

The Pipelines Safety Regulations 1996

Open Government status

Fully open

Target audience

ED Pipelines Inspectors

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Summary

This guidance provides enforcement advice to inspectors

Introduction

This guidance provides information on interpretation of the Pipelines Safety Regulations 1996 (PSR) and should be read in conjunction with the guidance booklet L82. The regulations are primarily concerned with pipeline integrity, are goal setting in approach and encourage operators to use risk-based techniques. This guidance replaces SPC/ENF/156 which is now withdrawn

Action

Inspectors should refer to this guidance for advice on interpretation of PSR.

Background

The Pipelines Safety Regulations 1996 require that pipelines are designed, constructed and operated safely and provide a means of securing pipeline integrity. Appendix 1 provides further advice on their interpretation.

Organisation

Targeting

Pipelines inspectors

Timing

N/A

Resources

N/A

Recording & Reporting

N/A

Health & Safety

N/A

Diversity

N/A

Further References

A Guide to the Pipelines Safety Regulations 1996 L82
www.hse.gov.uk/pubns/books/l82.htm

Contacts

ED3 Gas and Pipeline teams

Appendices

Appendix 1: Interpretation

Part I (Introduction - regulations 2-4)

Regulation 4 applies PSR to onshore and offshore pipelines and pipeline works. Offshore pipelines are covered by virtue of article 6 of The Health and Safety at Work etc Act 1974 (Application outside Great Britain) Order.

Pipelines and offshore installations

The definition of an 'offshore installation' under the Offshore Installations and Pipeline Works (Management and Administration) Regulations 1995 (MAR) includes any part of a pipeline connected to it and within 500m of any part of its main structure. MAR does not disapply PSR to this 500m section within the offshore installation or its associated operatorship in terms of control over conveyance of fluids.

Boundaries between each part of a pipeline should normally be physical, established at a valve or other means of blocking or regulating flow, or where pipelines join. Less distinct boundaries such as the edge of an offshore installation safety zone should be avoided wherever practicable. Examples of where distinct demarcation may not always be possible are

- an offshore import pipeline entering UK waters, or offshore pipelines with their own separate operators feeding into the pipeline(s) of other operator(s) to go to a beach terminal with operatorship changing further along the length of the

overall pipeline. In such cases the operators need to agree on a map grid reference as the boundary

Figures 2 and 7 in booklet L82 illustrate the limits of pipelines at offshore installations.

Part II (General duties - regulations 5-17)

Part II covers general duties, applicable to all relevant pipelines. These require proper design, use of suitable materials, safe construction and installation, safe operation, maintenance and decommissioning. This covers the integrity requirements of the Offshore Installations and Wells (Design and Construction etc.) Regulations 1996 (DCR), which do not apply to pipelines.

Part II imposes a duty on the operator not to use the pipeline unless

- it is designed and constructed to be fit for purpose, including access for future examination and maintenance (regulations 5-7, 9 and 10)
- it is provided with suitable safety systems such as emergency shutdown and shut off valves eg, subsea isolation valves (regulation 6)
- it is constructed of suitable materials (regulation 8)
- safe operating limits are defined (regulation 11), and
- arrangements are in place for emergencies (regulation 12)

Operators also have duties to

- maintain a pipeline in good repair (regulation 13)
- leave a pipeline in a safe condition when it is no longer in use (regulation 14)
- take reasonable steps to inform third parties of the existence and whereabouts of pipelines with a view to preventing damage to them (regulation 16), and
- cooperate with each other where more than one operator is involved in a pipeline or pipeline system (regulation 17)

It is an offence to cause damage to a pipeline which may give rise to danger to persons (regulation 15). There are some points to note on this regulation

- an offence under this regulation requires both damage to be caused to the pipeline (or the associated parts of the pipeline) and either an immediate or foreseeable prospect of danger to any persons to result
- in cases where the pipeline has been damaged, but not breached, a direct relationship between the damage caused and any potential future danger must be proved before an offence can be said to have occurred
- under RIDDOR, it is the responsibility of the pipeline operator to report any dangerous occurrences, injuries or death caused as a result of third party damage to their pipeline to HSE

- third parties who cause damage to pipelines sometimes conceal the damage or fail to report it to the pipeline operator. Although PSR places no specific duty on third parties to report damage to a pipeline operator this is still required under Section 3 of the HSW Act, and
- regulation 16 describes the steps a pipeline operator should take to prevent a person causing damage to a pipeline.

Part III (Major accident hazard pipelines - regulations 18-27)

Part III details the duties required for major accident hazard pipelines (MAHPs), defined as those conveying 'dangerous fluids'.

Notification - MAHPs general

Guidance on submitting notifications is available on our website at www.hse.gov.uk/pipelines/notifications.htm.

These duties are described in

- regulation 20: notification before construction (the operator notifies HSE of their name and address)
- regulation 21: notification before use (the operator sends notification 14 days before use or re-use of the pipeline)
- regulation 22: notification in other cases (the operator sends notification for any significant changes to the pipeline, eg change of operator, or 'certain events' such as rerouting, major modifications etc. (Schedule 5), and
- regulation 27: transitional provisions

There is no requirement for operators to notify HSE before construction of a new pipeline, or modification to an existing pipeline, unless it is a MAHP.

Notification - new MAHPs

The notification details include the name and address of the operator (Schedule 4). This notification may form the first contact between the operator and HSE for that pipeline. A productive dialogue is more likely if the operator is identified to HSE as soon as they are determined, whether for a new MAHP (where the aim of notification is to trigger HSE's inspection and initiate dialogue) or where previously advised operatorship details change.

The operator should be able to discharge their duties under PSR, particularly those regarding the major accident prevention document (MAPD) required for major accident hazard pipelines.

Notification - multiple construction sites

Under regulation 20, if construction of a MAHP occurs at more than one location (for example onshore, offshore or a combination of both) and in more than one stage,

notification to HSE should occur at least 6 months before the first stage begins. An example is where a pipeline bundle intended for offshore use is constructed on land and then taken to an offshore installation for final assembly and connection. Construction of the pipeline starts at the first stage on land.

Notification - other cases

Regulation 22 requires notification in other cases, at least three months before the event. Repositioning of ESDVs on pipeline risers is an additional example to those listed in the guidance to Schedule 5 in booklet L82.

Dangerous fluids

These are described in Schedule 2 by reference to certain physical properties. For offshore pipelines it is likely that all those conveying gas, produced fluids and live ('spiked') crude oil will be MAHPs, for example where the vapour pressure of the fluid is greater than 1.5 bar absolute at 20°C. Particular fluids are not prescribed, except acrylonitrile. There is no minimum quantity and no minimum pipeline dimensions. Glycol is not a dangerous fluid under PSR whereas methanol is, due to the Classification, Labelling and Packaging of Chemicals (Amendments to Secondary Legislation) Regulations (S.I. 2015/21) (CLP Amending Regulations), resulting in methanol being classified as very toxic.

Appendix 2 is a table of fluids known to be conveyed by onshore and offshore pipelines, indicating whether or not they are dangerous fluids as defined.

Emergency shutdown valves (ESDVs)

Regulation 19 defines an ESDV as a valve which is capable of adequately blocking the flow of fluid within the pipeline at the point at which it is incorporated. In the absence of a definition, 'adequate' means sufficient for a particular purpose. Schedule 3 provides additional detail, including

- **location** The valve should be located as far down the riser (away from the installation) as is reasonably practicable, consistent with it being able to be safely inspected, maintained and tested. This is to ensure that the most vulnerable section of the riser can be isolated from the majority of the pipeline inventory. There have been examples of providing protection for a number of risers by locating ESDVs together. This may lead to poor compliance with the location requirements and should be questioned if the ESDVs are located too high up the risers
- **operation** The ESDV should have a local shutdown control, and close automatically by operation of the installation emergency shutdown system. These methods for closing the ESDV should be verified during examination, testing or maintenance of the valve.

Major accident prevention document (MAPD)

Regulation 23 requires the operator to prepare a major accident prevention document before completion of the design of the pipeline. It should normally include

- a description of the pipeline
- a hazard identification
- a risk assessment
- prevention and mitigation measures, including those taken into account during design, construction and operation of the pipeline
- the pipeline management system, and
- emergency response measures

The MAPD need not be submitted to HSE, but it must be kept up-to-date and should be available for inspection. It may be a stand-alone document referred to in the offshore installation safety case or it may be included in the case in its entirety.

Emergency Procedures

If there are different operators for different parts of a pipeline then their emergency procedures and arrangements should be compatible with each other.

Exemptions (regulation 29)

The circumstances which justify exemption are likely to be few and will need close examination. HSE shall not grant any such exemption unless it is satisfied that the health and safety of persons who are likely to be affected by the exemption will not be prejudiced by it.

Appendix 2: Fluids known to be conveyed by offshore and onshore pipelines

Fluid	Phase	Flam	Boiling Point	Toxic	Vapour pressure	Dangerous - under PSR Schedule 2
Acetone	liquid	F	56.5	-		no
Acrylonitrile						yes (defined)
Adiponitrile	liquid	F	295	T	very low	no
Ammonia	gas	F		T		yes
Aniline	liquid	F	184	T	very low	no
Benzene	liquid	F	80.1	T	approx 0.1 bar	no
Brine	liquid	-		-		no
Butadiene	gas	F+	0.5	-		yes if above 7 bar
Butane	gas	F+	0.5	-		yes if conveyed as • a liquid or • a gas above 7 bar
Calcium sulphate	slurry	-		-		no
Carbon black	powder	F		-		no

Carbon monoxide	gas	F+		T		yes
Cement	slurry	-		-		no
Chalk	slurry	-		-		no
Cyclo-hexane	liquid	F	80.7	-		no
Ethane	gas	F+		-		yes if above 7 bar
Ethanol	liquid	F	78.4	-		no
Ethylene	gas	F+		-		yes if above 7 bar
Ethylene dichloride	liquid	F	82.4	-		no
Ethylene glycol	liquid	-		-		no
Hydrazine						
Hydrogen	gas	F+		-		yes if above 7 bar
Methane	gas	F+		-		yes if above 7 bar
Methanol	liquid	F		T	0.13	yes
Nitric acid (conc.)	liquid	-		-		yes (oxidising fluid)

Nitrogen	gas	-		-		no
Oleum	liquid	-		-		yes (reacts violently with water)
Oxygen	gas	-		-		no
Phenol	solid	-		T		no
Propane	gas	F+		-		yes if above 7 bar
Propylene	gas	F+		-		yes if above 7 bar
Sodium hydroxide	solution	-		-		no
Styrene	liquid	F	145.2	-		no
Vinyl chloride	gas	F+		-		yes if above 7 bar
White oils	liquid	F		-		no
Xylene	liquid	F	139	-		no