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Guidance on Practice for In Service Inspection and Testing of Special and Other Equipment

GP 32-49

BP GROUP
ENGINEERING TECHNICAL PRACTICES

Foreword

This is the first issue of Engineering Technical Practice (ETP) BP GP 32-49. This Guidance on Practice (GP) is based on parts of heritage documents from the merged BP companies as follows:

British Petroleum

RP 32-4

Inspection & Testing of In-Service Civil and Mechanical Plant -
Technical Guidance – Sections B4, B14, B15, B18, B19.

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1. Scope

- a. This GP provides in service inspection and testing recommendations for special equipment not covered by equipment specific series GP 32-41 through GP 32-48.
- b. The following equipment is within scope of this GP:
 1. Lifting and associated equipment.
 2. Flexible hoses.
 3. Marine loading arms.
 4. Single point moorings.
 5. Gas cylinders and containers.
 6. Flare tips and appurtenances.
 7. Cryogenic equipment.

In many cases, these are proprietary design and only general guidance can be provided. More detailed guidance should be sought from Vendor or specialised service providers.

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.

BP

GP 32-30	Guidance on Practice for In Service Inspection and Testing of Equipment - Management Principles.
GP 32-40	Guidance on Practice for In Service Inspection and Testing of Equipment - Common Requirements.
GP 32-42	Guidance on Practice for In Service Inspection and Testing of Piping Systems.
GP 32-44	Guidance on Practice for In Service Inspection and Testing of Above Ground Atmospheric and Low Pressure Storage Tanks.
GP 32-46	Guidance on Practice for In Service Inspection and Testing of Civil Engineering Equipment and Structures.
GP 32-47	Guidance on Practice for In Service Inspection and Testing of Mechanical Protective Devices.
GP 38-21	Guidance on Practice for Inspection and Maintenance of Pedestal Cranes/ Equipment.

American Petroleum Institute (API)

API 2510	Design and Construction of Liquefied Petroleum Gas (LPG) Installations.
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Energy Institute, UK, Institute of Petroleum (IP)

Model Code of Safe Practice for the Petroleum Industry.



Part 9

Liquefied petroleum gas. Vol. 1. Large bulk pressure storage & refrigerated LPG.

Oil Companies International Marine Forum (OCIMF)

Guide to Purchasing, Manufacturing and Testing of Loading and Discharge Hoses for Offshore Moorings.

Guidelines for the Handling, Storage, Inspection and Testing of Hoses in the Field.

Jetty Inspection and Maintenance Guide (to be published).

Single Point Mooring Maintenance and Operations Guide.

3. Terms and definitions

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

Competent person

Personnel who, by reason of training, experience, knowledge, and judgment for equipment to be inspected, examined, or tested, are able to detect defects or weaknesses and to assess defect importance in relation to safety of equipment for current and continued use.

National regulations use variety of equivalent terms (e.g., responsible person).

Inspection

Performed as part of daily, weekly, or monthly routines by personnel with suitable operational knowledge of equipment, such as operator or maintenance engineer.

Lifting accessory

Equipment for attaching loads to machinery for lifting (i.e., slings, shackles, eyebolts).

Lifting equipment

Equipment for raising or lowering loads (including attachments for anchoring, fixing, or support).

Load test

Using proof load or loads on actual lifting equipment and fixings.

Proof (or test) load

Specified load that item will withstand without showing permanent deformation or other defect.

Certain items, such as fibre ropes, fibre rope slings, thimbles, and bulldog grips, are exempt from testing.

Safe working load

Maximum load that lifting equipment may raise, lower, or suspend under particular service conditions as assessed by competent person.

Thorough examination

- a. Performed by competent person to establish fitness of equipment.
- b. Extent of thorough examination shall be decided by competent person and may include request for disassembly for inspection or non destructive examination (NDE).



4. Symbols and abbreviations

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

CALM	Catenary anchor leg mooring.
EA	Engineering Authority.
IA	Inspection Authority.
LNG	Liquefied natural gas.
LPG	Liquefied petroleum gas.
MOC	Management of change.
NDE	Non destructive examination.
PLEM	Pipeline end manifold.
SALM	Single anchor leg mooring.
SCBA	Self contained breathing apparatus.
SCUBA	Self contained underwater breathing apparatus.
SPM	Single point mooring.

5. Site technical practices

- a. This GP shall be read and interpreted in conjunction with GP 32-30 and GP 32-40.
- b. This GP shall be adopted, modified, or supplemented by Sites into Site Technical Practices (STPs) for each class of equipment within the scope.
- c. The STPs shall be approved by the Site Engineering Authority and form the basis for the development of equipment specific inspection and maintenance procedures.

6. Inspection and maintenance procedures

- a. Site inspection and maintenance procedures shall:
 1. Be developed for all relevant design types as per sections 7.to 13.
 2. Be approved by the relevant Site Inspection Authority.
 3. Assign competent persons accountable for planned inspection and testing of equipment within scope of this GP.
 4. Include competency and accreditation/certification requirements for contractors.
 5. Comply with applicable local regulatory requirements.
- b. Normative references, bibliography, and requirements of this GP shall be used to develop Site inspection and maintenance procedures.



7. Lifting and associated equipment

7.1. Scope of application

- a. Fixed and portable lifting equipment.
- b. Lifting machines.
- c. Hoists.
- d. Lifts.
- e. Cranes.
- f. Offshore Pedestal Cranes in accordance with GP 38-21.
- g. Lifeboat or raft launching systems.
- h. Lifting accessories.

There is no single international standard for examination of this equipment, but in most countries, regulatory requirements specify minimum standards to meet safe design, operation, inspection, and testing.

Guidance Publications on many aspects of the use, inspection and maintenance of lifting equipment is available from the Lifting Equipment Engineers Association www.leea.co.uk

7.2. Thorough examination

- a. Preparation for thorough examination of lifting appliance shall include the following as applicable and as required by the competent person:
 1. Provision of access.
 2. Cleaning and dismantling of equipment.
 3. Provision of test equipment.
 4. Transportation of equipment to suitable location.
 5. Presence of operational personnel.
 6. A review of maintenance records (including test certificates).
- b. Periodic thorough examinations shall ensure that:
 1. Statutory requirements (including provision of necessary information) are satisfied.
 2. Detailed written reports on condition of lifting appliances are created for each thorough examination.
 3. Integrity of lifting appliance is maintained by routine examination to determine extent of corrosion, structural defects, or mechanical damage.
 4. Lifting appliances in need of repair shall be:
 - a) Reported.
 - b) Withdrawn from service until properly repaired (if possible).
 5. Statutory authority and user (or owner) be advised regarding lifting appliances in need of repair. Provision shall exist to immediately withdraw unsafe equipment from service and inform local equipment owner of status before leaving site.
 6. New, altered, or repaired lifting appliances shall be proof tested before use.

Declaration of conformity as provided and required by EU countries is acceptable.



- c. Specialist assistance may be necessary during thorough examination to verify lifting equipment fitness for service.

7.3. Thorough examination frequency

Interval between thorough examinations is usually governed by relevant local regulations.

As guidance on good practice, UK Lifting Operation and Lifting Equipment Regulations (LOLER) require the following frequencies:

- *Lifting equipment thoroughly examined by competent person at least each 12 months. Longer intervals may be possible based on more rigorous examination scheme.*
- *Personnel lifting equipment thoroughly examined by competent person at least each 6 months.*
- *Lifting accessories thoroughly examined by competent person at least each 6 months.*

7.4. Independence of competent persons

Competent person shall be sufficiently independent and impartial to allow objective decisions on lifting equipment being examined.

This does not mean that competent person must be from external company, but if BP examiners are used, it must be clear they have genuine authority and independence to make decisions on fitness of equipment. Refer to GP 32-20.

7.5. Routine inspection

Routine inspection of lifting equipment shall be performed on planned basis (daily, weekly, or monthly) by personnel with sufficient operational knowledge of equipment, such as operator or maintenance engineer.

Routine inspection includes pre use safety checks, testing limits switches, controls, tyres, lubrication, hydraulic system maintenance, and emergency shutdown control.

7.6. Registration and marking

- a. Each lifting appliance shall have identification number or mark.
- b. Identification number shall be quoted on certificates and documents referring to that appliance.
- c. Each appliance shall be clearly marked (or have permanently attached) plainly legible figures and letters indicating:
 - 1. Identification number or mark.
 - 2. Safe working load.

7.7. Records

- a. Register shall be maintained that contains:
 - 1. Prescribed particulars of lifting appliance.
 - 2. Certificates.
 - 3. Reports of examinations or inspections.
 - 4. Repair or renewals.
 - 5. Other particulars as may be prescribed.
- b. Register shall be retained by equipment owner.



Schedules of equipment examination can be retained by independent inspection authority. BP would expect access to schedules at all times.

8. Flexible hoses

8.1. Scope

a. This clause applies to flexible hoses used for transfer of:

1. Crude oil.
2. Reduced crude oil.
3. Petroleum products (including liquefied gases).
4. Petrochemical feed stocks, intermediates, and products.
5. Chemicals for petroleum and petrochemical industries.

Additional information and guidance is provided in

- [*GN 32-015 UKOOA Flexible Hose Management Guidelines*](#),
- [*UKCS-SOP-011 Pressure Hose Management Manual*](#),
- [*RD 32-007 Flexible Hose Assembly Failures*](#).

b. This clause does not apply to:

1. Hoses that are part of proprietary item, such as hydraulic hoses on machinery or transport.
2. Snuffing steam hoses.

Hoses in non hazardous or utility duties, such as compressed air, nitrogen, water, and steam, are normally only registered for inspection if they are permanent features of installation for specific application and, in opinion of inspector, would cause unacceptable loss or hazard upon failure. Registration of hoses owned and used by maintenance staff is often not practical, although personnel should always undertake risk assessment before using this equipment to ensure, if practical, equipment is fit for service.

3. Hoses in subsea applications.
4. Hoses in wellhead and drilling applications.
5. Floating roof storage tank roof drains.

These hoses are not normally subject to specific statutory regulations except for few cases, such as flexible hoses used for marine tanker loading or unloading.

c. Hoses used on temporary basis on process plant duties shall, as a minimum, be:

1. Registered on the asset data base.
2. Technically specified for specific duty.
3. Covered by management of change (MOC) procedure.

d. The period in service for temporary hoses will dictate whether an inspection regime is necessary and shall be at the discretion of the Inspection Authority.

e. Hoses used for process plant duties and supplied as part of package unit shall be:

1. Registered individually.
2. Allocated appropriate inspection schedule.

