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MASTER'S THESIS

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1.0 Abstract

The thesis presents how an international oil service company, Halliburton, administrates their contracts. Contract administration and management is important in order to optimize the contract's full potential.

There are few articles on the field on contract administration; due to different companies have different procedures that may all work in the specific setting. An introduction to how a contract is created and regulations on public procurement are featured to give the reader a full overview.

Several departments in Halliburton work with contracts and contract administration. Business Development, abbreviated BD, receives the tender request, and is responsible for communicating with other departments to make the tender process run smoothly. BD is also responsible for negotiating any contracts terms and conditions. The legal departments reviews the contract and decides whether the contract impose Halliburton of any unwanted risk. The finance department reviews the financial terms and if the contract complies with Halliburton's policies.

Halliburton uses several databases to manage different aspects of their contracts. The contract price database, abbreviated CPD, stores all the information about prices and price history. CLM, the global contract database, contains a contract summary and holds information about upcoming escalations and reviews. BSA is used by planners, engineers and coordinators as a planning tool, and is also used for invoicing clients.

An important part of contract administration is to always work with the latest version of the contract. Much work is therefore spent on continuously update the contract with the latest prices, amendments and variation orders.

Some possible improvements were found with the CLM database; small upgrades so that the tasks are less exposed to human error than today. But the improvement that could possibly impose the biggest positive effect is a more proactive contract management approach. Examples of how to turn the current situation into a more proactive approach could be achieved by joint business development cooperation, or trying to sign more Master Service contracts and agreements with the different Operators.

2.0 Acknowledgements

This thesis represents the closure for my Master's degree in Industrial Economics. After almost 5 years of studying different subjects at the University of Stavanger, it has been interesting to work independently on a subject of my own choice and have the opportunity to dig deeper into a subject that I find interesting and of importance.

Before I started working with the thesis, I had no experience with the field of contract administration, let alone any experience with contracts. I therefore started with blank pages, and had to learn what processes were being used in the work. This led to a steep learning curve, and I have acquired information and knowledge that I am confident I can use when I start working full time after graduating.

I would first of all like to thank Halliburton for giving me the opportunity to write this thesis. All the people I have met with and talked to on the way have been positive and helpful.

I would also like to give a special thank to my mentors in Halliburton; Alan Tawse and Wenche Tjensvold Eriksen. They helped me get started with the thesis, and has provided me information of utter necessity. This has been very valuable to me. Tor Bjørn Ueland, Bjørg Kvale, Kjetil Geelmuyden, Tone Endresen Refsland and Lillian Knutsen have all contributed with important information on their field.

I would also like to thank my mentor with the University of Stavanger, Kjell Hauge. He has given advice on the structure and planning of the thesis, and reported possible improvements along the way.

Last but not least, I want to thank all of my fellow students at Industrial Economics. We have had 2 amazing years together, and you all inspire me with your great knowledge and fantastic personalities.

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5.0 Introduction

Contracts are a common way for two or more parties to create legal obligations for one and other. Contracts are also a tool for managing business, allocate and protect value, coordinate communication and a tool for risk sharing (Haapio, 2010). Much effort is put on the contracts' design with the intention to secure both parties from unwanted risk.

There may exist multiple different contracts between Operators and Service Companies at the same time, and when dealing with several contracts, the companies needs to have good systems for managing these contracts.

5.1Halliburton

This thesis investigates Halliburton's routines and processes for administrating their contracts. Halliburton is an International Oil Service Company with headquarters in Houston, almost 70 000 employees per 2012 and is present in around 80 countries (Halliburton, 2012). It was founded by Erle P. Halliburton in 1919, and Halliburton's two divisions Drilling and Evaluation and Completion and Production has of December 31, 2011 accounted for approximately $ 25 billion.

Halliburton started its business in Norway in 1972, and has today over 2000 employees in Scandinavia (Halliburton Scandinavia, 2011). Almost all rigs and platforms in the North Sea have Halliburton personnel present. Halliburton Scandinavia has their headquarters in Tananger, and is the largest business unit based outside Northern America.

Having this information, one can easily understand that the contracts between Halliburton and different Operators are worth millions of dollars. It is therefore of utter importance that these contracts are properly managed.

5.2 Objective

The objective of this paper is to review and examine Halliburton's tools for administrating their contracts, when Halliburton provides their services to Operators. The thesis does not reflect upon the opposite; when Halliburton has the role of a buyer, and buys services from a client. This has not been included in the paper due to Halliburton's role as an Oil Service Company, where most of the contracts are signed with the purpose that Halliburton provides their services. The opportunity to improve contract administration is normally larger in these contracts than where Halliburton buys services; as these contracts do not help grow revenue. They still affect Halliburton's cost and therefore profit.

Some theory on the tender process is included in the beginning of the paper, with the intention to give the reader context on how a contract is created. Some information about the contracts lifecycle is also included for the same purpose. A short introduction to public procurement is included as a "best practice" of how a contract is created.

A description of the processes used today is featured to give the reader insight into today's situation. What different databases are used, and what processes are in place to deal with the contracts? Is there room for improvement amongst these processes? These questions are answered below.

6.0 Method

In Halliburton, few people have knowledge about what processes are used in order to administrate the contracts properly, including myself. The idea for this thesis was just that; let an unaware and untrained person analyze how the work is done today, and see if this person can introduce some new ideas. Humans have a tendency of becoming narrow minded when working on a subject for a long time, so it can be useful for the experts to look for possibly better ideas from people not working with the tasks on a daily basis.

There are few books and articles on the topic of effective contract administration. This is most likely due to contract administration being a topic of confidentiality, and also that different companies have different routines, that may all work for their specific cause. There have not been established any “correct” way of administrating contracts; the most important thing is that the administration processes suits its purpose.

To gather information on this topic, I have sat down with key personnel, sometimes for an hour others an entire day, to learn about their work and letting them explain different parts of it. This information has been of utter necessity to me, in order to establish a foundation of knowledge about the processes.

I have also spent some time working through different process charts. These explain how a task should be performed, at what time and who is responsible for different tasks.

In order for me to look at what possible improvements can be made, I have worked through the processes and tried to look at tasks that are more exposed to risk than others. I have tried to put myself in the employees’ situation, and looked for situations where it is more likely to commit errors than others.

I have also sent out questions to employees working with contract administration in Halliburton, with the purpose of exposing the employees wishes, if any, on new improvements to the existing system, new features or suggestions that may work better than today’s system. The questions are found in the appendix.

7.0 Theory

People may think that when a contract is signed, the work is over, and the company can celebrate the victory and take a copy of the contract and put it in the bookshelf. This is however not the case. In order to get the most out of the contract it is important to have good routines

for administrating the contract. How a company administrates the contract, decides whether it ends up financially successful or leads to a non-profitable project. To send out invoices in time, handling escalations properly and attach all necessary documents are all important measures in order to receive the payment.

7.1 The contract's life cycle

Contract administration or contract management involves all the activities that start with the realization of a business need, to establishing terms and conditions, the signing of the contract and the review of the contract performance (Elsey, 2007). The activities are often divided into upstream and downstream of the award, but these two are still closely connected, see figure 1 below.

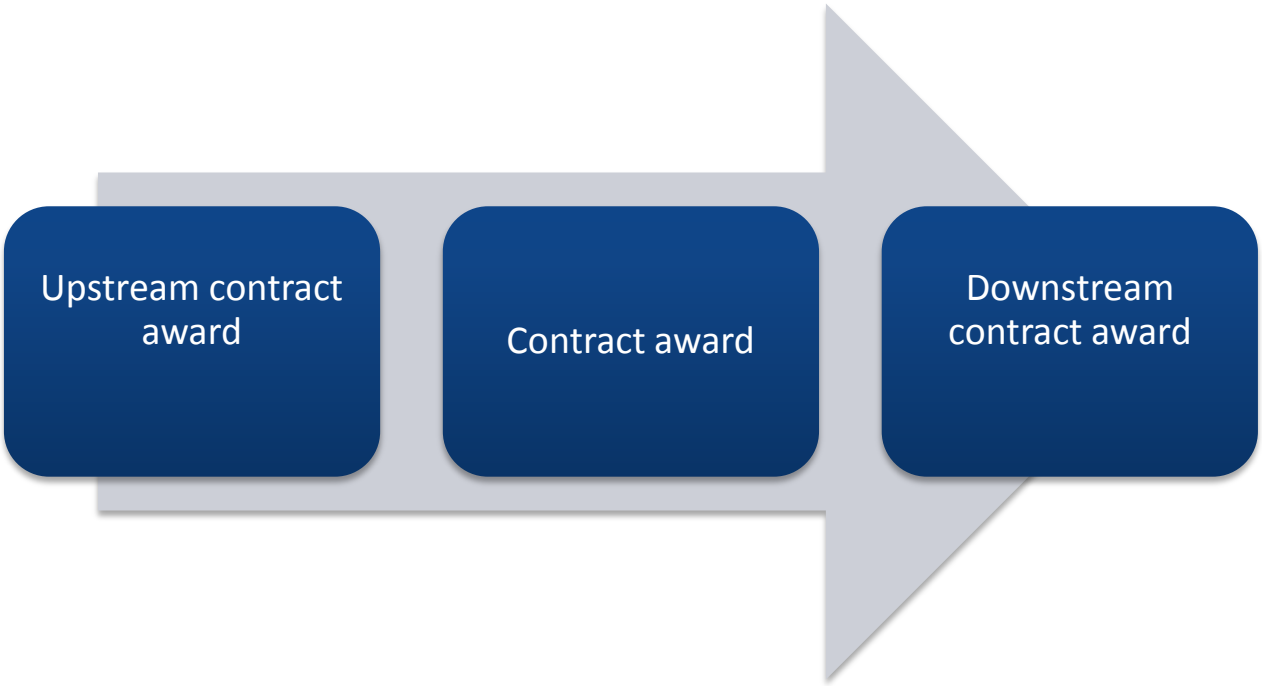

Figure 1 – The contracts life cycle

In the presentation from The Chartered Institute of Purchasing and Supply (Elsey, 2007), they divide the different upstream steps into the 14 different tasks listed below

1. Preparation of business case

2. Assemble a project team
3. Developing a contract strategy
4. Risk assessment
5. Developing contract exit strategy
6. Developing a contract management plan
7. Drafting specifications and requirements
8. Establishing the form of the contract
9. Establishing the pre-qualification, qualification and tendering procedures
10. Appraising suppliers
11. Drafting ITT documents
12. Evaluating tenders
13. Negotiation
14. Awarding the contract

I do not want to go thoroughly into every task, but rather give a summary of how the processes work. Some of the information is also taken from Kjell Hauge's lectures on Public Procurement (Hauge, 2011).

The first event that takes place is to acknowledge that there is a business need. This need is presented as a business case to people with the proper authority within the company. When an approval is made, a project team is assembled. The project team should be an interdisciplinary team, comprised by people form procurement, engineers and economists. This team is responsible for developing the contract strategy. When a strategy is decided upon, the development of the tender documents start. Specifications and terms are decided, selection criteria and award criteria are set and a copy of the contract is sketched. Invitation to tender (ITT) documents are prepared and sent out to the clients of choice. The tender has now started.

The operator that initiates the tender must be prepared to answer questions about the tender from the participants. When the deadline approaches, it is important to have good routines for

accepting and open the tenders handed in. After the tender is handed in, there is normally a period of negotiation. The contract is awarded to the client that meets the award criteria best.

The different downstream steps are divided into

1. Changes within the contract
2. Service delivery management
3. Relationship management
4. Contract administration
5. Assessment of risk
6. Purchasing organization's performance and effectiveness review
7. Contract closure

When a contract is signed, terms and conditions are regulated in the contract. But for contracts that last several years, it is likely that changes from what was originally agreed upon, occur. It is therefore important that the changes are handled properly. Contract administration becomes important for both parties, as it decides whether or not they can achieve the best of the contract. As a part of contract administration, it is important to always have the latest copy of the contract available. The contract can be viewed as a living document that is almost continuously changed for example when escalations, amendments and variation orders occur.

This thesis focuses on the downstream activities that take place within an oil service company, in this case Halliburton.

7.2 Tender in Halliburton

Since Halliburton is a Service Company, they first get involved when they receive the invitation to tender. However, Halliburton have several contracts with suppliers and subcontractors, and may then also initiate a tender. Still, this thesis focuses on the contracts when Halliburton provides their services to Operators.

As stated above, before a contract is signed between two parties, there is held a tender. Most of the time, Halliburton receives an invitation to tender (ITT) from the Operator. Sometimes, there is a pre-qualification round, where Halliburton and other service companies need to qualify to be able to take part in the tender.

When the tender starts, Halliburton receives documents with specifications, deadlines, and a copy of the contract with all the terms and conditions. The tender period varies in duration, but will on average last for about 4 weeks. Both legal and finance review all the terms. It is common that Halliburton make comments on specific demands like payment terms or the risk scenario, and submit changes they want to introduce to the contract. The new suggestions are handed in with the tender. After the tender is submitted, the Operator will review each company's documents and assess the results. This period will also vary in duration, but will on average last for around 3 months. In the meantime, the Operator may have questions regarding what is submitted by the Service Companies, and may then send out clarification questions, that the Service Companies will have to reply within a given time frame. There may also be negotiations between the companies where a disagreement about terms and conditions take place.

7.3 Public Procurement

Halliburton is not a government agency and is therefore not obligated to use the laws on public procurement. However, oil companies operating on a given license work after these regulations as a "best practice" norm, and Halliburton will therefore comply with these rules. I would therefore like to include a short summary of the content in this literature.

7.3.1 Background

The procurement process in government agencies in Norway is regulated by the EØS regulations. Norway joined the EØS agreement in 1992, and has today one law, "Lov om offentlige anskaffelser" from 1999 and two directives regulating procurement, "Forskrift om

offentlige anskaffelser" from 2006 and "Forskrift om innkjøpsregler I forsyningssektorene" from 2006. These regulations are based on the EU's ground principles non-discrimination, justice, transparency and equal treatment (Hauge, 2011)

The laws and directives regulating public procurement were conceived as a reaction of the threat that European countries were exposed to from the USA and Japan on high technological products. The existing regulations had a tendency of favoring some suppliers and had little transparency so the competition suffered from injustice. (Hauge, 2011)

The goal of the new regulations was to create an open and competitive market for European suppliers, with lower cost for the buyers. The outcome was just these results including increased cross-border trade.

The main goal in EU's regulations is that a tender should be held for all procurements, rather than to go directly to a provider and buy the product or service.

The law on public procurement and the two directives regulate the activities before procurements are acquired. These include announcement of the procurement, evaluation of offers, award of contract etc.

7.3.2 "Forskrift om offentlige anskaffelser" from 2006 – directive on public procurement

This directive is divided into four main sections; part 1 covers general provisions, part 2 covers procurements with a value under EØS threshold value, part 3 covers procurements over EØS threshold value and part 4 covers other procedures (Forskrift om offentlige anskaffelser, 2006)

Overview of the central parts in the directive:
The basis for the tender - chapter 8 and chapter 17
Notification rules - chapter 9 and chapter 18

Deadlines - chapter 10 and chapter 19

Implementation of tender – chapter 11 and chapter 20

Negotiations and clarification – chapter 12 and chapter 21

Finalization of tender – chapter 13 and chapter 22

7.3.3 Best practice

The threshold value is given in § 2-2 (1) and is set to 1 600 000 NOK for services and merchandises, and 40 500 000 NOK for construction contracts.
The notification rules are given in § 9-1. The tender should be announced on DOFFIN, which is the Norwegian database for public procurement. An announcement in TED, Tenders electronic daily, is optional. For acquirements over EØS threshold value, announcement in DOFFIN and TED is necessary.

The rules on submission of the tender and request of participation should be set so that the participants have sufficient time to complete the work necessary, § 10-1. It is important to take into account the tenders complexity, when a deadline is decided upon. Rules on minimum deadlines are given in chapter 19.

The contract should be awarded according to the qualification and award criteria determined by the procurer, § 11-1.

The tender should be in a written format and marked properly, and needs to be signed, according to § 11-2.

Regulation on opening of a tender is given in § 11-7. It says that the tender documents submitted should be opened according to what is stated in the tender, and that a minimum of two people shall participate in the opening.

7.4 Consequences for not spending time on the creation of a contract and administration

Contracts are created every day in business and personal life. But why is it so important to spend time on contracts? What are we really protecting ourselves against? And what are the consequences if we don't spend enough time on dealing with contracts?

One aspect that is particularly important to cover in the contract is the maximum liability. If Halliburton signs a contract with a value of $ 25 million, Halliburton may want to have a clause in the contract that states that their maximum liability is 70 % of the contract's value if something wrong were to happen. Companies would probably not engage in contracts if there were a possibility of them having to pay millions of dollars on a contract worth a fraction.

Another aspect is to cover Halliburton's responsibility at a rig, where the Operator manages the daily operations. Halliburton is involved in a lawsuit from BP per June 2012, regarding the oil spill from Deepwater Horizon in the Gulf of Mexico in 2010. Halliburton was on this rig responsible for the cement operations. BP claims that Halliburton was "grossly negligent", whereas Halliburton on the other hand claims that their contract with BP releases them from any liability as a result of the oil spill (CNN, 2012). BP has estimated that the total value for the cleanup will end up around $ 42 billion.

This shows that it is extremely important to have regulations in the contract regarding each party's responsibility and maximum liability.

8.0 The different departments in Halliburton – what do they do?

There are several departments in Halliburton working with contracts and contract administration. The three main departments are Business Development, Finance and Legal, see figure 2.

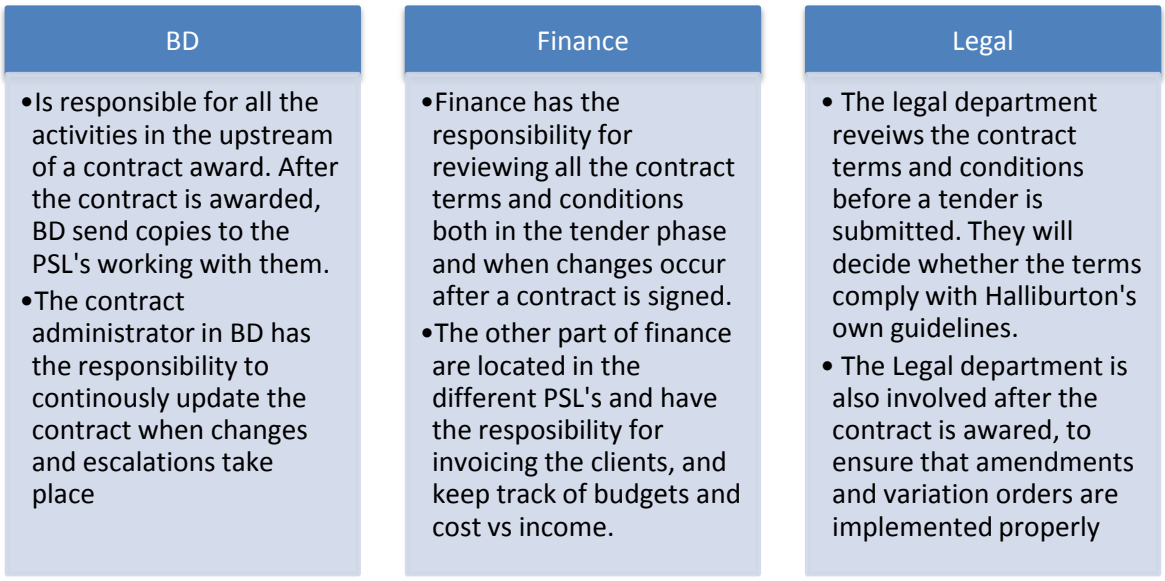

Figure 2 – the different Halliburton departments

8.1 Business development

The Business Development (BD) employee has several responsibilities concerning a submission of a tender.

- Halliburton receives a customer's tender request, which the BD employee must deliver to the law department, F&A department and the Tax department (in areas where this is a necessity)
- Proactively discuss different terms and conditions within the contract
- Cooperate with the law department and F&A so that all processes necessary to sign the contract are undertaken at an appropriate time.
- Make sure that someone within Halliburton with appropriate authority can sign the contract in time

8.2 The law department

The role of the attorney in the law department comprises

- Check the contract for all terms and conditions, and decide whether the contract sets Halliburton in any unusual risk.

- Cooperate with BD department so that the legal review work is performed on time
- Contact Risk Management Department if the contracts' content is not in accordance with Halliburton's guidelines, and may be of a higher risk than normal. The Risk Management Department will then need to come up with alternatives that clear out any uncertainties.
- The attorney is responsible for the final review before someone within Halliburton with the proper authority signs the contract.

8.2.1 More on legal

As mentioned, the legal department reviews the contract to see if it puts Halliburton in any unwanted risk. It can be points omitted from the contract or how the content is written, that the legal department may want to clarify and reply back to the customer with possible changes. There are four groups of interest that legal especially review:

- Catastrophic loss; hereunder blowouts and explosions
- Rights on patent when new technology is invented
- Insurance
- Indirect loss of profit for the customer

It is a common rule in Norway to use the so-called Knock for Knock rule. This rule states that each company takes responsibility for their employees and their equipment. It is therefore important to ensure that this is stated in the contract.

8.3 Finance and Administration

Finance and Administration (F&A) role comprises

- Review the contract regarding prices, payment terms and other financial matters
- If any matters stand out as a risk, the F&A Department is responsible for commenting these, and come up with any suggestions as to how to change the contract to manage the risk.

- Give a final approval before someone within Halliburton with the proper authority signs the contract.

8.3.1 More on finance

In Halliburton, Finance and Administration, abbreviated F&A, are responsible to review the contract to check if the contract attached in the tender documents comply with Halliburton's company policies. F&A will also support BD when calculating the contracts profitability.

F&A uses a global database called Contract Approval System, abbreviated CAS. This database stores some general information about the tender and the proposed contract terms and conditions, and includes uploaded documents received in the tender. It also includes information about the economy of the contract; how much Halliburton hope to earn if they sign the contract. CAS includes a list of questions regarding the proposed contract and whether or not these comply with Halliburton's guidelines. It is the F&A representative in BD that is responsible to answer these "Yes" and "No" questions. If there are any discrepancies, F&A will contact BD who communicates the discrepancy back to the customer. An example can be an Operator that demands a payment deadline longer than Halliburton has decided is acceptable. When waiting on payment, Halliburton needs to find other ways of financing, e.g. bank loans that are expensive. It is therefore important for Halliburton to receive their income within a suitable time.

When F&A have answered the questions in CAS, the CAS will be sent to a higher level of management with the proper authority, depending on the value of the potential contract. For the contracts with the lowest value, the potential contract is approved locally but as the value increases, these will need to be approved within the region or be approved by management in Halliburton's headquarters in Houston, depending on the value of the potential contract. A so-called "red team review" is held for tenders over $ 25 million, to evaluate whether Halliburton should submit a tender to engage in the contract or not. This is a safety measure in order for

Halliburton to not engage in contracts where a high amount of money is at stake, and there is a considerable amount of risk involved.

9.0 The different administrating tools

It is important to gain an overview of the different databases used in the process of managing the contracts in Halliburton. A short overview with figure 3 is given below.

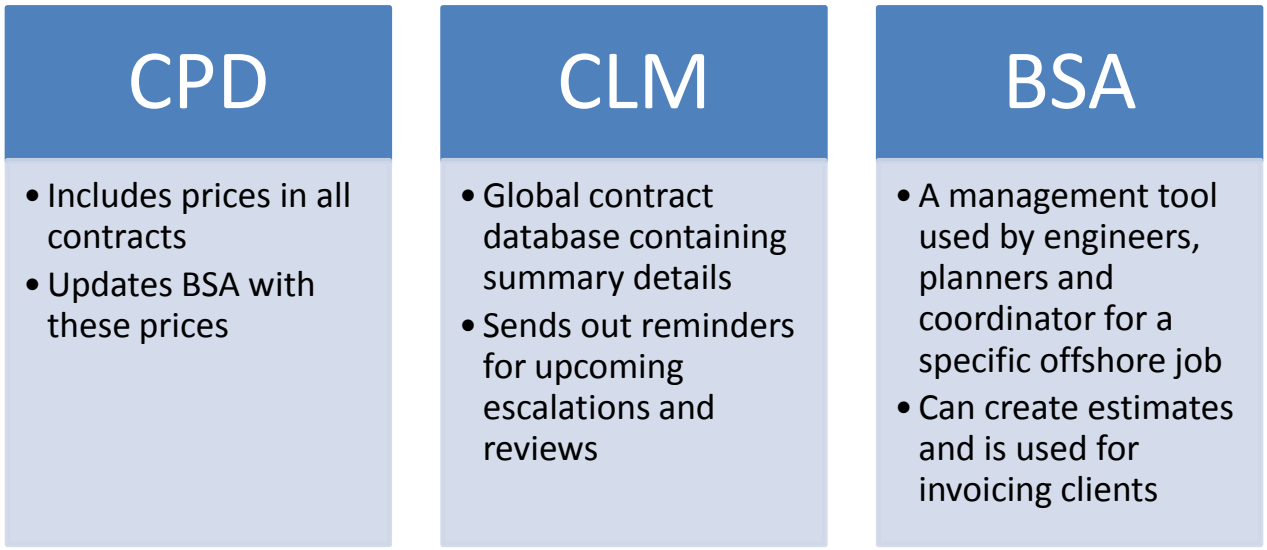

Figure 3 - The different databases

9.1 Contract Price Database (CPD)

The contract price database stores all the price information in Halliburton Scandinavia's contracts. Only the two SAP price maintainers have access to enter data into this database. The contract price database is sorted by PSL (divisions), and thereafter sorted by customer. The contracts are shown as either active or inactive. The database stores information on price history; when escalations have been implemented and for how long the prices are valid. Both

prices for labor and items (equipment, materials, services etc.) are stored in the database.

9.2 CLM

CLM is a global contract database, which stores every contract in Halliburton. The CLM was introduced January 2012, replacing the older CCM. CLM has all the information about the contract online, though there is always a printed copy of the contract as well. One of the new features with CLM is that it includes a total (estimated) value of the contract. In a program called PRINK contract profitability, the actual earnings from the every contract are displayed, and it is therefore possible to compare estimated value versus actual earnings.

9.3 BSA

"It is expensive for Halliburton to have outstanding income"

Kjetil Geelmuyden, Service Coordinator in Halliburton

BSA is a management system used in the planning stage for an offshore job, by the engineers and for invoicing clients. It is a local system developed and used only in Norway. The development of the system started as a reaction of dissatisfaction to the system used before. Earlier, estimates were done manually and wrong prices were in use due to escalations were performed wrong. Work that is done manually can cause mistakes to be made, simply because they are performed by humans, and humans make mistakes.

With the implementation of the new system, several benefits were noticed

- Poor estimating was eliminated due to a system communicating with other system of significance (SAP and CPD), and estimating was no longer performed manually
- The prices in BSA correspond to the prices entered into CPD. A source of error is thereby eliminated, due to CPD is always updated with the latest prices.
- Earlier, much of the information was handled in copies and after use, archived. Now, important information like field tickets, sales orders etc are stored in BSA. One can now

retrieve that information several years after a job is performed, not longer with the need to look it up in the archives.

As mentioned above, BSA is used by planners, engineers and coordinators. The system is divided into PSL, contracts, customer, wellbores and sections. The system makes it possible to make cost estimates before, during and after a job. The information on the system is based on what the engineers and coordinators have put in, on behalf of what personnel, chemicals and equipment is being used on a specific wellbore.

BSA also includes a system for when estimating, invoicing and updates should be performed. The system has default settings on when these tasks should be done, so a color code displays the status for the different tasks. A yellow mark means that the task is due in a few days; whereas a red mark indicates that the task is overdue. This makes it easier for the involved personnel to know when they should perform their work.

Halliburton uses e-business systems with some of their largest clients. It is an advantage then to have BSA. After invoices have been uploaded in BSA, and other documentation is attached, the electronic invoice is sent via BSA. But before the invoice is sent, a proforma invoice is sent to the client so that they can pre approve the invoice; they can either approve the invoice or dispute it. Proforma invoicing is a time consuming task, due to waiting on the client's response. The clients claim that the invoices often have errors, and that they therefore need time to approve these. To ensure that the electronic invoice is not lost in the system, or an error have occurred, a "response accepted" signs pops up so that Halliburton can be certain that the invoices are received by the client.

Halliburton has not got an e-business system with all of their clients. For those clients who are not part of it, a BSA "light" function can be used. The companies are asked whether they want to be a part of this system, and thereby receive electronic invoices via BSA. If they choose not to participate, the alternative is to receive the paper invoices per mail.

BSA was invented by people working within the cement department in Halliburton, and was therefore only used in this department at the beginning. Other departments have started implementing the system, but not yet to a degree where they utilize and benefit from all the features that the system can offer.

9.4 SAP

SAP is an intelligent software solution provided to corporations all over the world in different industries, amongst them oil and gas, healthcare and banking (SAP, 2012). The software may include solutions for supply chain management and customer relations as examples.

The SAP Price maintainer creates a ZCS (the contract's sales order) for every single contract that is signed. The ZCS makes it possible to make a link between the different costs and what contract they belong to, in SAP. It is sometimes necessary to make several ZCS, for example for the different bases that Halliburton have throughout Norway, such as Tananger, Ågotnes and Kristiansund, because the contract can have different prices at different locations.

A ZOH is created to divide the contract cost based on rig, job or on a monthly base.

Halliburton uses BSA as their invoicing tool. However, this task can be performed by using SAP, because SAP is installed with the different tools to make this possible. It is still decided that BSA is used, due to less administration required with this database.

10.0 The workflow

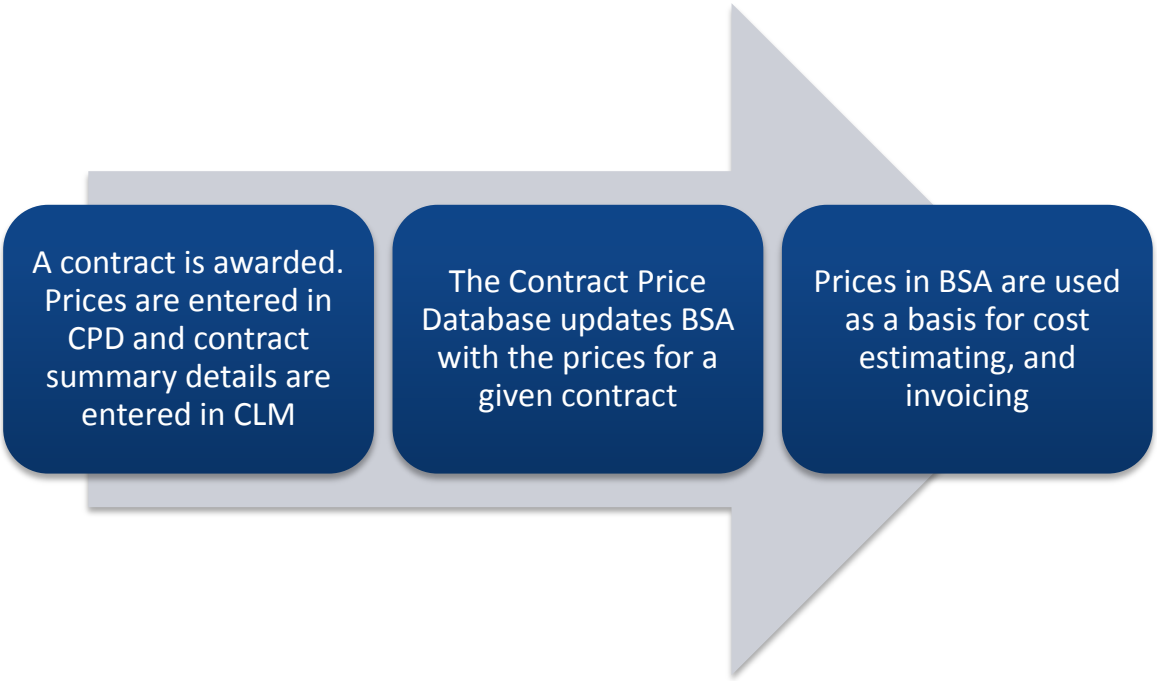

Figure 4 – A new contract is awarded

10.1 A new contract is awarded

The BP PSL representative, who is the contract responsible person in Halliburton, gives a copy of the prices to the SAP Price Maintainer. This document is often an electronic PDF, EXCEL or a WORD document, but the important thing is that is comes in an up loadable format. The SAP price maintainer enters the prices and contract header data into the Contract Price Database (CPD), and also attaches a PDF file of the contract and summary details in CLM, see figure 4. It is also important to enter reminders on escalation and adjustments at this point, to be delivered to the BD PSL representative.

An automatically generated e-mail is then sent from CPD to the BD PSL representative to review and accept the new prices. When the prices are confirmed by the BD PSL representative, the prices are automatically uploaded in BSA.

The next step for the SAP Price Maintainer is to create the internal SAP contract known as ZCS. This is an 8-digit number created by SAP. This number is a connection to the specific contract and customer, e.g. when the different PSL work on different contracts they log their spent hours to a specific contract, so that Halliburton later can charge the customer for how much time is spent on the contract.

At the end, a copy of the contract is sent to document control at a non changeable format, and sent out to people in Halliburton working with the contract.

10.2 Amendments, variation orders and escalations

The contracts between Halliburton and their clients may vary a great deal in content. But most of the contracts have regulations on when escalations will take place and how much the prices will escalate. The SAP price maintainer gets a notification from CLM when escalations are coming up. The BD person with responsibility for the contract sends out an e-mail or letter to inform the clients about Halliburton escalating their prices. (In some contracts, it is specifically stated that Halliburton must notify their clients about the upcoming escalations within a time frame of 30 or 60 days. If Halliburton don't comply with these deadlines, they might lose their chance to escalate the prices).The clients will then approve the escalations that are calculated from formulas given in the contract. These formulas may vary upon many factors, amongst them are indexes maintained by the Central Statistical Bureau. It is therefore important that both the clients and Halliburton review the numbers.

When the clients have approved the new prices, the SAP Price Maintainer receives an excel sheet with new prices. He/she will then use the contract price database to update the prices with the new escalations. These escalations will then need to be approved by the person who "owns the contract", which is the PSL-responsible in Business Development.

When new escalations have been implemented, the paper version of the contract needs to be updated with the new information. This can be done by generating an excel report that is attached with contract. This report is also sent to document control with the intention of forwarding the new prices to all the involved people working with the specific contract.

It is normal that variation orders and/or contract amendments take place during a contract. Amendments are changes made to a part of the contract, e.g. that the date for completion is postponed 3 months. Variation order is also changes to part of the contract, but it is often related to quantity and quality. Both legal and finance need to approve VOR's and amendments before anything new is implemented. This is a measure implemented to ensure that no extra demands or regulations are added to what Halliburton and the client agreed upon.

11.0 Process charts and company policies

Halliburton uses several process charts that depict what should be done at what time and who is responsible. The benefits of using these charts include a comprehensible map of who is to be consulted and informed at every step and where business risks may occur. These process charts are continuously updated, when better standards and procedures are found. It is therefore important to not rely on printed copies, but instead always download the latest copy of a process chart from the intranet, to ensure that you work with the latest issue.

11.1 Price Maintenance

For the flow chart with price maintenance there are 5 main tasks to be executed. These are

1. Establish new contract in SAP
2. Compile and check pricing data
3. Load SAP with initial contract pricing
4. Implement price escalations/amendments
5. Load SAP with updated contract pricing

The main business risk take place when the prices are gathered in a single excel document, and the information is reviewed. If these prices are wrong, this can mean that Halliburton looses income due to wrong prices are sent out to the customers, and they are not willing to pay if these are not the prices agreed upon in the contract.

11.2 Contract Maintenance

With contract maintenance there are 4 main tasks to be performed. These are

1. Enter a new contract
2. Maintain existing contracts
3. Process Contract Notifications
4. Conduct Periodic Contract Reviews

Halliburton has also a number of documents that detail various company policies on contracting that all of Halliburton employees must comply with. Amongst the company policies there is one for “e-commerce – buying and selling goods or service online”, and one called “contract requirements for oilfield services” which is the most often used.

12.0 Analysis

12.1 Review of today’s situation

Working with the systems used, I get the impression that the systems reliability and integrity is excellent. The different databases communicate with each other, e.g. BSA communicates with both CPD and SAP, so errors are eliminated, due to electronic transfer of data. The one thing that stands out as the largest business risk and source of error is the human aspect. It is a well known fact, that human makes mistake, so the tasks that are performed “manually” create the biggest risk.

As an example, when a new contract is awarded, specific prices are agreed upon in that contract, and these are uploaded into CPD. If these inputs are wrong at this stage, they will automatically be wrong in the other databases communicating with CPD. This may again affect a cost estimate and invoicing, and the client may dispute the invoice due to wrong prices charged.

12.1.1 Human error

"Exhortations to "be professional" or to "be more careful" are generally ineffective, because most errors are committed inadvertently by people who are already trying to do their job professionally and carefully"

Nia et al (Nia, Zeinolabedini, Roayaei, & Nabhani, 2010)

There have been several attempts to understand why humans make mistakes, and what precautions can be made to prevent these mistakes. In Reduction of Human Error by Inherently Safer Design (Nia, et al., 2010) they describe human error as *"Human errors is an imbalance between what the situation requires, what the person intends, and what he/she does…*".

In James Reason's article on human error (Reason, 2000) he divides human error into two approaches; the person approach and the system approach. The person approach focuses on forgetfulness, carelessness and negligence. The system approach focuses on the environment that humans work in, and make errors in. Human conditions cannot be easily changed, but it is possible to change the environment that humans work in.

In order to eliminate human errors it is of utter importance to have good procedures for quality insurance. If a task is checked multiple times by other employees, the probability of an error decreases. It is also important to establish a reporting culture (Reason, 2000). A reporting culture will capture misses and errors, and make it possible to reveal if there are any common trends between the mistakes made.

When amendments and VOR take place, these are entered manually. These prices are therefore reviewed by the BD PSL Responsible for quality assurance.

12.1.2 Reporting culture in Halliburton

Halliburton have a system called “Halliburton Observation card” – abbreviated HOC. With this system, every employee may write down positive situations or near misses. The observations are categorized into environment, facility, health safety, service quality or tools and equipment. If an unwanted situation is reported, the observer lists possible improvements, so that the situation is avoided at a later date. The “card” (a piece of paper was used earlier, but the paper card are now written in a designated database) is sent to a manager that reviews the observations. The manager must reply back to the writer on what actions are taken. It is common to go through the HOC’s during a monthly meeting, where the manager explains whether or not measures have been implemented.

It is important for Halliburton to motivate their employees to use HOC. There is no use in having a report-back system if it is not used. Employees are motivated to use HOC in multiple ways. The first thing is that some employees have goals on writing HOC in their PPR (People Performance Result). PPR are a set of goals that the employee and manager have decided that the employee should meet during a year. Another motivation is that every month, a HOC wins the monthly HOC. The writer receives a small appreciation for his or her HOC.

12.2 Vulnerability with the CLM system

I get the impression that the CLM system works well in accordance to what needs to be done. It seems that the reliability of the systems integrity functions well, but that human factor again is the source of error. Still, I have a few suggestions to small changes that I would think could benefit the users, and lead to positive outcomes.

- What are the possibilities that CLM can send out notifications directly to the clients about upcoming escalations? When the SAP Price Maintainer receives the notification about escalations approaching, he or she will contact the PSL representatives working with the contract in particular. The PSL representative will then calculate the new prices and forward this to clients. This process is exposed to human failure, e.g. that SAP Price Maintainer forgets to forward the e-mail to the BD PSL representative or that the PSL representative forgets to notify the clients, and Halliburton then looses their right to escalate their prices
- Only one person in Halliburton, the SAP price maintainer, receives notifications about upcoming escalations. If he or she gets ill or this person decides to resign from this position, it would be necessary to change the person who receives these reminders on every single contract. Perhaps it would be possible to send these notifications to a designated mailbox, where the SAP Price maintainer would be the user? It would be a time consuming task to change the receiver for every single contract.

12.3 Other observations

Even though Halliburton uses process charts for the main tasks executed by the contract administrators, and there are copies of company policies, I still get the impression that much of the knowledge sit with the people working with it, and is not well documented. This can have unwanted outcomes if some of the most experienced staff decides to resign from their work. It could perhaps be of value to make templates on how different tasks should be performed, or hold workshops so that more people get knowledge about contract administration.

12.4 Possible improvements

Two questions were sent out to a chosen number of people working with contracts and contract administration on a daily basis, to cover their view on today's processes and procedures.
Feedback on situations where Halliburton is exposed to risk

- It is important to evaluate the scope of work in the tender process. If the scope is misunderstood, this can lead to significant loss
- Regulations on catastrophic loss, insurance, patent rights and indirect loss of profit are all subject to risk for Halliburton. Legal reviews the terms in these areas in the contract, to ensure that Halliburton would avoid bankruptcy if any unwanted event should occur.

Improvements/changes to today's situation

- When a larger tender is worked on, Halliburton is obligated to host a Red Team Review (RTR). Here the pursuit leader presents the main parts in the tender, e.g. the business case, risk profile, strategy and evaluation of competitors to upper management. This meeting is held in the closing stages of the tender. A suggestion is to hold this meeting earlier in the tender process, a few days after the work has started. In this way, the focus of to the meeting is more on strategy and risk, and thereby gives the tender team some guidelines on their work ahead, and time to implement them.
- When Master Service contracts and agreements are in place, much of the work with the tender process is avoided. With such agreements, legal provisions are decided upon and the two companies are left with only needing to determine the scope, prices and other regulations in the tender phase.

12.4.1 Joint business development (JBD)

"Compared with other contracts with similar complexity and service, this co-operation requires less contract administration, and has yielded good results for both parties"

Torsvoll and Grotmol(Torsvoll & Grotmol, 1999).

There have been made successful attempts on making contract administration more effective. In the SPE article 49182 – "A new way of optimizing contract management and co-operation between operator and a service company" (Torsvoll & Grotmol, 1999) the writers describe a joint business development between Statoil and Baker Hughes. The idea came to life when Statoil, the operator, revised its contract strategy, and set goals to reduce contract

administration, improve cost efficiency and establish better co-operation with their suppliers. This was to be achieved by reducing the number of contracts and transfer responsibility to the service company.

A. Torsvoll and Ø. Grotmol describes challenges with implementing the joint business development. The two companies' strategies needed to match in order for them to establish good co-operation. A JBD structure was formed, and they created main focus areas. The team did experience lack of loyalty in the co-operation, but this was handled by spending time changing the participants' attitudes.

The benefits gained in this way of organizing the business are many. Joint strategies and goals, more efficient administration of contracts, and long term co-operation between the two companies are just some of the benefits seen when JBD was implemented.

12.4.2 Reactive vs. proactive contract management

"*It usually costs less to avoid getting into trouble than to pay for getting out of trouble*"

Louis M. Brown – known as the father of preventive Law (Haapio, 2010)

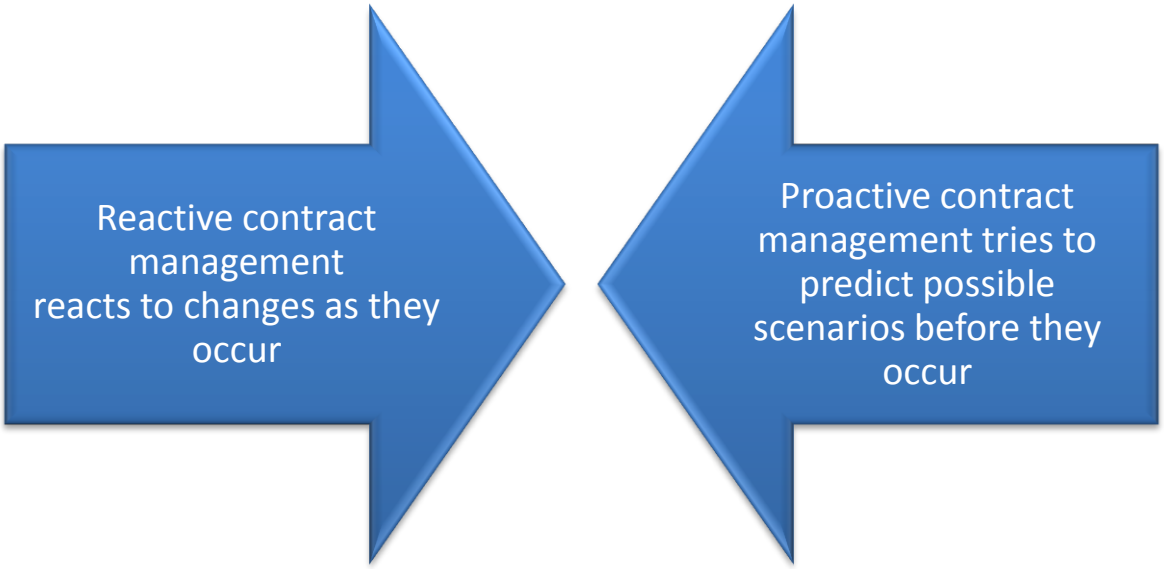

Figure 5 – Reactive vs. proactive contract management

Today most of the Operators create the contracts based on the OLF's model contract. The model contract was initiated by OLF, and both Operators and Service companies participated in the negotiations. The model contract was established to make the procurement process easier, and simplify the contract administration for both parties (OLF Board, 2007).

When model contracts are being used, parts of a contract that requires special attention may not be weighed as much as it requires.

The normal standard today is to respond to amendments and changes in the contract as they take place. This is a way of reactive contract management.

Whereas the normal standard is the reactive approach, a better way to organize the administration could be the proactive approach, see figure 5. But what is proactive contract management? The goal is to be able to predict the outcomes, and thereby eliminate surprises that again will lead to successful projects and good cooperation (Haapio, 2010). It is important to read and understand what the contract do say, and what the contract does *not* say, but may imply. Haapio lists some success factors in order to achieve a successful proactive management;

- Define clear expectations and outcomes
- Identify different situations and settings that can cause a problem to arise
- If a problem should occur, it should be solved immediately, so that no disputes occur
- If a dispute occur it should be solved without causing any harm to preserve the relationship between the parties

The most fundamental change that has to take place is then to sit down with the Operator and create a contract based on mutual expectations and a contract that is adapted to what is being delivered. In order for this to work, it is important that the companies have chosen a contract strategy that enables this collaboration and cooperation. This measure is time consuming for both the Operator and the Service Company, so it is therefore important that the people chosen to design this contract have the right attitude in order for the contract to become successful. Instead of spending time on changes to the contract, where both finance and legal are involved, the time could be spent on getting the contract right the first time around.

12.4.3 Payment

Getting paid on time is important for Halliburton, as it is for every company. As mentioned earlier BSA is used for invoicing the clients when an offshore job is finished. The Operator will then have some time to accept or dispute the invoice. But for some PSL's, there are different rules for when Halliburton can invoice the client. If an Operator orders two packers, one is set in the well, and the other is stored in the Operators warehouse for back up. Halliburton gets paid

for both packers, but can't list the second packer as payment, but as pre-paid. There is also the question on who has the risk for the second packer not installed in the well? This is an area where good clarification in the contract due to good cooperation between the two companies could yield better results.

13.0 Conclusion

Halliburton have good routines for administrating their contracts. They use databases created to service the need for keeping track of the contracts and any changes that need to take place. The databases seem to have good reliability and communicate the information in a suitable manner. The different departments; the law department, the finance department and business development have good communication and cooperation, which is important to perform the work in a timely manner.

A few potential changes in the global contract database CLM could possibly benefit the administration, making the processes less dependant on some employees and less exposed to human error. In order to reduce the number of human error, it is important to take into account the person approach, negligence and forgetfulness, and the system approach, the settings that surround humans when the mistakes are made. Making two persons quality check any important prices or information, reduces the chance for making a mistake.

Another timesaving measure is when Master Service contracts and agreements are used. With these agreements all the legal provision are already decided upon, so there is no need on spending time on these regulations during a tender, but the companies still need to decide the scope, prices and other regulations.

The change that could possibly impose the biggest positive effect is the implementation of proactive contract administration. Today, a lot of time and effort is being put on dealing with changes to the contract, but with a proactive approach, much of these changes could be

eliminated due to cooperation between the two companies in the contract. This could only be implemented if the parties focuses on identifying and pursuing common goals for their mutual benefit, and start a cooperative team, e.g. with a joint business development.

14.0 References

CNN. (2012). BP stills wants Halliburton to pay for whole Gulf Oil Spill cleanup, from http://articles.cnn.com/2012-01-03/us/us_bp-halliburton-lawsuit_1_bp-and-halliburton-blowout-preventer-cameron-international-corp?_s=PM:US

Elsey, R. D. (2007). Contract Management Guide Retrieved 17.04.2012, 2012, from http://www.cips.org/documents/CIPS_KI_Contract%20Management%20Guidev2.pdf

FOR 2006-04-07 nr 402: Forskrift om offentlige anskaffelser (2006).

Haapio, H. (2010). Proactive Contract Management in International Projects Retrieved 24.04.2012, 2012, from http://www.uwasa.fi/midcom-serveattachmentguid-680d65a6d8f7bc4d6e9b18d13f27644e/Helena%20haapio_26.1.2010.PDF

Halliburton. (2012). Corporate Profile Retrieved 20.02.2012, 2012, from http://www.halliburton.com/AboutUs/default.aspx?pageid=2458&navid=966

Halliburton Scandinavia. (2011). Velkommen til Halliburton Retrieved 20.02.2012, 2012, from http://www.halliburton.no/newsread/readimage.aspx?asset=DAM:945

Hauge, K. (2011). *Offentlige Anskaffelser*. Lecture. UiS.

Nia, B. H., Zeinolabedini, M., Roayaei, E., & Nabhani, N. (2010). *Reduction of Human Error by Inherently Safer Design: A Case Study*. Paper presented at the Middle East Health, Safety, Security, and Environment Conference and Exhibition, Manama, Bahrain. http://www.onepetro.org/mslib/app/Preview.do?paperNumber=SPE-136627-MS&societyCode=SPE

OLF Board. (2007). Procedure for revising OLF model contracts – follow-up in the OLF Administration Retrieved 12.04.12, 2012, from http://www.olf.no/PageFiles/1461/Procedure%20for%20revising%20OLF%20model%20contracts.pdf?epslanguage=no

Reason, J. (2000). Human error: model and management Retrieved 11.06.2012, 2012, from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1070929/pdf/wjm17200393.pdf

SAP. (2012). Business in Brief Retrieved 29.02.2012, 2012, from http://www.sap.com/corporate-en/our-company/inbrief/solutions/index.epx

Torsvoll, A., & Grotmol, Ø. (1999). Optimizing Contract Management and Cooperation Between Operator and Service Company. *SPE Journal of Petroleum Technology*(02). doi: 10.2118/54447-ms

15.0 Appendix

15.1 Survey

After completing interviews with key personnel, and learning about their work and tasks, I sent out two questions to finalize the analysis about the need, if any, for upgrading today's system with new features or other improvements wanted by the employees. The questions are given here:

1. Concerning your work with contracts and contract administration; are there any tasks that you consider to be more exposed to risk than others, and by making a mistake could lead to an economic loss for Halliburton?
2. Are there any improvements you would implement into today's system? E.g. changes in the processes and procedures used today, adding new features into today's system or organize the work in a different way.