



Document No.	GIS 24-231
Applicability	Group
Date	30 December 2005

Guidance on Industry Standard for Water Deluge System Design

GIS 24-231

BP GROUP
ENGINEERING TECHNICAL PRACTICES

Foreword

This is the first issue of Engineering Technical Practice (ETP) BP GIS 24-231. This Guidance on Industry Standard (GIS) is based on parts of heritage documents from the merged BP companies as follows:

BP

GP 24-23	Guidance on Practice for Offshore Active Fire Protection
GP 24-10	Guidance on Practice for Fire Protection – Onshore

BP Gulf of Mexico Deep Water Development Program (GOMDW)

1400-20-PR-RP-2002-14 Firewater Design Guideline

British Petroleum (Pre 1999)

RP 24-2	Fire Protection – Offshore.
---------	-----------------------------

Amoco

A PS-FES-00-G	Process Safety—Fire Extinguishing Systems—Guide.
A PS-FES-00-E	Process Safety—Fire Extinguishing Systems—Engineering Specification.

ARCO

ES 803	Fireproofing
--------	--------------

Copyright © 2005, BP Group. All rights reserved. The information contained in this document is subject to the terms and conditions of the agreement or contract under which the document was supplied to the recipient's organization. None of the information contained in this document shall be disclosed outside the recipient's own organization without the prior written permission of Director of Engineering, BP Group, unless the terms of such agreement or contract expressly allow.



Downloaded Date: 6/17/2008 10:31:18 PM

The latest update of this document is located in the BP ETP and Projects Library



Documents

Page 2 of 16
Document Sharing Hub

Table of Contents

	Page
Foreword	2
1. Scope	4
2. Normative references.....	4
3. Terms and definitions.....	4
4. Symbols and abbreviations.....	5
5. Philosophy	5
6. Design configuration	6
7. Deluge distribution	6
8. Firewater demand.....	7
9. Deluge water spray system.....	8
9.2. Process buildings, mezzanines, and structures.....	9
9.3. Hydrocarbon handling systems.....	9
9.4. Pressure vessels	9
9.5. Vessel supports	10
9.6. Shell and tube heat exchangers.....	10
9.7. Pumps	10
9.8. Compressors	11
9.9. Hydrocarbon piping, tubing & conduit in pipe racks.....	11
9.10. Pipe racks, critical structural members, & topsides module supports	11
9.11. Cable trays & cable runs.....	11
9.12. Wellheads.....	11
9.13. Air-fin coolers.....	12
9.14. Atmospheric storage tanks.....	12
9.15. Control valve stations.....	12
9.16. Large oil-filled transformers.....	12
9.17. Hydrocarbon loading area / rack	12
9.18. Center wells.....	13

List of Tables

Table 1 – Deluge design criteria.....	14
---------------------------------------	----



1. Scope

This GIS provides guidance on industry standard regarding health, safety and environmental legislation, good design practice, and technical and economic considerations for water deluge systems. The design information included in this specification is not intended to cover complete details. The guideline outlines regulations, design considerations, and recommends a configuration which can be scaled to adapt to the specific facilities which can differ due to layouts and production capacity,

2. Normative references

The following normative documents contain requirements that, through reference in this text, constitute requirements of this technical practice. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this technical practice are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies.

American Bureau of Shipping (ABS)

ABS Guide for Building and Classing Floating Production Installations
ABS Guide for Building and Classing Facilities on Offshore Installations

American Petroleum Institute (API)

API RP 14G Fire Prevention and Control on Open Type Offshore Production Platforms
API 2030 Application of Fixed Water Spray Systems for Fire Protection in the Petroleum Industry

BP Engineering Technical Practices (ETPs)

GP 24-23 Guidance on Practice for Offshore Active Fire Protection
GP 24-10 Guidance on Practice for Fire Protection – Onshore
GIS 24-233 Guidance on Industry Standard for Fire Water Pumps and System Design
Fire Booklet Series Liquid hydrocarbon storage tanks: prevention and fire fighting (2003)
Passive fire protection: types and applications (Jan 2004)

National Fire Protection Association (NFPA)

NFPA 11 Standard for Low-, Medium-, and High-Expansion Foam
NFPA 13 Standard for Installation of Sprinkler Systems.
NFPA 15 Standard for Water Spray Fixed Systems for Fire Protection

3. Terms and definitions

For the purposes of this GIS, the following terms and definitions apply:



Active Fire Protection

Equipment, systems, and methods required for the detection, alarming, control, and extinguishing of fires using water, steam, dry powder, or gaseous extinguishants. An example of this would comprise detection equipment for fire, smoke, gas, or heat that activates fixed extinguishing or control systems.

Fireproofing

Materials or application of materials to provide a degree of fire resistance to protect substrates.

Fixed Systems

Fixed systems are those comprising permanently installed foam distribution equipment and foam making equipment. These may be initiated automatically or manually with remote or local control...

Flammable Liquid

Any liquid having a flash point below 37.8°C (100°F) and a vapour pressure not exceeding 2,76 bar abs at 37,8°C (40 psia at 100°F).

Passive Fire Protection

Provision of non-combustible materials which in a fire, for a defined period of time, protect equipment, prevent the collapse of structural supports, or limit the spread of fire. In addition, passive systems embrace the basic requirements for area separation and classification.

4. Symbols and abbreviations

For the purpose of this GIS, the following symbols and abbreviations apply:

FRP Fiberglass reinforced plastic

5. Philosophy

- a. Each project shall be equipped with an active fire protection system, which extinguishes or mitigates fires through the spray of water, either automatically or manually. This active firewater system shall include a water deluge system, monitors, and hose reels.
- b. If offshore, the system must follow all applicable requirements for the American Bureau of Shipping (ABS), the US Coast Guard (USCG), and the Minerals Management Service (MMS) in the U.S.A. or equivalent European or country standards.
- c. The floating systems shall be classed with the ABS as FOI or "Floating Offshore Installation", which exempts the process plant from ABS review and certification.
- d. The design engineer shall follow the guidance in GP 24-23 on overall fire protection for offshore facilities and GP 24-10 for onshore facilities.
- e. The active fire protection system shall be in accordance with the requirements listed in API RP 14G, API 2030 and NFPA 15. If offshore, it shall also be in accordance with the "ABS Guide for Building and Classing Facilities on Offshore Installations" dated June 2000.

A hazard identification, minimization and assessment can be completed to address the appropriate mix of active and passive fire protection measures to contain, where practicable, extinguish potential fires, and protect the process equipment. Post extinguishment reignition hazards, such as residual flammable gas pockets or liquid

