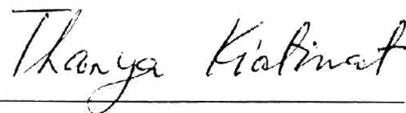


Watana Wichienrut 2007: The Study of Equipment Failures to Improve Maintenance System and System Reliability: A Case Study of Booster Compressor System on Offshore Gas Production Platform. Master of Engineering (Safety Engineering), Major Field: Safety Engineering, Interdisciplinary Graduate Program. Thesis Advisor: Associate Professor Thanya Kiatiwat, Ph.D. 102 pages.

Crude oil and natural gas are flammable. Consequently, leakage affects safety and the environment. Therefore, offshore oil and gas processing equipment must be highly reliable. The study of equipment failures in booster compressor system on an offshore gas production platform, specified into 3 major components have caused a lost production opportunity of 3,443,567 US dollars in 2006. A review of current maintenance system on these components was also conducted. Part Replacement Preventive Maintenance (PM) was proposed to replace the existing Break-down Maintenance. The preventive maintenance intervals of 8, 4 and 2 per year were then analyzed. The study revealed that the maintenance intervals of 2 per year yielded the highest benefit to cost ratio of 18.9 to 1. Where, the intervals of 4 and 8 per year yielded the benefit to cost ratio of 9.5 to 1 and 4.7 to 1, respectively. It is expected that once the revised maintenance system is implemented, availability of the booster compressor system would increase approximately from 89.46 to 94.96 percent. Also, lost production opportunity would be significantly reduced approximately from 6,269,229 to 2,997,322 US dollars or 3,271,907 US dollars saved production cost per year. However, total cost of maintenance and planned maintenance downtime will increase by approximately 181,772 US dollars per year. Study of equipment failures for adjusting maintenance system of critical equipment at appropriate intervals can improve equipment reliability and cost effectiveness.



Student's signature



Thesis Advisor's signature

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