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دستگاه نشانگر پیگ

Pig Signaler Specification

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ابلاغ مصوبه هیأت مدیره

مدیر محترم پژوهش و فناوری و رئیس شورای استاندارد

باسلام،

به استحضار می رساند در جلسه ۱۴۷۲ مورخ ۱۳۹۰/۸/۱ هیأت مدیره، نامه شماره گ۹/۹۹۲۲۶/۰۰۰ مورخ ۹۰/۷/۲۰ آن مدیریت درمورد تصویب نهایی استاندارد تحت عنوان "دستگاه نشانگر عبور پیگ" به شماره تقاضای IGS-E-PL-031(0) مطرح و مورد تصویب قرار گرفت.

این مصوبه در حکم مصوبه مجمع عمومی شرکتهای تابعه محسوب و برای کلیه شرکتهای تابعه لازم الاجراء می باشد.

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FOREWORD

This standard specification has been technically revised , and up dated , it intended to be mainly used by all divisions of N.I.G.C. and EPC contractors , and has been prepared on interpretation of recognized standards , technical documents , knowledge, backgrounds and experiences in gas industries at national and international levels.

Iranian Gas Standards (IGS) are prepared, reviewed and amended by technical standard committees within NIGC standardization division of research & technology management and submitted to "the standards council of NIGC" for approval.

Iranian Gas Standards (IGS) are subjected to revision, amendment or withdrawal, if required, thus the latest edition of IGS shall be cheeked / inquired by IGS users.

Any comments from concerned parties or individuals in IGS'S are welcomed.

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1.0.Scope

This standard specification defines NIGC'S mandatory requirements for the design , fabrication , material selection , inspection and testing of pig signaler for pipeline size 6 in to 56 in . and for pressure class rating up to class 600 inclusive.

2.0. References

Throughout this standard specification, the following standards & codes are referred to, the edition of these standards & codes those are in effect at the time of issuing of this standard specification.

The applicability of changes in standards & codes that occur after the date of standards that referred shall be mutually upon by the purchaser and supplier and / or manufacturer. Pig signaler shall conform to latest edition of ASME B.31.8 & ASME VIII and shall be manufactured in accordance with the standards specified herein as supplemented in this standard specification.

2.1. Normative references

2.1.1. ASME B.31.8 ,2007	: Gas transmission and distribution piping system.
2.1.2. ASME VIII ,DIV.1&2 ,2010	: Pressure vessel code.
2.1.3. ANSI B.16.5 ,2009	: Pipe flanges and flanged fittings from NPS ½ through NPS 24.

3.Pig signaler specification

Pig signaler is used to indicate the passage of a pig & assumed that, they will be installed permanently on pig trap system or at other locations along the pipeline .

-.Pig signaler shall be suitable for the same class rating of related equipment.

-.As a minimum the require design pressure up to ASME class 600 pressures rating . (In some project class 900 may be used).

-.Ambient temperature range : -29 to 60^0C

-The design calculation of signaler pressure housing shall be in accordance with ASME section VIII DIV. 1 or Div. 2 .

-Pig signaler pressure containing parts shall meet the requirements of ASME section VIII DIV.1 or 2.

3.1. Pig signaler shall consist of

3.1.1.A pressure housing, containing the transfer mechanism connected with the trigger equipped with or without flange for installation.

3.1.2.The signaler shall be equipped with a 2 in. flanged (as per ansi b16.5) or 1 ½ welded type base connection.

3.1.3.A flanged ball valve with or without flange extension to isolate pig signaler from Pipeline.(all pig signaler shall be removable for repair).

3.1.4. The signaler required for mounting on main pipeline ,shall be set on a base connection Suitably beveled for welding direct on to the specified pipeline.

3.1.5. Mechanical / electrical indicator mounted externally on the pressure housing .

3.1.6. Electrical components : Shall have following features.(if required) and made of corrosion resistance material.(IP65 ,EEX 11 B , T6 MIN.)

Type : Micro switch.
Rating : 24 V-DC ,2 AMPS.
Load : Relay (inductive).
Housing : Weather, dust and explosion proof:
Cable entry : ET with compression gland for PVE/LC/DWA cable.
Electric signal : Auto reset

The electrical switch shall be suitable for use in hazardous area and shall be made of corrosion resistance material.

3.2. Pig signaler characteristic

3.2.1.Visual signals shall be clearly visible from a distance of 50 meters (flag type) and should be manually re-settable.

3.2.2. A trigger guided into the main bore of the pipe , which shall be moved by a passing pig (Bi- directional movement capability) including a ball valve.

3.2.3. For maintenance purposes a portable tool for safe lifting of the transfer mechanism, completed with the trigger through the isolating valve with the pipeline under pressure (Jacking bracket, as per the end user request).

3.2.4.The operational method shall be provided in technical manual.

3.2.5. For commissioning and maintenance ,two years spare parts shall be recommended by manufacturer with S.P.L.I (Spare Part List Interchangeable record.)

3.3.Functional requirements

3.3.1.The trigger shall trip the mechanical indicator for local indication, when pig passes the pig signaler in any direction.

3.3.2.The internal mechanism shall reset automatically to the defined position.(Resetting of the signal mechanical indicator shall be done manually and only resetting of the electrical switch shall be automatic).

3.3.3.The mechanical signal flag or electrical switch shall not be triggered, by the flow or internal pressure of the pipeline.

3.3.4.The trigger shall not make obstruct, damage, or be damaged as pig passing.

3.3.5. The penetration of the trigger shall be kept to a minimum to avoid unnecessary obstruction.

3.3.6.The trigger shall be stainless steel ,spring type at least gr.302

3.3.7. Pig signaler shall be maintenance free as permanent installation in outdoor environment.

3.3.8. For installation of pig signaler on pipeline in surrounded area , may order with stem extension.

4. Materials

4.1. Only base connation shall be forged type and max carbon content 0.23% .and weldable to matching pipe.

All internal parts shall be made of stainless steel in accordance with AST M STD., grade 304 for sweet gas and grade.316 for sour gas as a minimum requirement.

4.2. Non – metallic parts shall be suitable for long term exposure to the transferred fluid at specified design pressure & temperature.

4.3. Flag shall be made of aluminum or stainless steel in case of corrosive media.

5. Inspection and testing

5.1 .General	Inspection & testing's shall be carried out before external anti- corrosion coating.
5.2. Visual inspection	Visual inspection method of all components shall be casually examined in accordance with ASME VIII , DIV. I , part UE-93 .
5.3. Functional test.	Shall be carried out to demonstrate that, the trigger mechanism is capable to trip the mechanical indicator or the electrical switch.
5.4 .Weld inspection	All welds tests shall be carried out in accordance with ASME SEC.V applicable articles.
5.5 .Pressure housing.	The pressure housing of the pig signaler shall be stamped with the pressure . class rating as of the valve as indicated on the data sheet
5.6 .hydrostatic pressure test.	The proof test documents concerning the assembled pig signaler ,including isolation valve ,shall be submitted ,which has been issued by a well known certifying body. The proof test pressure shall be 1.5 times of the related pipeline design pressure. The acceptance criteria is no leakage or loss of pressure.
5.7. Inspection certification.	An inspection certification shall be submitted by manufacturer for all Pressure retaining components.

6. Surface preparation and final coating

After completion of the hydro test, pig signaler shall be dried internally, also all surface shall be free from oil or grease. Carbon steel parts shall be blast cleaned according to ISO 8501-1 to Sa 2 ½ & externally coated according to attachment1(except Stainless steel parts).

7.Marking

7.1. A nameplate of 0.5 mm thickness of stainless steel attached with fastener of same material to a visible location of pig signaler.

7.2 .Name plate shall be marked by die stamping & included following information.

872.1. Manufacture's name

7.2.2. Date of manufacturer

7.2.3. Applicable design code & standard

7.2.4. Nominal size (1 ½ in. for welded type &2 in. for flanged type).

7.2.5. ANSI class rating

8.Documentation

Following documents shall be submitted by manufacturer/supplier :

8.1.Manufacturing drawing and bill of material.

8.3.Maintenance and operational manual.

8.3. Valve testing certificate of the manufacturer.

8.4.All components testing certificates.

8.5.Original technical catalogue**.**

8.6.Recommended spare parts for two years operation.

8.7 Proto type .proof test certificate of assembled pig signaler.(shall be carried out By one of the certifying organization from attachment.

9.Data sheet

General			Manufacturer's Remark
Signaler orientation	Vertical on horizontal pipe . Horizontal on vertical pipe. Other		
Certification	BS EN 10204 3.1B/3.1. Other		
Inspection / certifying body (If applicable)			
Signaler type	Electrical Mechanical Electrical & mechanical		
Design parameters			
Pressure class rating		Bar/Psi	
Hydrostatic test pressure		Bar/Psi	
Design temperature		C Min. C Max.	
Pipeline O.D.		IN./MM	
Pipe wall thickness		IN/MM	
Operating pressure		Bar/Psi (Min.) Bar/Psi (Max)	To be specified by manufacturer
Operating temperature		C Min C Max.	
Standout length (flange type)		IN/MM	
Connection	Welded Flanged type		
Connection size	1 ½ 2		
Flange rating	600 900		
Flange face	R.F.,S.F		
Top coat details	According to attachment 1		Details shall be submitted by manufacturer.
Jacking bracket	Yes No		

The relevant elements of this data sheet shall be filled by purchaser and the rest by manufacturer
And to be signed by manufacturer's authorized person.

Attachment 1 : Above ground piping component external coating.

ABOVE GROUND PIPING COMPONENT	
Primer coat	Epoxy polyamide ,in accordance with SSPC 22 ,with a min. thickness of(DFT) of 70µm .
Intermediate coat	Epoxy polyamide ,in accordance with SSPC 22 , with a min. thickness of 140µm.
Top coat	Two-component aliphatic polyurethane , in accordance With MIL-C-83286 B ,or equivalent ,with min. thickness (DFT) of 70µm. Colour : white (RAL 9016)

Normative references

1.SSPC –paint 22 ,1982 : Epoxy polyamide paints (Primer ,Intermediate , Top coat). (Editorial changes Sept2000)

2.MIL-C-83286 B : Urethane , Aliphatic Isocyanate Coating