DIMENSION BID — WELL INTERVENTION | PERFORATION SERVICES

Encoder/DTR Simulator
<DTR/Encoder Simulator>

Mohd Ezzatul Fahmie Bin Mahjim, CHS, Labuan
21 April 2024

This project proposal is prepared for the CHS Development Plan (CHS Improvement Project

Abstract

The Depth Time Recorder (DTR) and encoder simulator is a comprehensive system designed to replicate the functions of DTR signals and encoding processes found in communication systems. By combining hardware and software components, it accurately mimics real-world scenarios for testing and validating communication protocols and systems.

This simulator offers researchers and engineers a controlled environment to experiment with different parameters and conditions, mitigating risks associated with real-world testing. Its precision in controlling inputs and observing outputs provides valuable insights into system behavior, aiding in performance optimization and vulnerability identification. Careful design considerations ensure accuracy, scalability, and compatibility with industry standards, making the simulator a versatile tool for various applications.

Through detailed implementation and experimentation, its effectiveness in practical scenarios is demonstrated, highlighting its significance in advancing communication technology.

Introduction

The idea of creating this project is came after realize when preparing an emite job and job that using depth time recorder and encoder. Even though the equipment is function but the way of make sure of equipment function well still unclear. This situation can lead to failure while in offshore.

During the function test of DTR and encoder, the engineer tested it manually. This step required the engineer rotate the encoder manually. But this way still cannot be as confirmation of DTR and encoder are in good condition. When encoder is rotating in longer period, the reading in DTR will be some error. This simulation is created to ensure the DTR and encoder can generate a good result for the job and reduce error.

The simulation is very good practice for the engineer. This will mimic the way of DTR and encoder work in real operation. At the same time, this can help engineer to confirm that the DTR and encoder are in good condition and ready to used. By this simulation also, it can also act as proven of DTR and encoder are fully check and function well.

Problem Definition

Currently our DTR and encoder are tested without showing any document to support the test. The client has power to pointing on us because we do not have any proper document or procedure on testing our DTR and encoder.

The new comer engineer cannot imagine how DTR and encoder are working. This can cause some misunderstanding when conducting the DTR and encoder during operation. This can cause on conducting or receiving the data either is true or false.

Benefit to Dimension Bid and to Client

For the company, it would benefit as below:

1. Safety Training -Help companies foresee risks in offshore operations, like equipment failures or accidents, and understand their potential impact on people, the environment, and assets. By spotting these risks early, companies can take steps to reduce them, making operations safer and more efficient.

2. Cost Reduction -Save money by replacing expensive real-world tests, especially in offshore settings. They help companies improve equipment, training, and operations, cutting costs for maintenance, downtime, and meeting regulations.

3. Equipment Testing and Validation -Help companies check how well depth-time recorders and encoders work in different conditions. This finds problems early and improves equipment design and be a validation of the equipment are in good condition.

4. Regulatory Compliance -Help companies show they follow these rules by proving they have done thorough risk assessments, safety training, and environmental monitoring.

5. Risk Assessment and Mitigation -Companies can check

for risks in offshore operations, like equipment problems or accidents, and see how they could affect people, the environment, and assets. Finding these risks early helps companies take steps to reduce them, making operations safer and more efficient

As for the client, it would benefit in term of:

1. Help clients optimize equipment design and operational procedures, leading to increased efficiency and productivity in offshore activities.

2. Help client in validation of our DTR and encoder are function well during the operation.

Having a simulator for DTR and encoders provides a valuable tool for validating their functionality to clients. By offering simulations, our company can demonstrate the reliability and effectiveness of these devices before deployment in real-world operations. This proactive approach not only helps in ensuring client satisfaction but also protects your company from potential blame in case of failures during operations. It is a win-win situation that builds trust and confidence between your company and its clients.

Project Objectives

Main objectives of the project are to ensure the company could produce:

1. The encoder is in good condition before the job begin.

2. The depth time recorder DTR is in good condition before job begin and while running the job.

3. Simulator for depth in both slickline memory job and E-line job.

Project Deliverables

As per discussion with FSM and Head of PEXS, it was agreed that the simulation for DTR and encoder. The main purpose of the project is focus on the DTR and encoder function test and the way proven the test for the client.

At its core lies the simulation software itself, providing users with a platform to mimic the operation of depth-time recorders and encoders across different conditions. This simulation is accompanied by a user-friendly interface. It is allowing for easy

navigation, configuration of parameters, and visualization of simulation outcomes.

To aid users in effectively utilizing the simulator, comprehensive documentation is provided, offering guidance on installation, setup, and usage. This can be a proven that help client trusts our equipment in good condition.

Additionally, training materials such as tutorials and videos may be included to assist users in mastering the simulator's functionalities. Ongoing support services ensure that users can receive assistance with any inquiries or issues they encounter, while updates and maintenance efforts ensure it remains up-to-date and functional.

Project Time Line

This project expected to be completed in 3 months. Allocation time a month for the draft, a month for the amendment and a month for review and approval.

Project Resources

This project involved a person who have experience and knowledge on using DTR and encoder. After done with the draft, it will be reviewed by another panel to confirm the function of the equipment and procedure of equipment. After amendment has been done, it will be record tested for approval to management.

Main objective of this project is to ensure the DTR and encoder are function well by providing the client with proven document. This also help the engineer mimic the operation of using DTR abd encoder in real time operation.

Sources are collected from all the engineer and maintenance team that has experience on operating the DTR and encoder. There is no third party involved in this project.

Project Cost
No cost is incurred in this project by Dimension Bid.

Project Risks

Expected risk would be:

1. User Training - Users may require training to effectively

utilize the simulator and interpret simulation results accurately. Inadequate training could lead to misunderstandings or misinterpretations of simulation outcomes.

2. Overreliance on Simulations -Depending too heavily on simulations without real-world validation can lead to complacency or a false sense of security. It's essential to use simulations as a tool in conjunction with real-world testing and validation.

3. Accuracy Limitations -May not perfectly replicate real-world conditions, leading to discrepancies between simulated and actual performance. This could potentially result in misleading conclusions if not carefully validated.

Conclusion

By implementing this project, our ultimate goal is to ensure the DTR and encoder are in good condition by supporting document. This can also help our client on trusted our equipment are in good condition.
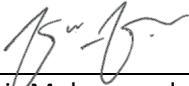
If this project is successful, this can be also a simulation for new comer engineer to have a view for the DTR and encoder are operated in real operation. This simulation also help new engineer to understand the function of DTR and encoder very well.

Notes:
This proposal should be kept to a maximum of 6 pages.
Any supporting documentation should be attached in the

	Prepared and Submitted By:	Verified By:	Approved By:	Acknowledged By:
Sign:	*fahmie*			
Name:	Mohd Ezzatul Fahmie Bin Mahjim	Mohd Ismady Bin Ismail	Faris Mohammad Firdaus	Zahir Manan
Position:	Junior Field Engineer	Head of PEXS	Field Service Manager	Operation Manager
Date:	3/5/2024	3/5/2024	3/5/2024	3/5/2024

Appendix: