

Recommended Practice for the Design of Offshore Facilities Against Fire and Blast Loading

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FOREWORD

This recommended practice is under jurisdiction of the API Subcommittee on Offshore Structures. This Recommended Practice for the Design of Offshore Structures against Fire and Blast Loading is based on sound engineering principles and many years of experience gained by the owners, operators, designers, fabricators, suppliers, and classification/certification agencies of offshore facilities. In no case is any specific recommendation included that could not be accomplished by presently available techniques and equipment. Consideration is given in all cases to the safety of personnel, compliance with existing regulations, and prevention of pollution.

This recommended practice has been developed with the help and extensive contributions from industry experts of different areas of expertise. This recommended practice covers both fixed and floating structures that are in use by the industry as offshore oil and gas production systems. These include systems supported by column-stabilized units (semi-submersible vessels), ship-shaped vessels, Tension Leg Platforms (TLP), deep draft caisson vessels (also known as SPARs), and other hull shapes.

This recommended practice provides an assessment process for the consideration of fire and blast in the design of offshore structures and includes guidance and examples for setting performance criteria. This document complements the contents of the Section 18 of API RP 2A, 21st Edition with more comprehensive guidance in design of both fixed and floating offshore structures against fire and blast loading. Guidance on the implementation of safety and environmental management practices and hazard identification, event definition and risk assessment can be found in API RP 75 [51] and the API RP 14 series [52, 53]. The interface with these documents is identified and emphasized throughout, as structural engineers need to work closely with facilities engineers experienced in performing hazard analysis as described in API RP 14J [52], and with the operator's safety management system as described in API RP 75 [51].

This recommended practice provides general guidelines for incorporating hazard analysis output into the structural response assessment in determining whether the structure or its components meet the specified performance criteria.

This recommended practice includes code provisions and associated commentary. The commentary provides design guidelines for the evaluation of structural response to fire and blast loads. Nominal blast load cases are provided for certain classes of facilities. Guidance is also provided for the calculation of fire loads. Discussion of alternative methods for the calculation of blast loads, in lieu of applicable nominal load cases, is included with reference to sources of detailed guidance. The commentary also includes examples of good practice for fire and blast design including guidelines for facilities layout and structural connection detailing.

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