



CUTTING TECHNIQUE STRUCTURE USING
EXPLOSIVE SHAPE CHARGE

ROEMANIZAM BIN ABDUL RAJAK
97184905

ABDUL AZIZ BIN MANSOR
97392655

DIPLOMA IN MECHANICAL ENGINEERING

UNIVERSITI TEKNOLOGI MARA

OCTOBER 2002

Acknowledgement

This acknowledgement is especially for our parents who have done a lot of sacrifice to see our success.

Also our acknowledgement to Prof. Madya Zamri Abdul Rahman who has guided us in many ways towards the fulfillment of the project and also to all the UiTM lectures and staff of PETRONAS (Kerteh), PETROSAINS (KLCC) and to all of our friends namely Nik Ahmad Syihan, and to Miss Huraizah for their assistance and guidance in this project.

ABSTRACT

Decommissioning of an offshore structure nowadays, has become one of the most important issues since the emerging of oil and gas industries. This industry has become the most profitable sector and lead towards the development of economic, social and infrastructure in the country. The increment in the number of platform build for the propose of oil and gas drilling also indicate the growth of this industry. Apart from it the number of old platforms also increase and have to be removed as stated in the offshore law. The cutting techniques used in decommissioning process are very important since it may give bad effect to the environment and sea mammals. Reliability and cost of the decommissioning process also important to be considered when we are choosing the best techniques.

The latest technique in decommissioning process is the use of explosive in cutting techniques. These techniques have become important nowadays since they are more reliable, effective, efficiency and cheap. Although these techniques can promise all these good things but they still give bad effects to the environment and sea life. Research must be done to increase the capability of these techniques and at the same time reduce the bad effects to environment and sea life.

Objective of this project is to survey and collecting information on current trend on decommissioning of offshore structure. The use of shaped charge is being focused in this project since it can produce a good and smooth cutting on the target. The ability of this technique has made it become one of the most suitable to be used for under water cutting. It also can reduce the cost of decommissioning since it use only few equipment compared to the mechanical or abrasive cutting technique.

Contents	Pages
ACKNOWLEDGEMENT	
ABSTRACT	
LIST OF FIGURE	
LIST OF SCHEDULE	
1.0 Introduction	1
2.0 TYPES OF EXISTNG OFFSHORE (PLATFORM) STRUCTURE	3
2.1 INTRODUCTION	
2.2 TYPES OF PLATFORM STRUCTURE AND ITS CONFIGURATION	4
2.2.1 Free Standing Caissons With Well	5
2.2.2 Well Protector Jacket	7
2.2.3 Braced Caissons With Well(s)	9
2.2.4 Conventionally Piled Platform With Wells	12
2.2.5 Conventionally Piled Platform Without Wells	
2.2.6 Skirt Piled Platform	15
2.2.7 Special Application Platform	
3.0 Cutting Techniques	18
3.1 Cutting Techniques Using Explosives Materials	20
3.1.2 Bulk Explosive Charges	
3.1.3 Configured Bulk Explosive	22
3.1.4 Cutting Charges	23

3.2 Development of Cutting Techniques Using Explosive Materials	24
3.2.1 Cutting Charges	
3.2.2 Fracturing Charges	25
3.2.3 Shock Wave Focusing	
3.2.4 Radial Hollow Charges	26
3.3 Cutting Technique Without Using Explosive Material	29
3.3.1 Mechanical Cutters	30
3.3.2 Abrasive Cutters	32
3.3.3 Diver Cuts	37
3.4 Cutting Techniques Without Using Explosive Currently Developed	41
3.4.1 Hydraulic Shears	
3.4.2 Diamond Wire Cutter	
3.4.3 Laser Cutting	44
3.4.4 Pyrotechnics Cutting	
3.4.5 Cryogenics	
3.4.6 Chemical Cutters	45
4.0 Technical Consideration	47
4.1 Maintaining Platform Structure at its Original Place	51
4.2 Moving Parts of a Platform Structure	52
4.3 Toppling Down the Platform Structure at its Original Place	53
4.4 Dismantling Whole Platform Structure Method	54
4.5 Factors in Choosing Dismantling Method	57
4.6 The Cost of Dismantling Platform Structure	61
5.0 Explosive Materials	65
