

# Analysis The Influence Of Safety Incentive And Safe Behavior In Improving Safety Performance At Lng Company Bontang East Borneo

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**ABSTRACT:** One of the largest LNG plants in the world located in Bontang East Borneo. As a form of commitment from top and middle management to prevent and reduce accidents in LNG Company continue to make improvements in all areas, one of which runs safety incentive programs. The aim of this study was to analysis the influence of safety incentive and safe behavior towards safety performance. This study uses a quantitative method with cross sectional. Population of this study were 947 workers uses Proportional Simple Random Sampling technique by the sample size were 90 workers. Data were collected by questionnaire. The results of the study showed (54.4 %) had levels of safety incentive a good understanding, (54.4%) of respondents have a good safe behavior based on the suitability of the use of PPE, the operation of the tool according to the SOP and (54.4%) has a good safety performance. Some variables safe behavior, safety incentive, knowledge about OHS (Occupational Health Safety), perception and motivation has significant influence on safety performance. Variables safety incentive, perception of the danger, and motivation has influence on safe behavior. The variable knowledge about OHS has not significant influence on safe behavior. The study showed the influence of safety incentive and safe behavior towards safety performance. Therefore, required increase safe behavior through training BBS (Behavior Based Safety).

**Keywords :** Liquid Natural Gas Company, Safety Incentive, Behavior Based Safety, Safety Performance, Bontang East Borneo

## 1 INTRODUCTION

Cooper (2001) states that even hard controlled correctly, 80-90% of whole work accident caused by *unsafe behavior*. Cooper's opinion (2009) are supported by *National Safety Council* (NSC) research result (2011) showing that the cause of working accident 88% of *unsafe behavior*, 10% because unsafe condition and 2% unknown cause. Another research conducted by *DuPont Company* (2005) showing that working accident 96% caused by unsafe behavior and 4% caused by unsafe condition. Based on those research results, concluded that human behavior is the important element caused working accident (Cooper, 2009). Therefore, it is need a behavior approach to prevent the working accident. Behavior based safety is systematically application from psychology research about human act toward safety in the work place (Cooper, 2001). On the principle, this is a good way to get better working performance (Cooper, 2001). Safety performance include safety organization and management, safety tools and safety procedure, accident statistic, and training and safety evacuation, accident investigation and practice of safety training (Wu *et al.*, 2008). *Safety performance* will be defined as the quality of working related to the safety as the way to conduct safety effort. Safety performance can be assumed as part of total organization performance (Wu *et al.*, 2008). The improvement of safety performance in an organization can decrease the risk of accident through implementation of behavior in working to whole of working place. Safe behavior is form of behave, so, the approach that can be conducted to decrease or prevent accident is behavior approach. Based on model *Antecedent-Behavior-Consequence* (ABC), behavior is influenced directly by certain behavior. Behavior is everything can be measured directly by the workman, including talking, acting, and doing functional physic. Consequence is things that can be determined those behavior will repeat (Geller, 2001). Factor relating to the safe behavior included individual factor (motivation, perception, and knowledge about OHS) and organization factors (management rule, procedure rule OHS safety campaign,

safety incentive). As part of safety system and health management, many companies using safety incentive program in motivating their employees to be safe in act. These programs giving reward like cash, food, stuffs and public recognition. Company can give those rewards based on individual work performance or group depend on program design (*Government Accountability Office*, 2012). The aim of this study to analyze the influence of safe behavior toward safety performance and analyze the influence of safety incentive toward safety performances in LNG company.

## 2 MATTER AND METHOD

Plan design of this research is cross sectional study by using quantitative analysis. Time of research was conducting on November 2014-February 2015. Populations of this research are 947 people. Based on counting determination with sample taking technique by using *Proportional Simple Random Sampling* obtained 90 respondents from 12 work units. Research variable consist of independent variable with individual characteristic (age, gender, working time, work position, and education level), safe behavior and safety incentive and variable dependent namely safety performance. Technique of data collection was using in-depth interview technique, data measure about safe behavior and safety incentive (organization program) from secondary data obtained about safety performances, investigation of data report was conducting measurement and reliability of instrument (questionnaire) about individual factor, safe behavior, safety incentive and safety performance. Analysis differential conducted by connecting two variables namely independent and dependent variable. These analysis conducted to able to know the influence of individual factor influence (knowledge about OHS, perception of dangerous, and motivation), safe behavior and safety incentive with safety performance, and correlation analysis of individual factor influence (knowledge about OHS, perception of dangerous, and motivation) and safety incentive with safe behavior by using regression logistic test. This kind of test using accurate

tescale for independent variable and using nominal scale measurement for its dependent variable.

### 3 RESULT

#### Distribution of safety incentive comprehension in LNG Company.

Based on the table 1, as many as 54.4% of 90 respondents with good knowledge of safety incentive program, known with mean score 12.5 with minimum score 6 and maximum score 16. Variable measured by 4 questions to know the respondent's comprehension relate with safety incentive program. Generally, respondent know the safety incentive program is a form of reward when workers with safe behavior in working to the company have made effective program in effort to improve safety performances.

**Table 1.** The frequency distribution of safety incentive to respondents in LNG Company 2015

Category	Frequency	Percentage (%)
Less	8	8,9
Sufficient	33	36,7
Good	49	54,4
Total	90	100,0

#### Distribution of safe behavior on labor in LNG Company.

In this study, carried out the data collection based on a questionnaire about safe behavior, results of questionnaire scores of safe behavior variables, known mean value of 49.13 with a minimum score of 30 and a maximum score of 62. Known more than half of 54.4% of respondents have a good safe behavior. These variables are seen based on the appropriateness of use of PPE, the operation of the apparatus according to the SOP, and prudence in the works. In general, workers always use appropriate PPE when working, always operate the work equipment in accordance operational procedures are known, always put the materials and tools in place, and always remind co-workers in order to work safely.

**Table 2.** Distribution of the frequency of safe behavior on LNG Company of respondents in 2015

Category	Frequency	Percentage (%)
Less	41	45,6
Good	49	54,4
Total	90	100,0

Based on Table 2. The respondents who have less category by 45.6%. Therefore, it is necessary to do OHS based programs improving the behavior of safe behavior.

#### Distribution of safety performance in LNG Company

Based on the results of recapitulation questionnaire of Table 3, it can be seen that more than half of the respondents (54.4%) had a good safety performance. In this thesis, safety performance is the quality of safety-related work.

**Table 3.** The frequency distribution of safety performance on the respondent in LNG Company 2015.

Category	Frequency	Percentage (%)
Less	41	45,6
Good	49	54,4
Total	90	100,0

Variable safety performance measured by 10 questions based on the Key Performance Indicator (KPI) as results of oriented indicators (lagging indicators) and moving indicators (leading indicators). Based on this study, a total of 45.6% had less because of safety performance by committing such traffic in the area as much as 29 respondents LNG Company, making the damage as much as 4 responder tools, and never experienced a fire accident by 2 respondents, never experienced anything near miss as many as 6 respondents .

**Table 4.** Results of Safe Behavior Variables Inferential Analysis, Safety Incentive with Safety Performance in LNG Company of Bontang 2015

Independent Variable	Dependent Variable : Safety performance			Conclusion
	Sig.	B	Exp(B)	
Safe Behavior	0,001	0,230	1,259	Significant
Safety Incentive	0,013	0,376	1,457	Significant

The table above shows the significance <0.05 on safe behavior variables, safety incentive. It is proved that safe behavior and safety incentive significant effect on safety performance, R-square values for logistic regression is 0.745. This value can be interpreted that the variable safe behavior, safety incentive able to explain the variation in the variable Safety performance was 74.5%, remaining 25.5% of the variation is explained by other variables.

### 4 DISCUSSION

#### Influence of safety incentive to safety performance in LNG Company

In the world of working, occupational safety approach to behavior ranging widely implemented by implementing various programs in an effort to improve safety and safe work behavior. One of these safety incentive programs that are part of the system of occupational safety and health management, and is widely used in companies in order to promote safety in the workplace (Duff et al, 1993). The program includes safety rewards with giving rewards to workers in achieving a certain safety. Examples, include cash awards, food, tangible goods, and public recognition. The Company can provide such benefits on the basis of individual or group performance depends on the design of the program (Government Accountability Office, 2012). The safety incentive program is a safe behavior-based program reward employees that can be used as a proxy for safety performance. Basically everyone will feel appreciated and tend to repeat behavior that is rewarded is good if when it played a role in increasing or maintaining safety performance. In LNG Company of safety incentive program was started from things that are as simple as the contribution of workers in the manufacturing performance STOP CARD which now becomes AWAS CARD, exemplary worker, best Safety Talk, until the achievement of safe working hours starting 10 million, 27 million, 40 million, 50 million and 65 million in 2014 either for LNG Company or Partners. The purpose of safety incentive programs in LNG Company is to provide motivation to workers in an effort to change safety culture in the company and make that safety become the responsibility of each worker. The results showed a significant effect of safety incentive to safety performance. This is consistent with previous research by Guastello (1993) and Smith (1997) that the safety incentive program will affect the safety performance.

## The influence of safe behavior toward safety performances in LNG company

According to Bird dan Germain (1992) safe behavior is the act can be caused the occurrence of accident or incidence. It is supported by Heinrich (1931) that safe behavior is act or action of somebody or some workers who will reduce the possibility on work accident. LNG company conducted two approaches in effort to improve a good safety work either reactively or proactively. Reactive means the effort of traced from unsafe or risky behaviors that result in losses. Proactive safety efforts traced means of safe behavior that produce a successful proactive approach to accident prevention is the underlying labor of LNG Company to predict factors that can lead to an increase in safe behavior. AWAS program (aware for safety), is one of the proactive programs that run LNG Company with the aim to improve and enhance the safe working behavior through observation and communication as well as preparing reports using observation card. LNG companies in their implementation of the AWAS program online has improved significantly increase observation cards and lowering indices unsafe behavior (unsafe acts index) as expected. The results of this study, showing there is no significant influence of safe behavior with safety performance. Most respondents have a good safe behavior. Proactive efforts undertaken LNG Company is considered more effective in improving workplace safety because they do not have to wait for the occurrence of unsafe behavior that led to the accident or loss beforehand. The results of previous studies by Mulyana (2010) who found that statistically the relationship between safe behavior by the accident in PT. X. The results Mulyana (2010) stated in the conclusion that the safe behavior can prevent or reduce the incidence of workplace accidents.

## CONCLUSIONS

1. There is a significant influence toward safety incentive and safe behavior toward safety performances in LNG company Bontang East of Kalimantan
2. Safety incentive program in LNG company is specific program as a way to motivated the workers and involving workers to contribute toward safety working program
3. LNG company conduct two approaches in term of improving safety working either reactive or proactive. Reactive means safety working effort traced by unsafe behavior or risk of loss. Proactive means safety effort traced by the safe behavior created a preventive working accident.
4. There is influence of safe behavior toward safety performance in LNG company
5. There is influence of safety incentive toward safety performance in LNG company

## SUGGESTIONS

1. To improve safe behavior though BBS (*Behavior Based Safety*) training program aimed to practice and improve the ability in understanding concept and strategic of implementation BBS in the company as systematically and comprehensive.
2. The company should pay attention about reward and punishment innovation in order to give more motivation to the workers in controlling dangerous.
3. Repairing the format of STOP card reporting by providing observation toward workers as one of the way to improve the implementation of BBS continually and consistently. It

is aimed in order the unsafe behavior and will not be repeated.

## 5 REFERENCES

- [1] Bird, F.E., G. L. Germain. 1992. Practical Loss Control Leadership. International Loss Control Institute: USA.
- [2] Cooper, D. 2001. Improving Safety Culture: A Practical Guide, Applied Behavioral Science. UK.
- [3] Cooper, D. 2009. Behavioral Safety a Framework for Success. BSMS Inc: Indiana.
- [4] Duff, A.R., Robertson, I.T., Cooper, M.D., Phillips, R., and United Kingdom Health and Safety Executive (HSE). 1993. Improving Safety on Construction Sites by Changing Personnel Behavior. HSE Contract Research Report No.51/ 1993 (sitasi 23 Oktober 2014).
- [5] DuPont Company. 2005. No Walking the Talk: DuPont's Untold Safety Failures. <http://assets.usw.org/resouces/hse/resources/walking-the-talk-duponts-untold-safety-failures.pdf> (sitasi 28 Oktober 2014).
- [6] Government Accountability Office. 2012. Workplace Safety and Health Better OSHA Guidance Needed on Safety Incentive Programs. Report to Congressional Requesters: United States (sitasi 13 Desember 2014).
- [7] Geller, E.S. 2001. Woring Safe: How to Help People Actively Care for Health and Safety. 2nd edition. CRC Press LLC: USA.
- [8] Guastello, S. 1993. Do we really know how well our occupational accident programs work? Safety Science, 16, 445-63 (sitasi 26 September 2014).
- [9] Heinrich, H.W. 1931. Industrial Accident Prevention: a Scientific Approach. McGraw-Hill.
- [10] Mulyana, S. 2010. Hubungan Safety Behavior dengan Kecelakaan Kerja dalam Penerapan Zero Accident di PT. X. Skripsi. Universitas Diponegoro: Semarang.
- [11] Nasional Safety Council. 2011. Injury Facts, Edition. Itasca, IL: Author (sitasi 12 September 2014).
- [12] Smith, T.A. 1997. What's Wrong with Safety Incentives? Professional Safety, May, 44 (sitasi 15 Januari 2015).
- [13] Wu, T.C., Chen, C.H., Li, C.C. 2008. A correlation among safety leadership, safety culture and safety performance. Journal of loss prevention in the process industries. Vol. 21, pp. 307-31