

# Offshore Risk Assessment



## Background

Offshore Oil and Gas production requires the risks of hydrocarbon releases resulting in jet fires, pool fires and explosions to be managed. Examples where this has been unsuccessful are the Piper Alpha disaster (1988 – 167 fatalities) and Deepwater Horizon (2010 – 11 fatalities).

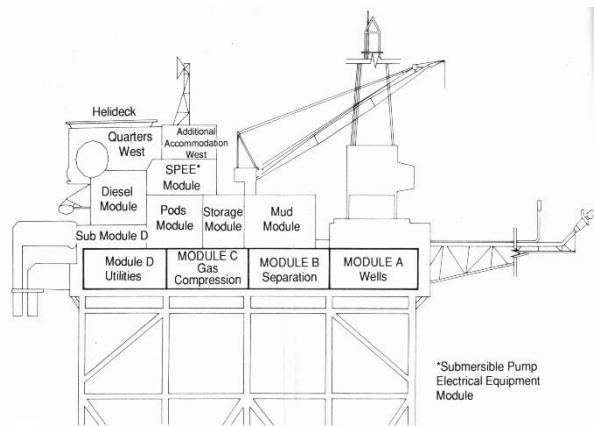
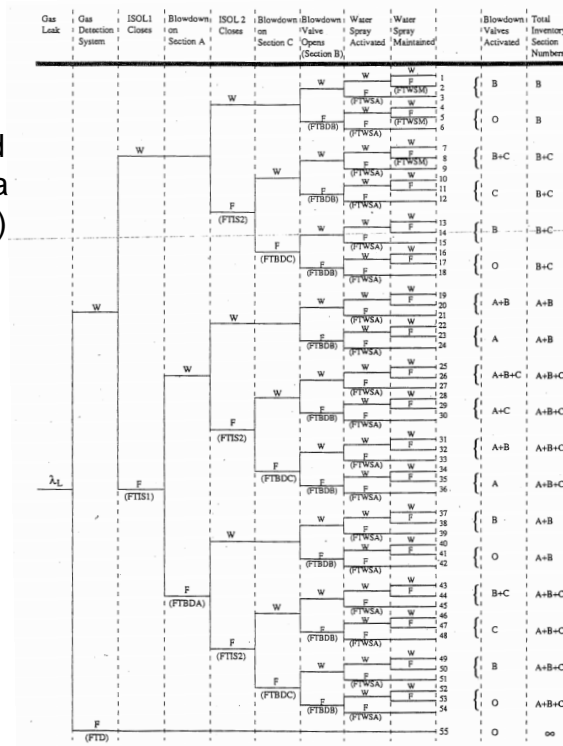


Fig. 3.2 The Piper Alpha platform: west elevation (simplified).

## Objectives

Model the risks resulting from hydrocarbon release on platforms which are operating beyond their originally intended design lives.

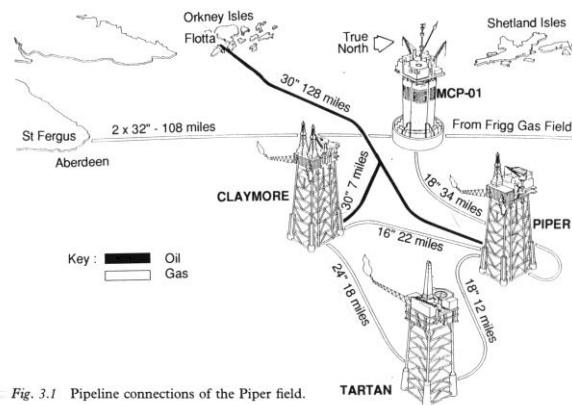


Fig. 3.1 Pipeline connections of the Piper field.



Table 4. Frequencies of mitigated and unmitigated explosions for each concentration range in the module.

Concentration range	Explosion frequencies (per year)	
	Unmitigated explosion frequency	Mitigated explosion frequency
5-6	$1.748 \times 10^{-7}$	$3.151 \times 10^{-6}$
6-7	$1.592 \times 10^{-7}$	$2.705 \times 10^{-6}$
7-8	$1.525 \times 10^{-7}$	$2.570 \times 10^{-6}$
8-9	$1.439 \times 10^{-7}$	$2.412 \times 10^{-6}$
9-10	$1.297 \times 10^{-7}$	$1.771 \times 10^{-6}$
10-11	$1.331 \times 10^{-7}$	$1.612 \times 10^{-6}$
11-12	$1.429 \times 10^{-7}$	$1.471 \times 10^{-6}$
12-13	$1.517 \times 10^{-7}$	$1.371 \times 10^{-6}$
13-15	$3.048 \times 10^{-7}$	$1.705 \times 10^{-6}$
Total	$1.492 \times 10^{-6}$	$1.877 \times 10^{-5}$