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Guidance on Practice for Bulk Loading and Unloading of Lubricants

GP 82-12

BP GROUP
ENGINEERING TECHNICAL PRACTICES

Foreword

This is the first issue of BP Lubricant Supply Chain Guidance on Practice GP 82-12 that gives recommendations and requirements for the safe bulk loading and unloading of lubricants to/from vessels and tank vehicles.

Heritage documents:

RP 44-7	Plant Layout	February 1996
RP 12-16	Electrical Systems and Installations Earthing and Bonding	February 1994
RP 30-2	Selection and Use of Measurement Instrumentation	September 1993
GS 138-3	Marine Loading Arms	November 1994
GS 128-1	Oil Hoses for Dock Loading and Discharging Services	February 1998
BP Marine Assurance	Terminal Ship/Shore Interface minimum standards	February 2003

Revision History		
Rev	Date	Comments
1	Q1 2004	Initial draft prepared and reviewed with European PTN
2	06/04/2004	Edited by RJM and submitted to LSC EA network for comment/approval
3	31/08/2004	Final edited version for release
4	13/04/2005	Additional comments on fall arrest. Submitted to ETP

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Table of Contents

	Page
Foreword	2
1. Scope	4
2. Normative references.....	4
3. Terms and definitions.....	5
4. Symbols and abbreviations.....	7
5. Bulk loading and unloading of tank vessels.....	7
5.1. General.....	7
5.2. Tank vessels.....	8
5.3. Earthing	8
5.4. Marine loading arms	8
5.5. Marine loading hoses.....	9
5.6. Overfill protection.....	9
5.7. Wharf design.....	10
5.8. Spillage collection	10
6. Bulk loading and unloading of road tank vehicles and rail tank cars.....	10
6.1. General.....	10
6.2. Tank vehicle and railcar design.....	11
6.3. Earthing	11
6.4. Loading arms.....	11
6.5. Loading hoses	12
6.6. Overfill protection.....	12
6.7. Operator fall prevention and protection	13
6.8. Loading terminal layout.....	13
6.9. Spillage containment.....	16
7. Safety requirements.....	17
8. Security and emergency response.....	18
8.1. Security.....	18
8.2. Emergency response	18
9. Management of change	19



1. Scope

This document is intended to outline the design and operational considerations that must be made when Lubricants, Base Oils and Additives are bulk loaded to or from vessels or tank vehicles (road or rail).

It is not intended to be a detailed design manual, nor to replace the need for thorough evaluation of the specific requirements of an installation (existing or proposed) and preparation of detailed designs by suitably qualified engineering staff or consultants based on a full understanding of the relevant standards referred to in the text. However, it should serve as a basis for such detailed evaluation, and bring to the attention of local staff and their appointed consultants (if appropriate) BP's acceptable practice, relevant BP and Industry Technical Standards and other related information.

This document does not deal with the design or operational conditions for the storage facilities of the lubricants, only with the bulk loading operations.

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.

Most recommendations in this Engineering Technical Practice are taken from NFPA 30, which is the standard industry reference Code of Practice for this subject, although it deals with Flammable and Combustible Liquids. For this document, only the recommendations for Combustible Liquids, which are less stringent, are considered.

BP Technical Practices

GP 82-11	Vertical and Horizontal Above Ground Storage Tanks
GP 82-13	Design, Installation and Operation of Bulk Lubricant Tanks at Customer Locations
GP 82-31	Use of Flexitanks for Transporting Lubricants
GP 82-51	Fire Protection and Response in Lubricant Blending Plants
GP 82-52	Storage and Handling of Flammable Materials

NFPA (National Fire Protection Association)

NFPA 30	Flammable and Combustible Liquids Code
NFPA 51B	Standard for Fire Prevention during Welding, Cutting, and Other Hot Work
NFPA 70	National Electrical Code

Energy Institute (formerly Institute of Petroleum)

Energy Institute Code of Practice - Petroleum Road Tanker Design and Construction

AAR (American Association of Railroads)

AAR M-1002	Manual of Standards and Recommended Practices
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API (American Petroleum Institute)

API RP 1004 Bottom Loading and Vapour Recovery for MC-306 Motor Vehicles

OCIMF (Oil Companies International Marine Forum)

Design and Construction Specification for Marine Loading Arms (Parts I, II, III)

Marine Terminal Baseline Criteria and Assessment Questionnaire

International Safety Guide for Oil Tankers and Terminals (ISGOTT)

CFR (US Code of Federal Regulations)

CFR, Title 33, Part 154 Facilities Transferring Oil or Hazardous Material in Bulk

ANSI (American National Standards Institute)

ANSI B16.5 Steel Pipe Flanges and Flanged Fittings

ANSI B31.3 Chemical Plant and Petroleum Refinery Piping

ASTM (American Society for Testing and Materials)

ASTM F 1122-87 Standard Specification for Quick Disconnect Couplings

British Standards

BS 1435 Rubber Hose Assemblies for Oil Suction and Discharge Services

BS 1560 Circular flanges for pipes, valves and fittings (Class designated). Steel, cast iron and copper alloy flanges.

3. Terms and definitions

For the purpose of this document the following terms and definitions apply:

Bulk terminal

That portion of a property where liquid lubricants are received by tank vessel or tank vehicle and are stored or blended in bulk for the purpose of distributing such liquids by tank vessel, tank vehicle, portable tank or container.

Combustible Liquid

Any liquid that has a closed-cup flash point at or above 38°C (100°F). Combustible liquids are classified as Class II or Class III as follows:

- a. Class II: any liquid that has a flash point at or above 38°C (100°F) and below 60°C (140°F)
- b. Class IIIA: any liquid that has a flash point at or above 60°C (140°F), but below 93°C (200°F)
- c. Class IIIB: liquid that has a flash point at or above 93°C (200°F).

Fall Prevention

A system with barriers/handrails such that accidental falls are prevented. Also covers any harness system with a fixed lanyard attached to a suitable anchor such that a fall from height is not possible.

Fall Protection

A full body harness attached to an approved synthetic fibre self retracting harness fitted with a shock absorber and connected to a fixed approved overhead anchor. Designed to safely arrest a fall after it happens with minimal injury to the operator.



Flash Point

The minimum temperature of a liquid at which sufficient vapour is given off to form an ignitable mixture with the air, near the surface of the liquid or within the vessel used. It is determined by the appropriate ASTM test procedure as described in NFPA 30 Section 1.7.4.

Gantry

The structure associated with a product supply system and provided with all equipment necessary for loading and providing safe access to road vehicles during top loading.

Kerb (Curb)

Small raised edge, normally of concrete or block construction, built around an area to mark it out and contain spillage.

Loading area

The collective area embracing all filling islands and bays but excluding vehicle waiting areas.

Loading arm

A system of pipes and swivels which is balanced for easy movement, and through which product is transferred from the supply pipe into a vehicle tank or vessel tank or vice versa.

Loading bay

(1) Each side of a top loading gantry at which road vehicles can be filled at both sides, (2) Alongside the island of a bottom-loading facility.

Loading island

The area on which the equipment necessary to load a vehicle is mounted, e.g. meter(s), (control) valve, loading arms, hose loaders, control equipment etc. Islands may be designed for multi-product or single product loading.

Loading terminal or facilities

A combination of one or more loading bays or gantries with one or more marine transfer areas, including additional facilities such as parking areas, waiting lanes, dispatch office, social amenities, and the product and utilities supply piping, from the point at which it enters the loading area.

Lubricant

A heavy petroleum fraction, to be classified as "Combustible material" Class IIIB, covering materials with flash points above 93°C (200°F).

Marine transfer area

That part of a waterfront facility handling liquid lubricants in bulk between the vessel, or where the vessel moors, and the manifold or shutoff valve adjacent to the bulk storage tank, including the entire pier or wharf to which the vessel is moored.

Tank car

A tank or other container mounted on a railway (railroad) truck chassis.

Tank vehicle

A tank or other container mounted on a road-going chassis that is towed or self-propelled and capable of carrying lubricants in bulk.

Tank vessel

Ship, vessel constructed or adapted to carry, or that carries lubricants in bulk as cargo or cargo residue. This may be a barge or a coaster.

