

ANALYSIS OF ROV OPERATIONS IN AQUACULTURE.

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EXPPOSED

OBJECTIVE

The overall objective of this master thesis is the analysis of current ROV operations in Norwegian aquaculture, with respect to operational requirements, procedures and documentation. The purpose is to get in touch with relevant companies and gather information from their point of view.

The analysis should be used to discuss whether ROV operations can be used in reducing risk in exposed aquaculture operations. It will further consider if ROVs create better or worse solutions by assessing strengths, weaknesses, challenges and costs, as compared with divers.

BACKGROUND

The Norwegian aquaculture is an important source of food, nutrition, income and employments around the world [1, 2]. The coastline has limited space, and Norwegian fish farmers express a desire and ambition to use the more exposed locations, because these waters are believed to have several advantages, both to the fish (better water quality), and the environment (less waste products in the fjords) [2, 3].

Several aquaculture cleaning and maintenance operations today are highly dependent on manual labor, which leads to close human interactions either in form of personnel operating from the floating ring around the cage, or by divers working on the cage structure. Aquaculture is considered to be one of the most dangerous occupations in Norway when it comes to risk. Associated accidents such as drownings and falls are common. Main challenge when moving towards more exposed areas is the extreme weather that will cause higher risk for damage to the cages and increased risk for the operating crew. Daily routines on fish farms will also be harder to implement [4].



METHODOLOGY

The methodology for this master thesis has mainly been fieldwork, interviews and literature reviews. The student has been on three field trips, visiting one fish farm and two service companies, observing the daily routines and conducted interviews. Interviews have also been conducted over the phone, and through email. Literature have been used to support the knowledge gained from the companies.

The main focus has been on talking to service companies. In addition, breeders and equipment producers have been contacted to cover a broader range of today's situation, and also to follow up some of the information gained from the service companies.

Involved companies so far:



RESULTS SO FAR

Working in the aquaculture industry is both hectic and varied. Almost all service companies said their days can not be fully planned, because of sudden emergency situations that have to be prioritized.

The biggest challenge with divers is operation time, since a diver can only dive for a certain time depending on operational depth. It is very common for divers to work with ROVs. They are considered very robust and reliable, and with unlimited working time, which give several advantages. The thesis will focus on three operations: Cage inspection, mooring inspection and washing. All operations are documented electronically after completion.

For ROV operations, all companies agree that weather is the biggest challenge, and that it often causes operations to be canceled, because of lack of launching opportunities and/or sight under water. Delayed operations over time can give critical consequences.



CONCLUSION

The industry is currently not ready to go offshore. There are some equipment that needs improvements before they are applicable. ROVs are here to stay, and most companies agree that these are reliable enough to be used offshore as they are today. They are most necessary, but will probably never be able to fully take over for a diver. Safety for humans will definitely increase by increased use of ROV.

REFERENCES

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