures. It is said that when the systems have an interactive complexity, and is tightly coupled, then accidents will be inevitable. It is the level of complexity that eventually will cause the system to have unexpected interactions. These unexpected interactions will instigate a probability of having accidents, (Martinez & Kim, 2012).

The NAT explains two types of interactive systems, linearly or complexly. Interactive complexity are non-linear, unfamiliar component interactions that is unexpected or unplanned. These interactions are not visible or understandable for the people that are running the system, (Dekker et al., 2008). This means that the people who run the systems won't know what is happening ahead of time. And this is what the NAT say combine with tight couplings and makes accident inevitable. Systems can be loosely or tightly coupled, Dekker et al. (2008) explain it like this, tightly coupled systems have time dependent processes which means that the process needs to be attended to at ones, and it has invariant sequences, which means that there is a strict order to the process that needs to be followed. Also there is little slack which means that things cannot be done twice if it is not done correctly the first time. There is a dilemma between the two dimensions though, interactive complexity and tight coupling, and that is that a system like this, that is highly interactive, resist standardization, like procedures, and allow lower level workers to act as they see best fit to the situation. Also it encourages direct contact between the employees and therefore it brings together expertise and perspective that would be necessary to understand the problem they are facing. This means that when an unrecognizable and unexpected event occurs in an organization, that is when the system can experience this interactive complexity which leads to an accident. It is common knowledge that accidents happen all the time, both the small and the bigger ones. The NAT believes accidents are inevitable, but divide the accidents into categories, the ones who have a serious outcome are looked at as inevitable, but infrequent. Then there are the ones who have

a catastrophic outcome, the NAT also see these as inevitable, but as extremely rare, (Martinez & Kim, 2012).

The NAT believes that accidents are not anomalies that just happens because of isolated human error. These accidents are “normal” in the sense that they arise from features that is deeply embedded in the work systems. This is shown in investigations that frequently show a system that often for a long time has been managed towards a catastrophe (Dekker et al., 2008). The procedures, policies, safety systems, and other mechanisms are all barriers that keep an organization from failing in such a way that it can produce a bad outcome. These measures make sure the systems are relatively safe from the failures of single components or procedures that could lead directly to a bad outcome. The NAT means that these barriers could add complexity to the system, because if small things start to go wrong, then it will be difficult to get of that path, and this again will lead to failure. To be able to make these types of systems reliable, one also have to make them complex, this means tight couplings between the various parts, and the operations that is executed are often under constraints like time pressure (Dekker et al., 2008).

The above can describe a decentralized organization, on the other hand a system that is a tightly coupled one, can only effectively be controlled by a centralized organization. This is because tight couplings demand that people respond quickly and coordinated. The NAT believes that an event that tumbles through the system cannot be stopped quick enough if people need to assemble a team with the right expertise first. Examples on centralization are procedures, drills and automatic shut-downs. These are necessary if the event is to be stopped quick enough, (Dekker et al., 2008). The NAT believes that an organization cannot be both centralized and decentralized, that is if an organization is both interactively complex and tightly coupled it cannot be controlled effectively, and this is what the NAT means when they say that accidents is inevitable. If the system in the organization have both a tight coupling and is interactively complex, then accidents will definitively happen.

### **Barriers and James Reason**

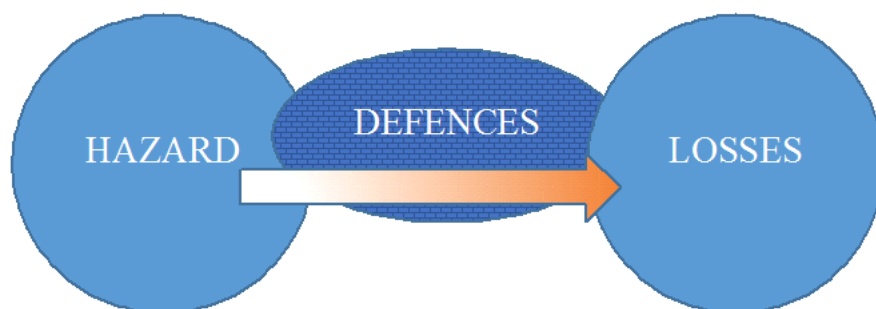
**James Reason.** One can divide the accidents that happen into two different categories, the first is the type of accidents that happen to individuals. This is the type of accident that happens the most, and is more common. This type of accident often involves one person or a group of people, that both causes the accident and get hurt in doing so, (Reason, 1997). Consequently, the people involved might experience the situation badly, and though they are close to the accident, the spread is limited to the people involved.



The other type is the one called organizational accidents, and often these types of accidents ends with a catastrophic outcome. And on the contrary to the other type, this one will affect more than just the people involved. These types of accidents often have multiple causes for why they happened. Often the operations involve having many people operating on different parts at the same time, at different levels, (Reason, 1997). The organizational accidents will affect the companies and organizations they origin from, and might also affect the environment around them, the market globally, or people living near the organizations stronghold. Luckily these types of accidents do not happen very often.

In James Reason's (1997) book he focuses on this last type of accidents, the organizational accidents. These accidents are difficult to model as they seem to happen suddenly and there and then. If one digs a little deeper though, one might find that the accident has been prone to happen for some time already. Reason believes that underlying principles of accident causation do exist. And he explains in his book, (Reason, 1997) that these accidents are only truly accidental in the way the contributing factors will combine and cause an accident. But the precursors are not accidental and neither is the conditions that combine to create them. There is however a difficulty in finding the appropriate descriptions. Each accident will show its own individual pattern when it comes to cause and effect.

***James Reason and barriers.*** It can be said that all organizational accidents happen as a result of hazards being able to penetrate the barriers put up to safeguard the systems from them. Reason, (1997) have in his book a figure that shows the relations between hazards, defences and losses, where the last part, losses, is the inevitable consequence of an accident or failure happening. Figure 2.1 shows my interpretation of the figure in Reason's, (figure 1.1, 1997) book.



*Figure 2.1: The figure shows the relationship between the hazards, defences and losses when it comes to organizational accidents.*

Hazards will always be present in every organization, and every organization should have measures and other safeguards in place as defences against any failure or accident. If the

defences are breached and the hazard gets through, then the organization will most likely suffer losses of different degree. From the figure however, one can ask the question, how does the hazards break through the defences? The defences consist of both human, technical and organizational measures, that together protect the organization from the hazards. These three factors are again governed by the processes of production and protection, (Reason, 1997). It is only logical that all organizations produce something which they then sell to costumers. Even if this is a material thing, or a service. The possible victims and lost assets will need to have some type of protection that can intervene between them and the hazard. If one could choose, then the protection that is in place in the organization would be matching the level of the many hazards that the production could instigate, (Reason, 1997). This means that if the process of protection is going to work at its best, then it needs to be pared up with the process of production, they need to level each other out.

***The swiss cheese model.*** James Reason (1997) developed a model that in an understandable way pictures how barriers are breached and hazards are let through. If the world had been ideal, the layers of protection that guard against failure or accidents, would be intact and no hazard would be able to get through. But the world is not perfect, and therefore it is not ideal. Every layer in the defence have its own weakness, there are holes in the barriers. This is more easily explained by looking at figure 2.2, which is based on, and pretty much the same as the one in Reason's (1997) book.

In the model we can see how the theory looks like visually. The ideal world would not let any hazards escape through any of its barriers, but as we can see, the real life is different. Every barrier has several holes, and coincidences, malfunctions, technical breakdowns, bad routines, misunderstandings, unobservant acts, these are just some examples, but many more exist. The model is called the Swiss cheese model because of these holes in the defences. As in the Swiss cheese, the holes will move around, never lingering in the same place, malfunctions are discovered, misunderstandings are cleared. As such, the holes will continually open and close. But the holes in themselves does not cause a bad outcome. It will have to happen in many layers at the same time, and they need to line up, giving way for a trajectory where accidents get their opportunity, and the hazards lying in the background will be able to penetrate the defence, (Hollnagel, 2002; Reason, 1997; Reason, 2000).

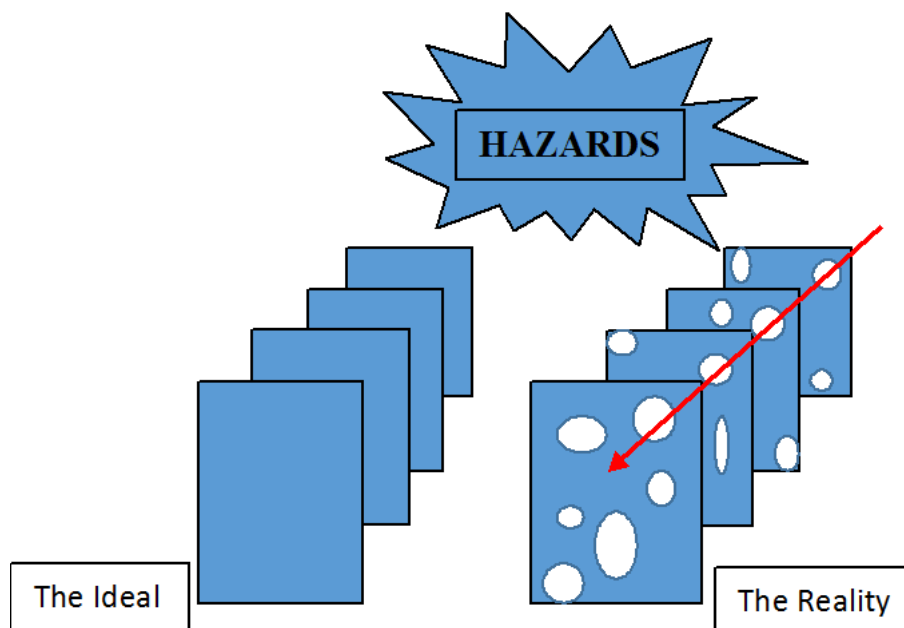


Figure 2.2: The Swiss Cheese Model of defences, based on figure 1.4 in Reason, 1997.

The defences of an organization come in many shapes and sizes. Based on the organization they are operated in, and the level of hazardous operations, there will be differences between one organization and the next. Even if they have the same measures in place. The difference will lie in the degree of the operating hazards. If one of the organizations work in the petroleum business, and the other in health care, there will be both differences and similarities in the hazards they encounter, and there will be both differences and similarities in the measures they apply to prevent the hazard from causing an accident. It is however, the degree of how hazardous the operation is to operate that will determine the way a measure is applied.

Defences serve certain functions for an organization, it could be to build and create an understanding and an awareness of hazards that could occur, it could give guidance, to provide alarms and warnings, to contain and eliminate hazards, provide escape and rescue, restore the system, or it could be to interpose safety barriers. All of these examples end up underlying the idea of “defences-in-depth” which basically means to have multiple layers of protection, in the shape of barriers that defend against losses. The idea is that by having multiple barriers put up like a defence in the depth, each barrier makes sure that nothing happens to the barrier placed in front of it, (Reason, 1997). This is also illustrated in figure 2.2 where we see that with only one barrier in the defence, the hazards would more easily find a way to get through.

Some years back the human role in an operation were more hands-on than they are today. Take piloting for example, years back the pilots were flying the plane with their

hands, then the technology developed further and they got the autopilot. After this, the role of the pilot has switched from being a productive one into being a supervisory one, controlling the plane by monitoring everything that is going on in the system, and only stepping in if the system fails. This part, restoring the system if it fails, is a defensive function put in place in the event of an emergency. The defence-in-depth view are both positive and negative, using this system makes it more complex, and the human part have become more and more remote as the technology have improved and developed. And this again, have led to the build-up of latent conditions, which will be discussed next.

***Latent conditions and active failures.*** Human decisions and how they act can be said to have an effect on organizational accidents. This is logical since people are the ones who program and design the systems, they are the ones who manufacture, they operate the systems, and they maintain and manage the systems, as such, humans have something to do with the systems in every twist and turn. This makes it easy for people to contribute to breakdowns, and there are two distinct ways that shows itself. The first one has to do with the hands-on errors and violations committed by for example, the pilots, maintenance personnel, and operators. These unsafe acts have a direct impact on the system and its safety, and because of this they are called *active failures*, (Reason, 1997). The active failures happen because of the direct contact the operators have with the systems; this means that when the operators do an unsafe act this can lead to active failures. Examples on active failures are violations of procedures, lapses, mistakes and slips. The active failures often have a short lived impact on the defences. Often it could be an active failure that opens up the last hole in the swiss cheese model and lets the hazard through, effectively causing an accident, (Reason, 2000).

The *latent conditions* have to do with people making error and violating procedures because of things outside individual psychology. Examples of latent conditions can be poor design, supervision with gaps, defects in the manufacturing that goes unnoticed, poor training, and so on. These types of failure may have been present in the system for many years before they are noticed, if they are noticed. However, if they combine with the active failures and local circumstances and break through the defensive layers of the system, it can result in catastrophic events, (Reason, 1997). The latent failures arise from the decisions made by the designers, the builders, the ones writing the procedures, and the management. In some cases, the decisions that leads to latent conditions are made by a mistake, then again other times it is not. All decisions have the potential to introduce the system to pathogens.

The latent conditions have two ways of effecting the system. The first one has to do with conditions within the workplace like time pressure or understaffing, conditions that are error provoking. Secondly they can create weaknesses or holes in the system that is potentially long lasting. For example, procedures that does not work, alarms or indicators that cannot be trusted or flawed design. Understanding that the latent conditions can be detected and dealt with makes for proactive risk management instead of reactive risk management, (Reason, 2000). The impact of decisions will spread throughout the organization, and help shape the culture. You can find the latent conditions in all systems and in every organization. The difference between the active failures and latent conditions has to do with the timeframe, how long time do they need to wreak havoc? The active failures usually have an immediate effect; the latent conditions however, like mentioned earlier, can lie dormant for many years before they team up with the local circumstances and take down the defences. Also there is a difference between them when it comes to where and who is instigating them. The active failures happen where the work is done, in the so called sharp end. And the workers are the ones instigating them. When it comes to the latent failures though, they happen before they reach the sharp end, these are done in the manufacturing, in the development of the designs, in the making of the contracts, and so on, (Reason, 1997).

***Defences, procedures and error management.*** Reason (1997) explain in his book that accidents are impossible. With this he is thinking of the prior warning of an accident, and the fact that it will not be a warning if one does not know what kind of disaster it is that will happen. If you do not know what is coming, a red light could mean many things. Accidents have the knack of happening when one least expects it, and it happens because one does not think it is possible that such a thing could happen. If one knew that such a thing could happen, one would try to prevent it. Defences are not a bad thing, but sometimes like with a vaccination, one needs to suffer a little bit for the greater good. One such example is the increased automatization happening in many industries. Confusion because the operator makes the wrong assessments or because the operator fails to notice something of importance, can be the result of bad automatics. By trying to compensate for the human performance and its unreliability, the design and creation of automated systems might have created ways for new errors to unfold, errors that could be even worse than the original ones, (Reason, 1997).

Another example is procedures. They are designed to create more efficient and safe workdays. But to many procedures might end up being restrictive. The goal is to get the job done under optimal conditions, but if to many procedures restrict the workers, and makes it so that the permitted way of doing their job is reduced, then the conditions in which they work

might lead to unhappy workers. Knowing that the procedures that restrict them are there only to keep them safe, might not help them either. And if the only way to do a job, because of the restrictions, is by violating the procedures, then this might not help motivate the workforce either, (Reason, 1997). It might even imply that by doing their job, they put themselves and others in danger, because why else would there be procedures that restrict them from doing their job, if it was not for the safety of themselves and others? This is what defences is about though, they are there to safeguard the organization and its employees, but the employees must also live with the paradox of there always being a possibility of danger prone activities.

The defences, like procedures, might tell them that it is dangerous to do something, but doing it is the only way of getting the job done. Doing accident-implicated actions however, does not bring about a bad outcome, if it is done in isolation, (Reason, 1997). Like it has been mentioned earlier in the text, an accident or failure is the outcome of many things having to go wrong. All the holes in the barriers needs to create a trajectory. By tightening up the safe working practice, it will give way for the workers to create more violations. The violations create risk by making the possibility of an error more likely. Two consequences can come out of this. Number one is the increased probability of a later error, and number two is the increased likelihood that this error will have a bad outcome. For the workers the question will be when to violate, and when not to. If the condition of having a job done means that the worker needs to violate, then the organization will have to expect violations to be occurring, (Reason, 1997).

Error management consist of two components, error reduction which is all about limiting the occurrence of error, and error containment which is all about limiting the consequences of the errors that the reduction component cannot contain, (Reason, 1997). Error management is about the tools of managing safe acts. The goal is to withstand the dangers that the organization face, as well as achieving their objectives. The high reliability organizations are example of such organizations with their models of building a resilient system, (Reason, 2000). It can be said that error management consist of piecemeal, reactive, and event-driven attempts. Examples on problems in the existing forms of error management today are the consisted focus on errors that already happened, instead of focusing on the next one that could happen, greater focus on active failures instead of latent conditions, or the greater focus on personal contributions to error instead of situational ones. It is a problem that we focus a great deal on blaming people rather than situations when it comes to accidents. Even the best of us can make mistakes, and error management can see this, (Reason, 1997).

By recognizing the basic facts about human nature and the errors themselves it is possible to turn the table and stop putting the blame where it might not belong. Reason (1997) explain that in error management we can, as in all management systems, find things that is not so easy to manage, distractions are one of them, preoccupation and forgetfulness is a couple more. It is not possible to change the human condition, but the working conditions can be changed so that they make unsafe acts unlikely. Keeping in mind that people mostly never intend for accidents to happen, can make the management of error and the blaming part under control. Also keeping in mind that people will make errors, they will make mistakes, and accidents will happen, it is only a question of when and how one can try to prevent the next one.

**Safety management.** It is a global understanding that accidents can create both human, commercial and environmental dangers if big enough. Managing the workplace and the operations in an organization is easier than trying to manage a person's mind. Changing the conditions that the humans work in, is easier than trying to change the human condition. As such, Reason (1997) explain that most of the human performance problems are of the technical sort, and not psychological. There are three models for managing safety, *person*, *engineering*, and *organization*. They all have a different view on human error.

The occupational safety approach is an example of the person model. Individual unsafe acts and personal injury accidents are the main emphases in this model, as well as believing in people being free agents that can choose between what is safe and unsafe behaviour. This model shows an example where psychological factors like forgetfulness and lack of experience are shaping the model. For example, the use of this model constitute the use of poster campaigns, writing a new procedure or training and accident, (Reason, 1997). Reliability Engineering, risk management and human reliability assessment is the origin of the engineering model. In this model safety is looked at as something that must be engineered into the system and quantified as precisely as possible. Human error is not looked at as only something individual, but it emerges from mismatches between humans and machines. In the last model, the organizational model looks at human error as a consequence rather than the cause. Errors reveal the latent conditions in the system, and are therefore seen as a symptom that affect the integrity of the defences. One way to see this model is as an extension of the engineering model, because it also looks at the human and machine mismatches, but they see it as result of earlier decisions made by people higher up in the system, (Reason, 1997).

All three models have their own measures. In an overall safety management program, all these three models should be taken into account as they all have something to say about

individual and organizational accidents. It is important that safety managers are aware of the origins of organizational accidents and of the techniques they can use to stop them. Effective risk managers will use different countermeasures at the same time, targeting different levels of the system. Because they will know that it is not only one thing that instigate an accident, there are many things coming into play, both dormant underlying conditions and resent ones.

**Safety culture.** When asking what makes good safety cultures one have to understand the organization as a whole and how they have organized the systems to make good safety culture a possibility. Reason has covered the field of safety culture in a way that gives us an example of the whole picture. To be able to create what Reason calls an informed culture many parts in a system needs to be in order. The informed culture is based on the values and theories of a safety culture; this makes the informed culture a good culture for achieving good results in safety management, (Reason, 1997; Weick & Sutcliffe, 2007). It is put together by four parts that each takes on different parts of the safety culture in an organization, without involving individual thoughts on safety. This does not mean that the worker's thoughts won't be affected by the measures put in place. Especially parts involving motivation and attitude towards the security work will be important for creating lasting participation from the employee. The four parts in the informed culture is reporting culture, flexible culture, learning culture, and a just culture, (Reason, 1997).

The reporting culture constitutes the report system in an organization, what do the employees report when people makes errors or experience near misses. The just culture has to do with fairness and constitutes how people deal out blame when something goes wrong. The flexible culture has to do with adaptability, how good are the employees at adapting to any sudden increments in the pacing, intensity or pressure at the workplace. Moreover, the fourth part in the informed culture is the learning culture which involves how the organization and its workers learn from the experiences, and how adequately they can convert the lessons into new assumptions and action, (Reason, 1997; Weick & Sutcliffe, 2007).

Reason, (1997) explain that the acquisition of an effective safety culture, stems from the general principles of effective solutions to human performance problems. This means that they concern the conditions under which the people work and not the human condition itself. He continues by explaining that organizational cultures are shaped by the shared practices in the organization. He also argues that a bad organizational accident can create an immediate buzz about safety and maybe a temporary safety culture in the time following the accident, but the conversations and the aftershock will eventually die down, and be short-lived. One cannot assume that a safety culture will automatically develop itself and stay in place after an



accident, instead a safety culture is something that will gradually emerge from persistent and successful implementation of practical measures, (Reason 1997).

**Barriers.** Failure is not straightforward, henceforth detecting failure cannot be seen as something that is straightforward either. Sometimes it might start with a feeling, or a hunch, and feelings and hunches are difficult factors to use when trying to detect if something is wrong or not, even more so in which degree something is wrong. In many organizations the use of checklists is a good way to detect failure since it gives you a black and white picture on what is wrong, or what is missing. For example, if there is a missed step in a procedure, this failure can be detected through the use of a checklist on this procedure, (Weick & Sutcliffe, 2007). James Reason, a human factors psychologist, has a different list that can help you spot unforeseen events and where they will surface. Reason thinks that failures most likely will occur at the human-system interface and that managers can access this through asking three questions. These three questions involve one “hands on” question, one “criticality” question and one “frequency” question. The “hands on” question asks what activities involves the most direct human contact with the system. This is asked because activities that involves the most direct human contact with the system, also get the greatest opportunity for human decisions or actions, to have an immediate or a direct effect upon the system. The criticality question focuses on what activities will pose the greatest danger or risk for the systems well-being, if it is performed less than adequately. The frequency question takes into account how often as a whole, in the day to day operation, the activity is performed, (Reason, 1997; Weick & Sutcliffe, 2007).

Investigations into serious accidents and almost accidents often show that the cause lies in the barriers applied to prevent an accident from happening. A main goal for most of the organizations in for example, the petroleum industry, is to avoid accidents. To make this happen though, barriers are put up through technical solutions, contraptions and other safety measures. These barriers will act to prevent any accidents from happening, (Faret, 2010). The barriers are found within both technical, operational and organizational parts of the organization with measures corresponding to each of the parts. The measures are there to reduce the possibility of failure and to eliminate or reduce the consequences if an event should occur. If, however the barriers should fail, events from the global market shows that any violations on well-established barriers might be catastrophic for the organization, (Faret, 2010). One has to be constant with the barriers, and it is important to work with the barriers, this is so that they are not forgotten and made unimportant, which can lead to accidents. If one keeps an eye on the barriers, one can perhaps catch deviations and correct them before they

can do a lot of damage. It is very unlikely that all or many of the barriers would collapse at the same time, as such there should be time to detect the faults and then correct them. From this, one thing is for certain, maintain the barriers and one might prevent accidents and failures.

Viewing the barriers in a man, technological and organizational perspective is one way to solve the puzzle of getting organizations to take care of their barriers. Maintaining a good safety culture is also another way to boost the organizations focus on barriers. It is important that the organizations can use what they learn from previous experiences and convert their knowledge about the barriers and their functions, into measures and practice that will help avoid accidents and failures in the future, (Faret, 2010). Doing a good investigation after an accident has happened will be one way of procuring the information needed for learning. By categorizing the organizational factors one can up the chances of making sure the investigative work systematically reveals hidden contingencies that might be the cause of the underlying causes. A systematically conducted cause-analysis could be the answer for mapping out missing or broken barriers. And with the results it will be possible to propose measures. The goal is always to prevent or limit the consequences of the accidents or failures if they should happen, even with the measures in place, (Thunem, Kaarstad & Thunem, 2009).

### **Migration towards the boundaries**

There is a tendency with complex systems that they move towards unsafe operations stepwise. Because of cost of operation, there will always exist a drive for finding cheaper and more efficient ways to do business in organizations. But because of the complexity, change will be difficult to predict, and as such it will also be difficult to predict how these changes will affect the operations and maybe lead to failures. And again, because change when implemented is difficult to change back, going back isn't an option, (Rasmussen, 1997).

Accidents can be seen as emerging from the interactions that happens between system components, and usually they won't identify any single causal factors. What happens is that they look at what could have gone wrong with the operations or technology and how these could give way and let an accident happen. Rasmussen (1997) views safety management as a control problem, he also looks at component failures and external disruptions as a cause for accidents happening, or the handling of the interactions between the layers and the components are not adequately enough. Both big and small control inputs are necessary if a system is to stay safe, this is how the control theory looks at it, because if the system is left alone by itself it could create a hazard. This is the basis thinking of resilience. The view of this theory is that an event does not cause another event that again trigger another event and eventually cause an accident to happen, (Dekker et al., 2008). If the safety constraints that is

put on design and operation are violated by the interaction between components, then an accident could be the result. If this happens then inputs on feedback and control might grow at odds with the real problem, or the real processes that is to be controlled. Therefore, in the heart of the control theory, one has the concern of these control processes and how they change, (Dekker et al., 2008; Reason, 1997).

When it comes to change, the control theory thinks that even the smallest change in a system, for example, a small change in the way a procedure is executed, will have some sort of consequence in another part of the system. A concern is how a lack of control will allow activities in the organization, to migrate towards the boundaries of what is acceptable. A system is more than the sum of its elements. As such an organization will constantly change and adapt to new processes, this is to achieve the goals of the organization and to adapt around the constraints that might appear, (Dekker et al., 2008). The objectives and constrain in an organization will shape the part in the system that evolves around human behaviour. If work performance is to be successful however, then these must be respected. But this leave some degrees of freedom open, and these must be closed by the individuals themselves. Criteria's like workload, risk of failure, cost effectiveness and similar will act as a guide to close this hollow. This hollow again has other constraints in place like administrative and functional ones that binds it all together. The changes in an organizations work conditions that one can call normal, will lead to constant modification when it comes to the strategies, this again will create variety, (Dekker et al., 2008). And this again will lead to the systematic migration towards the boundaries as was mentioned earlier in the text. If one crosses this boundary and it is not reversible, then an accident could occur, (Rasmussen, 1997).

A way to prevent this from happening is to make sure the boundaries are known in the organization, and also to develop ways that people can cope with the edges of the boundaries. Rasmussen (1997) also suggest that increasing the awareness of the system drifting towards the boundaries might be a way to prevent it, because as the organization push towards more efficiency the boundary will grow nearer. Then maybe the organization could launch a safety campaign to push the organization in the opposite direction. None of these though, do something concrete about the actual boundary, (Dekker et al., 2008). Defining the boundaries can out of the above seem to be a management issue. A task for the safety manager will therefore be to define the boundaries and supervise that no one crosses them. Because crossing the boundaries as has been mentioned will make an accident imminent.

### **High Reliability Organizations**

The safety science knows more about what causes an event than how you can avoid it, (Reason, 2000). The term high reliability organization, (HRO) was first spoken by a group of social scientists based mainly at Berkley, (Weick & Sutcliffe, 2015). They set out to find principles that could define an HRO. And later they looked at the commonalities between three organizations that fitted the description of an HRO, a nuclear aircraft carrier, an air traffic centre, and a nuclear power plant. What they found was that these HRO operate in an unforgiving environment with many potential errors. Learning through experimentation is prevented by the level of consequences, and complex processes is needed to manage the complex technology if one wants to prevent failure, (Weick & Sutcliffe, 2015).

Based on the terminology that was first used by the researchers at the University of California, Berkley, Weick and Sutcliffe, (2007) lump the findings from these organizations together and call them High Reliability Organization, (HRO). In their second edition book from 2007 they explain that many people have looked at organizations that can be put in the HRO box, and have been struck by these organizations unique featured structures. But Weick and Sutcliffe, (2007) also saw something else, the HRO think and act differently. Their processes and practices are different, maybe not in ways that are uniquely different, because they still have unexpected problems that needs to be fixed, but still different.

Most of these problems involve a lapse in reliability that occurs over time, an oil rig does not blow up in an instant, it is many small things, like people thinking something will happen that does not, or the opposite. Small clues accumulate for some time, and it is up to the workers to pick up on them and realise that these clues are unexpected things that are happening for a reason and that they will not go away. A part of the HRO's success is their uncommon skill at finding ways to stay mindful about the things that happen. By updating the ideas of current situations and not being stuck in the ways of the past, the techniques that these organizations use is something that would be worth copying, both because it would ensure faster learning and a better relationship with customers, but also because it ensures more alert sensing towards danger and failures, (Weick & Sutcliffe, 2007).

Reliability however does not equal complete lack of variation, but the opposite. Mindful variety will ensure a stable high performance, something the HRO's have learned through their successes and their failures. Weick and Sutcliffe (2015) believe that managing the unexpected will be an ongoing effort to define and monitor the weak signals of the systems in the organization. For many years now, the HRO's have dealt with issues of mismanagement of the unexpected. This means that they are aware of what they do and do not

know, something that gives them a way to stay ahead, and prevent unwanted events from happening. They can be looked at as good role models not only because they have managed to stay away from catastrophe's waiting to happen, but because they on a continual basis strive to get it right. Two of their greatest enemies are complacency and hubris, (Weick & Sutcliffe, 2007; Weick & Sutcliffe, 2015).

When trying to find a reason for why high reliability organizations were experiencing less accidents than their risk and complexity at work would seem to require, compared to other organizations, Weick and Sutcliffe, (2007) find that high reliability organizations practice a form of organizing that helps reduce the brutality of audits and also helps speed up the process of recovery. In their book they explain how expectations can get the organization in trouble if they do not create a mindful infrastructure that on a continually basis tracks small failure, resists oversimplification, remains sensitive to operations, maintains capabilities for resilience and takes advantage of shifting locations of expertise, (Weick & Sutcliffe, 2007; Weick & Sutcliffe, 2015). These five characteristics makes up the foundation for what HRO's are all about. It is these five characteristics that provide the answer to how the HRO's manage themselves as well as they do.

High Reliability Organizations do their best trying to avoid accidents. To succeed in this, the organizations use complex processes to maintain control of complex technology and complex tasks. And it seems like it is working, because even if these organizations are vulnerable to big accidents, statistics show that they have a low accident rate, much lower than could be expected. We may therefore ask the question why? One of the explanations the HRO theory gives is the high level of reliability that these organizations show. Often these organizations have a dynamic focus on creating reliability, and they always seek to improve the reliability in the organization, by intervening to avoid mistakes and by mastering and recovering quickly if a fault occurs.

There is a huge focus on development in the organizations that operate in an environment with high-risk, and that shows the greatest success. HRO's are good at building creative responses to failures that may occur, (Weick & Sutcliffe, 2007; Weick & Sutcliffe, 2015). To better be able to understand the results from the analysis in this thesis it is important to understand the five characteristics in the HRO's that we mentioned earlier. There will always exist a possibility for failure to happen. As such the HRO's focus a lot of energy into methods for reliability like training, experience and creativity. The goal is to come out on top after an unexpected event, they use the methods to recover from failure. The five characteristics is a response to these methods and by following these five characteristics either

intentionally or unintentionally the workers do their job even when unanticipated events happen. In the following, the five characteristics will be explained, preoccupation with failure, reluctance to simplify interpretations, sensitivity to operations, commitment to operations and deference to expertise.

**Preoccupation with the possibility of failure.** I mentioned earlier that the high reliability organizations have less than their fair share of accidents, if you look at what can go wrong for these organizations, the list will be long, and the consequences of failure could be catastrophic. Something that could explain this is that by averting errors, the organizations recognize that human variability is a force to harness. The organizations work hard to focus this human variability and could be said to constantly be preoccupied with the possibility of failure, (Reason, 2000).

Some people might resist using the phrase “preoccupation with failure”. This could be because it might suggest that any unexpected event that happens in the organization, is the result of someone’s failure. It is easy to therefore imply that someone specific is to blame for the failure, instead of the fact that something can be learned from it. Weick and Sutcliffe, (2007) states that preoccupation with failure is a preoccupation with maintaining a reliable performance, and explains that maintaining a reliable performance is a system issue and not an individual issue, as such preoccupation with failure must not be seen as a person specific problem, but a problem with the system.

The fact is that all failures are connected. The small events that happen are the outcome of earlier events that is more distant and that likely deviated from the expected, but were put down as a minor regression or failure. We find that failures off misspecification, misestimating and misunderstanding have a story that stretch back in time, much before they appear in unexpected events. These stories however are difficult to spot along the way, but are easily spotted in hindsight, (Weick & Sutcliffe, 2007; Weick & Sutcliffe, 2015). For HRO’s it is important to embrace failure, meaning that they pay close attention to any weak signals of failure that may arise and be a symptom to something bigger, a larger problem in the system. Also it means that HRO’s spell out mistakes that people normally don’t dare make. Because of the view the HRO’s have towards embracing failure, they are better at creating practices that preclude mistakes tied to strategy.

It has been mentioned before that failure in an HRO can have catastrophic consequences. Even so, failure is failure no matter the organization, failure means that there has been a lapse in detecting the failure, someone should have noticed something. And that something should have been dealt with properly and thoroughly. If an organization is ignorant

about failure, where it was located, the genesis and the trajectory, then you could say that the organization is not as mindful as it could be. There are many things one can do in an organization to raise the capability for mindfulness. Calling attention to failures when they happen, raise awareness of the consequences if attention to failures do not happen, take advantage of other people's management of similar failures, find and propose measures that will detect failure systematically, share stories that will keep and preserve the lessons that is learned from past failures, (Weick & Sutcliffe, 2007; Weick & Sutcliffe, 2015).

That an organization is preoccupied with the possibility of failure means that the organization is mindful about failure. And raising mindfulness in the organization will keep the organizations focus on preoccupation of failure. When it comes to being mindful, one can say that it is a good thing to feel bad, and it is a bad thing to feel good, meaning that if you feel good you might very well not be as attentive as you think you are, and as such allow small problems to accumulate undetected into bigger problems that eventually will lead to failure, (Weick & Sutcliffe, 2007).

One way to be mindful towards failure is to have a good report system in place. This includes a general understanding in the organization that they can feel safe to report incidents. If workers don't feel safe they might ignore the incidents or try to cover them up. A good way to strengthen the organizations safety culture can be to have management encourage workers to ask questions and to reward the ones who report errors, mistakes or observations, (Weick & Sutcliffe, 2007).

**Reluctance to simplify interpretations.** The globalization has changed organizations in many ways. It is more difficult to anticipate what is going to happen next, and this has made organizations all over the world more mindful of what they ignore, but also how they can alter the processes of simplification in the organization. We can recognize the weariness and concern of blind spots in the scepticism of HROs. By finding out how the system in the organization makes people socialize into fewer assumptions, how it makes them notice more, and how it makes them ignore less, you can seek out how there is a reluctance to simplify. By looking at the norms at the workplace you can also find that it gives you the possibility to look outside the confines of current expectations, both to question, but also to restrain temptations to simplify, (Weick & Sutcliffe, 2007; Weick & Sutcliffe, 2015).

It is important to have a divergence in the viewpoints provided in the organization since this will give the organization a broader set of assumptions and sensitivity to a greater variety of inputs. Both of these can be seen as the antithesis of simplification. An important factor to take into account is that the diverse views tend to be distributed toward the bottom of

an organization, disproportionately. This means that the ones who most likely catches the warning signals are the ones who have the least amount of power to do something about it, and also the least amount of argumentative skills to get people to listen and make them see that the signal should be taken seriously, (Weick & Sutcliffe, 2007). It is therefore important that there is a strong shared attitude and sentiment towards mindfulness being imperative to success.

Mindfulness insists on a closer attention to context, categories, and expectations. By having a stronger attention to these three factors, mindfulness gives a way to counteract the simplifications being made when unexpected problems occur. For example, expectations can simplify the world and steer the focus away from evidence that suggests an unexpected event might be right around the corner. With more differentiation in the mind-sets and the way one view the world, one would get a more varied set of precautions, one would also get early warning signs. One could say that HRO's are good at complicating their simplifications, if they decide to simplify they will do this slowly, reluctantly and very mindfully, (Weick & Sutcliffe, 2007).

There are many things that can make simplification a hazard towards organizations, for example, labels. Words have strong influence on how we react around them, or how we interpret them. Weick and Sutcliffe, (2007) explain that the words you use determine meaning, action and consequences. The word, empty, can be misinterpreted since for example, a gasoline drum is empty when it does not have gasoline in it, but it is still not empty in the sense that it is safe to smoke beside it, since it without the gasoline is filled with explosive gas instead.

To be able to detect the unexpected as early as possible one way to go about it would be to design organizations in a way that they can manage the unexpected. But early detection depends on the names we impose on the things we experience. We all have our own stock of interpretations, and we see the world through what this stock will allow us to see. When we as an individual want to make sense of something unexpected, we will use active exploration to do so. It does not immediately require us to name something, but if we should start with naming what we have seen, then these names will take over and the impressions we sensed will fall behind, (Weick & Sutcliffe, 2007; Weick & Sutcliffe, 2015).

HRO's impose on preinterpretation warily since they simplify details, which can be a signal for trouble. As such simplifications will occur more slowly if details are preserved. Easy to remember, easy to practice, easy to teach, all are what Weick and Sutcliffe, (2007) makes up as the rules of thumb when speaking of resistance to simplification. Important



things in this characteristic is to make people look out for anything out of the ordinary, encourage people to have their own opinions and to speak up about them, strengthen skills when it comes to conflict resolution and negotiation, make sure that people are aware that when an unexpected event occurs the interpretation must be revised as new evidence appears, learn from all unexpected events, and display mindful thoughts openly.

**Sensitivity to operations.** Knowing how your workplace work will make it easier to spot failures and other things that is not as it should. If you are sensitive to operation you know that the system is not perfect, you know that it could be better, and you know that the system is messy, but because you know these things you are also responsive to them. If an organization has a sensitivity to operations it will be able to monitor the things that are supposed to be expectable interactions, and prevent failures before they happen by responding to anything unexpected that happens, (Weick & Sutcliffe, 2007).

An organization that have implemented a good practice for sensitivity to operations focus their attention on small deviations and interruptions in the operation. To be good at managing unexpected events it is important to value detection of small failures and to be watchful for the moment-to-moment changes in the condition, also it will be important to value the differentiations of categories. Other important aspects of handling risks that the designs have not anticipated will be to appreciate the relationships and conversations that is continuous in the organization. Examples of practical sensitivity to operations could be meetings were the systems and the operations are discussed, operational measures of the performance, and a continual face-to-face interaction in the organization, however there are things that might stand in the way for success in this aspect, (Weick & Sutcliffe, 2007).

Examples of threats to operations could be the culture and/or the tendency of routines becoming mindless. Weick & Sutcliffe, (2007) explains that a mindless act is automatic while a routine act is merely customary. If the meaning of these two gets mixed up, or if you for example assume that the word routine refers to an automatic activity, then people might forget to ask what if...? And if your schedule that day is filled with jobs that are normal, then the what if's will feel like a waste of time. When an operation is executed mindfully it is easier to rework routines so that they will fit changed conditions and if necessary update the routine when new learning is gained. Another threat to look out for would be the possibility of learning the wrong lesson from a near failure, or a close call. The close calls reveal a potential for danger, some organizations however would look at a close call as evidence for their working system, and proof that their management skills and abilities to avoid disaster is good.

The problem with this is when someone see what they do as sufficient, when they should have seen an almost miss, then they might face a new challenge, the acceptable risk might grow bigger and one day the skills to avoid a disaster won't be sufficient enough, and failure happens, (Weick & Sutcliffe, 2007). The important lesson in this is that sensitivity to operations should be used as a guideline for organizations to help them derail the blindness that takes the form of intentions rather than the actual work, routine work is anything but automatic and the actual work is defined by the relationships and not its parts. By being sensitive to operations you have a great way to correct the failures of foresight.

HRO's can be seen as hands-on operations, meaning that all the way through the organizations ranks they are in close contact with the things that are going on. They do not delegate operations to some people and let others do the thinking. HRO's think while they are doing and they do it by doing, something that is reflected in their sensitivity to operations. The managers can create a context where surprises can be spotted and corrected more easily by having an ongoing attention to operations.

**Commitment to resilience.** Commitment to building resilience and deference to expertise are both characteristics with the HRO that helps them to contain the problems that arise and bounce back from the crisis. You cannot write procedures for every possible thing that will ever happen, it is impossible to anticipate every situation and condition that is a part of peoples work every day. This means that if an organization shall successfully manage the unexpected, then people have to change what they do, without losing their way of sensing that something needs to be done, (Weick & Sutcliffe, 2007). In other words, a reliable outcome require that the workers are capable to sense the unexpected, but in a variable manner. Organizations that does not file under the HRO mostly goes about their day under the influence of routines and expectations, by keeping their activities constant and only varying their process of mindfulness, they end up with doing the opposite of what an HRO would do.

Something that might seem inefficient can be a bore to do, and workers might feel that they should not have to do it. But when it comes to changes that can improve resilience, what might seem inefficient can be an investment for the safety in the organization. It is up to the managers to encourage the workers, and make them feel like such inefficiencies are a necessary evil to protect those that use them and make the inefficiencies an investment in good resilience, (Weick & Sutcliffe, 2007; Weick & Sutcliffe, 2015). Deep knowledge, generalized training and learning are key points to resilience. Increasing the response repertoires of the workers will give them a greater range of issues that they then can deal with in the best possible way. Training and learning are ways to get them there. By enlarging the

capabilities of action they will start to notice different things, for example, they will start to notice more hazards, because now they can handle the things that they see.

Another thing to be aware of is that leanness can strip the organization of resilience and flexibility. As such, sacrificing positions also means that you sacrifice the expertise and experience those workers have built up during their time in the organization. An outcome of this might be that the repertoire of responses that the organization was thriving on is now limited. Therefore, to improve resilience it might be wise to organize the workforce into networks that is self-organized and that can produce expert problem solving, (Weick & Sutcliffe, 2007; Weick & Sutcliffe, 2015).

Resilience is also linked with good feedback. If the effects of initial attempted improvisation turn out to be making things worse, then quick and accurate feedback on this will make it easier to abandon what is initiated, and the action can be altered or abandoned. A serious disruption made by an unexpected event is partly made up of novelty and routine. When you encounter something new, your previous experiences are just partly relevant which means that you should begin with what you know, but always be in doubt that what you do is the correct thing to do. If something turns up that you are unfamiliar with you should deal with it immediately, but still retain the context of past experiences, this will help keep your intervention meaningful. The goal of this is to act simultaneously like it is something you have and have not faced before, (Weick & Sutcliffe, 2007; Weick & Sutcliffe, 2015).

Being resilient is the same as being mindful about errors that *have already* occurred, but also to correct these errors before they become worse and can cause more harm. Managing the unexpected means managing something that has already happened, it means that you need to manage something that you did not anticipate would happen, but that did. How capable is the system for maintaining its function and structure when faced with changes of both internal or external degree, and does it degrade when it must? This is resilience. If the system is able to operate when faced with failures at some parts of it, then we call it a resilient system. An HRO would, based on this, want to degrade gracefully instead of shutting everything down. The ability to absorb strain and preserve functioning, the ability to bounce back and recover, and the ability to learn and grow from previous experience are three components that resilience consists of. The HRO are continually weary because they know that they have not experienced all the ways something can fail or go wrong, (Weick & Sutcliffe, 2007; Weick & Sutcliffe, 2015).

**Deference to expertise.** By moving away from at least two assumptions, authority equates to expertise and that higher up in a hierarchy equals greater expertise, one can say that

you are deferring to expertise. More substantive and less obvious expertise is what you want to move towards. A mindful organization will always need experts, but the view of the actual expertise needs to be realistic. If the workers that are referred to as experts have a disproportional view of their own expertise, then your organization might be in trouble. What you don't want is people presuming that if something serious were happening they would know about it, and go on to assume that since they don't know about it, then it is not happening.

This is a distortion that can keep you from seeing the truth, and is called the fallacy of centrality, (Weick & Sutcliffe, 2007). Being told that you are important enough times can easily make you believe you are important, being told that you are an expert on an area can easily make you believe you are an expert on that area, and prevent you from asking for help in situations you are insecure. When in doubt, ask. It is important that you ask for help when you are in doubt, no one is all-knowing. But it is not only a problem that someone thinks they are all-knowing, the problem is that others might start to believe that to, and that is when the bigger problems becomes a part of the picture. If someone thinks you already know something then they won't tell you, this something turns out to be something you do not know, and failure becomes a fact.

In a mindful organization people speak up and they listen. It is however important to notice that HRO's also have hierarchical patterns of authority, but they have mastered the ability to alter typical patterns of deference. When the tempo of operations increases and they start to experience unexpected events, the decisions start to migrate throughout the organization until it finds a person that has a specific knowledge of the event, and hence can make a good decision that will benefit the organization, (Weick & Sutcliffe, 2007).

Weick and Sutcliffe, (2007) also makes it clear that imagination is an important part in managing the unexpected. By securing that the system values imagination as an expertise, the organization can become better at mindfully managing the unexpected. For example, hypothetically constructing lines of action and envisioning things that might have been overlooked or scenarios that have not yet happened are all parts of managing the unexpected. It is important to remember that when speaking of expertise one speaks of the experience, learning, the knowledge and intuitions that normally does not exist in any single individual, and if it does it will have to be requested or deferred to by a second person. Moreover, the expertise given must be modified or rejected by this second individual, the expertise given needs to be interrelated. It is a contribution and not a solitary act, the goal is to make sure the system stays productive and resilient.

HRO's use a lot of their time focusing on the mindful infrastructure, it is understood that mindful processes can unravel fast, today's technology and today's environment makes sure that this is an ongoing process.

**Safety culture.** What is a culture, is it what an organization is, as in the beliefs, values and attitudes, or is it something the organization has, as in control and practice? Whatever it is, changing attitudes and beliefs directly has proved to be harder than changing the acting and doing. By changing the acting and doing you might be able to change the thinking and believing as well. The acting and doing are influenced by the norms, practices and policies in an organization, and over time the attitudes and beliefs can be changed by the group context and conformity, (Weick & Sutcliffe, 2007). The culture will effect both what people expect of each other internally, as in the norms at the workplace, and the expectation of the external dealings with for example, clients and competitors. These expectations will then say something about the attitudes and behaviours and what is the proper way to act. Culture can be seen as a key element in managing the unexpected since norms for appropriate behaviour that stems from a culture, will turn out to be coordinated and resilient, (Weick & Sutcliffe, 2007).

Changing culture is difficult. It is a slow process that will be subject to many relapses. It is recommended to only try to change the culture when it is absolutely necessary with a specific problem that needs to be solved. It will also work best if there is existing cultural strength to work with. The reason it is difficult to change the culture in an organization is because different views on cultures also imply that there are different strategies for change. If one still wants to change the culture in an organization, one should start with changing symbols or behaviour, (Weick & Sutcliffe, 2007). By changing the symbol, one start with easy changes that you could use as leverage for the larger and deeper changes that comes later. For example, one can use a watch as a symbol for teamwork by asking what part of the watch is not needed? Off course, if a watch is going to work it will need all its parts, (Weick & Sutcliffe, 2007).



## **Method**

The aim of this study is to look at what the informants do when they think of and implement safety aspects in everyday work. Then to see if what they do and think can be related to some of the theories that exist in the social sciences. Because of this, a qualitative approach was selected.

### **Choice of method**

This study aims to find the practitioners view on safety management, what they actually do and how they do it. There exist some theories in the social sciences already, like the ones I have outlined in the theory chapter; the normal accident theory, the barrier theory of James Reason, the migration towards the boundaries, and the high reliability organization theory. All of these shed some light on safety in organizations. In this study however, I wanted to know the practitioner's views. To do that I chose a qualitative approach of methods. This was to be able to ask the questions I wanted to ask, and let the informants answer what they wanted, without the boundaries of a quantitative approach. Because of this I chose the method of semi structural interviewing to gather my data. When it comes to the choice of methods, there is a debate going on about the trustworthiness of the qualitative approach, in relation to the quantitative approach, (Meyrick, 2006). But it is also noted that the flaws in the research from both the qualitative and quantitative approach often show the same problems, and good research no matter the approach is the ones that are aware of and acknowledges that there could be some error, (Meyrick, 2006). In this study, a qualitative approach was chosen because I wanted to investigate the informant's perspective on safety management.

### **Participants**

The participants were selected through contacting relevant organizations. All the participants are relevant for the project, and they all give an interesting insight to how safety management are acted out in a real work environment. It was important to have a variety of safety managers with different types of tasks when it comes to safety, from different companies, since this would hopefully show different ways to do safety management, and it would give a representative sample. There were also participants from companies who performed courses and worked with education about safety and safety management of leaders in other companies. These participants were important since it gives a picture of what the leaders learn, and where information comes from regarding theory and literature. It was voluntary to participate, and only those who wanted to participate were interviewed. There

were nine participants and the interviewees were both men and women, (three women and six men).

### **The interview guides**

The interview guides were developed with the help of my supervisor. Two interview guides were created, one for the participants working with safety management, and one for the participants working with courses and education on safety management, (appendix 1). A semi structural interview guide was chosen for this study, the order of the questions was set, but if one of the informants mentioned something from a later question, this question would take precedence. The semi structural method was chosen because then the informants would be allowed to speak outside of the questions, and this could lead to interesting findings that we had not thought of when writing up the questions. The questions in the interview guides were open questions, this was another important aspect since it gave the informants the possibility to speak freely about the aspects they thought were important. It gave them room to explain their daily work and their own way of perceiving safety and safety management. As a general the informants were not shown the questions in advance, however, one of them asked and was allowed to see it. The interview guides were revised after the first couple of interviews to add a question that was asked every time; “do you think that your organization is a high-risk organization?” The interviews started out with the participants being asked to tell about a normal day, this way one gets a picture about what they normally do in their work. Gradually the questions turned toward safety and safety management. The questions included the following: If something unexpected should happen, can you explain how you would solve this? Who takes responsibility? What do you do with the information you get? Can you describe the procedures you have in place when it comes to safety? How do you think the procedures work? How do you work with improving the procedures? Can you describe what you think a good safety manager do? What is important to be a good safety manager? How does an organization facilitate for good safety management?

### **Interviews**

All the interviews were performed within a timespan of three months, and was originally timed to one hour each, though most of the interviews lasted about 15 minutes more. The interviews were carried out face-to-face, and via telephone when meeting up was not possible. The time of the interviews was decided from the informant’s time schedules. Most of the interviews took place during the informant’s workday. It was only the interviewer and the informants present during the interviews, and no one else could listen to what was



said during the interviews. The writer of this thesis was the one who recruited the informants, by sending e-mails to perceivably relevant organizations. It did not prove difficult to recruit informants, and more could have participated if time had allowed for it. For this study nine semi-structured interviews were conducted, and they were recorded for transcription and analysis. All the informants were provided with an informed consent form, that needed to be signed if the interviews were going to be used in this study, (appendix 2). These consent forms were all signed ahead of the interviews apart from the ones where telephone interviews were conducted. In these cases, the forms were signed and sent by the informants. None of the telephone interviews were transcribed before the forms were received.

### **Transcription**

After the interviews were conducted they were transcribed before they were analysed with a focus on finding the meaning of what was said. The transcription was based on John W. Du Bois transcription system. Du Bois (1991) transcription system is a readable system that looks at transcription as documenting language use. Du Bois thinks that one cannot equate transcription of something that is spoken, with simply writing down speech. This is because there cannot be a single standard way of putting spoken word to paper, different people will produce different renderings of the same recording (Du Bois, 1991). In the case of dialect, the interviews were all transcribed using “bokmål”, as a way to make the meaning of the text easier to understand. All participants spoke Norwegian, and through the whole process, both the interviews and the transcription was done in Norwegian. Therefore, the quotes used in the results has been translated to English.

### **Ethics**

This study was applied to and approved by *Norsk samfunnsvitenskapelige datatjeneste*, (NSD). This happened before the collection of data was instigated, (appendix 3). Anonymization can be explained as obscuring the identity of someone, (Nespor, 2000). It was important that the study took into account the anonymization of both the informants, actions that could give light to who it involved, or the organizations as there were not many in the same positions as the informants, knowing the names of the organizations would therefore make it easy to find who the informant was. In regards to the quotes of transcription and anonymization, these are translated from Norwegian to English, and therefore it should not be possible to understand who said what, also it has been taken care that the chosen quotes do not mention something that can give away who it is that said it. The informed consent forms were all sent on e-mail to the informants, and read through by the informants before the

interviews started. The audio files were stored in a password-protected folder on the researcher's personal computer. The computer itself also needed a password to be opened. It was not possible to recognize the informants from the numbering in the names of the files. It is only the one researcher in this study that have had access to the audio files, and the transcribed material. At the end of this study and assignment, the raw data material will be deleted in accordance with what is explained in the approval from NSD and the consent form for the informants.

### **Analysis**

When analysing the transcribed interviews, the method of thematic analysis based on Braun and Clarke (2006) was used. This analysis method was chosen because it is good at identifying and analysing patterns and themes within the data. This study was looking for patterns and themes that after the analysis could be interpreted on its own to see what the practitioners thought of good safety management. And then after seeing what the practitioners think, this could be related to, and searched for in different theories within the social sciences. It is important to focus on the information within the data that you have and using a thematic analysis will give you the possibility to do this (Braun & Clarke, 2006). Based on Braun and Clarke (2006) the thematic analysis process consist of six phases. Some of these phases are similar to the phases of other qualitative research. This means that the stages in this type of analysis are not unique to thematic analysis. The phases are: familiarising yourself with your data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, producing the report. Analysing content in the way you do with a thematic analysis involves constantly going back and forth between your data. An integral part of the analysis is the writing process and writing down ideas and thoughts from the start, in phase one, and to continue doing the same true the entire analysing process (Braun & Clarke, 2006).

**Familiarising with the data.** In this master thesis there is only one investigator and writer, as such this person had many ways to familiarize with the data. Being the singular scientist on the study and having been through all the parts of the data material collecting, transcribing, and analysing, it gave the investigator a good knowledge of the data. Like mentioned, only one person conducted the interviews, and being a part of every interview gave the analyst a possibility to become very familiar with the interview guides, the questions being asked, both those that was already on paper, but also those that where asked during the interviews. For example, one question where added in all the interviews, "*Do you think that your organization is a high-risk organization, (høy risiko bedrift)?*". This question was asked as the last one during the interview, and produced a picture of how the informants looked at

their own organization and whether they would term themselves as an organization that works with high risk. The interviews were transcribed, and initial thoughts were written down during the process. The transcriptions were then listened to again to make sure the transcribed material was accurate. This is also a big part of familiarizing with the data as it gives the analyst a thorough way to go through the material. Before starting the process of analysing the material, all interviews were read through three times, as another way to familiarize with the data. Also, during the whole process of analysis, that means all the phases. I found myself going back and forth between the data and the phases, to make sure that nothing was missed. This also helped me familiarize myself with the data in a much better way than by just reading the transcriptions in the beginning and then jump straight from phase to phase. All of the aforementioned have played a part in doing the analysis in the best possible way, with the hope that the results will be as correct as possible.

**Generating initial codes.** Through the transcription and the first phase of the analysis, many thoughts were written down, and a set of ideas for initial codes were found. In phase two these writings were put to good use, as they were used to generate the initial codes to the data set. In this phase colour coding was used, and going through all the transcriptions, sentences or/and paragraphs were colour coded according to what the informants were talking about. Also these codes were seen as important aspects of the features in the data in relation to the research question. The whole set of data was given an, as much as possible, equal time, so that repeated patterns within the data could be found and considered in regards to the research question. It is important to always remember that during the whole analysing process you should constantly go back and forth between your data, something that became important in this phase.

**The search for themes.** In the third phase the initial codes were sorted through and put into potential themes. In this phase the codes were put into a table to make it more observable. This way it became easier to discern patterns and combinations that would go into themes. Many of the initial codes could be put into these themes, something that might help explain bigger sections of the data set. In this phase it was time to start dividing up the codes and data set, so that only the codes that were relevant to the research question were put into a theme, and moving on to the next round in analysis. It is important to mention in regard to this, that during the next phases of the analysis, the codes that were discarded were looked upon several times to make sure that important information or new insight was not left out. Just because something was seen as not equally important at one time, does not mean it could not become important later in the process.

**Reviewing themes.** After finding the initial themes based on the codes, all the current themes were put into thematic maps. These maps helped review the themes, and further cutting out the ones that did not seem relevant. Also the maps aided the researcher in finding relationships between the themes. At this phase it was important to move back and forth between the initial codes, the themes and the maps, so that one could be sure that nothing was left out, or that nothing unimportant was kept, as this could confuse or misguide the researcher in the rest of the analysis. If during this phase there was found new parts that needed new codes, this was done and then the codes were placed in themes. Again we can see the importance of going back and forth in the data. Only when it was believed that the themes were at place and the context seemed to be clear, it was time to move to the next phase.

**Defining and naming the themes.** Based on the initial phases the themes were now in thematic maps, and initial names had been given. In this phase however, it was time to look at the maps as a whole and the names of the themes. And for some of the themes a redefining of the names would be necessary. The names of the themes should be a reflection of the essence in the theme itself. Also trying to understand the underlying meaning of them was an important part in this phase. The themes were identified by searching for the most predominant quotes and aspects that would represent the themes on the whole. Initially the thematic maps gave 8 themes, but after going through them again, all the way back to the codes, and forth again, five themes emerged that all had their own subcategories. The five themes were named “To cope with unforeseen events”, “To set a good example”, “Bad things will happen”, “Being approachable”, and “Distinct communication from the management”.

After the names of the themes were set, it was time to write the results. The following is the results section, and also the sixth and final phase in Braun and Clarke’s (2006) guide to a thematic analysis. This last phase is meant to describe the individual themes and the stories within the themes, with examples of transcript that will help illustrate the elements discussed both in the analyses themselves, but also in the discussion of this master thesis.

## Results

The analysis presented me with five themes that each had their own set of subcategories. These themes are presented in table 1 below. The themes presented in this results part are the themes that were most dominant during the analysis process and answered to the part of the topic of the thesis, what do the informants think is good safety management? In the following I will first present the context and then the themes and subcategories.

**Table 1.** Themes and subcategories from the analysis.

Theme	Subcategories
To cope with unforeseen events	<ul style="list-style-type: none"> <li>- Mental preparedness in the event of accidents</li> <li>- Contingency plans are for all organizations</li> </ul>
To set a good example	<ul style="list-style-type: none"> <li>- Walk the talk</li> <li>- The responsibility for safety lies in the line</li> <li>- Create a culture for safety</li> </ul>
Preventing accidents	<ul style="list-style-type: none"> <li>- Barriers prevents high-risk</li> <li>- Learning and preventing by looking at statistics and reports</li> <li>- Training; Coping and preventing accidents</li> <li>- Procedures are both a necessity and a nuisance</li> </ul>
Being approachable	<ul style="list-style-type: none"> <li>- Learning from others</li> <li>- The importance of a good psychosocial environment</li> </ul>
Distinct communication from the management	<ul style="list-style-type: none"> <li>- Avoiding misunderstandings</li> <li>- Gradual change</li> </ul>

## **Context**

This context aims to give an understanding of the informants, with the goal that it will be easier to replicate the study. The informants in this study came from both the security, science, health care, and petroleum industry. They were all working with safety in managing positions. Some held positions as health and safety environment managers, some worked within training and education, others had experience from managing a platform offshore, and some worked with contingency management. The work tasks were variable, but all worked with safety on a daily basis. The workdays consistent of a lot of meetings, report work, and updating of systems, procedures, measures and similar.

Most of the informants had positions close to the general management, some were also in the same network as the top management in the organization. A difference between them would be that only some of them had some sort of human resource function, and the others had a main function on keeping an eye on the safety in the organization.

When it comes to their experience, all of the informants had several years of experience working with safety related issues.

One of the informants was not working at the moment of the interview, but had over 30 years of experience from working with safety, and as such I could see no reason for not having the person as an informant.

All the informants described the same types of safety challenges, like implementing the right types of measures, raising the awareness of safety in the organization, or getting people to follow certain procedures.

## **Themes found in this study**

The results from the study provided five themes with their own set of subcategories. These themes and subcategories will be presented in the following with accompanying transcription and interpretation. The first theme I will present is “to cope with unforeseen events”. This theme has two subcategories, “mental preparedness in the event of accidents” and “Contingency plans are for all organizations”.

After this I will continue on with the second theme, “to set a good example” with accompanying subcategories “walk the talk”, “the responsibility for safety lies in the line”, and “create a culture for safety”.

Thirdly I will present “preventing accidents” with subcategories “barriers prevent high-risk”, “learning and preventing by looking at statistics and reports”, training; coping and preventing accidents”, and “procedures are both a necessity and a nuisance”.

Next up I will present the theme “being approachable” with its subcategories “learning from others” and “the importance of a good psychosocial environment”.

And lastly I will present the results from the theme “distinct communication from the management” with subcategories “avoiding misunderstandings” and “gradual change”.

### **To cope with unforeseen events**

This theme is about how the informants deal, and believe is a good way to deal, with unforeseen events. This theme has two subcategories that I think say something about how good safety management also involves having mechanisms in place that able them to deal with things that have not yet happened. The theme is about what the informants would do after an event has happened, how they cope with it.

**Mental preparedness in the event of accidents.** This subcategory describes how one should prepare oneself for something unforeseen, one informant put it like this: *“When I went to bed every evening, I had an idea in my head of what operations were going on, what is happening during this night (...) because then you were a little more prepared if the alarm should go off”*. Even though everything seems fine when you go to bed one evening, by the next day one could stand in the middle of a crisis. Having your mind in the right place, and preparing your mind for unforeseen events can help you cope with the events when they occur.

*“Where people are mentally, have a great impact on the safety, this we can see in the statistics. Because even though, big things will happen, and you see that the damage increases slightly and then the risk level is also slightly higher”*. Being mentally prepared also had something to do with the focus during the workdays, it was important that if the safety of the operations where to be upheld then people needed to stay focused mentally on the tasks at hand. Having troubles at home, or other difficulties that constantly comes to the forefront of the mind could become a hazard leading to accidents.

**Contingency plans are for all organizations.** During the analysis it became clear that having a contingency plan, and having someone in charge of the contingency plan in the organization was an essential part of the safety work. *“The methodology of ours is that we first must try to uncover risks, and try to find out what events it is that may affect us, then find out what it is or how it can affect us and what measures we must take to handle that type of event.”*

*“Which risk factors, what threats, what can happen. And in this is the history of what they have experienced. Also it is important to look at how to prevent it, that is the most important. But also safety, contingency, what do we do if it happens, or if it is about to*

*happen, what measures do we apply, that is a contingency plan, that is consequence reducing measures.*” Every informant spoke about contingency plans in some level, and every informant seemed to think this was a good measure to have in place in case of unforeseen events. It seemed to be unified idea of the method that was used creating the contingency plans, and the informants explain the same game, first you need to uncover the risks and find the hazards, then you need to find the measures that can help avoid or prevent these risks and hazards from becoming anything more than a risk and a hazard. The last step has to do if an event happens, how do we react and what measures do we apply. The importance of having these plans in order, and to review them often, not necessarily changing anything, but keeping them up to date as the organizations keep moving forward, and other changes that appears in the society.

*“I think that is an area where one has succeeded a lot in the offshore industry, to actually prioritize resources on contingency.”* One of the informants mention the offshore industry as a good example of not holding back the resources needed to create good and working contingency plans. However, another informant mentions the importance of having a contingency plan in every organization, even the smallest ones. *“There are many who forget it, that one must have a contingency plan, for example (...) the gas stations that is open 24/7, it is important that the employees can get a hold of someone during the night.”* Every organization can experience some sort of failure, risk, or hazard. Knowing how to act and what to do in such situations can minimize the negative outcome of the event. This means that contingency plans are for every organization, not just the bigger ones that work with very obvious hazards. One might not think of it, but if something should happen during the night, then it would be necessary for that employee to be able to reach someone in the management. Because the management would want to know that something was going on. It will be a form of safety in itself, knowing that you are able to reach someone, calling the police is a given, but they are not responsible for the store or organization.

*“I am also very committed to building confidence, as such when I work with contingency the main principle is that when something happens, you shall know what to do and you shall believe that you can do it.”* Another important aspect will therefore be the feeling of confidence and safety, and this is something that the management can build through having good plans for contingency in order.

*“That people know their role and their responsibilities, so that it does not fall somewhere between two chairs. For example, just going to, or I thought that you, these things are examples we work to avoid.”* The importance of knowing what to do in a certain situation



is also true when it comes to normal work days. By knowing the role one has both during stressful and risky situations, and during the everyday work you can eliminate uncertainty that can affect the performance and push towards a dangerous situation. *“I have said no to jobs that wanted me to run an unscheduled contingency exercise with all its glory, scare the hell out of people, uh I think not. It might be that we will have an exercise like that later on in the training program, but not as a first start.”* Avoiding stressful situations also applies to the drills and exercises used to train the organization on the contingency plan. In these situations, it is important to not scare the employees and the management, so that they in a real situation freezes. The point of an exercise is to make people capable of dealing with the situation ahead of them. One of the informants points out that it might be that they would run an unscheduled exercise later in the training program, but not at the very beginning, Because the point of the contingency plan and the training is to be able to deal with unforeseen events in the best possible way.

### **To set a good example**

Many of the informants would stress the point of being the good example when it came to safety. After all, how could they expect someone else to do something if they did not do it themselves. This way of thinking showed itself through many parts of the interviews, and seemed to be something they would focus on and work on when it came to getting the message of safety out to the employees. This theme involves three subcategories that describe how the managers are expected to act, and how they are a part of the safety system and culture of the organization, as such creating a culture for safety is an important part of the safety managers' workday.

**Walk the talk.** *“If a director doesn't show, you have to walk the talk, if you do not do what you say yourself, then it will not work. Because people will reveal it right away (...) if you say one thing and then do something else, then you are exposed, and then the respect will disappear, and it will not work.”* Leading by example and making sure that whatever the management tell others to do, they would do themselves as well, was important as a way to show the employees a good example. *“I have much fate in that, managing by walking around, that is not so dumb.”* And if possible they would do it better than the employees. This subcategory describes how the management and their actions is an important part of the safety system in the organization. Many of the informants would point out that if the management would not do something themselves, then the employees would not know why they should do it either. Therefore, it would be imperative for the management to lead by example.

*“You have to go forward as being a good example, and this applies to all that have management positions in an organization, no matter which level you are on.”* The rules should apply to everyone in an organization, and normally they do. But for an employee, seeing is believing, and seeing your manager being a good example can prompt the employee into being one himself. Hence you will get a good circle, where everyone thinks and act on the idea of safety. Important aspects of this is that all of the management, even the ones on the very top, understands the important of this.

*“It is important that the safety manager is out and about, so that this is not only something that comes from the top, and gets threaded down the heads of the people.”* Another important aspect is that the manager is out and about, and actually makes it possible for the employees to see him doing the good stuff, picking up garbage, putting things in place after they are used. The opposite of this could lead to the feeling of having seemingly good ideas thrown after oneself, something that might lead to the employees choosing not to do something, because the manager didn't, and so it cannot be that important. Avoiding this and being out, seeing what the employees do on a daily basis were something the informants described as important.

*“You have to be available, walk around in the labs, talk with those who is there, get a feeling of what it is, because it is not my discipline any of what they are doing, so I am dependent on trying to understand.”* Being a good example will also provide the manager with a way to see what is going on, see and understand what the employees do, and give the manager a way to catch up on things that can lead to failures. If a manager does not understand what the employees do, how can he know what the risks are, other than the black and white ones that will show up easily.

One of the informants say it like this; *“I am close on, even though I have the strategical responsibility I am afraid to just be strategic, because I don't think that is good practice. You also have to show it, if I don't bother to bend down and pick up something, or clean up something, how am I supposed to expect that others shall do it, right. It is something about showing that you are a good example (...) and to not be afraid to muck in whatever the task is, that you don't become the distant leader who don't really understand anything of what it is that they are doing. Because that is something that I really fear, and it inspires a completely different respect.”* To get the respect of the employees and to show them that you are serious in what you say, you have to show it. The more you are out and about, the more you show them the good examples, the more they will start to follow your example.

**The responsibility for safety lies in the line.** Something that was important for the informants in general was pointing out who was responsible for the safety in the organization. *“It is the line that has the responsibility for safety (...) a safety manager has no responsibility, he should only give good advice (...) it is you, the line, which has responsibility for the safety.”*

*“The responsibility is very clearly defined in the line. It is not my responsibility making sure that no one hurts themselves, it is actually quite important.”*

*“We are very concerned that we are organized as a line organization, so that the line has full responsibility.”* They seemed quite in agreement on the responsibility being everyone’s responsibility. It was not the safety manager’s responsibility to make sure that no one hurt themselves, that everyone followed the procedures, and so on. They were advisers that one could turn to if one needed help, or if something did not work they could try and find new solutions. The informants seemed to think that the employees in the organizations could blame them if the safety was not at its best, this however, they felt would be wrong since the question of safety did not lie with one person alone, but with all in the organizations line. Another thing was the question defining what is safe enough, what is good enough. At this they made it perfectly clear that the definition of what is good enough when it comes to safety, is something the top management needed to define.

*“I compare it with Prinsenkrysset here in Trondheim, someone walk across on the red lights, someone wait and walk across on the green lights (...) all have an idea of staying alive, but we perceive the risk differently (...) when you start up in an organization, it is not up to the individual to define the safety.”* One of the informants explain about who is in charge of the definition of safety in the organization with the good example above. In our own lives we perceive and act on our own idea of risk and safety. But in an organization it is up to the top management to define what is good and bad. After they have done that, the safety manager can start working with this, spreading the news, develop measures to counteract the risk. And then the whole organization as a whole need to see to it that the measures, procedures and other elements of safety are followed and used.

*“Working with safety and the reasons why I think it is important in an organization is to ensure a unified picture of what is necessary safety measures based on the risks. So it is not up to the everyday man to define what it is, what does I think is good enough, it becomes what does the organization think is good enough.”*

*“It is not like it is one person who is responsible for all the safety in an organization, we are a great team who work together and complement each other.”*

*“(...) often we see that the best measures are when both the management and employees at different levels are involved, and then they need to work on it over time.”* If this is going to work however, it is important that the whole organization has a unified picture of the important safety elements. To make sure this is possible all levels in the organization needs to put in some effort.

*“On every possible level to demonstrate that safety always comes first, and that it is complied with in practice, in the line amongst the management on all levels. Because safety always comes first is cracking in a celebration speech, but it will fall on stony ground if it is not seen through in practice, you have to be consistent.”* An important part in working with safety is to make sure that it is believed to be important, and that there is a valid reason behind the measures and procedures. To do this it needs to be visible in the line, it needs to be perceived by all levels in the same way, as something important. And this visibility and viewpoint needs to be constant and consistent.

**Create a culture for safety.** The culture in the organizations where touched upon by all the informants. *“What affects the safety work the most is the safety culture, or the missing safety culture (...) as long as nothing happens, then the safety culture will falter gradually.”*

*“Working with safety culture in an organization this big is a challenge, really. All the focus is in a different place. Because here it is patient, patient, patient all the time and nothing else matters. And this is how it should be, if someone is standing over there and screams something about safety, then that is something one does not care very much about, as long as things are ok.”* Some would speak much about it and others not so much. But consistently they all spoke of the culture as an important part of the safety in the organization. Either they called it safety culture or just culture, the ideas seemed to be similar among the informants, it was a difficult aspect to work with. One of the reasons for this could be the focus of the organization and its employees. Normally in a health-care organization the focus on patients would take precedence over thinking on one’s own or the organizations safety.

*“We sit all over the place, and that has something to say when one tries to make a unified safety culture, and so it requires some extra twists to be able to make a unified culture.”* There were different reasons why working with the culture in the organization was difficult. For some it was the size of the organization, for others it was the main focus in the organization that was the problem. This last point seemed to be the main reason for the informants working within health care, as the focus would be on the patients. Other informants mentioned that as long as nothing bad happened then the focus on a culture of safety thinking would fade away. Another informant mentioned the many buildings that the

organization used as a problem for creating a good culture and safety focus among the employees. The informants did see these problems, but they didn't look at it as something they could not overcome, they were just bumps in the road. They all wanted more focus on safety, and as such they looked for possible openings where they could step in and advocate the safety focus.

*"I think that safety cannot be decided from the top. You can signal attitudes and expectations from the management, but you build safety from the bottom, from the ones who actually do the work."* One way to do this was by seeing the safety as something that needed to be built from the bottom, by the workers, and not from the top. This was something that came through with several of the informants. Having the workers on your team would make it easier to spot hazards and find risks that normally would go unnoticed if not for the general though of safety among workers.

*"Safety culture that is to be diligent, it is to care, it is to stop others that do something stupid, that is a part of the safety culture for me. That is how you prevent the dangers from happening."*

*"You need to set aside time to get to know people. And then your worklist will expand, because you sit down and talk to people, and things will emerge that would not otherwise, and these weak signals are important to listen to. You can capture a lot in such coffee conversations, but to be able to get these things you need to have the peoples trust, and to get that you need to build relations over time."* To be able to grow the focus on safety and a strong culture these thoughts was also accompanied by examples of how one could build the safety culture from the bottom. Being caring, report not on someone, but to someone if their gear is wrong, or if they forgot something, using some of your time on getting to know people, letting them know that it is ok to speak of the bad, as well as the good, because that is what one would learn from. All of this makes the management seem approachable, and by doing it themselves they lead on as a good example for the employees to follow. Making sure that the employees are as much a part of the culture in the organization, with their own minds and thoughts on safety, but also with the understanding of the organizations definition of what is good and what is bad safety.

*"I am certainly concerned that we include those that work with all the operations in the everyday life, working in groups and working in teams is important to me, and not to sit alone and keep on with it, but to sit down together and try to land things."* This way one could create a good safety environment were telling someone that they forgot their helmet is not seen as a bad thing, but a good thing, building under the notion of everyone creating a

safety team. Once again it is not about doing something alone, and leaving all the responsibility on one person, it is all about doing it as a team and build the organization and its culture together.

*“It starts with management because an organization becomes a function of its leader.”* Some of the informants had a different view on where the safety was built though. Something that shows how different people also think differently. Even though the previous way of thinking, that safety is built from the bottom, was the most mentioned by most informants, a couple would offer a different view. *“I think it is important that the safety manager is systematic about the safety, and have the abilities for it, and especially that he has the ability to ground it within the management. This means being tactical in relation to progress.”* Also getting things through to the management was an important part of this view. If you wanted a safety aspect to take a hold in the organization, then you needed to ground it with the management. And you needed to do this in a smart way.

*“(...) an organizations resilience is grounded in the team’s climate, how is the interaction in the team, how do we ensure that we use the potential in the team, how do we get all in on the team, and how do we deal with someone that have a bad day due to relationship at home with the family or other social factors.”* Even though the view of where one starts to build the safety focus is different, one can still find the one thing that both views have in common. Both views values team-effort and no matter where one grounds the safety aspects or start building it in the organization, it is still a necessity to have teamwork, that everyone in the organization cooperates to create a good culture for safety, were problems that arise can be dealt with efficiently and without affecting the general safety in the organization.

### **Preventing accidents**

*“You have something that is named basic damage, and these accidents you can never escape, there are no measures for them. People will trip and fall, hurt themselves and such, no matter what measures you implement, that is for sure. But we need to work with it.”* There was an understanding that could be found during the analysis, from all the informants, that accidents will happen. There will always be risks, and as such failure and accidents can never be fully prevented from happening.

*“Working with safety is very difficult, there is no definitive, there is no blueprint on how to do it.”* Some of the informants pointed out how difficult it is to work with safety. Knowing that bad things will happen, but not having one definite way to deal with it can be a trying thought indeed, but none of the informants uttered anything that might be interpreted as

them having given up or having lost hope on finding the best measures possible for counteracting any accident from happening.

*“The top management must develop a safety policy and a strategy, it does not need to be something big about that, but again one gets to highlight that this is something we take seriously. And this policy must say something about what is good enough because we can never secure something 100%, that does not work, but we need to say something about what level we think is good enough, that is what level of risk is accepted here, and what is not accepted.”* To do this the management should develop safety policies and strategies, this must also say something about what is good enough. Knowing what is good enough will aid the safety manager in his or her work, exactly because of the knowledge that accidents will happen. This theme has four subcategories, that explain the informants view on barriers and their relationship with being a high risk organization, how they use the statistics and reporting system to try and prevent accidents from happening, how training is an important part of both coping and preventing accidents, as well as the role of procedures in relation to preventing accidents from happening.

**Barriers prevents high risk.** When the informants were asked about their organization and if they thought it was a high risk organization, they found reasons for both being a high risk organization and not, they would say that *“It depends on how one defines it.”*

*“It’s in the nature of the research, everyone who work with research work with risk, because what is there is that you’re doing new things that nobody has done before, and you do not use standard equipment, so all research will be connected with risk.”*

*“In some cases, we work as mentioned with chemicals, we work with infectious agents (...) we are coordinated with another organization and they do their own research (...) so in some areas I would say that we are a high risk organization.”* If the organization have operations which can be critical on its own, without any barriers in place, then the informants would say that their organization was a high risk organization.

*“We do have risks, but we have measures that enables us to reduce the risk enough so that we can operate. Because we are not allowed to send people out into high risk situations.”*

*“There are many compensatory or risk reducing measures put in place (...) given that you remove all of these risk reducing measures, then health care would definitely be a high-risk business. But that is also why you have all these measures in place, so that one can level down to an operation that is not high-risk.”*

*“We have the potential for high-impact events, but that is not the same as high-risk (...) we can get our workplace to explode if we make the right errors.”* They would however, point out that having barriers in place would counteract the high-risk, and make it secure to work whatever operations they needed to. This all can be interpreted to all types of organizations having the possibility of being a high-risk organization, but as long as the measures and barriers are in place, the ones working there will not perceive it as being operations with high-risk.

*“A petroleum company handles such a big risk that one single accident can lead to the end of the company.”* For some of the informants who were in the petroleum industry the knowledge of how risky the business could be without the right measures in place, can say something about the pressure they have on making sure the measures are up to date, and are followed. They know that if the measures and barriers had not been there the rate of accidents would have risen, and the potential for it going very badly had been a question of how soon until? One of the things that revealed itself in the analysis was the constant evaluation of how good their measures and barriers were, and what their next move would be towards reducing the risk. They knew that the challenge of high-risk possibilities was there, the question was how to prevent it from ever getting a foot hold.

**Learning and preventing by looking at statistics and reports.** *“One thing that I work with now has to do with a risk that is getting bigger and bigger every day because now we have (...) historically good results statistical within safety, we have never before had such results. Two things happen now, one is that the results become better, knock on the wood, statistically, and the other thing that is happening at the same time is that it is a longer and longer time from the last bang that we had. And this we know a lot of in relation to major accidents, when it happens in an organization then there will be developed (...) a perception that we are good enough because of the good statistical numbers (...) it is called complacency, and it is the absolutely biggest safety risk we have at this time, as a result of us getting so much better statistically.”* One of the informants also spoke of a new risk that was emerging, with the new era of continual development and use of reporting systems, and statistics being made from previous failures and accidents, the risk of complacency would start to show itself. The danger is that when looking at the statistics and reporting systems and numbers, one might start to feel safer than one truly is. The numbers show that they are doing something right, and that the operations are safer than ever. But in between these numbers are all the barriers and measures and thoughts about safety, if one should start getting lax in the



performing, one could start letting things slide, and eventually this could lead to major accidents.

*“One of the conditions that is important in regards of what I am working with is that we have a good reporting system.”*

*“Yes it is very important, extremely important, because at any given point I can extract statistics for the last 12 months.”*

*“What we who is in the management can do is to pick out reports and see if there is something that is repeating, is there something that shows us some trends, is there something we need to think about when we add guidelines or recommendations on the focus for the next year.”* The informants did not look at the reporting system and statistics as a negative, rather more positive.

The notion was that the reporting systems and the statistics one could get out of them would present them with knowledge on how the operations and procedures were working. And about issues that needed to be dealt with as an improvement. If this was going to work however, the reporting system needed to be functional and good. When the reporting system works and people use it, the information that is saved can be used to pull out statistics. And this statistic can be used to prevent and improve the systems and procedures.

*“And then we go inn and look at what makes someone do the same error many times.”* Looking at previous statistics can give a picture on what happens prior and during the failures that is reported, and this can be used to create counter measures.

*“You have to classify things correctly, or else they will end up in the wrong place.”* *“We have a variable named status, that functions by either being open, under work, or it is closed. All of them is supposed to be closed, and so we track the closings.”* Also It will always be a necessity to have good systems when dealing with reports and statistics, having a system for knowing the status of a report will make it easier to follow up with the proper measures.

*“All experience shows that statistics is not to be trusted, it is not true information because statistics does not show you information on skill-level or the level of behaviour in an organization (...) were you use the statistics from yesterday to manage the today, well if that statistics is wrong, then your management will be wrong.”* The statistics must however, not be seen as a constant. By believing that, it could end up telling you the wrong information. It might not tell you total truths about the system, but it could show you trends that can be necessary to deal with in making sure the organization stay as high-risk free as possible.

**Training; coping and preventing accidents.** Training was found to be something that most of the informants would say something about. *“Then there is training, training, training, because that’s what makes you good. There is none of us that know how we would react if there is a difficult situation, it is not possible to say in advance because we cannot know that if we have not tested it. If your life is threatened, then you will not know how you will be, but the likelihood of you doing what you have trained on, it’s big”*. It is difficult to know how to react to something if you do not have a foundation for it first. For most of them training was an important part of the contingency plan, and it was prioritised in the organization. It was looked at as being a foundation for both workers and leaders, as it made sure that everyone knew what to do if an event should occur and that they became good at handling the situations that they could suddenly find themselves in.

Another important aspect of training was the safe environment factor: *“Because if you think ahh, I cannot do this, know I am very insecure and I have no idea what to do, then it is a big possibility of not succeeding. But if you think that yes, I have cards describing the measures, I have trained myself on them, I think I can do this, then you do. It is all about making people mentally able to go into action in a stressful situation.”* If someone feel safe about their leader, the organization, their own training, then they would act better in stressed situations. This can also be seen as building on the subcategory of being mentally capable of doing a job that was presented earlier. *“It is to institute training as a part of the work, just like in sports, and then develop the managers’ skills. That is what it is all about, training is the big clue.”* Training does not only concern the workers, but the leaders as well as they also need to know how to act and think in difficult situations. Especially in the event of trying to avoid accidents.

Updating one selves on the laws and regulations and other relevant aspects of the work is another part that was important when the informants were speaking of training related perspectives. *“It is clear that it is important with updates, and we should preferably stay ahead, so I try to scroll through and see if there are something one should focus on, and then we try to attend some courses and other external things.”*

*“I have read some literature within risk management and health and safety environment. Mostly within risk management and barrier management.”*

*“I have been reading about safety and contingency plans.”* Staying up to date was important because changes could be expected everyday based on things that could or would happen. Important parts of safety management were to stay ahead, because if you fell behind something would come and bite you and cause accidents. As such this was a focus several of

the informants would point out. One way to stay updated was to read relevant literature, or to make it a good habit to check the regulations regularly. Mostly the informants would read about contingency plans, barrier management and safety. These issues seemed to be well read topics.

*“I use the web a lot, I have the pages of the PSA, the pages of labour inspection, STAMI, the state institute of occupational health, some international, and then there is standard.no, the Norwegian standards.”* Almost all of the informants preferred to use the web as a source of information and as a way to help them keep up to date. This seemed to be the easiest way to get updated information.

*“I read a lot of textbooks on competence management, organizations and such methodology. Negotiations, conflicts, there is a lot to read, coaching, I do like to read and can throw myself over a good textbook.”*

*“It has been a lot about leadership.”* When reading they would also read magazines, books and other literature that focused on leadership, as this also was a part of their daily work through the managing part.

*“I don’t read very many books, interspersed occasionally, but otherwise it is mostly scholarly updates in seminars and such. Also I try to keep up with what is published, if not books then articles and papers.”*

*“There are many journals I have read that print articles.”* Almost all would say that they tried to keep up to date by reading recently published articles. But only some of them would read articles of a scientific manner in which they would search specifically for themselves. The ones that did not look for them would say they read articles in magazines, something that seemed to be more efficient, as such one can say that what the informants read had to do with how much time they had and how easy it was to get a hold of. Reading and gathering information on the web, by subscriptions delivered in the mailbox, by magazines and journals, was all ways in which they could save some time in a workday with a pressed time schedule.

*“I have many magazines, but it is a rarity to have the time needed to read it.”* There was some of the informants however, that did not read at all as a result of the pressed time schedule.

*“I did a lot of that, but now I don’t bother no more.”* Some would simply not read at all saying that it was something they did before, but not something they would prioritize today. By looking at how the informants choose what they would use their time on, it is found that even though they all felt that it was important to keep up to date on the literature in their

field, and to find and develop good ways to train one selves and other employees. The time they all give to reading new scientific material and discover new ways and inspiration for learning and preventing accidents from happening, was rather low. Other things would be prioritized over this, even though they would say it is important to keep up with the times.

**Procedures are both a necessity and a nuisance.** Every informant would at some point in the interview mention procedures, either they would talk at great length when the question came up, or they would mention it on their own.

*“There are a lot of procedures.”*

*“How many do you want, haha, no it is not that bad.”*

*“There is many procedures you know.”*

*“In this line of work there is miles and miles of books with procedures, there are procedures for everything.”* Almost all would say something about it being a procedure for everything, and as such they could not mention them all, it would be to many and take too much time. *“Maybe even too many procedures, because it is easy (...) that if there is to many procedures people will stop thinking for themselves, and just do things automatically, and this is a pitfall, and then there is a danger that things will go wrong.”* Several of the informants would mention that it might be to many procedures, and that this might be a bad thing.

If an organization has to many procedures they will limit the workers own thinking process as they would not need to think, it is all written down, this is how you do it. If an unforeseen event would occur, then the worker might not be capable to handle the situation.

*“Because with the amount of procedures we have, I think some of it is drowning, and some of it might feel a bit unnecessary.”*

*“In the long run I wish that the organization should switch to a management system that increasingly puts the user in the centre. Because the danger of having written procedures is that they exist a little bit to cover the backs of the management (...) even though they specify the requirements necessary for the user to use them, it say very little about how the requirements must be safeguarded, and I could imagine having a development towards something that say more about how to use them.”* It is important that the ones who use the procedures feel that they are a necessity, and not a burden that inhibits their work day. One informant pointed out that the written procedures feel like a way to cover the backs of the management, and that the procedures don't really say much about how to safeguard the requirements.

*“What certainly has to be in place is to make sure that one has a good system where one can have the procedures comprising the safety work, and where one can also register*

*deviations, this is so that one can work in accordance with the deviation.*” Good safety management should also look at the procedures as a hindrance for safety, not knowing how to use the procedures, or how to act if something happens that is not described in the procedures are a risk the organizations should take into account. An important part of this will be to have good systems in place that makes the procedures easy to find, and easy to understand. Also it will be necessary to have a system for reporting deviations, because every deviation is a step closer to failure.

*“If people get responsibility and the ability to think for themselves, and to figure things out, that is a lot better than going into a procedure with detail.”*

*“You should follow the work procedure as best as you can and don’t take any short cuts (...) but again, if the system gets too rigid then people stop thinking, and then it is very easy to miss out on a procedure.”* Having good systems in place makes the work towards a safer environment and workday easier, making sure that it is easy to understand and easy to use is also important. Moreover, if people are trusted enough to know their job and to think for themselves, then maybe some of the procedures in place in the industry today can be removed. The informant touches on an important aspect regarding the autonomy of workers, and people in general. People are not robots, and as such we should not be expected to work as ones. If the procedures are in place to reduce or remove the possibility of risk, but the work itself is risky, and taking that risk is necessary to get the job done, then the worker will be faced with a dilemma. And if the systems become too rigid the result might be that people stop thinking and just do, this again can play out bad when it comes to procedures, because if people just do, they stop thinking of what they are doing, something that can lead to them missing an important step or an important procedure. Hence, one should follow the procedures, but leave room in the procedures for people to think for themselves as well.

*“Had we not had this kind of work and order system, and a system for what equipment, and what type of operation we should have, it would become a wild chaos out on such a platform.”* It was clear in the analysis that too many procedures might end up being more a nuisance than a necessity.

*“I have a responsibility in seeing to it that the organization work to ensure the safety in the employee’s daily work. And my chance of doing this is through making sure that we have good procedures in place, and that those are made known, and that we also make sure that certain events does not happen. And if they happen, that we are good enough to inform and get the information out to the organization.”* Still mostly all of the informants would mention procedures as a good thing, as a necessity to prevent accidents from happening. All

of the informants who mentioned procedures did so in a way that made it clear how necessary they were for the safety of the organization and its work. Even though they might question the amount of procedures, and the way they were organized, the gist was still the same, procedures was a necessity for making sure the organization stayed safe, with a minimum of risk to the daily work.

*“It is like this, that it is important to do something, it does not matter what it is, just to do something to show that you can do something (...) it is actually actions of panic, when you are in a situation and someone freezes and do nothing, and others do something they should not, because they feel like they have to (...) and this can hurt the health and safety environment.”*

*“Constantly there are changes or revisions of the procedures, it could be after events, which allows us to see that something was not good enough described, or we have to better the description, it can be after input from individuals who feel like it does not safeguard their needs.”* This focus of having good procedures in place, and making sure they were known, did not involve a lot of change to the procedures as a way to make them better. The procedures were not changed constantly, and new ones were not implemented in a rapid pace, because this was seen as a negative way to handle the safety. That type of behaviour would be looked at negatively because it was seen as a way to show some muscles in a bad time. On the other hand, sometimes the procedures needed to be changed, but this should not be done unless there were a strong foundation for changing the procedure. Procedures has shown itself as being an important part in preventing accidents from happening. If, however, an accident happens one should take a look at the procedures to make sure that they were not an accomplice to the accident. The transcription above gives us a picture on the constant work that these procedures require. But as mentioned above it is not about changing for the change itself, it is always about making it better, to make the safety in the organization better, to reduce the risk and avoid unforeseen events. The procedures are a necessity, but the amount and details of the procedures must constantly be evaluated in relation to the operations and its risk. It all comes down to making the decisions on the right grounds.

### **Being approachable**

*“On my part, the job was to be available, talk to people, especially the leaders, make sure to create a good vibe.”*

*“If you want to make a team work effectively then it needs to be a good mood around the workplace.”* This theme has to do with the management and how they act around their employees. It is important to be approachable. And to create an environment where people

could work effectively and safe. This theme has two subcategories, that describes the underlying aspects of the theme, it is not possible to know everything, and one should therefore be open for others opinions, and understand the importance of building a good psychosocial environment.

**Learning from others.** By being approachable one opens up the possibility of learning something new. For example, by understanding that it is not possible to know everything, you open up for new ideas and new thoughts coming from other people. Being open for other ideas will help build relationships based on mutual respect. Listening to your employees also lets you build a culture of safety by taking into consideration their thoughts and ideas.

*“That is why you have leaders, and you have a crew, because they are the ones that know. An instrument leader knows how an instrument works, and a nurse knows how to fix people.”*

*“Acknowledge that you can become better, if you acknowledge that, then you have come very far. But if you think you are the best, then it is a bit scary.”* An organization have both managers and employees for a reason, it is necessary, no one knows everything, and as such you need every type of people to make things go around. Also you need to own up to the fact that you can always develop yourself and your skills,

*“You have to use the doors that you have.”*

*“It is good to get a second opinion.”* Using the minds that you have available can help confirm and verify your own thoughts and ideas.

*“Knowing your own competence, limitations, and knowing that I know something about this, but this I don’t know anything about, and when you get to an area where you know nothing, or you know that others know more, to then listen to these people.”* Knowing your own limitations will also be helpful in managing safety as you will be able to understand when you need to ask for help, and when not. It is important to be aware of the fact that to ask for help, or for a second opinion does not mean that you have failed, it only means that you have realised the possibility of developing your own skill-level.

*“Most likely I would confer with someone anyway.”*

*“You have everyone else around you.”*

*“We have a lot of common catchment; we intervene into each other’s workday. It is very nice to have a network that you can spar a little with.”* The informants were all aware that they were never alone, they all had their own professional network that they could use if

they needed. Mostly, they would use people within a common field, who understood what they meant when using their terminology.

*“Not at least participation and interaction which is very important. Getting the employees on your team.”*

*“The ones that own the problem, often own the solution to, but it is easy to send the ball upwards in the system and say, oh, can you fix it? In these situations, I often go into a dialog with them, and if they need any expertise I can get them that, but very often they have the solutions themselves.”* Sharing knowledge can help create participation and interaction. Because often one will find that the ones doing the hands-on work have a great many ideas of improvements. Of what might work, and what might not. Using this information on a daily basis will be a very important part of both the physical and the mental safety work.

*“It is really about making people good, because I can do my part and that is one part, but we won’t be any safer just because of that.”* What it ultimately spins down to is to make each other good, build people up, and help each other to reach their own potential, to learn something new, and to make a better working environment.

**The importance of a good psychosocial environment.** *“If you behave like people when you have such a job, then you will get a good atmosphere. Don’t be a stone-faced type and make yourself into something you are not (...) this will gain you respect (...) but you must also respect the people.”* The mental state of the employees in the organization will have an impact on the safety in the organization. As such the psychosocial environment is a key part that needs to be functional. Being approachable is one way to make sure that the employees actually come to you for help, or with problems they might be experiencing. The informants would point out that this was a difficult area to deal with, as it was more personal and up front, than other parts of the safety work. But gaining the employees respect and creating a good environment were aspects they thought were helpful,

*“All of these psychosocial factors that affect the safety, it is challenging, handling conflict for example, something most leaders shun like the plague, they know that is a conflict there, but they keep away until they have to do something, and then they are poor at handling it, not having any formal training on handling it.”* Some of the informants would mention conflict solution as a factor that was difficult to work with, and find solutions for. It is necessary for a safety manager to get in and solve the conflict before it creates an atmosphere of risk potential. This is essential in regards to the environmental safety aspects, and the general vibe at the workplace.



*“It is communicated a lot, and is followed up on such a large degree the way I perceive it, that safety should always come first. And then off course it is a little bit under pressure, when the time-factor becomes more and more important.”*

*“We always work after a plan (...) but at the same time having a dialog around this plan if something occurs (...) at least if there are factors one cannot control. Because then there are activities one can do to reduce the time pressure.”* Having an open and positive atmosphere in the organization will create a greater trust towards the management. Most of the informants would point out the importance of safety always being the top priority, but they also pointed out that the time-factor with the result of stress could counteract this focus. Making sure that one has a plan to work out from, can lessen the burden when the time-factor creates settings one cannot control, by opening up the possibility of reorganizing the plan.

*“And of course if you are very tired you do more faults, because then you are less focused.”*

*“Having good systems for follow ups.”*

*“When things are predictable and known you reduce the stress.”*

*“I think that as a safety manager it is very important to listen to the employees. What are their experience, what are they thinking, they have some recognition and thoughts about what feels ok in that particular situation”* There are many situations that can create stress. This means that it is necessary to create good systems for managing stress. One way is to create environments that have routine and stability. Also it can be wise to make it a norm that the safety manager listens to the employees. By listening he or her can pick out dormant or underlying reasons for the feeling of stress, or the employees will simply tell them.

*“Let’s say a crane operator that is not present in his head because of issues at home, in this case he is a danger both for himself and others.”* The employees state of mind is also an aspect that will affect the safety and the psychosocial environment. When working with operations that can be potentially dangerous, it is important that the employees are able to concentrate on what they are doing. One of the informants say it like this; *“If people are in a good mood, and the atmosphere is a good one, then I think that they work a lot more secure then if they walk around being pissed and have their mind a different place then it should be.”*

*“My experience is that to make a good culture for health and safety environment one have to crate trust and a feeling of safety.”* One way to counteract a bad vibe in the organization, is by creating a safe and trusting environment. Other informants also mentioned trust as a key part of the environment, *“it is foundational that one creates trust in the*

*organization, that the employees feel that they can express their concerns, they can bring stuff up that the manager won't think is entirely positive."*

*"You have no safety culture if people are afraid to speak up."*

*"You are dependent on having an open dialog, because if not you will not gain insight as a safety manager, if you are going to manage the safety, then you are dependent on people speaking up."* Without the feeling of trust, the employees won't bring things to the management, things that might be safety critical. One way to counteract this is to have an open dialog between the employer and the employees. This is a critical factor as a safety manager since it will give an insight to the things going on in the organization. But this dialog must be built on trust and respect, as anything else would make for an uncomfortable situation.

*"We have a big working environment survey every other year, and with this we get good data over what people think of and is bothered by (...) both in relation to the tangible, concrete, physical safety that very often is easy to do something about since it shows. It is more difficult to do something about the things related to stress, psychosocial."* Using the working environment survey one can gain valuable information pertaining the psychosocial environment, and based on the findings one can implement measures to counteract the negatives like stress.

*"It is like eating an elephant. As long as you don't focus on the elephant, but eat a small bit at the time, you will see that we can managed this, and now that is good, and then we fix this so that this is good as well, like this you can build a little motivation, you cannot look at the whole picture, something that might seem insurmountable at times, but you have to celebrate the small victories."* It all comes down to taking it one step at a time and create a little motivation and a little trust every day until it has become a part of the culture.

### **Distinct communication from the management**

Communication is a big factor in every organization, this theme is about this communication being informative enough and meaningful. The two subcategories go into the necessity of communication being distinct both during change, and to avoid misunderstandings.

**Avoiding misunderstandings.** *"The thing is that it had been three different organizations, and so something has slipped between the fingers during the handover, and in the documentation. It is uncertain if they even had all the documentation at all, and that's dangerous."* One part of communication in an organization is the part evolving around the misunderstandings. Most of the misunderstandings will originate in the way something is

communicated. Especially when implementing new procedures or measures having good communication will be crucial. If the information going out is lacking, then this might lead to hazardous situations.

*“I am a little unsure how well known they are out there, because the amount of information is so great.”* One problem can be when there is so much information, that it is potentially drowning in on itself. In these situations, making sure that the most safety-critical of the information are known will be a minimum for the safety manager.

*“Management is goal-searching, problem-solving and language creative (...) I have had a focus on the language creative part, because I can see that we speak, or use the same words, but we create a different meaning to them.”*

*“If you cannot communicate how things shall be, then it will be impossible to make it happen, if people do not understand how, what the style of the game is, then you will never make it.”* Good communication in an organization can be a difficult thing to both create and monitor because of the very many different ways it can be interpreted. People might use the same words and sentences, but what we actually mean when we say them can be potentially very different. Making sure that information is given clearly and distinctly will be essential for a safety manager, Misunderstanding the way things are done, or not understanding the terms used during conversation are examples of how communication can lead to things going bad.

*“And then we have (...) just as much training on that which is called conflict-communication, that is handling conflict verbally (...) solving the conflict before it reaches the outer boundaries.”*

*“It was simply a misunderstanding, a communicative error between those that worked there.”*

*“After such an event you always think, oh, we should have been out earlier, we should have given even more information.”* Also when trying to solve conflict avoiding the misunderstandings will often start with the communication part. How do we speak to each other and what do we mean with the things that we say? It will be an important task for the safety manager to develop the skills that is needed to tackle any conflicts that may arise. It is too easy that bad communication leads to misunderstandings, that further can lead to major accidents.

**Gradual change.** Change is something that happens all the time everywhere. You cannot escape it, and as such one should rather plan for it. *“If the people that are going to do it does not understand the need for why they shall do it, then it will never be seen through.”*

*“I am dependent on the people being interested in using the system, and so I run a step by step changing process where I accept that it will take some time.”*

*“They need to have an ownership to it.”* One of the biggest issues one can get from change in an organization is the lack of support from the employees. If the employees don't support the change, or at least try to, then the change might not happen at all or lack some aspects of it. One of the reasons the employees might not support the change can be because they don't understand the need for the change. It is important to keep the interest of the employees, and to implement the change in stages. And it is important to make sure that the people the change is affecting have a feeling of ownership to the change and the things changing. This way it won't be just another thing coming from the top.

*“In my experience you have only done 20% of the work after changing a document, the rest of the 80% is to get the user to implement the change into what they are doing. The operationalization of a change is much more difficult than updating a piece of paper.”*

*“Many updates the management system without looking into how individuals in the organization shall relate to the change, and if they actually can manage to implement the change in their actions.”* It is a lot of work implementing change in an organization. Another part that is important is to see how the persons the change is affecting will relate to the change. The change must be possible on all levels, this means that even though the change can be implemented over night on paper, it is not certain that the acts of the ones the change concerns is possible to change overnight. *“Even though you get them to change slower than what the management would want, there will be change.”* It will also be important to remember that even though one use a long time on implementing change, it will happen eventually, and even small changes are a change in itself.

*“All the time there is change or revisions of procedures, and this can be after events that makes us see that this was not described good enough, or we need to improve it, maybe after input from individuals who experiences that it did not safeguard their needs.”*

*“As any safety worker I am dependent on things happening, it is almost like that, it has become like that (...) because then the safety awareness rises, then the motivation rises and then the culture rises (...) and then we are there trying to sell and use the good safety mood before it drops back down. So the art is to use and discover where in the organization there is a good safety mood, where did something happen, and be there.”* After an accident, normally there will be a necessity for some type of change. Mostly all changes happen as a result of some failure. When accidents happen the focus of safety rises. This focus was something the informants would use to implement changes or improvements.

*“The moment you start changing things people gets insecure, in my opinion.”*

*“People don’t like change, Norwegian people don’t like change, they want it to be like it always have been.”*

*“There are the negative aspects of the safety when these things are going on, because every big change like this, and this we can see in the statistics, when the campaigns arrive (...) then the statistic on injuries rises. Because then the people are thinking of something else and is occupied by that.”* Change makes people sceptical, this is the downside of change.

Another downside with change is that before things settle down, there might be a rise in the statistics when it comes to injuries. People who does not understand or want to understand the necessity of the change might not be able to stop thinking of it, this could be a potential hazard. Communication is the key point to this, and making sure that the employees understand the reason the change is coming, and that their questions are answered if they should have any, can make the process of change an easier endeavour.



## **Discussion**

In this discussion I will first present the topic of my thesis, then I will move on to give a summary of the findings. After that I will discuss my findings up against the theories from my theory chapter, then I will move on to my interpretation of the findings. To wrap this discussion up I will discuss some of the validity of the research, my views on further research and end the chapter with a summary and conclusion.

### **The topic of the thesis**

The topic of the thesis was; What do practitioners describe is good safety management? The main focus of the study has been to find the answer to the topic question. The practitioners are the ones who are supposed to use the theories and models that the scientists discover, but it is not a given that the practitioner does. It was however not the intention of this study to find what models or theories they did not use, but to find specific things they actually did in their workdays. What did the informants in this study do to make themselves the best safety managers they possibly could be, what did they describe when speaking of good safety management? This was the aim of the study. But it was also the aim to look at the results of the study and to compare it to some of the theories out there. This would give a picture on the similarities and differences between what the theories say and what the practitioners describe.

### **A summary of the results**

**To cope with unforeseen events.** The way the informants dealt with unforeseen events was important in regard to safety management. Being mentally prepared in the case of an unforeseen event happening, both had something to do with having your mind in the right place and focusing on the task at hand, and keeping a track on operations happening in the near future that could lead to unwanted events.

Having a contingency plan in place was an overall essential for the organizations safety. The contingency plan was a good thing to have in place in case of an unforeseen event. Every organization should have a contingency plan, even the smallest ones, because every organization is prone to some sort of unforeseen event happening. Having good plans in form of contingency could help create a feeling of confidence and safety. It would also give the workers an explanation of their role during a stressful or risky situation, but in regards to that they also would have to train themselves on the contingency plan.

**To set a good example.** Being a good example was something many of the informants would stress as important, because you could not expect anyone else to do something if you

did not do it yourself. Being out and about will give a good arena to show the employees that the rules apply to everyone. Being out and about also gives the manager a view on what is going on in the organization, and what the employees actually do. This gives the manager a way to catch things before they happen, if a manager does not understand what the employees do, how then can he know what the risks are, other than the very obvious ones.

It became clear in the analysis that the responsibility of safety in an organization does not lie with one person, say the safety manager, but with the organization as a whole. The informants would say that the responsibility of the safety is in the line. Everyone have to contribute to the safety. It was not the safety managers job to make sure that no one got hurt, that was their own job. But the safety manager would advise, and safeguard that no one forgot about a procedure, a routine or any other aspect of the safety. Another thing that seemed important was the definition of what is safe enough. This again was the top managements job to define. They had to say something about what is good enough because the informants new that nothing would be 100% perfect, and it was important that the organization as a whole had the same perception of what is safe enough and that safety was important for the organization as a whole.

The culture in the organization was a key factor in the safety of the organization. When they spoke about the culture they all referred to safety aspects with the culture, but they did not necessarily call it safety culture. The informants found working with culture a difficult aspect. Both the size of the organization, the focus of the organization, or the focus on safety as a general in the organization, also if the organization was spread over many buildings it could present problems when working with the culture. Even with these difficulties the informants used whatever opening they could find to work a culture on safety thinking into the organization. This could be as simple as focusing more on safety in departments who just had an event, but also by advocating that safety must be built from the bottom and up. Also making sure that the whole organization speaks of the bad without there being repercussions, this makes it easier for the employees to participate in weeding out the bad. Another view within the analysis was that safety started with the management, in this view it was important to make sure that the safety aspects was grounded with the management, as this would make it easier to have safety be a part of the whole organizations responsibility. Both the views valued the notion of teamwork.

**Preventing accidents.** The analysis revealed that the informants expected accidents to happen, they knew that they could not prevent everything, and as such safety was seen as a difficult thing to work with. As a measure to prevent accidents from happening they would



create policies and strategies, these would say something of what was good enough. Barriers was seen as a measure that would reduce the risk and ultimately prevent any event from occurring. Any organization dealing with high-risk operations was seen as potentially being a high-risk organization, but the barriers in place would ultimately prevent the informants from looking at the organizations as being a high-risk organization. For those who worked in organizations with high-risk operations there was a pressure in keeping the measures up to date as the opposite would have led to more accidents. As such the measures and procedures was constantly evaluated.

Using the reporting system to gather information and then pull statistics from it too learn from was something all the informants looked at as an advantage. The statistics would be used to see how the procedures and measures were working and to find aspects that needed to be reworked. The statistics could also give a picture of the events leading up to an accident, the latent failures. A negative with the statistics though, was that it might let the organizations think they were better than what they actually were, or become so emerged in the positive ratings that they would risk complacency. Feeling safer than they actually are is a risk that could grow from thrusting in the statistics too much, statistics is not a constant. Another important part of the reporting system would be seeing to it that it is a good system, for example with different labels of status on the progress of a reported incident.

Training was an intrinsic part of being able to both prevent and cope with unforeseen events since it made sure that everyone knew what to do both in the everyday lives, and if an event should occur. Both workers and managers needed to train themselves regularly. Feeling safe in their leaders, the organization and their own training makes people more capable to handle themselves during a stressful situation. Another part of training was to keep up to date with relevant literature or new regulations, trying to stay ahead of anything that might happen. All the informants felt it was important to stay up to date, but the time given to reading new scientific material was rather low because of the time available.

All the informants would have examples on some sort of procedure as there were many to choose from. A concern that came up was that there might be too many procedures resulting in people not needing to think for themselves, something that might have a bad outcome in the event of something unforeseen. And by possibly being an instigator to an accident in itself. Therefore, making sure the procedure is necessary and not a burden will be an important task for the safety manager. Another negative about the procedures was that it sometimes felt like a way to cover the managements backs, as well as some of the procedures not saying anything about how the workers should do it, just what they should do. These

things were looked at as a hindrance for safety more than the opposite. Having a good reporting system in place would be one way to catch deviations before they turn into something bigger. Giving the workers the ability to think for themselves, might increase their autonomy and ability to react if something unforeseen should happen. The procedures are necessary, but there should be room for the workers to think for themselves as well. When speaking of changing the procedures, the gist was that change should not happen just for the sake of change itself. It needed to be a valid reason for the change. Overall though the informants felt that the procedures were a necessary part of the safety system in the organization. And that the organization was better of having a couple to many, then none at all.

**Being approachable.** The management were an important aspect for all the informants in one way or another. How the management acted and how approachable they were seemed to be an important part for creating a safe environment in the organization. It is important that the management, the safety manager included are open for other people's views and does not believe themselves to be all knowing. Learning from others will gain new insight and create respect between people, it can also help in building a safety culture since all thoughts on safety are valued as a measure against accidents. There is always something new to learn, and owning up to that fact was important to the informants. Also, asking for a second opinion was encouraged, both from their professional network, but also from the people with hands-on experience since they normally would have many ideas of improvements. Making each other good and building each other up are aspects that would help the safety manager in creating a safe environment.

The mental state of the employees would affect the safety in the organization, and if not kept in check it could affect it in a bad way. This means that the psychosocial environment must be taken into account when working with the safety in an organization. Making sure that the management are approachable will open a window for the employees to come with their problems and concerns. This is another difficult arena of the safety work due to the personal aspects of it. But by gaining the respect and trust of the employees one have an opening. Conflict was one aspect that made this job difficult, the time-factor was another. Time, or the lack of time, was a big factor when it came to stress, and creating good systems for counteracting the stress-factor was important. Having an open door policy founded on trust could also create a way to pick up on the reasons of stress, it might not be work-related at all, but problems at home. It is especially important that the employees have their minds in the right place when they work on high-risk operations. By using the working environmental

survey as a foundation for information one can pick up on problems where measures will be needed to counteract the problem.

**Distinct communication from the management.** Communication plays a part in every organization, and the analysis shows this. Especially when it comes to the communication being distinct and understandable. This is important to avoid misunderstandings. Implementing new procedures and measures needs the communication to be informative and distinct. There are many ways in which the information going out can be misinterpreted, the same words and sentences might mean different to different people. Developing skills to avoid misunderstandings are necessary to avoid any unnecessary accidents.

Another part where information and communication plays a part is during change. In every organization there will be some sort of change at some point. In these situations, it will be important to make sure the communication is distinct. Lack of support from the employees can be a problem during change as it might lead to it never being implemented. A lack of understanding could be a reason for the lack of support, again showing the necessity of good communication. One way to counteract this is to make sure the employees have a feeling of ownership to the change. If they feel a responsibility for seeing to it that the change happens, then it will be easier to implement it. Change is always difficult because people don't really like change. That means the safety manager must monitor the employees during a change to make sure they relate to the change positively, and to make sure the change is possible to act out. Some things cannot be translated from paper to practice, at least not overnight. This was something that was well known to the informants, change takes time, and to get the best effect of the change it should be implemented over time. Also, using a resent event and the focus on safety that would arise in the immediate aftermath, was a well-known technique among the informants.

### **My results and existing theories**

In relation to the topic of this thesis I would say that I have gained many good examples for answering the topic; What do practitioners describe is good safety management? I found five themes in my study during my analysis that really stood out and that the informants talked a lot about. Because the themes were complex on their own, these five themes got their own subcategories that explained more about the different aspects of the themes. These subcategories say something about what safety managers can do practically to be good safety managers. They give a picture on the concrete ways one can do good safety

management. In the following I will discuss my results in light of the theories found in the theory chapter, and how the results and theories are both alike and different from each other.

**Normal accident theory.** Charles Perrow developed the normal accident theory that look at organizational aspects of safety. The characteristics of the system will determine if it is inevitable that multiple unexpected interactions of failure will happen. If the system has an interactive complexity, and it is tightly coupled, then the normal accidents theory say that accidents will be inevitable, (Martinez & Kim, 2012). That is, organizations with many complex operations that are dependent on each other to work properly and efficiently will according to this theory inevitably experience accidents. The analysis showed something similar, the informants knew that accidents of some form would happen, they knew that they could never prevent everything, nothing was 100% perfect.

However, the informants were talking about people, humans that is not capable of thinking about everything that might happen and then being able to do something about it. The normal accident theory talks about the systems, and it might seem like this theory underestimates the potential ways an organization can cope with uncertainties like this, (Marais, Dulac & Leveson, 2004). Yes, accidents will happen, but the analysis shows that even knowing this, the informants did not give up on trying to stop them from ever happening at all. They just thought of new ways to deal with it every day.

If the system in the organization is tightly coupled and have complex interactions. This creates the divide between decentralized and centralized regulation of systems. If one put this theory up against others, like the HRO it is found that an organizations ability to switch between different degrees of centralization could be crucial to lower the risk of failure, (Grote & Künzler, 2000). The way the systems are built though doesn't have to matter as much as one should think. In the analysis there was many examples of things one could do to be a good safety manager, that didn't necessarily involve the system of the organization. Building trust for example, or creating a respectful environment, having distinct communications. These are all things that can be done no matter what type of organization or system it has.

In relation to the theory of normal accident though, and the view that accidents are normal, they happen. The analysis found that being aware of the possibility of failures and accidents being able to happen is one thing, but in the last couple of years some changes must have happened. That is at least something one can agree on. And today it might be a little far off to have this perspective. Especially in regards to safety management, the view of the normal accident theory is very negative. To believe that you cannot expect being able to prevent accidents, and the organizations won't let themselves be managed, and so accidents

will happen no matter what you do. This is quite a pessimistic view if you ask me. And I do hope that this study has given some examples as to what one can do to prevent accidents from happening.

**Barriers and James Reason.** Reason would divide accidents into two different ones, the individual ones which are the ones that happens the most, and organizational ones that often ends in catastrophic events, this last one is the one he based his theories on. He believes that underlying principles of accident causation exist, and contributing factors will combine to cause an accident, (Reason, 1997). This means that accidents happen as a result of hazards being able to penetrate the barriers that safeguard the system. The analysis found that the informants would speak of barriers as measures put up to prevent the accidents from happening. Without the barriers there was a big chance of big accidents happening. They also spoke of barriers as being the thing that would make sure their workers didn't work on high-risk operations. Reason (1997) developed a model called the swiss cheese model, this model shows how barriers constantly changes and therefore create new ways for hazards to penetrate and cause an accident. The informants were aware of the constant change that happens every day in an organization, they would constantly evaluate their measures, procedures and policies to make sure that it was up to date.

The defences an organization put up will serve as a function to build and create an understanding and awareness of the occurrence of hazards, as a guidance, providing alarms and warnings, as a way to contain and eliminate hazards, to provide escape and rescue or as a way to restore the systems. All of these are examples of multiple defences that work together as a defence-in-depth, (Reason, 1997). The informants knew that all the layers of barriers they had prevented the rate of accidents from rising. They also felt that by having several barriers in place, they prevented any high-risk from happening. The defence-in-depth view can be looked at as both positive and negative since it makes everything more complex. The role the humans at some point had, has with time become more remote and technology has taken over. This have led to a build-up of latent conditions that has to do with humans making errors, (Reason, 1997). This is found in the HRO theory as well, the latent conditions or as the HRO refer to it, tracking small failures are things that can have happened and been present for many years before they are noticed. Either by an accident happening and instigating an investigation, or in time to stop the accident from happening. The informants did try to pay attention to the weak signals, because they did see that small things could eventually lead to bigger events.

By taking some time to walk around, speak and listen to what the workers have to say, drink some coffee with them, and eat lunch with them, a safety manager can pick up on the latent failures much quicker than if he just sits in his office. However, to get the workers to talk up, they need to trust you, and they need to trust that you will do something about it, and not lash out on the worker because of the things he is saying. Having the workers trust is crucial for a safety manager. This would show itself in many aspects during the analysis. Trust was important during change, trust was important during communication, trust was important when referring to expertise, trust was important during training, and more.

Getting the trust of the whole organization is not an easy task, but an essential one if the organization want to be as safe as they possibly can. This means that the responsibility of the safety needs to be the whole organizations responsibility, this means that the workers must feel like their voice are being heard, and that they can speak up about worries and small things that might not seem relevant at the time, but still feel like they are being taken seriously. These aspects are crucial parts to take into account if the organizations want to stay safe.

When it comes to the procedures, Reason (1997) acknowledges that they do create a more efficient workday, but to many can be restrictive. This was exactly the same as the informants would speak of as well. They were necessary for the safety of the organization, but to many might restrict and inhibit the worker's days, and also make them insecure on the actions they should take. If the only way to get a job done is to go against the procedure, then this won't act as a motivation for the workers. As such they might not be the best action to take.

Reason's (1997) safety culture, builds on the notion that it is four parts and they all make up what he calls an informed culture. These four parts are flexible, learning, just and reporting cultures. The reporting culture has to do with the reporting system in the organization and what the workers report in the event errors are made. The informants felt that the reporting system in their organization was a good one, and that they could use the information the workers reported on in their work on preventing future accidents from happening. The flexible culture is about the adaptability the employees show, how good are they adapting to change for example. In the analysis it became clear that the informants found change to be difficult as many aspects needed to be in place for the change to take effect. The just culture is all about how fair the management and employees are when they deal out blame in the event of something going wrong. In creating a culture for safety the informants would speak of caring for people and help others instead of blaming them or telling on them, it was better to act as a team and be in it together, then standing alone. The learning culture is about

learning from previous happenings and using the experience to act better. Learning and training was a big deal for the informants as that was what made them capable of developing into something safer. They would use previous experiences as a foundation for doing better in the future.

The analysis also found that it was a gradual process to develop a culture for safety. This we can see in the way they speak about change and in the way they speak of creating a good environment where thoughts on safety becomes a foundation in the organization. Reason (1997) say that one principle for good safety culture is good management, this includes that the management makes sure the procedures are followed, and that they make sure the employees know of the procedures and follow them. The informants would talk about safety and how it was the whole organizations responsibility to make sure no one got hurt. They looked at themselves as guard dogs that would make sure that the procedures were followed, and making sure that there was enough good and understandable information available for the workers about the procedures, especially with new ones. They did realise that this was a difficult job though, as making sure the information reaches everyone when the organizations where big was a challenge.

In this thesis some of the informants worked in health-care organizations. The question might then come up if this can be seen as a high-risk organization when a health-care organizations focus is to save lives and take care of other people. Reason (2000) however, say that these organizations share important characteristics with other HRO that work with high-risk. By having the ability to reconfigure themselves, that is to change their systems so that they can suit local circumstances. For example, in everyday life the routines are conventional and hierarchical, but in the event that something should happen, the experts would take over immediately. This is something the informants would speak of as well, in the event something would happen, they would move into a contingency mode, many of the informants were managers of the contingency plan themselves, and as such, they were responsible if something should happen. They are the experts in this manner. This is something that easily could happen in the medical domain as well, after the crisis has blown over though, it is back to normal routines and the normal responsibilities.

**Migration towards the boundaries.** Jens Rasmussen (1997) produced the theory of migration towards the boundaries, which say that an organization will constantly modify themselves as a result of change in the working conditions. These changes will lead to variety something that eventually will lead to a systematic migration towards the boundaries of the organizations accepted performance. All organizations have different levels of complexity,

but because of this change will be difficult to predict, and also how the changes will affect operations, (Rasmussen, 1997). Change was something the informants spoke a lot about, and the same as in the theory of migration towards the boundaries they also looked at change as something that was happening all the time, for the informants it was the change they wanted to implement themselves that was difficult. The control theory think that the smallest change could have a consequence in another part of the system, the concern is how this lack of control can allow the activities in the organization to migrate towards the boundaries, (Dekker et al., 2008). This type of ripple effect was talked about when the informants mentioned weak signals, that it was important to keep an eye on previous happenings, as they affect other happenings later on. Even though the theory speaks of ripples like this when it comes to change, it still thinks that an event does not cause another event who again triggers the next. This view is also not what the analysis showed, as the informants valued the information statistics would give on latent failures, and showing them barriers and events that led to the next one.

Safety management is seen as a control problem, as accidents can be looked at as emerging from interactions between system components. Not being able to control the operations or technology in the organization can give room for accidents to happen. The analysis shows that safety management is not a control problem at all, it does not show this, as many things can lead to a safety manager having control over a situation. The contingency plans for example. Also this theory speaks of a boundary that if crossed will have people venture into an accident prone world. Keeping within the boundaries was seen as the safe and good way of managing. As such, safety management is seen as a way to guide and help, and it builds on simple interaction factors like trust and respect, which again takes the human part into the picture. Something the control theory does not seem to do.

Rasmussen (1997) do offer some guidance on how to get there and keep the organization from ending up crossing the boundary. Knowledge about the boundaries and coping mechanisms are two examples of this, that also reverberates in the analysis, because knowledge and coping, was two important parts of good safety management. Another part of the analysis that seemed important to the informants was the part about what is good enough. Since nothing would ever be perfect, the informants wanted the top management to define what was good enough for this organization. This can be seen in contrast to the migration towards the boundaries theory. If these boundaries are seen as the same as good enough, then the top management would have to define these boundaries, what is good enough, where do the management believe the crossing line goes.



The problem is however, that getting a grasp on where this boundary is, what defines it, will be very difficult indeed. As such this is something I believe can create an arena for complacency. If the organization put up this boundary, they might start to feel safe and a little bit too comfortable in their own skin. You can never really know where the next accident or failure will show up, and so what if this failure happens within the boundary, and the boundary was wrong? Then the complacency might lead to people not noticing that something wicked this way comes. It was something the informants feared, and with good reason if you ask me. Also the informants view on being critical to the statistics can be linked to this. If the boundary is based on the statistics, then by the next day that boundary might already be wrong.

Rasmussen (1997) also offer a push and pull example as a way to keep the balance between where the organization pushes towards a more efficient workday, something that ultimately gets them close to, or over the boundary. And then the organizations should create a campaign to pull them back in again behind the boundary. The informants however, did not appreciate the notion of campaigns, and felt that they did not work at all. They would rather use other measures to create a good safety environment.

**High reliability organizations.** What makes the high reliability organizations, (HRO) successful is their way of finding ways to stay mindful about things that happen. Updating the ideas to current situations and not being stuck in the ways of the past are techniques the HRO use to ensure faster learning and being more alert when it comes to sensing dangers and failures, (Weick & Sutcliffe, 2007). This can be found in this study where the informants speak about keeping up to date. It was important to stay ahead, the opposite could mean to invite accidents to happen. And reading relevant literature was one way to do this.

The HRO are role models for other organizations in that they have a way of staying away from catastrophe's that is waiting to happen and because of their continual work towards getting things right. In this two enemies can be found, complacency and hubris, (Weick & Sutcliffe, 2007). The informants also spoke of complacency and how this was a growing problem, that the last years without any big accident were to blame for. Because of the good statistics in the organizations that the informants work for, they also see the possibility of people developing a tendency of complacency. They see the good numbers and mistake them from being the hard work that it actually is to them being better than they have ever been. The culture in the organization might have a saying in this as well. After a time without any accidents happening people forget to be afraid, as such the analysis shows that it is important to look at the statistics they pull out with a critical pair of eyes. In an HRO the

culture provides them with reminders and tools to help the workers remember, (Reason, 2000). The informants made it very clear that they did not trust the statistics blindly, but used it to look at the events leading up to an accident, to learn where they should have applied measures, and where they should have picked up on something earlier.

When it comes to change, the HRO look at safety culture as a way to do change in a good way. They believe that attitudes and beliefs are hard to change, but by changing the acting and doing one would be able to change the thinking and believing as well, (Weick & Sutcliffe, 2007). The analysis shows that the biggest problem for the informants was to get the support from the employees, but when they did, the change would go more smoothly. When it comes to the culture, this as well is a difficult thing to change, it is a slow process and must be done over a period of time, change as a whole was something the informants knew had to take time, no matter what they wanted to change, doing it step by step was the way to do it.

Knowing that failure was something that would happen in some way or another, and accepting this as a fact was also something the informants did and was aware of. There would always be some form of risk, and as such failures and accidents cannot be fully prevented. This is also something the HRO are aware of, that there will always exist a possibility of failure happening, and because of this they focus a lot of energy into methods for reliability like training, experience and creativity, (Weick & Sutcliffe, 2007). Training was a big part of coping with unforeseen events in the analysis as well, as well as preventing accidents from happening. The informants would say that it was a foundation that both management and employees had to have. One of the reasons for this was to be able to handle unforeseen events if they should happen, it is easier to do something you have trained on, then to figure out everything there and then. As well, knowing what you are supposed to do, and doing it properly from the start was something the informants felt could prevent accidents from happening at all.

Creating expectations that involve a mindful infrastructure of tracking small failure, resist oversimplification, remain sensitive to operations, maintain capabilities for resilience and take advantage of shifting locations of expertise are all a part of the HRO way of handling unforeseen events, (Weick & Sutcliffe, 2007). These are also the five categories of the HRO.

When it comes to preoccupation with the possibility of failure, all failures are connected. The small events that happen are all the outcome of earlier and more distant events. These earlier events most likely deviated from the expected, but when reported it was put down as a minor regression or failure, (Weick & Sutcliffe, 2007). In relation to the analysis this comes to show in how the informants want to learn from previous failures and

accidents, and also how they want to prevent future ones by looking at the previous ones. Tracking small failures came up several times in the analysis, at different times and in different coats. It is also mentioned above with James Reason, there as latent conditions. In the subcategory of “walk the talk” one of the things that was said was that the manager had to be out and about, it was important to see what the workers did, and try to understand what the workers were doing. This way they would be able to pick up on things that could ultimately lead to failures. But to be able to pick up on those things it was important to understand what the workers did. Also under the subcategory of “create a culture for safety” tracking small failures showed itself. To be able to create a culture that focuses on safety it was necessary for the manager to create a relation to the workers, to create trust between the management and the workers. One way to do this could be to sit down and talk to them. This again could lead to the workers telling about things that if not dealt with could lead to accidents. It was weak signals, but the manager needed to pick up on those. The subcategory “learning and preventing by looking at statistics and reports” also provided an example of tracking small failure. By looking at previous statistics one could pick up on things that happened before the accident that could have led to or opened up a trajectory for the accident to happen. Weick and Sutcliffe (2007) find that failures of misspecification, misestimating and misunderstanding have a story that stretches back in time, before they show themselves in unexpected events. Avoiding misunderstandings was something that seemed important to the informants, and communication seemed to be the main thing they focused on. They would do their best to make sure that the communication between themselves and others in the organization was as distinct as possible. An organization that pays close attention to the weak signals is an organization that is preoccupied with the possibility of failure, they are mindful about failure, and try to create a focus on this in the organization. One way the HRO raise awareness on being mindful is to have a functional and good reporting system in place, with the general understanding of it being safe to report the incidents that do happen, (Weick & Sutcliffe, 2007). Like mentioned before a good reporting system can be used to pull statistics from. And these statistics can be used to track small failures. The informants all believed that it was important with a good reporting system, because it would be impossible to get the whole picture of the organization and its failures if not.

In the HRO they believe that reluctance to simplify interpretations, refusing to simplify interpretations when facing competition, complexity and a lot of data, has to do with the ones who most likely catches the warning signals, and that these ones often are the ones with the least amount of power to do something about it. This might also be the ones with the

least amount of argumentative skills when it comes to getting people to listen to them and take the signals seriously, (Weick & Sutcliffe, 2007). The HRO see the problems and try to pull out the information about the problems without reducing and oversimplifying them. Creating a trusting environment where the employees feel they can come to the management and speak of safety related issues that isn't necessarily good, was an important issue for the informants.

Being responsive when it comes to seeing that the system is not perfect, that it could be better makes an organization sensitive to operation. In the analysis the informants expressed this as well, they knew that the systems they had were not perfect, and as such they knew that they had to keep their eyes open for anything that could lead to failures. One of these things are mentioned above as well, to detect small failures and understand that these could be the beginning of something bigger. Things can change from one moment to the next, and being alert to this is something the HRO practice, (Weick & Sutcliffe, 2007) but also something the informants would mention. Especially in regards of being mentally prepared to tackle the challenges ahead were important issues the informants would speak of. Because where people are mentally will affect their performance, and ultimately the safety. This can mean that workers need to be more sensitive, mentally, to the operations they do. The communication part and creating an environment where people talk to each other, also to the management which can be found in the analysis, is also something the HRO speak of. For the HRO handling risk that is not anticipated by the design can be dealt with by building on the relationships and conversations that is always a continuous in organizations, (Weick & Sutcliffe, 2007).

When the HRO speak of commitment to resilience they speak of changing what is being done, but without losing the sense of something having to be done. If one wants to have a reliable outcome it requires the workers to be capable of sensing unexpected things. Some key points to resilience is knowledge, training and learning, (Weick & Sutcliffe, 2007). Both knowledge, training and learning were things the informants would speak of as important elements of being in charge of the safety in an organization. With all of the above one can make sure that the workers act as best as they can when faced with an unforeseen event. Without it though one can risk making it worse. The HRO thinks in a similar way, by increasing the response inventory of the workers one can give them more ways to handle events. The training and learning part are the ways to get them there. Ultimately, if a system is able to operate even when it is faced with failures then it is a resilient system, (Weick & Sutcliffe, 2007).

The last category of the HRO is the deference to expertise. When unexpected events happen the HRO encourage people to ask and use the ones with the most expertise as a way to deal with it. The decisions will start to migrate throughout the organization until it finds a person with knowledge of the event, (Weick & Sutcliffe, 2007). The analysis revealed that this is something the informants used as best as they could to. They knew that if they wondered about something they had people they could ask. And as such they would use their networks when they felt like a second opinion. Most of the informants would consult with someone else as well, before making decisions that would have an effect on the safety in organization. It was also important for the informants to know their own limits and rather ask for a second opinion then to risk making a situation worse. They wanted to be the best that they could be, but they also understood that to be the best that you could be, you had to use the people around you, because no one knows everything.

The HRO have many good ideas on how good safety management should be, and they present five categories that each takes a hold of important aspects with creating a mindful organization. When looking at these five categories I could find similarities between my study and all the five categories as I have shown in the text above. Even so the difference between all of the categories in the HRO and my study is noticeable. The HRO does not give very good, if any examples on what a safety manager have to do concretely to create a safe organization, or to be the best possible safety manager. There are a lot on where one wants to be, what state the organization, the workers or the manager needs to be in to become a mindful organization that can combat accidents. What my study surprized me with was more concrete examples of what needs to be done to become a good safety manager and to create a safe organization. It is not just the HRO that disappoint in this regard however, the other theories that I chose in this study would show me the same. There are a lot on where do we want to be, but not so much on how do we get there.

I believe the HRO can provide a good foundation for organizations to work towards. Globally the business becomes more and more competitive and the customers expect much more than they did before on many levels. But these changes in the organizations environment will ultimately make them more risk prone and unforgiving. The HRO confronts this kind of environment however, and therefore the types of processes the HRO have can be an asset in this changing world, (Weick & Sutcliffe, 2007). By using the ides of the HRO any organization can develop a greater success when it comes to learning and adapting. The analysis in this thesis did show the informants interest in training and learning, and it did

show how they understood the challenge with change, and how adapting to new aspects were hard to do without a certain amount of understanding and gradualism.

### **Implications for practice: what is good safety management?**

My results provide concrete examples on what a safety manager should do to be a good safety manager. This however, does not mean that there is not more out there on being a good safety manager. It does not mean that these are absolute, it will depend on the organization and the system of the organization. But some of the examples are basic elements, like trust, which have been mentioned previously in the text above. Trust is an essential part of creating an environment where people feel their voice are being heard, but also that their voice are being respected. It is quite clear to me that trust plays a big part in creating an environment for good safety management. It is also very interesting that the study gave examples for how to do this as well, for example by simply talking to people.

Another thought is the aspect of autonomy when speaking of safety. This came up when speaking of the procedures, and how to many procedures might act as a hindrance for the workers. Trust also play a part in this as it will be important to trust the workers, their skills, and their ability to think for themselves. Autonomy has been linked with motivation, and motivation again has been linked with safety, (Grote & Künzler, 2000). Also in my study this is found to be true as both autonomy and motivation are important aspects for good safety management.

When it comes to trust one can also speak of a psychological contract, since research on the topic has been found to be strong and multifaceted, (Robinson, 1996). A psychological contract is a perception of what an employee owes to an employer, or the opposite, (Robinson, 1996). This means that if the manager tells an employee in the beginning of the year that this employee can have Christmas eve off, and then makes him work on Christmas eve anyway, the psychological contract they made at the beginning of the year have been breached. In relation to trust research have found that if the employees have a high initial trust in their manager, they can overlook or forget if their managers breach a psychological contract between them. And the opposite, if an employee initially don't trust the manager then this employee might actively remember or search for incidents of breach in a psychological contract, even if there haven't been one, (Robinson, 1996). This means that a safety manager will benefit on creating a trusting environment right from the start, as fast as possible.

Hopefully, this study has given some food for thought on how good safety management will affect organizations, both in relation to making the operations safe, but also in the finding of the psychosocial environment aspect of it all. In the following I will discuss

my findings in relation of trying to suggest concrete ways that can be seen as good safety management.

**The first theme.** “Coping with unforeseen events” say something about how being a good safety manager incorporates the way one deal with unforeseen events. Preparing one selves in the event of something unforeseen should happen can be done in several ways, and the informants spoke of multiple ones. Being mentally prepared was one thing they spoke about a lot, in this knowing what goes on in the organization, having focus on the job one are doing and not on other problems, was specific things that a safety manager either had to do or make sure that others did.

Another important part of this theme was having a contingency plan that was operational, and a person designated in charge of it. Not only the big organizations needed to have a contingency plan in place, this was something every organization should have. Because every organization is prone to some sort of accident happening, it could be as easy as the building catching on fire and burning down, maybe during the night. In this case it will be necessary to have a contingency plan, who is the contact person, and what do we do to next? Having a contingency plan will create confidence and a feeling of safety for the employees as they will know what to do and how to act in the event of something happening. Training was an important part when the informants spoke about contingency plans as well. Knowing what to do is one thing, but knowing how to do it is something else. Also in the event of something happening stress can lead to people freezing up, if they have trained on something though it is more likely that they will do that, then nothing at all.

In relation to training on the contingency plan, an important factor was that it had to be done properly. Scaring people into action was not seen as the right way to go about it, rather it would lead to insecurity instead. The point is to help them get better, help them into knowing what to do, take it step by step, don't rush in with an unannounced exercise as the first thing you do, this will only scare them, start with the basics where you are available for questions and guidance. Then later on in the training program, maybe one can run an unannounced exercise.

**The second theme.** “To set a good example” is an important part for a safety manager because how can one expect other people to follow your rules and guidelines if you do not do it yourself? The analysis shows that this was important for the informants, they felt that a good safety manager would lead by example. For the workers it will make a greater impact if they get to see the managers follow their own saying, seeing is believing. To set a good example also had to do with being out and about in the organization, to walk around, talk to

people, see what they are doing, being out makes it possible for the safety manager to try to understand what the workers are doing. Being out is a good way for a safety manager to pick up on things that could potentially lead to failure.

Another important part of this theme is that the responsibility of the safety in the organization is not one persons, it is the whole organizations. The informants would call this to have the responsibility in the line. And they would point out that they did not have or wanted to have the responsibility of making sure that others didn't hurt themselves, they could provide them with guidance and they could be what they would call a guard dog, that pointed out the faults, but the responsibility was ultimately the organization as a whole.

To be able to do their jobs though it is important that the organization define what good enough mean, it is not possible for a safety manager to be perfect, or to create systems that are perfect. As such it is necessary to know what is good enough. And this is the top managements responsibility to define. Safety is important, and getting the word out to the employees about this is hard, but important work. Especially when it comes to procedures and measures it is important that the workers understand this importance, and understand the valid reasons behind them.

This theme also includes the part about creating a culture for safety. This is an ongoing job that involves a lot of work as it is difficult to work with the culture in an organization, but it is work that is necessary. There were two points of view when it came to building the safety culture. Most of the informants would build the safety from the bottom and up, a view that have the workers wanting the safety culture. For example, good safety culture is if you see someone that should have a helmet on, then you go and tell that to the person instead of going to the management and tell on that person. The other view was to start with the management, that safety culture was built from the top and down. In this view the management sets an example that the rest of the workforce follows.

Both the views however, value teamwork as the way to spread it through the organization. What is right and what is wrong is a matter of perspective, both would work since the important part is to have the ultimate responsibility of safety in the line, and having the whole organization working towards a safe culture as a team.

**The third theme.** "Preventing accidents" involves the knowledge about it being impossible to prevent anything from happening with a 100%. It is about knowing that whatever you do you cannot protect the organization completely from events. There will always be some sort of risk that can cause hazards and accidents. Because of this it is important that the management follows what was said in the previous theme about saying



something about what is good enough. Knowing what is good enough will give the safety manager a guideline to follow, nothing is perfect, one can only do so much.

Barriers work as a way to prevent risk from happening. To reduce risk is a central part of being a safety manager, and good measures, procedures and other barriers are the tools they use to do this. A good report system is also an important work tool for the safety manager. If the reporting system is good, it can be used to prevent new accidents from happening. By using the reports that the organization together produce, the safety manager can pull out statistics that can be used to look for latent failures that either did lead to an accident, or that could eventually lead to an accident. There is however, some negatives to this, the number one is that if the statistics shows good results one can risk falling into a complacency mode and essentially think one is better than one is. This is something one should be aware of and try to make sure doesn't happen. Another thing to think about when it comes to the statistics is that it is old news, it has already happened, and even though the informants made it very clear that learning from past mistakes was essential. They also said that it was important to use the critical eye when looking at the statistics. Change happens all the time, and tomorrow might give a new challenge that you cannot find in your statistics. As long as one is aware of this, then using the statistics as an advantage should be just fine.

The informants also spoke a lot about training, because when one train oneself on things that might happen, then it is easier to handle the things that happen when they do. In regards to training it was also important to create a trusting environment, since this would make it easier for the workers to feel safe in the leader, in the organization and in their own training. Another important aspect of this theme was that a safety manager needed to keep up to date when it came to the laws and regulations and in relevant literature. Reading was therefore an important part to being a safety manager, a problem with this though was that finding the time to read could be difficult. But knowing the importance of this can prompt the management into finding time for it in an otherwise busy schedule.

When it came to the procedures, a safety manager should know that there are both positive and negative sides to procedures. Knowing this, the safety manager can easier trust a little more in the workers and their skills, and reconsider creating another procedure. Because to many procedures could act as a hindrance for the workers, and make them insecure in their own work. This again could lead to the workers making errors they normally would not do if they had had the trust of the management. Changing the procedures was also looked at with scepticism, as it was difficult to know if a procedure had to be changed or not, and with the risk of changing just for the change. This was not seen as a good thing because why would

you change something that was already working from before. My suggestion would be to use the time planned on changing something that is already good enough for reading up on the latest literature. The option of not having any procedures however, was not an option at all if you asked the informants. The procedures were a necessity to keeping the organisation safe as not having them might lead to full chaos.

**The fourth theme.** “Being approachable” has to do with how the management act around the employees. The way they act will have something to say for the safety aspect. A key element is that the safety manager must be available so that the employees can ask question, or come to them with concerns or problems. Talking to people is also important, by talking to people you start to build trust, because talking also involves to listen. Creating a good vibe in the organization can help the safety manager since happy people might talk more. The coffee conversation can shed some light on things that if not dealt with could lead to something more dangerous. These weak signals won’t show themselves and will be more difficult to detect if people won’t talk about them. This is all parts of creating a good environment where people can feel safe, both when it comes to risky situations, but also in other settings such as the one about talking up.

Another important aspect in this theme is to learn from each other. It is to realise that no one knows everything, and that it is a wise decision to be open for other ideas and thoughts. Especially for a safety manager this is important. Other people’s advice and ideas might be exactly what you need to complete a broken picture. It is all about knowing one’s own limitations, because this will allow you to know when you need to ask for help. In an organization there are plenty of people to ask, all with their own set of skills and experiences. The informants all had their own professional networks that was used on a regular basis, but they also saw the value of being able to ask the ones with the hands-on experience.

The gist of this theme was to make each other good, to build each other up, and use the information available to create a safer environment. This also included the psychosocial environment, as when dealing with risky situations and operations it is important that people have their mind in the right place, preferably on the task in front of him. If the safety manager is approachable the other employees might feel like they can come and talk about the problems and concerns that bothers them. This part of the safety work was something the informants felt was difficult however, because it was all about the more personal aspects. An important part of the safety management in regards to this was to gain the respect and trust from the people in the organization. Making sure that one has the proper training and skills to master conflicts that may arise was also an important part, because conflict was seen as

something that would build an atmosphere for risk potential. However, if one was able to build an atmosphere that was open and positive it could help in the process of building trust, and ultimately improve the safety.

The informants looked at the time-factor as a potential for wreaking havoc in the organization. To counteract this, they would create plans, because having a plan, and having routines and stability could reduce the stress level, another part that if not dealt with could create an unstable safety environment. It seemed to be an important part for the informants, to make sure the employees were mentally healthy. Making sure the dialog between the safety manager and the workers are open, will give the workers the arena they need to speak up. Also it was mentioned that the working environment survey was a way to pick up on bad vibes and issues in the organization, that then could be dealt with. It is a tedious project to keep the safety in an organization at the best level one can, one has to take it day by day, and try to create a little motivation and trust every day.

**The fifth theme.** “Distinct communication from the management” was important for most of the informants if the organization wanted a safe environment. Communication is a big part of the everyday, and this also applies to organizations when managing safety aspects. One part the communication plays a big part in, is when it comes to misunderstandings, in an organization that deals with any type of risk, misunderstandings are a nuisance of a problem, because it can be fixed by being more distinct, clear and informative when it comes to the communication. Making sure that enough information on a subject are given are also a way to counteract the misunderstandings.

It is also important to keep in mind that people being different also talks differently, and therefore also give meaning to things differently. One person saying something and another person saying the same, might mean different things. Conflict in regards to communicative disagreements are common, but knowing how to handles this might not be that common. A good safety manager therefore makes sure to learn how to handle this. Because conflict is a risk element the organization does not need.

When it comes to change the informants knew that it was a constant in the organization. Change will happen, it happens all the time, but good change that also implements safety aspects was difficult. One way to do change good was to get the support from the employees. If the employees supported the change it would run more smoothly. Ways to do this was to have them feel an ownership to the change, making sure that the change was possible for the workers to implement, and see to it that the change happened gradually.

Also it was good to use the heightened focus on safety after an accident or event as a way to get the employees aboard with the change. It was known by the informants that people don't really like change, and that campaigns didn't really work. So to for example, get a culture for safety better implemented they had to use the above mentioned methods, and realise that change happens gradually. However, if the people involved in the change had an understanding of why the change had to happen, then it would be easier to advocate it and implement it.

This theme along with "to set a good example" and "being approachable" had something else in common. The theories in this thesis does not speak to much about issues found in these three themes. HRO, for example, is occupied with a cognitive infrastructure. How shall the people in the organizations think? But none of the theories seem to have given much thought on the social aspects in the organizations, and how it should be treated, how the leaders should be thinking. Maybe we can find some of it in Reason through his view on the safety culture, but not any big mechanisms that is specific. Or anything on how one can build a good psychosocial environment, something the informants say is a good thing for the safety. With that as a foundation, this might very well mean that I have found something new, something that the existing theories does not speak to much about. The social aspects in an organization matters, maybe even more so then what we have been led to believe, based on the theories in this thesis.

### **An evaluation of this study**

In this thesis I have tried to explain the steps I have taken to answer my topic. I have also tried to explain my methods and the research I have conducted, in a way that will make it possible to replicate this study. Thematic analysis was chosen in this study because it is found to be appropriate when analysing for information and finding relationships between variables for comparing, (Alhojaila, 2012). That is to find patterns in the data and themes, and because of this the six phases of Braun and Clarke's (2006) approach to thematic analysis was chosen. Making sure that the steps of the phases provided from Braun and Clarke (2006) were followed as best as possible, and making sure that I was being thorough in the writing of the results, have hopefully provided enough information if someone would want to replicate this study. This has hopefully made the scientific process coherent enough and therefore improved the validity, (Yardley, 2000).

Also, the choice of using Braun and Clarke (2006) was deliberate as their model of doing a thematic analysis can be seen as a transparent and systematic one, that is easy to replicate in other studies. When something is transparent and systematic in the way of

qualitative science, the research includes enough details that help establish a transparent process, and it uses an analytical framework, (Meyrick, 2006). Both of these, if one has them, makes it easier for others to judge the study and the methods used. Hopefully, I have done this in a satisfactory way. I have tried to be as transparent as possible with the results, and I have tried to structure the method section so that it is easy to understand and easy to use. Also, I have tried to have a structure in the gathering of data, and informants.

I analysed the interviews and coded them using an inductive method, this was because I wanted to find out what the informants said, but without any preordained framework that would guide the findings. I did this without trying to find latent interpretations, the data was interpreted from what the informants said, (Braun & Clarke, 2006).

Often qualitative research will be criticised for many reasons such as the size of the sample and its representativeness, or to give objective findings, (Yardley, 2000). I have to the best of my ability tried to be as objective as possible during the analysis. When it comes to the sample size, nine people might not be as many as one would want when thinking of the statistical representativeness, (Yardley, 2000). But given the time I had available on this study, and being just one person I have opted for a “theoretical” sampling, (Yardley, 2000) where I have found people who worked with the same types of problems and challenges, even though not in the same organization, but in similar jobs.

I believe the informants that was chosen was diverse enough for getting different views and experiences, but within the same type of jobs so that it was representative. I believe they all felt they could speak freely and did not hold back on the negative aspects of the work, though naturally some was more open than others. That was expected however, as I anticipated people with different personalities. People are different, and I believe we react differently when confronted with questions and new settings. None of the participants however, seemed to be uncomfortable or insecure in the setting.

One aspect I would like to address is what I want to call the language barrier. All of the research and the first five parts of the analysis was done in Norwegian. The sixth phase that was to write up the report was in English as this thesis is written in English. This means that I had to translate the names of the themes, the subcategories and the transcriptions/quotes from Norwegian to English. This gives room for interpretation as the grammar of Norwegian and English is different. I have had to change the wording in the transcriptions to make them understandable. However, I have as best as I could, tried to keep the meaning of the transcription the same. This is none the less something that needs to be taken under

consideration. Still, by choosing not to look at latent interpretation, I feel the true meaning of the transcription still shows in the text.

### **More research**

This study had the negative of time on its side. By this I mean that it was limited how many informants one could interview, and analyse. It was however, not difficult to gather the informants, something that might suggest that there was a lot of interest in the study. It would most certainly be interesting to further develop this study by running several rounds of interviews, to see firstly if one would find the same, and secondly if one would find something more. This would again build on the validity of this study.

Another thing that would be interesting to look at some more are the findings in this study about the more concrete examples of how to do good safety management. In general, the theories that exists focus a lot on explaining how good safety management looks like, but not so much how one can get there. Therefore, it would be interesting with more research on exactly that, what do the safety managers actually have to do to get to the place the theories speak of? This can simply be a developed research on this study, or it could be something new based in one specific existing theory, like the high reliability organization by Weick and Sutcliffe (2007) as an example. Never the less how one develop future studies and what one base it on, the science will only profit on a more focused research in regards to the concrete how and what. What do they do, with concrete examples, and how do they do it with concrete examples? It is difficult with science however, as you do not know what you find until you do, as such more research on this topic will be needed if one wants to find more practical solutions to the question. The HRO do have many good ideas for good safety management, even though they don't spell them out. But more research is needed to find the concrete examples that the managers can use in their everyday lives.

There should be a greater focus on that type of studies though. Because in my study I could see the divide between the scientists and the practitioners. The scientists find good environments and ideas of how it should be, but not too much on how to get there. The practitioners however, want more concrete and practical research that can tell them what to do and how to get there. It seemed to me that the communication between the two are lacking, the scientists can profit from listening to the practitioners, but the practitioners can also profit from listening and talking to the scientists. This would also be an interesting study as well. The scientists use a lot of their time in trying to find out what works and what does not, how to do things better, all so that the practitioners can have an easier day at work. But how much of the research is actually being implemented, how much of what is found are actually being

used? Do the practitioners actually take the science into consideration at all? And the other way around, how much does the scientists actually listen to the practitioners and what they want and need? Do they listen at all or do they just do research on what they find interesting themselves? These are all questions that would benefit from more research, for both parties.





## **Summary and Conclusion**

The idea of this master thesis was to look at what the practitioners of safety systems thought and practiced in regards to good safety management. The results provided both general thoughts about safety, and some concrete examples of what a safety manager must do to create a safety environment in the organization. Creating a climate for trust and respect, by setting an example, being approachable, learning and listening to others, and make sure that the information that is communicated throughout the organization is distinct and understandable. All of these things can minimize the misunderstandings and help when implementation of a change is needed. Also the findings of the importance of a good psychosocial environment, which is something the theories do not say much about, is an interesting part in regards to safety in organizations.

The theories presented in the theory chapter, could all present some foundation for these findings, but it was also found that these theories have good ideas when it comes to safety management, and are good at describing what the organization should focus on to get a good safety environment, but not too much about how they can get there. More research on both this thesis's research question, and into more concrete examples of how to become a good safety manager is to be welcomed. Future research should focus on what the practitioners want to know more about in general. There is a void between the practitioners and the scientists that would benefit from some more communication and inquiry into each other's domains.

## References

- Alhojailan, M. I. (2012). Thematic analysis: A critical review of its process and evaluation. *WEI International European Academic Conference Proceedings*.  
<http://www.westeastinstitute.com/wp-content/uploads/2012/10/ZG12-191-Mohammed-Ibrahim-Alhojailan-Full-Paper.pdf>
- Arbeidsmiljøloven. (2005). *Lov om arbeidsmiljø, arbeidstid og stillingsvern mv.* (arbeidsmiljøloven). Retrieved 26.04.2016, from  
[https://lovdata.no/dokument/NL/lov/2005-06-17-62#KAPITTEL\\_2](https://lovdata.no/dokument/NL/lov/2005-06-17-62#KAPITTEL_2)
- Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3, 77-101.  
<http://www.tandfonline.com/doi/abs/10.1191/1478088706qp063oa>
- Dekker, S., Hollnagel, E., Woods, D. & Cook, R. (2008). Resilience engineering: New directions for measuring and maintaining safety in complex systems. *Lund University School Aviation*. Retrieved 26.04.2016, from  
<https://www.msb.se/Upload/Kunskapsbank/Forskningsrapporter/Slutrapporter/2009%20Resilience%20Engineering%20New%20directions%20for%20measuring%20and%20maintaining%20safety%20in%20complex%20systems.pdf>
- Du Bois, J. W. (1991). Transcription design principles for spoken discourse research. *International Pragmatics Association 1*(1) 71-106. Retrieved 27.04.2016, from  
<http://journals.linguisticsociety.org/elanguage/pragmatics/article/download/464/464-782-1-PB.pdf>
- Faret, O. J. (2010). Teknisk operasjonell sikkerhet: Mål om null barrierehull. *Petroleumstilsynet: Sikkerhet-Status og Signaler* (p. 24). Retrieved 25.03.2016, from  
<http://www.ptil.no/barrierer/teknisk-og-operasjonell-sikkerhet-maal-om-null-barrierehull-article6584-828.html>
- Grote, G. & Künzler, C. (2000). Diagnosis of safety culture in safety management audits. *Safety Science*. (34) 131-150. PII: S0925-7535(00)00010-2
- Hollnagel, E. (2002). Understanding accidents – From root causes to performance variability. Human factors meeting. *Department of Computer and Information Science, University of Linköping*. Sweden. Retrieved 26.04.2016, from  
[http://ieeexplore.ieee.org/xpls/abs\\_all.jsp?arnumber=1042821&tag=1](http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=1042821&tag=1)
- Hollnagel, E. (2013). Is safety a subject for science? *Safety Science* 67(2014) 21-24. Retrieved 26.04.2016, from <http://ac.els-cdn.com/S0925753513001756/1-s2.0->

- [S0925753513001756-main.pdf?tid=195803a0-0bd4-11e6-ac02-00000aacb360&acdnat=1461691806\\_0ac15a63484946615afab9a6dbe9a3dc](https://doi.org/10.1080/S0925753513001756-main.pdf?tid=195803a0-0bd4-11e6-ac02-00000aacb360&acdnat=1461691806_0ac15a63484946615afab9a6dbe9a3dc)
- Marais, K., Dulac, N. & Leveson, N. (2004). Beyond normal accidents and high reliability organizations: The need for an alternative approach to safety in complex systems. *Engineering Systems Division Symposium*. Retrieved 26.04.2016, from <https://esd.mit.edu/symposium/pdfs/papers/marais-b.pdf>
- Martinez, M. P. & Kim, C. (2012). Quantification of complexity and coupling indices to validate normal accident theory in telecommunication network accidents. *International Conference on System Safety*. Retrieved 27.04.2016, from <http://www.howard.edu/library/scholarship@howard/articles/2012/charleskim.pdf>
- Meyrick, J. (2006). What is good qualitative research? A first step towards a comprehensive approach to judging rigour/quality. *Journal of Health Psychology*. 11(5) 799-808. DOI: 10.1177/13591053060666643
- Nespor, J. (2000). Anonymity and place in qualitative inquiry. *Qualitative Inquiry*, 6(4), 546-569. <http://qix.sagepub.com/content/6/4/546.full.pdf+html>
- Rasmussen, J. (1997). Risk management in a dynamic society: A modelling problem. *Safety Science*. 27(2/3) 183-213. Retrieved 26.04.2016, from <http://www.sciencedirect.com/science/article/pii/S0925753597000520>
- Reason, J. (1997). *Managing the risks of organizational accidents*. England: Ashgate Publishing Limited. ISBN 13:9781840141054
- Reason, J. (2000). Human error: Models and management. *Education and Debate*. (320) 768-770.
- Robinson, S. L. (1996). Trust and breach of the psychological contract. *Sage Publications Inc*. 41(4) 574-599
- Thunem, A. P-J., Kaarstad, M., & Thunem, H. P-J. (2009). Vurdering av organisatoriske faktorer og tiltak i ulykkesgranskning. *Petroleumstilsynet*. Retrieved 25.03.2016, from <http://www.ptil.no/getfile.php/PDF/Rapport%20-%20Vurdering%20av%20organisatoriske%20faktorer%20og%20tiltak%20i%20ulykkesgranskning.pdf>
- Weick, K. E. & Sutcliffe, K. M. (2007). *Managing the unexpected: Resilient performing in an age of uncertainty (2th ed.)*. San Francisco: Jossey-Bass. ISBN 978-0-7879-9649-9
- Weick, K. E. & Sutcliffe, K. M. (2015). *Managing the unexpected: Sustained performance in a complex world (3th ed.)*. New Jersey: John Wiley & Sons, Inc. ISBN 978-1-118-86241

Yardley, L. (2000). Dilemmas in qualitative health research. *Psychology & Health, 15*(2), 215-228. DOI: 10.1080/08870440008400302

## Appendix

### Appendix 1: Interview guides

#### Interview guide 1.

##### I forhold til informanten:

Hvilken utdanning og bakgrunn har du?

- a) Hvordan kom du inn i sikkerhetsyrket?

Kan du kort beskrive den organisasjonen du jobber i?

- a) Hvem er din nærmeste leder?
- b) Hvor i organisasjonen er du? ( gjerne tegn et kart).
- c) Hvilke sikkerhetsutfordringer har denne organisasjonen?
- d) Hvilke forhold/faktorer påvirker sikkerhet i denne organisasjonen? (som for eksempel ledelse, kommunikasjon, tidspress, stress, prosedyrer osv.)
- e) Hvorfor er dette en utfordring?

Kan du beskrive arbeidsdagen din i går?

Var dette en typisk dag?

- a) Hva er en typisk dag?

Kan du beskrive konkret hvordan du jobber med sikkerhet?

- a) Hva gjør du?
- b) Hvorfor er det viktig?

Kan du beskrive noen sikkerhetsutfordringer/sikkerhetstiltak som du jobber med og hva du gjør med de?

- a) Hvorfor er dette viktig?

Kan du beskrive rapporteringssystemet deres?

- a) Hvordan ser systemet ut?
- b) Hvordan jobber du med rapportering?
- c) Hva gjør dere med rapportene dere får inn, bearbeiding videre?

Kan du beskrive noen prosedyrer dere har på plass når det kommer til sikkerhet?

- a) Hvordan tenker du at prosedyrene fungerer?
- b) Hvordan jobber du med å forbedre prosedyrene?

Dersom noe uventet skulle skje, kan du beskrive hvordan du vil løse det?

- a) Hvem tar ansvar?
- b) Hva gjør dere med informasjonen som kommer inn?
- c) Hvordan trener dere ansatte mtp sikkerhet? (følge prosedyrer, selvstendige avgjørelser/autonomi)

Hva inspirerer deg i ditt arbeid?

- a) Har du et faglig nettverk og kan du beskrive det?
- b) Leser du litteratur som sikkerhet eller ledelse?
- c) Er det noen spesielle teorier eller litteratur du bruker i ditt daglige arbeid?

*I forhold til god sikkerhetsledelse:*

Kan du beskrive hva du tenker at en god sikkerhetsleder gjør?

Hva er viktig for å være en god sikkerhetsleder?

Hvordan synes du at en organisasjon best legger til rette for god sikkerhetsledelse?

Hvordan jobber dere med sikkerhetskultur?

## Interview guide 2

### I forhold til sikkerhetsleder kurset og bedriften:

Kan du si noe om hvilken utdanningsbakgrunn og erfaringsbakgrunn dere som jobber i bedriften har?

Kan du beskrive bedriften? Hva gjør dere? Hvem er kundene?

Kan du beskrive et typisk sikkerhetsledelses kurs i korte trekk?

Hvilken informasjon baserer dere innholdet i kursene på?

Kan du si noe om hvilke teorier og litteratur dere bruker i sikkerhetsledelses kursene?

### I forhold til informanten:

Hvilken utdanning og bakgrunn har du?

Hvordan kom du inn i sikkerhetsyrket?

Kan du beskrive arbeidsdagen din i går?

Var dette en typisk dag? Hva er en typisk dag?

Kan du beskrive konkret hvordan du jobber med sikkerhet? Hvorfor er det viktig?

Hvilke sikkerhetsutfordringer jobber du med?

Er det noe spesiell litteratur du bruker i ditt daglige arbeid?

### I forhold til god sikkerhetsledelse:

Kan du beskrive hva en god sikkerhetsleder gjør? Gjerne med eksempler.

Hvordan mener du at en organisasjon best legger til rette for god sikkerhetsledelse?

Hvilke faktorer mener du påvirker sikkerhet?

Hvilke tiltak i forhold til sikkerhet, mener du har best effekt?

## **Appendix 2: Informed consent form**

### **Forespørsel om deltakelse i forskningsprosjektet**

#### *«Hva er God Sikkerhetsledelse?»*

#### **Bakgrunn og formål**

Formålet med studien er å se på hva god sikkerhetsledelse er i forhold til de teoriene som man finner i samfunnsvitenskapen, og gjennom intervju av ledere som jobber med sikkerhet.

Finnes der noen fellesnevner mellom teori og praksis? Brukes teoriene bevisst eller ubevisst? Og dersom de ikke brukes, hvorfor ikke? Dette prosjektet er en del av en mastergrad i Arbeids og Organisasjonspsykologi ved Psykologisk Institutt, på NTNU.

Informantene som stiller til intervju er valgt ut ved å sende forespørsel til bedrifter som opererer med sikkerhetsspørsmål og risiko i hverdagen.

#### **Hva innebærer deltakelse i studien?**

Informantenes rolle vil være å delta på et personlig intervju med varighet på ca. en time.

Spørsmålene vil omhandle sikkerhet og hvordan informantene jobber med sikkerhet i hverdagen. Men også om hva informantene selv tenker er god sikkerhetsledelse. Det vil bli brukt lydopptak under intervjuene, og noen håndskrevne notater kan forekomme.

#### **Hva skjer med informasjonen om deg?**

Alle personopplysninger vil bli behandlet konfidensielt. Det er kun student og veileder som vil ha tilgang til personopplysninger. Lydopptak vil lagres i passordbeskyttet mappe på pc. Resultatene fra studien vil bli publisert i en masteroppgave og muligens også i en vitenskapelig artikkel. Deltakere i studien skal ikke kunne bli gjenkjent i en eventuell publikasjon av studien.

Prosjektet skal etter planen avsluttes 31.12.2016. Etter prosjektets slutt vil alle personopplysninger og lydopptak bli slettet.

#### **Frivillig deltakelse**

Det er frivillig å delta i studien, og du kan når som helst trekke ditt samtykke uten å oppgi noen grunn. Dersom du trekker deg, vil alle opplysninger om deg bli slettet.

Dersom du ønsker å delta eller har spørsmål til studien, ta kontakt med Charlotte Ulla Pleym, masterstudent ved Psykologisk institutt, NTNU på telefon: 91132334 eller via mail: [charlotte.u.p@hotmail.com](mailto:charlotte.u.p@hotmail.com), eller Karin Laumann, førsteamanuensis ved Psykologisk institutt, NTNU på telefon: 73590993 eller via mail: [karin.laumann@svt.ntnu.no](mailto:karin.laumann@svt.ntnu.no).



Studien er meldt til Personvernombudet for forskning, Norsk samfunnsvitenskapelig datatjeneste AS.

**Samtykke til deltakelse i studien**

Jeg har mottatt informasjon om studien, og er villig til å delta

---

(Signert av prosjektdeltaker, dato)

## Appendix 3: Approval from the Norwegian Social Science Data Service

Norsk samfunnsvitenskapelig datatjeneste AS  
NORWEGIAN SOCIAL SCIENCE DATA SERVICES



Harald Hårfages gate 29  
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Tel: +47-55 58 21 17  
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nsd@nsd.uib.no  
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Org.nr: 985 321 884

Karin Laumann  
Psykologisk institutt NTNU  
  
7491 TRONDHEIM

Vår dato: 09.11.2015

Vår ref: 45220 / 3 / HIT

Deres dato:

Deres ref:

### TILBAKEMELDING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

Vi viser til melding om behandling av personopplysninger, mottatt 16.10.2015. Meldingen gjelder prosjektet:

45220	<i>Hva er god sikkerhetsledelse?</i>
<i>Behandlingsansvarlig</i>	<i>NTNU, ved institusjonens øverste leder</i>
<i>Daglig ansvarlig</i>	<i>Karin Laumann</i>
<i>Student</i>	<i>Charlotte Ulla Pleym</i>

Personvernombudet har vurdert prosjektet og finner at behandlingen av personopplysninger er meldepliktig i henhold til personopplysningsloven § 31. Behandlingen tilfredsstillende i personopplysningsloven.

Personvernombudets vurdering forutsetter at prosjektet gjennomføres i tråd med opplysningene gitt i meldeskjemaet, korrespondanse med ombudet, ombudets kommentarer samt personopplysningsloven og helseregisterloven med forskrifter. Behandlingen av personopplysninger kan settes i gang.

Det gjøres oppmerksom på at det skal gis ny melding dersom behandlingen endres i forhold til de opplysninger som ligger til grunn for personvernombudets vurdering. Endringsmeldinger gis via et eget skjema, <http://www.nsd.uib.no/personvern/meldeplikt/skjema.html>. Det skal også gis melding etter tre år dersom prosjektet fortsatt pågår. Meldinger skal skje skriftlig til ombudet.

Personvernombudet har lagt ut opplysninger om prosjektet i en offentlig database, <http://pvo.nsd.no/prosjekt>.

Personvernombudet vil ved prosjektets avslutning, 31.12.2016, rette en henvendelse angående status for behandlingen av personopplysninger.

Vennlig hilsen

Katrine Utaaker Segadal

Hildur Thorarensen

Kontaktperson: Hildur Thorarensen tlf: 55 58 26 54

Vedlegg: Prosjektvurdering

*Dokumentet er elektronisk produsert og godkjent ved NSDs rutiner for elektronisk godkjenning.*

*Avdelingskontorer / District Offices*

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