

**THESIS**

**PIPELINE EMERGENCY SHUTDOWN VALVE (PESDV) INTEGRITY  
STUDY: CASE STUDY OF UNOCAL THAILAND LIMITED**

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**A Thesis Submitted in Partial Fulfillment of  
the Requirements for the Degree of  
Master of Engineering (Safety Engineering)  
Graduate School, Kasetsart University**

**2007**

Apiwat Soontornmitrapab 2007: Pipeline Emergency Shutdown Valve (PESDV) Integrity Study: Case Study of Unocal Thailand Limited.  
Master of Engineering (Safety Engineering), Major Field: Safety Engineering, Interdisciplinary Graduate Program. Thesis Advisor: Assistant Professor Jarun Chutmanop, D.Eng. 116 pages.

Pipeline Emergency Shutdown Valves (PESDVs) are safety critical elements of all hazardous process plants. They permit the isolation and segregation of hazardous inventories in sections of the plant so that, in the event of an emergency (such as a leak), the operations personnel have the ability to minimize the hazardous inventories involved and mitigate escalation. The valves should be closed to isolate the inventories effectively. Failure to close the valve and seal off the hazardous substances could cause catastrophic loss of life and assets during an emergency situation.

Most companies have valve maintenance programs in place, but these programs are often not comprehensive enough. This is caused by the limitations of the production demand and technologies. This study reviews the reliability and effectiveness of a specific program and its PESDV components against the known codes and standards such as SI 1989/1029 and API RP 14C. The study classified the valves by risk and historical data, and then applied possible testing opportunities and modern technology, stroke testing, to investigate the best means of evaluating the reliability and effectiveness of pipeline ESDVs.

The results of this study indicated that the application of the related codes, standards and modern technologies and qualitative risk assessment will benefit the development of a reasonable risk based guideline in order to manage the testing of PESDVs in the Gulf of Thailand Oil and Gas Exploration and Production industry.

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Thesis Advisor's signature

## **ACKNOWLEDGEMENTS**

Three resources were critical to the success of this thesis. First, my advisors Asst. Prof. Dr. Jarun Chutmanop, Thesis Advisor and Assoc. Prof. Dr. Thongchai Srinophakun, Major Subject Committee Member provided key guidance and support. Their continuous advice helped focus the study and made the target of the thesis clearer and clearer until meet the objectives were achieved.

The second key support group was composed of three gentlemen who guided me in my career: Mr. Graham Dryden, the former Engineering & Construction Director at Unocal Thailand Limited, Mr. Scott T. Hansen, the Facilities Engineering Manager, Chevron Thailand Exploration and Production (CTEP) and Khun Chaiwat Yawapamong, OE-HES Manager, CTEP. They fully supported my voluntary education program and were flexible regarding the specific time constraints and work scheduling during the study.

The last group includes the people around me who gave me full time support. They are my family, my classmates, and my special friends, Khun Atuek Chuglin, Maintenance Advisor, who helped me on the maintenance historical data., Mr. John Edmed, Safety Engineer, who provided outstanding advice and wonderful guidance. Without the consistent support and sharing of these individuals, this thesis would not have been a success.

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February 2007