Narongsak Dapthuk 2014: Risk Assessment of Securing Material in Natural Gas Exploration and Production for Road Transportation. Master of Engineering (Safety Engineering), Major Field: Safety Engineering, Faculty of Engineering. Thesis Advisor: Assistant Professor Chansiri Singhtaun, D.Eng. 100 pages.

The research studies the risk from road transportation of materials and equipment used for natural gas exploration and production operation. The study used the Fault Tree Analysis (FTA) and What-if Analysis techniques to identify hazards and conducted risk assessment aligning with the regulatory of theMinistry of Industry (1999) and regulationof the Department of Industrial Work entitled the Strategy of Factory Safety and the Indicators of Danger(2000).

This study divided into 3 phases: first, hazards preventive identificationusing What-If Analysis technique and analyzing the possible root causes of road incidents both before and after the occurrence of the incidents using Fault Tree Analysis (FTA) methods; secondly, conducting risk assessment and risk level prioritization; and lastly, developing risk management plan in order to reduce and control risks. In risk management phase, four cases of road accidentswhile transporting the material in natural gas exploration and production business which occurred in Songkhla province from 2007 to 2011 were analyzed. The result indicates that the highest risk level was level 3 (high risk). One of the main factors of road incidents of transporting was due to no specific regulations for lashing materials and equipment. Therefore, therisk management planwas developed by proposing the calculation method to appropriately calculate number of lashing straps needed. Outcome of the proposed calculation shows more number of lashing straps suggested for use when comparing with the simple calculation means that has been using currently.

After conducting the field experimentation by transporting 8-feet container with weight of 6-tons, the resultof using the number of lashing straps calculated by the proposed calculation method showed that the tension force in each lashing strap was 0.13% of the load or 8 kilograms. While using the number of lashing strap, which was calculated by the current calculation practice, the tension force in each lashing strap was 14.67% of the load or 880 kilograms. Although this force could not wear out the lashing belt, it proved that the materials that were transported could be fallen during transportation. It is therefore suggested to use the number of lashing straps according to the proposed calculation method in this research.

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