TECHNICAL SPECIFICATION

PIG SIGNALLERS: INTRUSIVE TYPE

DEP 31.40.21.33-Gen.

October 1994

DESIGN AND ENGINEERING PRACTICE

USED BY

COMPANIES OF THE ROYAL DUTCH/SHELL GROUP

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PREFACE

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The objective is to set the recommended standard for good design and engineering practice applied by Group companies operating an oil refinery, gas handling installation, chemical plant, oil and gas production facility, or any other such facility, and thereby to achieve maximum technical and economic benefit from standardization.

The information set forth in these publications is provided to users for their consideration and decision to implement. This is of particular importance where DEPs may not cover every requirement or diversity of condition at each locality. The system of DEPs is expected to be sufficiently flexible to allow individual operating companies to adapt the information set forth in DEPs to their own environment and requirements.

When Contractors or Manufacturers/Suppliers use DEPs they shall be solely responsible for the quality of work and the attainment of the required design and engineering standards. In particular, for those requirements not specifically covered, the Principal will expect them to follow those design and engineering practices which will achieve the same level of integrity as reflected in the DEPs. If in doubt, the Contractor or Manufacturer/Supplier shall, without detracting from his own responsibility, consult the Principal or its technical advisor.

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1) Operating companies having a Service Agreement with SIOP, SIEP, SIC or other Service Company. The use of DEPs by these Operating companies is subject in all respects to the terms and conditions of the relevant Service Agreement.

2) Other parties who are authorized to use DEPs subject to appropriate contractual arrangements.

3) Contractors/subcontractors and Manufacturers/Suppliers under a contract with users referred to under 1) or 2) which requires that tenders for projects, materials supplied or - generally - work performed on behalf of the said users comply with the relevant standards.

Subject to any particular terms and conditions as may be set forth in specific agreements with users, SIOP, SIEP and SIC disclaim any liability of whatsoever nature for any damage (including injury or death) suffered by any company or person whomsoever as a result of or in connection with the use, application or implementation of any DEP, combination of DEPs or any part thereof. The benefit of this disclaimer shall inure in all respects to SIOP, SIEP, SIC and/or any company affiliated to these companies that may issue DEPs or require the use of DEPs.

Without prejudice to any specific terms in respect of confidentiality under relevant contractual arrangements, DEPs shall not, without the prior written consent of SIOP and SIEP, be disclosed by users to any company or person whomsoever and the DEPs shall be used exclusively for the purpose for which they have been provided to the user. They shall be returned after use, including any copies which shall only be made by users with the express prior written consent of SIOP and SIEP. The copyright of DEPs vests in SIOP and SIEP. Users shall arrange for DEPs to be held in safe custody and SIOP or SIEP may at any time require information satisfactory to them in order to ascertain how users implement this requirement.

All administrative queries should be directed to the DEP Administrator in SIOP.

NOTE: In addition to DEP publications there are Standard Specifications and Draft DEPs for Development (DDDs). DDDs generally introduce new procedures or techniques that will probably need updating as further experience develops during their use. The above requirements for distribution and use of DEPs are also applicable to Standard Specifications and DDDs. Standard Specifications and DDDs will gradually be replaced by DEPs.

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1. INTRODUCTION

1.1 SCOPE

This is a new DEP which gives minimum requirements for the design, fabrication and testing of shop fabricated intrusive type pig signallers for onshore and offshore carbon steel pipelines (except subsea) with a nominal diameter of DN 100 to DN 1200, design pressures not exceeding 250 bar and a temperature range of -20 °C to 120 °C.

Pig signallers are used to indicate the passage of a pig. Intrusive types are normally mounted on pig trap systems but may also be installed at other locations along the pipeline. Intrusive type pig signallers should be installed on all pipelines which will be routinely pigged at intervals of six months or more frequently. It is assumed that they will be installed permanently in an open environment.

The requirements of this DEP are based on the assumption that the intrusive type pig signallers are mounted on the pipeline via a DN 50 branch connection into which the pipeline fluid will enter and pressurise the housing of the pig signaller.

The adherence to this DEP ensures that the relevant requirements of ANSI/ASME B31.3, B31.4 and B31.8 for the pressure containing components of the pig signaller will be complied with.

This DEP is not applicable to non-intrusive types of pig signallers.

1.2 DISTRIBUTION, INTENDED USE AND REGULATORY CONSIDERATIONS

Unless otherwise authorised by SIPM, the distribution of this DEP is confined to companies forming part of the Royal Dutch/Shell Group or managed by a Group company, and to Contractors and Manufacturers/Suppliers nominated by them (i.e. the distribution code is "F", as described in DEP 00.00.05.05-Gen.).

This DEP is intended for use by Functions in the Group that are involved in the design, material procurement, construction and operation of pipelines.

If national and/or local regulations exist in which some of the requirements may be more stringent than in this DEP the Contractor shall determine by careful scrutiny which of the requirements are the more stringent and which combination of requirements will be acceptable as regards safety, environmental, economic and legal aspects. In all cases, the user shall inform the Principal of any deviation from the requirements of this DEP which is considered to be necessary in order to comply with national and/or local regulations. The Principal may then negotiate with the Authorities concerned with the object of obtaining agreement to follow this DEP as closely as possible.

1.3 DEFINITIONS

1.3.1 General definitions

The **Contractor** is the party which carries out all or part of the design, engineering, procurement, construction and commissioning or management of a project or operation of a facility. The Principal may undertake all or part of the duties of the Contractor.

The **Manufacturer/Supplier** is the party which manufactures or supplies equipment and services to perform the duties specified by the Contractor.

The **Principal** is the party which initiates the project and ultimately pays for its design and construction. The Principal will generally specify the technical requirements. The Principal may also include an agent or consultant authorised to act for, and on behalf of, the Principal.

The word **shall** indicates a requirement.

The word **should** indicates a recommendation.

1.3.2 Specific definitions

Data/Requisition The data/requisition sheet DEP 31.40.21.95-Gen., which is to be

sheet	used by the Principal and completed by the Contractor. A specimen copy for information is included in (Appendix 1).
Pig	A device which can be propelled through a pipeline by fluid flow and is normally used for cleaning, batching, inspection or other activities.
Pig signaller (Intrusive type)	A device installed on a pipeline or pig trap system with a trigger penetrating into the bore of the pipe to give an indication of the passage of a pig.
Pig trap	An ancillary item of pipeline equipment, with associated pipework and valves, for introducing a pig into or removing a pig from a pipeline.

1.4 ABBREVIATIONS

DN	Diameter Nominal (mm)
HAZ	Heat Affected Zone
HIC	Hydrogen Induced Cracking
PN	Pressure Nominal (bar)
PTFE	Polytetrafluoroethylene

1.5 CROSS-REFERENCES

Where cross-references to other parts of this DEP are made, the referenced section number is shown in brackets. Other documents referenced by this DEP are listed in (15).

1.6 ACTION ITEMS

The Data/Requisition sheet shall be fully completed by the Principal or the Contractor as appropriate. Items requiring a statement in the Data/requisition sheet are identified with an asterisk (∗) in the margin.

2. COMPONENT DESCRIPTIONS AND FUNCTIONAL REQUIREMENTS

2.1 COMPONENT DESCRIPTION

The pig signaller should consist of the following components:

- a trigger penetrating into the main bore of the pipe which will be moved by a passing pig;
- a transfer mechanism to transfer the movement of the trigger causing the trip of a mechanical indicator and/or electrical switch;
- a pressure housing, containing the transfer mechanism connected with the trigger, having a flange DN 50 for installation on to the pipeline;
- a mechanical and/or electrical indicator mounted externally on the pressure housing.

Additionally, for pig signallers on pipeline sections which cannot be depressurised for pig signaller maintenance or where installed on pipelines at buried locations:

- a flanged ball valve DN 50, with or without a flanged extension, to isolate the pig signaller from the pipeline;
- a portable jacking tool for safe lifting of the transfer mechanism complete with the trigger through the isolating valve with the main pipeline under pressure.

* The Principal shall identify on the Data/Requisition sheet whether the Manufacturer/Supplier shall provide a portable jacking tool or not.

NOTE: If an existing jacking tool is to be used, the Manufacturer's confirmation must be obtained that this tool is suitable for the offered pig signaller model.

2.2 FUNCTIONAL REQUIREMENTS

The functional requirements for the pig signaller are as follows:

- the trigger shall trip the mechanical indicator for local indication or an electrical switch for remote indication or both when a pig passes the pig signaller in any direction;
- after the pig has passed the pig signaller, the internal mechanism shall re-set automatically to the position required for indicating the passage of the next pig. Resetting of the signal mechanical indicator shall be undertaken manually only. Resetting of the electrical switch shall be automatic;
- the mechanical signal flag or the electrical switch shall not be triggered by the flow or pressure of the pipeline fluid;
- the trigger shall not obstruct or damage a passing pig and the trigger shall not be damaged by a passing pig;
- the penetration of the trigger into the main pipe shall be kept to a minimum to avoid unnecessary obstruction of the fluid flow;
- the trigger shall be corrosion resistant over the specified design life.

3. SERVICE AND INSTALLATION REQUIREMENTS

3.1 SERVICE REQUIREMENTS

The pig signaller shall be designed for maintenance free operation and permanent installation in an open environment.

Pig signallers shall be suitable:

- for buried main pipes that are horizontal and have a cover not exceeding 1.2 m:

  to be installed vertically at the 12 o'clock position with an extension and an isolation valve configuration as shown in Figure 1;

- for horizontal above ground main pipes:

  to be installed vertically at the 12 o'clock position with an isolation valve configuration as shown in Figure 2, or without an isolation valve as shown in Figure 3;

- for vertical above ground main pipes:

  to be installed horizontally at any position, with or without an isolation valve configuration.

* The necessity of an isolation valve shall be stated by the Principal in the Data/Requisition sheet.

Pig signallers designed for replacement with the main pipe under pressure shall have a liftable internal mechanism to allow the closing of the isolating valve and to allow safe release of the pressure of the isolated part when the valve is closed.

The trigger and the transfer mechanism shall be suitable for a passage through a branch with a minimum ID of 38 mm.

3.2 INSTALLATION REQUIREMENTS

The pig signaller branch is part of the pipeline supply, and the branch details given here are to determine the branch stand-out only.

The pig signaller shall be mounted on the main pipe via a branch terminating in a raised face flange size DN 50 as specified in (5.5), supplied by the Principal as follows:

- for main pipe diameters less than DN 200 the branch construction shall be:

  a reducing tee where practical (otherwise a DN 50 weldolet), a weld neck flange, and a pup piece if required;

- for main pipe diameters equal to or greater than DN 200 the branch construction shall be:

  a DN 50 weldolet, a weld neck flange, and a pup piece if required.

* The dimensions required by the Manufacturer/Supplier to determine the necessary length of transfer mechanism and trigger, such as branch dimensions, main line data, length "E" of the flanged extension for buried pipelines and the configuration of the branch connection shall be stated by the Principal in the Data/Requisition sheet as follows:

- Dimension "W" (centre of run pipe to end face of weldolet plus flange) as shown in Figure 1 and 3;
- Dimension "T" (centre-to-end outlet of the reducing tee plus pup piece plus flange) as shown in Figure 2.

  NOTE: The length "E" of the flanged extension shall not exceed 1.5 m, and dimensions "W" and "T" shall not exceed 200 mm plus ½ run pipe diameter.

The pig signaller shall have an adjustable trigger to reset in the field, the exact stand-out dimension "W" or "T" ensuring that the correct trigger penetration is achieved.

Bolting and gaskets for the field installation will be part of the Principal's scope of supply.

4. DESIGN AND ENGINEERING

4.1 DESIGN CODE

The design methodology as described in ASME VIII, Division 1 shall be used for the design calculation of the pig signaller pressure housing.

4.2 DESIGN CRITERIA AND REQUIREMENTS

The design of the pig signaller shall comply with the requirements of (2.2) and (3) and the specification given in the Data/Requisition sheet.

The design pressure of the pig signaller pressure housing shall comply with the pressure/temperature rating classes for flanges as stated in ANSI/ASME B16.5, based on material group 1.1 unless otherwise stated in the Data/Requisition sheet, for the limited temperature range of -20 °C to 120 °C.

NOTE: 1) Pig signallers installed on pipelines operating at higher temperature require a derating.

2) For pig signallers installed on pipelines having a lower design temperature, the requirements of DEP 30.10.02.31-Gen. shall also apply.

* The required pressure/temperature rating of the pig signaller and the design criteria/parameter of the pipeline shall be stated by the Principal in the Data/Requisition sheet.

Pressure containing components not having established pressure ratings shall be qualified for use as described in UG-101 of ASME VIII, Division I; or Appendix 6 of ASME VIII, Division II; or by engineering calculations.

The minimum wall thickness of the pig signaller pressure housing and any extension shall be 4.8 mm.

* If a corrosion allowance is required, the additional wall thickness shall be stated by the Principal in the Data/Requisition sheet.

5. MATERIALS AND COMPONENTS

5.1 METALLIC MATERIALS

The selection of the metallic construction materials shall be in accordance with DEP 30.10.02.11-Gen.

The carbon equivalent of the steel shall be less than or equal to 0.43 percent calculated by the following formula:

$$CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15.$$

The carbon content shall not exceed 0.23%, or 0.25% for forgings.

The base material and welds shall have a maximum hardness of 325 HV10. Base metal hardness readings shall be made in accordance with ASTM E92 on each heat lot of fittings at 5 random locations.

The actual yield to tensile strength ratio of the steel shall not exceed 0.90.

* If carbon steel and stainless steel components are used in combination, the risk of galvanic corrosion at the contact areas shall be minimised by the use of flanged connections with nickel plated or aluminium coated bolting and a spiral wound stainless steel gasket.

NOTE: For standard applications AISI 316 or equivalent is preferred as trigger material (2.2).

The materials to be used and configuration shall be stated by the Manufacturer in the Data/Requisition sheet.

5.1.1 Sour service

* When sour service conditions are specified by the Principal in the Data/Requisition sheet, all components shall conform to the requirements of NACE MR0175. In addition seamless pipe shall have a maximum sulphur content of 0.010 wt%. The base material and welds shall have a maximum hardness of 248 HV10.

5.2 NON-METALLIC MATERIALS

The selection of non-metallic fluid exposed construction materials shall be in accordance with DEP 30.10.02.13-Gen. The selected material shall be suitable for the long-term exposure to the transported fluid at the design pressure and temperature conditions.

5.3 RING SEALS

Elastomeric materials for ring seals shall resist explosive decompression and shall be suitable for the long-term exposure to the transported fluid at the design pressure and temperature conditions. The cross-section of the seals shall not exceed 7 mm diameter for design pressures of 150 bar and above.

NOTE: Compatibility of ring seals materials with the transported fluid may be checked with DEP 30.10.02.13-Gen. Polybutadiene acrylonitrile and vinylidene fluoride-hexafluoropropylene are commonly used.

5.4 STRAIGHT PIPE

Straight pipe used for the housing of the pig signaller shall comply with MESC specifications 74/001 or 74/002, depending on the pipe material, including any additional requirements for the particular service conditions, see (5.1.1) and (9).

5.5 FLANGES

Flanges shall be raised faced and the end profile shall be suitable for butt-welding. Flanges shall be in accordance with ANSI/ASME B16.5 and MESC specifications 76/001 and 76/002, including any additional requirements for the particular service conditions, see (5.1.1) and (9).

5.6 GASKETS

Gaskets for flanged connections shall be of the spiral wound type in accordance with ANSI/ASME B16.20 and the MESC specifications given in MESC Main Group 85.

* The type of gasket to be used shall be specified by the Principal in the Data/Requisition sheet.

Gaskets shall be tightened until guide ring contact is reached. Gaskets shall never be re-used.

5.7 BOLTING

The selection of bolting material shall be in accordance with DEP 30.10.02.11-Gen. Studs and nuts shall be aluminium coated or electroless nickel plated, or painted and protected with grease filled caps.

NOTE: The preferred materials for standards applications are ASTM A193/A193M grade B7 and ASTM A194/A194M grade 2H for non sour service conditions, and ASTM A193/A193M grade B7M and ASTM A194/A194M grade 2HM for sour service conditions; in accordance with MESC specifications 81/001 and 81/002.

5.8 ISOLATION VALVE

The isolation valve of the pig signaller shall be a ball valve in accordance with MESC specification 77/130, including additional requirements for the particular service conditions, see (5.1.1) and (9).

5.9 OTHER ITEMS

Other fittings should be produced in accordance with MESC specification 76/003.

6. WELDING

Welds shall be made by welders/welding operators qualified in accordance with ASME IX. Welding procedures shall be qualified in accordance with ASME IX.

Welding procedure qualification shall include hardness testing of the weld, HAZ and base metal. The hardness shall be measured in accordance with ASTM E 92. For pipe butt welds, hardness traverses shall be carried out on lines 2 mm from the pipe surfaces on a weld cross-section. Each traverse shall have at least three hardness measurements taken in each of the weld metal, the HAZ each side of the weld, and the base metal. For each HAZ, one of the hardness measurements shall be made within 0.5 mm of the weld fusion line. The hardness shall not exceed the values specified in (5.1) and (5.1.1).

End profiles of pipes and fittings to be butt-welded shall be in accordance with ANSI/ASME B16.25.

The requirement for the pig signaller to be post-weld heat treated shall be determined in accordance with ASME VIII, Division I, Subsection C. Procedures to be applied shall be in accordance with ASME VIII, Division I, Part UW-40.

7. THREADED CONNECTIONS

Threaded connections shall not be used in any of the pressure containing components except when required to facilitate the removal of the internals of the pig signaller.

If used, threads shall be either taper pipe threads (NPT) or straight pipe coupling (NPSC), secured by an acceptable method such as a locking ring, retaining strip or locking pin. The threads shall be in accordance with ANSI/ASME B1.20.1. Threaded connections shall have a gasket or an O-ring above and below the thread.

8. INSPECTION AND EXAMINATION

8.1 GENERAL

Inspection and testing shall be performed before any paint or coating is applied.

Visual examination methods shall be in accordance with ASME V, Article 9.

All components shall be visually examined in accordance with ASME VIII, Division I, Part UG-93.

A functional test shall be performed to demonstrate that the trigger mechanism trips the mechanical indicator or the electrical switch.

8.2 EXAMINATION OF WELDS

Each weld shall be examined by 100% radiography (RT). In addition, carbon steel welds shall receive 100% magnetic particle examination (MT) and stainless steel welds shall receive 100% liquid penetrant examination (PT).

RT shall be in accordance with ASME V, Articles 2 and 22, with acceptance criteria in acordance with ASME VIII, Division I, Part UW-51.

MT shall be in accordance with ASME V, Articles 7 and 25, with acceptance criteria in acordance with ASME VIII, Appendix 6.

PT shall be in accordance with ASME V, Articles 6 and 24, with acceptance criteria in acordance with ASME VIII, Appendix 8.

9. MARKING

The pressure housing of the pig signaller shall be stamped with the pressure class rating as indicated on the Data/Requisition sheet.

If sour service conditions are specified, the signaller shall be stamped "NACE MR0175".

10. HYDROSTATIC PRESSURE TEST

The assembled pig signaller, including the isolation valve, shall be submitted to a hydrostatic pressure test prior to any painting or coating. The test pressure shall be 1.5 times the design pressure (at ambient temperature) stated on the Data/Requisition sheet. The test pressure shall be held for a period of at least 4 hours. The acceptance criteria are no leakage or loss in pressure. Only clean tap water with a chloride content not exceeding 200 mg/kg shall be used. Austenitic stainless steel materials shall be flushed with condensed or demineralised water to reduce the chloride content to 2 mg/kg if the pig signaller will not be dried immediately after the completion of the hydrostatic pressure test.

11. SURFACE PREPARATION AND COATING

After the completion of the hydrostatic pressure test the pig signaller shall be dried internally. All exterior and interior surfaces shall be dry and shall be free from grease or oil.

Carbon steel parts of the pig signaller shall be blast cleaned to ISO 8501-1 grade 2½ and externally coated with an amine cured epoxy, to a dry film thickness of 300 microns, applied in two coats. The application shall be in strict accordance with the coating supplier's specification.

The coating shall be subject to holiday detection using a wet sponge tester set at 60 volts. The acceptance criterion shall be zero pinholes.

12. ELECTRICAL SWITCH

The electrical switch shall be suitable for use in hazardous areas and shall be made of corrosion resistant materials, e.g. salt water resistant materials for offshore installations.

NOTE: Guidance and minimum requirements for electrical equipment are given in DEP 33.64.10.10-Gen.

* The classification of the hazardous area shall be stated by the Principal in the Data/Requisition sheet.

13. DOCUMENTATION

An Inspection Certificate shall be provided by the Manufacturer for all pressure retaining components in accordance with the following:

- ISO 10474 Type 3.1B for chemical analysis, mechanical properties, notch toughness properties, hardness properties, heat treatment, non-destructive examination.
- ISO 10474 Type 3.1C for other tests, e.g. dimensional checks, pressure test, functional checks.

The Manufacturer/Supplier shall provide a user manual detailing the requirements for installation, inspection and preventive maintenance of the pig signaller. A list of recommended spare parts and details of the jacking tool shall be included.

14. TRANSPORTATION

The pig signaller shall be protected against damage and corrosion during transport and storage. The transfer mechanics with the trigger outside the pressure housing shall be protected by plastic covers.

15. REFERENCES

In this DEP, reference is made to the following publications.

NOTE: Unless specifically designated by date, the latest edition of each publication shall be used, together with any amendments/supplements/revisions thereto.

SHELL STANDARDS

Index to DEP publications and standard specifications	DEP 00.00.05.05-Gen.
Requisition binder	DEP 30.10.01.10-Gen.
Metallic materials - Selected standards	DEP 30.10.02.11-Gen.
Non-metallic materials - Selection and application	DEP 30.10.02.13-Gen.
Metallic materials - Requirements for prevention of brittle fracture of equipment in low-temperature service (45 °C or below) and equipment containing liquefied gas or lethal substances	DEP 30.10.02.31-Gen.
Data/Requisition sheet for pig signallers	DEP 31.40.21.95-Gen.
Electrical engineering guidelines	DEP 33.64.10.10-Gen.
MESC buying descriptions and specifications: Pipe, carbon steel, API Spec 5L	MESC 74/001
Pipe, carbon steel, ASTM A106	MESC 74/002
Hydrogen induced cracking sensitivity test	MESC 74/125
Flange facing finish	MESC 76/001
Flanges, ANSI B16.5,	MESC 76/002
Fittings, butt-welded, ASTM A234	MESC 76/003
Ball valves to API 6D, flanged or butt-weld	MESC 77/130
Studbolts, ASTM A193	MESC 81/001
Nuts for bolts	MESC 81/002
Gaskets	MESC 85

AMERICAN STANDARDS

Pipe Threads, General Purpose	ANSI/ASME B1.20.1
Steel Pipe Flanges, Flanged Valves and Fittings;	ANSI/ASME B16.5
Metallic gaskets for Pipe Flanges - Ring joint, Spiral-wound and jacketed	ANSI/ASME B16.20
Butt welding ends	ANSI/ASME B16.25
Chemical Plant and Petroleum Refinery Piping	ANSI/ASME B31.3
Liquid Transportation Systems for Hydrocarbons,	ANSI/ASME B31.4

Liquid Petroleum Gas, Anhydrous Ammonia, and Alcohols	
Gas Transmission and Distribution Piping Systems	ANSI/ASME B31.8

ASME Boiler and Pressure Vessel Code

Section V, Non-Destructive Examination	ASME V
Section VIII, Pressure Vessels	ASME VIII
Section IX, Qualification Standard for Welding and Brazing Procedures, Welders, Brazers, and Welding and Brazing Operators	ASME IX

Issued by:
The American Society of Mechanical Engineers
345 East 47th Street
New York NY 10017
USA.

Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service	ASTM A193/A193M
Standard Specification for Carbon and Alloy-Steel Nuts for Bolts for high-pressure and High-Temperature Service	ASTM A194/A194M
Standard Test Method for Vickers Hardness of Metallic Materials	ASTM E92

Issued by:
American Society for Testing and Materials
1916 Race Street
Philadelphia PA 19103-1187
USA.

Standard Material Requirements, Sulphide Stress Cracking Resistant Metallic Materials for Oilfield Equipment	NACE MR0175

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National Association of Corrosion Engineers
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USA.

INTERNATIONAL STANDARDS

Preparation of Steel Substrates before Application of Paints and Related Products Visual Assessment of Surface Cleanliness; Part 1; rust grades and preparation grades of uncoated steel substrates and of steel substrates after removal of previous coatings	ISO 8501-1
Steel and Steel Products; Inspection Documents	ISO 10474

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FIGURES

SCHEMATICS OF PIG SIGNALLER INSTALLATIONS

Figure 1

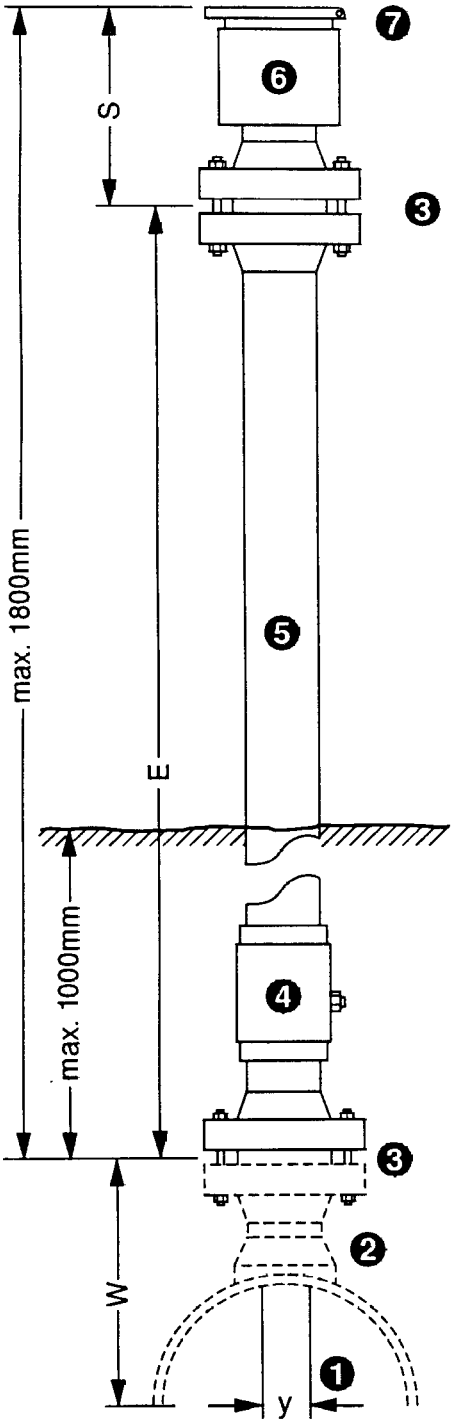


Figure 2

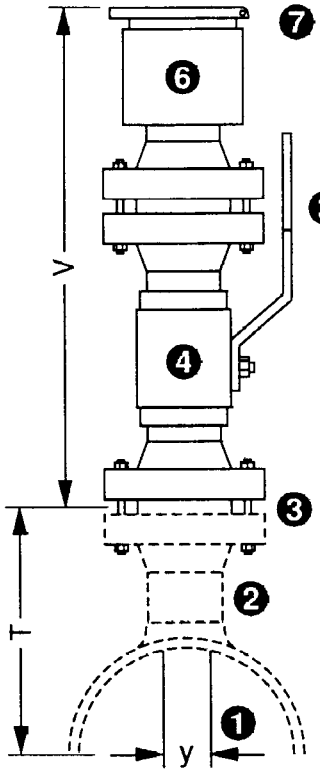
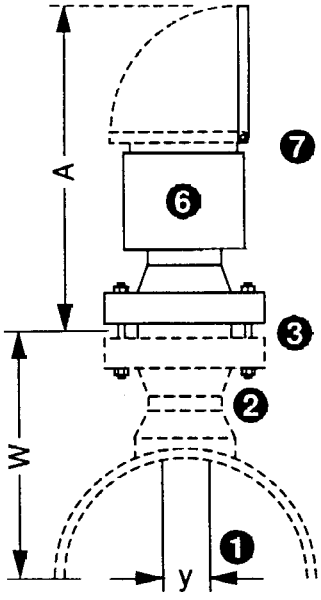


Figure 3



1. run pipe ≥ DN 100 ≤ DN 1200
2. weldolet or pup piece, DN 50
3. flange connection, DN 50
4. isolating valve, DN 50
5. pipe, DN 50
6. main component of the pressure housing
7. mechanical indicator

A = length of actuated pig signaller
E ≤ 1500mm
S = length of pig signaller housing
V = length of pig signaller housing plus valve
T, W ≤ 200mm plus 1/2 run pipe diameter
y = ID minimum of 38mm
---- prepared by the Principal

H75182P

APPENDIX 1 SPECIMEN COPY OF BLANK DATA/REQUISITION SHEET

A specimen copy of the Data/Requisition sheet DEP 31.40.21.95-Gen. is attached. The latest revision of this sheet shall be used and can be found in the Requisition Binder (DEP 30.10.01.10-Gen.).

Data/Requisition sheet for **Pipeline Pig Signaller**			Project Name:			
			Project Number:		Order/Enquiry No.:	
			QUANTITY REQUIRED:			
Section (Note 1)		ITEM	SELECTION			
4.2	PIPELINE	Design Code	ANSI B31.4	ANSI B31.8	Other:	
		Pig Trap Design Code	ANSI B31.4	ANSI B31.8	Other:	
		Design Pressure	bar (ga)			
		Pig Trap Design Temperature	Minimum °C	Maximum °C		
		Ambient Temperature	Minimum °C	Maximum °C		
		Transported Fluid				
5.1.1		Sour Service	Yes	No		
4.2		Corrosion Allowance	mm			
		Steel Grade				
		Outside Diameter	mm			
13		Gasket type				
		Hazardous Area Classification	Zone 1	Zone 2		
			Gas Group :	Temperature Group :		
4.2	PIG SIGNALLER	Pressure Class Rating PN	50	68	100	150 / 250
		Pressure Class Rating ANSI	300	400	600	900 / 1500
5.1		Materials Information	If stainless steel is used in combination with carbon steel, state materials and configuration :			
Figures		Dimensions	Pig signaller housing length, S : mm			
			Actuated pig signaller housing length, A : mm			
			Pig signaller housing plus valve length, V : mm			
2.1		Portable jackiing tool required	Yes	No		
	INSTALLATION		LOCATION 1		LOCATION 2	
3.1		Isolation valve	Yes	No	Yes	No
3.2		If buried	Flange extension length, : mm		Flange extension length, : mm	
		If Tee Branch connection	Run pipe wall thickness, : mm		Run pipe wall thickness, : mm	
			Outlet wall thickness, t2 : mm		Outlet wall thickness, t2 : mm	
			Outlet dimension, L : mm		Outlet dimension, L : mm	
			Pup piece dimension, l : mm		Pup piece dimension, l : mm	
			Flange dimension, h : mm		Flange dimension, h : mm	
			Dimension, T1 : mm		Dimension, T2 : mm	
		If Branch Fitting outlet	Run pipe wall thickness, t : mm		Run pipe wall thickness, t : mm	
			Weldolet dimension, a : mm		Weldolet dimension, a : mm	
			Flange dimension, h : mm		Flange dimension, h : mm	
			Dimension, W1 : mm		Dimension, W2 : mm	

In shaded boxes, [ ] use a 'Check Mark' to indicate selection

ADDITIONAL DATA

INFORMATION TO BE SUBMITTED WITH THE TENDER

This completed data/requisition sheet DEP 31.40.21.95-Gen. (i.e. all data fields not already completed by the Principal).

NOTES

General: Pig signallers shall comply with DEP 31.40.21.33-Gen.

Note 1: Refers to section numbers of DEP 31.40.21.33-Gen.

REMARKS AND/OR DESCRIPTION OF REVISIONS

Made by:		Date	EQUIPMENT :	Rev. letter			
				Date			
Chk'd by:			PLANT :	Sign.			
Appr'd by:			CONSIGNEE :	Sheet No. 1 of 1			
Eng. by :				Equipm. No.			
Principal :				Req. No.			

DEP 31.40.21.95-Gen., dated 10/94

SPECIMEN
USE LATEST REVISION