

Title	Review of approaches to blast, fire and accidental loads	
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Executive summary	<p>This report describes the work performed under hse contract matsu1889513611 to Investigate the approach to accidental and extreme loads in codes and standards And interpret how the various approaches may be applied to the treatment of fires And explosions offshore.</p> <p>A number of techniques of direct applicability to the treatment of fire and blast loads In the offshore situation have been located and are described in chapter 2. Chapter 3 describes a number of approaches to aspects of accidental loads Described in the codes and discusses their relevance to the UK Offshore industry. Section 3.1 discusses some areas of uncertainty in the current method of application of the QRA method. Section 3.2 identifies common performance standards for structural components. Section 3.3 presents some target probabilities of failure used in other industries. Section 3.4 discusses a possible approach to design against blast and fire Hazards using limit states.</p> <p>Section 3.5 discusses return periods associated with hazard events and overall Risk levels. Section 3.6 discusses robustness from a physical and statistical viewpoint. Finally aspects of ALARP are discussed in section 3.7 using a specific cost model To indicate the influence of the large variability in blast loading.</p> <p>Recommendations The defence and nuclear codes (27, 28) contain much useful information on external Explosion loading, missile generation and response and should be consulted. The 'Monte Carlo' approach where a probability distribution of blast overpressure is Derived gives a more complete picture of the hazard profile and risk values and can Also be used to define a design scenario for detailed analysis.</p> <p>Because of the large uncertainty associated with some of the contributing factors to Risk measures such as the estimation of the number of fatalities, or the escalation Potential, it would make sense to define normalised risk measures which have These factors removed. Statistical measures of robustness may be used to quantify the robustness of a Structure. Seismic measures of structural robustness may be useful in the context of The assessment of primary structural response to explosions. Widespread application of the cost model given in reference 14 would help to Establish a common approach to ALARP and would benefit from further Investigation.</p>	
Table of contents	1 introduction 1.1 overview 1.2 method 2 directly applicable techniques 2.1 blast loading 2.2 blast response 3 review and discussion 3.1 quantified risk analysis 3.2 performance standards 3.3 allowable probabilities of failure - prescribed reliability indices 3.4 design events and return periods..... 3.5 limit states - load and resistance factors 3.6 structural classification – robustness 3.7 the demonstration of ALARP 4 conclusions and recommendations..... 5 references	1 1 2 5 6 7 8 8 10 12 19 21 25 29 33 37

	List of figures Appendix a list of reviewed documents Appendix b review basis
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