UNIVERSITI KEBANGSAAN MALAYSIA (UKM)

Faculty of Science & Technology

Managing Radiation Safety in an International Oil Service Company in Malaysia – Comparison with Best Practice

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I PROPOSAL IDENTIFICATION

A Research Title

MANAGING RADIATION SAFETY IN AN INTERNATIONAL OIL SERVICE COMPANY IN MALAYSIA – COMPARISON WITH BEST PRACTICE

B Key Words

Managing radiation safety, international oil service company in Malaysia, best practice

C Student

D Degree and Institution

Master in

E Supervisor

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G Summary

……. is an American oil service company whose headquarters is in Houston, Texas. They have operations in more than ninety countries worldwide and in Malaysia their current bases are situated in Kemaman, Terengganu and Labuan, East Malaysia. Among others, they provide services for drilling, formulation, evaluation, completion and production of oil and gas wells. Cs-137 and Am241Be are the common sealed radioactive sources used while providing these services. Proper management of radiation safety is vital to protect the workers, members of the public, property and environment from the harmful effects of ionizing radiation. The research compares the current practice of managing radiation safety of the company in Malaysia with the best practice as recommended in the guidelines by the Malaysian Atomic Energy Licensing Board (AELB). In addition, the study is also aimed at identifying existing gaps and make recommendations on further improvements to strengthen the managing of radiation safety in the company.

II OBJECTIVES OF THE RESEARCH

This research carries four objectives, as follows:

1. To determine the current practice of managing radiation safety in an international oil service company in Malaysia;

2. To evaluate the extent by which the current practice of managing radiation safety in an international oil service company in Malaysia in comparison to the currently available best practice;

3. To identify gaps currently faced in managing radiation safety in an international oil service company in Malaysia; and

4. To make recommendations on further improvements to strengthen the managing of radiation safety in an international oil service company in Malaysia.

III RESEARCH BACKGROUND

A Rationale of the Research

There are number of local and international oil service companies operating in Malaysia deploying radioactive sources especially sealed sources in oil exploration work. Currently, the Malaysian Atomic Energy Licensing Board (AELB) has been established to regulate and control atomic energy activities throughout the country to ensure that such activities are being handled safely and not to endanger the workers, members of the public, property and the environment (AELB. 2007 Guides: 34). AELB provides guides to these companies on managing radiation safety (AELB. 2007 Guides: 26). This research enables us to investigate, compare, identify and improve existing methodology used by an international oil service company operating in Malaysia in managing radiation safety. In addition, the results of the study will be very useful as a guide to identify and improve their management of radiation safety.

B Present Status of the Subject

In Malaysia, the use of all forms of radioactive material of substantial amount or an irradiating apparatus that emits ionizing radiation for beneficial use in the industrial or medical sector must have an approved license from the Malaysian Atomic Energy Licensing Board (AELB) (Act 304. Malaysia. 1984). All licensees will be required to follow certain guidelines in managing radiation safety as part of the license requirement

to ensure their activities are being handled safely and not to endanger the workers, members of the public, property and the environment.

……. (M) Sdn. Bhd., is an international oil service company operating in Malaysia with bases in Kemaman, Terengganu and Labuan, East Malaysia (… 2006). They deploy radioactive sealed sources from these bases to the rig-site offshore in their oil exploration work. Periodically many sets of sources are transported to and fro between these offshore locations and their respective land bases, where they are inspected and stored before being deployed again. The company has a valid license with AELB since starting out in Malaysia from 1993 (Act 125. Malaysia 1965). Talisman (Talisman TML/D53015. Malaysia 2007) and Murphy (Murphy D096. Malaysia 2006) are their current customers that use their drilling services.

All licensed oil service companies dealing with radioactive sources ensure that as a bare minimum, they adhere to the requirements as stipulated in their license. In this context, when looking at managing radiation safety, each oil service company will have their own strategy and 'recipe' of dealing with this, based on their available resources, personnel strength and expertise. Radiation safety is the sole responsibility of these companies (Act 514. Malaysia 1991) and the 'bottom-line' is to ensure the workers, members of the public, property and the environment are protected from the harmful effects of ionizing radiation. Currently, there has not been any academic study in detail conducted on companies handling radiation sources with regards to best practice in Malaysia.

C The Strength and Significance of the Research

The strength of this research is the genuine approach to evaluate the current practice of managing radiation safety in ….. (M) Sdn. Bhd., with best practice as provided in the AELB guidelines and justify that the company is sincere in ensuring the protection of the workers, members of the public, property and the environment against the harmful effects of ionizing radiation is much more important than merely meeting the 'basic' license requirements.

In the process, inevitably gaps will be identified and recommendations made to further improve and strengthen the managing of radiation safety which is the significance of the research.

D References

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IV RESEARCH APPROACH

A Research Methodology

This research will be carried out in five stages (methods), as follows:

Stage 1: Literature Review

This stage involves a literature review on the current status of ……. (M) Sdn. Bhd. managing radiation safety and to identify the best practice as recommended in the AELB guidelines – looking at organizational structure of the management of radiation safety, training and competencies of radiation workers, record keeping, source safety and security, source

tracking, source accounting, Dosimetry administration and managing abnormal and emergency situations.

Stage 2: Formulate Questions and Determine Participants

Based on the findings in Stage 1, a set of questions are formulated in a questionnaire form. The questions set will identify the key requirements necessary, with the aim of investigating how they are going to be met from each individual point of view. A Lickert scale type of questionnaire will be used. The participants are determined from the company's staff, directly or indirectly involved in managing radioactive sources as well as their customers. These participants will be made up of managers, supervisors, workers, support staff and customers.

Stage 3: Conduct Survey

The questionnaire forms will be sent to the respondents by e-mail. This will be followed up with interviews to be carried out following the receipt of the responses to the questionnaire. The purpose of this interview is to get more detailed feed back so as to make conclusive comparison with the evaluation criteria and eventually come up with effective improvement suggestions.

Stage 4: Data Compilation and Interpretation

Data will be compiled as follows: (a) Number of respondents based on their experience in working with radioactive sources, (b) Number of respondents based on their designation in the company involved with sources, (c) Number of respondents based on their awareness of the key requirements in managing radiation safety in comparison with best practice (d) Identifying areas that need to improve and strengthen the managing of radiation safety in the company based on the feed back of the follow-up interview. Statistical analysis of the data collected will be made and inferences and conclusions determined from the results.

Stage 5: Report Writing and Submission

It is estimated that the project paper will comprise of the following chapters: (a) Introduction, (b) Objectives, (d) Methodology, (e) Results and Discussion, (f) Conclusion and Recommendation.

B Research Activities

The research activities covering the three-semester period of study are as follows:

1. Literature Review (June – October 2008)
   A literature review on the current status of …… (M) Sdn. Bhd. managing radiation safety and to identify the best practice as recommended in the guidelines (key requirements for managing radiation safety) – looking at organizational structure (including roles and responsibilities of managers, Radiation Protection Officer [RPO], RPS and radiation workers), training and competencies of RPS and radiation workers, record keeping, source safety and security, source tracking, source accounting, Dosimetry administration and managing abnormal and emergency situations.

2. Formulate Questions and Determine Participants (November – December 2008)
   Based on the literature review, a set of questions will be formulated in a questionnaire form. The questions set will identify the key requirements necessary, with the aim of investigating how they are going to be met from each individual point of view. The questionnaire form will consist of three sections, namely: **Section A:** General Information of Respondent; **Section B:** Key Requirements Identified for Managing Radiation Safety (Respondents Awareness) – looking at roles and responsibilities, training and competencies, record keeping, source safety and security, source tracking, source accounting, Dosimetry administration and managing abnormal and emergency situations; and **Section C:** Recommendation (for improvement). A Lickert scale type of questionnaire will be used. The participants are determined from the company's staff, directly or indirectly involved in managing radioactive sources as well as their customers. These participants will be made up of managers, supervisors, workers, support staff and customers.

3. Conduct Survey (January – February 2009)
   The questionnaire forms will be sent to the respondents by e-mail. A total of at least 30 respondents have been identified. This will be followed up with interviews to be carried out following the receipt of the responses to the questionnaire. The purpose of this interview is to get more detailed feed back so as to make conclusive comparison with the evaluation criteria and eventually come up with effective improvement suggestions.

4. Data Compilation and Interpretation (March 2009)
Data will be compiled as follows: (a) Number of respondents based on their experience in working with radioactive sources, (b) Number of respondents based on their designation in the company involved with sources, (c) Number of respondents based on their awareness on each of the key requirements in managing radiation safety in comparison with best practice (d) Identifying areas that need to improve and strengthen the managing of radiation safety in the company based on the feed back of the follow-up interview. Statistical analysis of the data collected will be made and inferences and conclusions determined from the results.

5. Report Writing and Submission (April - May 2009)
It is estimated that the project paper will comprise of the following chapters: (a) Introduction, (b) Objectives, (d) Methodology, (e) Results and Discussion, (f) Conclusion and Recommendation.

C Key Milestones of the Research

The progress of the research will be monitored through three key milestones, as follows:

Key Milestone 1 (December 2008)

Completion of Questionnaire form, ready for distribution to the respondents.

Key Milestone 2 (March 2009)

Completion of collection of completed questionnaire forms from respondents and interviews, data is ready for interpretation.

Key Milestone 3 (May 2009)

Completion of Research project (write-up)

The research activities are shown in Appendix 1.

D Risks of the Research

Risks	*Degree of Risks*
Possibility of reduced number of respondents from the managerial/supervisory staff (*Technical risk*)	Low
Effect of reduced number of respondents feed-back received (*Time-related risk*)	Medium
Possible requirement to visit locations for data acquisition (*Cost-related risk*)	Medium

V BENEFITS OF THE RESEARCH

It is anticipated that the findings of this research will benefit the following sectors:

Knowledge

Able for the company to understand their current status of managing radiation safety in comparison to the best practice.

At……

An opportunity to identify gaps to improve and strengthen the managing of radiation safety as a way forward.

Public Sectors

To look at the actual implementation of the guidelines by an oil and gas company as a role model for other companies in the relevant field.

Private Sectors

An opportunity to learn, improve and strengthen their methodology of managing radiation safety.

Appendix 1

Table of Research Activities

Research Activity	2008							2009				
	J	J	A	S	O	N	D	J	F	M	A	M
Literature Study	X	X	X	X	X							
Formulate Questions and Determine Participants						X	X					
Key Milestone 1							**K1**					
Conduct Survey								X	X			
Data Compilation and Interpretation										X		
Key Milestone 2										**K2**		
Report Writing & Submission of Dissertation											X	X
Key Milestone 3												**K3**

K1 Completion of Questionnaire form, ready for distribution to the respondents.

K2 Completion of collection of completed questionnaire forms from respondents and interviews, data is ready for interpretation.

K3 Completion of Research project (write-up) & submission.