

THE INSTITUTE OF PETROLEUM

**WORKSHOP  
ON FATIGUE**



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# FOREWORD

This document contains papers presented at the "Fatigue" workshop held at the Institute of Petroleum, October 1999. As a result of these papers and the general discussion it is hoped that the industry's understanding of fatigue in the workplace will be improved.

# ACKNOWLEDGEMENTS

This workshop was held by the Institute of Petroleum on 21<sup>st</sup> October 1999, and led by Professor Simon Folkard, Department of Psychology, University of Wales Swansea, with guidance from the Institute's Sub-Committee for Occupational and Environmental Medicine.

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# SUMMARY AND INTRODUCTION

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Shift work is common in the petroleum industry. Over the last few years there have been many efforts to develop the "ideal" shift system. As knowledge has been improved it has been recognised that this ideal system does not exist.

Shift work does have many advantages both to employers and employees but it can cause difficulties because shifts work against the natural human rhythm of being awake during the day and asleep at night.

A successful system is one that balances the knowledge that we have of the risks and problems of shift work with the wishes of the staff to maximise the advantages to employees and employers while minimising the disadvantages.

One system will never be popular forever as peoples' needs change as they grow older and their lifestyle changes as do the business requirements, therefore shift systems should be regularly reviewed.

	Employee	Employer
Advantages	Flexible	Good utilisation of plant and machinery
	Time off during the day	Can take advantage of delivery time windows
	Useful for childcare purposes	Respond to customer demand
	Attractive pay	
Disadvantages	Tiredness	Unpopular with staff
	Miss out on social life with family and friends	Difficult to supervise
	May miss seeing children once they are school age	Higher accident rates than standard days
	Disruptive to normal routine	

## Sleep physiology and performance

People's alertness and capability change over 24 hours. Peak performance occurs in the early morning, 0700 - 1000 hours, and again in the early evening, 1800 - 2000 hours. The worst time for fatigue related accidents is midnight - 0300 hours and there is a smaller rise in fatigue related accidents between 1400 - 1600 hours. Worst performance in terms of dealing with complex problems and in making judgements also occurs between 0300 - 0500 hours.

There is never complete adjustment to night shift work. Even adjusted night shift workers get 2 - 3 hours less sleep per break period than day shift workers.

Forward rotation of fast rotating shift systems is the most compatible with the body clock ie: morning > afternoon > night > break. Backwards rotation (night > afternoon > morning) is totally opposite to the body's adaptation mechanisms. Quick change over between duty periods can cause sleep to be less than 5 hours per break period, night > afternoon and afternoon >