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| **طرح نگهداشت و افزایش تولید 27 مخزن** | | | | | | | |
| **SPECIFICATION FOR PIPELINE CONSTRUCTION**  **نگهداشت و افزایش تولید میدان نفتی بینک** | | | | | | | |
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| D02 | | MAY. 2023 | AFD | A.M.Noori | M.Fakharian | A.M.Mohseni |  |
| D01 | | MAR. 2022 | IFA | A.Khosravi | M.Fakharian | M.Mehrshad |  |
| D00 | | JAN. 2022 | IFC | A.Khosravi | M.Fakharian | M.Mehrshad |  |
| **Rev.** | | **Date** | **Purpose of Issue/Status** | **Prepared by:** | **Checked by:** | **Approved by:** | **CLIENT Approval** |
| **Class: 2** | | | **CLIENT Doc. Number: F0Z-707162** | | | | |
| **Status:** | | **IDC: Inter-Discipline Check**  **IFC: Issued For Comment**  **IFA: Issued For Approval**  **AFD: Approved For Design**  **AFC: Approved For Construction**  **AFP: Approved For Purchase**  **AFQ:** Approved For Quotation  **IFI: Issued For Information**  **AB-R: As-Built for CLIENT Review**  **AB-A: As-Built –Approved** | | | | | |

**REVISION RECORD SHEET**

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| **PAGE** | **D00** | **D01** | **D02** | **D03** | **D04** |  | **PAGE** | **D00** | **D01** | **D02** | **D03** | **D04** |
| **1** | X | X | X |  |  | **66** |  |  |  |  |  |
| **2** | X | X | X |  |  | **67** |  |  |  |  |  |
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1. **INTRODUCTION**

Binak oilfield in Bushehr province is a part of the southern oilfields of Iran, is located 20 km northwest of Genaveh city.

With the aim of increasing production of oil from Binak oilfield, an EPC/EPD Project has been defined by NIOC/NISOC and awarded to Petro Iran Development Company (PEDCO). Also PEDCO (as General Contractor) has assigned the EPC-packages of the Project to "Hirgan Energy - Design and Inspection" JV.

**GENERAL DEFINITION**

D01

The following terms shall be used in this document.

|  |  |
| --- | --- |
| CLIENT: | National Iranian South Oilfields Company (NISOC) |
| PROJECT: | Binak Oilfield Development – General Facilities |
| EPD/EPC CONTRACTOR (GC): | Petro Iran Development Company (PEDCO) |
| EPC CONTRACTOR: | Joint Venture of : Hirgan Energy – Design & Inspection(D&I) Companies |
| VENDOR: | The firm or person who will fabricate the equipment or material. |
| EXECUTOR: | Executor is the party which carries out all or part of construction and/or commissioning for the project. |
| THIRD PARTY INSPECTOR (TPI): | The firm appointed by EPD/EPC CONTRACTOR (GC) and approved by CLIENT (in writing) for the inspection of goods. |
| SHALL: | Is used where a provision is mandatory. |
| SHOULD: | Is used where a provision is advisory only. |
| WILL: | Is normally used in connection with the action by CLIENT rather than by an EPC/EPD CONTRACTOR, supplier or VENDOR. |
| MAY: | Is used where a provision is completely discretionary. |

1. **Scope**

This specification gives amendment and supplement to IPS-C-PI-140(1), "Construction Standard for Transportation Pipelines (Onshore)”.

It shall be used in conjunction with data/requisition sheets for present document subject.

IPS-C-PI-140(1) contains 19 parts outlines requirements for a procedure to specify responsibility of CLIENT and EXECUTOR in handing over, loading, hauling, unloading, keeping list of inventory and storing of materials required for installation of pipeline except for explosive materials which are dealt with in part 4 of this Standard.

1. **NORMATIVE REFERENCES**

## Local Codes and Standards

|  |  |
| --- | --- |
| * IPS-C-PI-140(1) | Construction Standard for Transportation Pipelines (Onshore) |
| * IPS-D-PI-143(0) | Pipeline Right of Way |
| * IPS-D-PI-175(0) | Pipeline Road Crossing Major & Secondary Road Crossing |
| * IPS-G-PI-280(2) | General Standard for Pipe Supports |
| * IPS-E-PI-140 | Engineering Standard For Onshore Transportation Pipelines |
| * IPS-E-TP-100 | Engineering Standard For Paints |
| * IPS-C-TP-101 | Construction Standard for Surface preparation |
| * IPS-C-PI-270 | Construction Standard For Welding Of Transportation Pipeline |
| * IPS-C-PI-370 | Construction Standard For Transportation Pipelines (Onshore) Pressure Testing |
| * IPS-C-PI-274 | Construction Standard Protective Coating |
| * IPS-C-TP-820 | Construction Standard for Cathodic Protection |
| * IPS-D-PI-103 | Pipeline Spacing |
| * IPS-D-PI-111 | Pipeline Scraper Trap |
| * NISOC-S4-L-6501 | PIPELINE SCRAPER TRAPS |
| * NISOC-S4-L-6502 | PIPELINE ROAD CROSSINGS |
| * NISOC-S4-L-6503 | نگهدارنده لوله اي مرتفع ساختمان خط لوله |
| * NISOC-S4-L-6505 | PIPELINE RIGHT - OF - WAY |
| * NISOC-S4-L-6508 | PIPELINE MARKERS & TEST POINTS |
| * NISOC-S4-L-6509 | SADDLE ANCHORS FOR PIPE LINES ALL GRADES |
| * NISOC-S4-L-6510 | PIPELINE HILLSIDE ANCHORS |

## International Codes and Standards

* ASME B 16.5 Steel Pipe Flanges and Flanged Fittings
* ASME B16.9 Factory-Made Wrought Steel Butt-welding Fittings
* ASTM E92 Standard Test Methods for Vickers Hardness and Knoop Hardness of Metallic Materials
* ASTM D3839 Standard Guide for Underground Installation of Fibreglass Pipe (ADD.)
* AWWA C950 Fiberglass Pressure Pipe
* AWWA M45 Fiberglass Pipe Design
* AWWA M55 PE Pipe Design and Installation
* DIN 8074 Polyethylene (PE) Pipes
* DIN 8075 Polyethylene (PE) Pipes – General Quality Requirements, Testing
* API Spec. 5L Specification for Line Pipe
* API 15HR Specification for High Pressure Fibreglass line pipe
* API 15LR Specification for Low Pressure Fibreglass line pipe and Fittings
* API RP5L1 Recommended Practice for Railroad Transportation of Line Pipe
* API RP5L5 Recommended Practice for Marine Transportation of Line Pipe
* API RP15S Recommended Practice for Qualification of Spoolable Reinforced Plastic Line Pipe
* API RP1102 Steel Pipelines Crossing Railroads and Highways
* ANSI/ASME B31.8 Gas Transmission and Distribution Piping Systems
* ANSI/ASME B31.4 Pipeline Transportation Systems for Liquids and Slurries
* ANSI/ASME B16.20 Metallic Gaskets for Pipe Flanges
* ANSI/ASME B16.25 Buttwelding Ends
* ANSI/ASME Sec.V Non-Destructive Examination
* ANSI/ASME Sec.IX Welding, Brazing and Fusing Qualification
* API 1104 Welding of Pipelines and Related Facilities
* ASTM E165 Standard Practice for Liquid Penetrant testing for General industry
* ASTM E709 Standard Guide for Magnetic Particle Testing
* BS- EN-10204 Metallic Products; Types of Inspection Document
* NACE MR-0175/ISO 15156 Petroleum and natural gas industries — Materials for use in H2S-containing environments in oil and gas production
* NACE TM-0284 Evaluation of Pipeline and Pressure Vessel Steels for Resistance to Hydrogen-Induced Cracking
* NACE TM-0177 Laboratory Testing of Metals for Resistance to Sulfide Stress Cracking and Stress Corrosion Cracking in H2S Environments

## PROJECT DOCUMENTS

|  |  |
| --- | --- |
| * BK-GNRAL-PEDCO-000-PL-SP-0008 | Specification for Pipeline Flushing, Cleaning and Hydrostatic Testing |
| * BK-SSGRL-PEDCO-110-PI-SP-0001 | Piping Material Specification |
| * BK-SSGRL-PEDCO-110-PL-SP-0001 | Pipeline Material Specification |
| * BK-GNRAL-PEDCO-000-PL-DW-0001 ~0014 | Pipeline Standard Drawings |
| * WPS & PQR: (Shall be prepared and approved during construction) |  |
| * BK-GNRAL-PEDCO-000-PL-SP-0009 | Specification for welding of Transportation Pipelines |
| * BK-GNRAL-PEDCO-000-PL-SP-0008 | Specification For Pipeline Flushing, Cleaning And Hydrostatic Testing |
| * BK-GNRAL-PEDCO-000-PL-SP-0003 | Specification for Pipeline Cold Bending |
| * BK-GNRAL-PEDCO-000-PL-SP-0007 | Specification for Pipeline Coating |
| * BK-GNRAL-PEDCO-000-PI-SP-0002 | Specification for transportation, handling, storage of pipe |

## ENVIRONMENTAL DATA

Refer to "Process Basis of Design; Doc. No.BK-GNRAL-PEDCO-000-PR-DB-0001".

## CONFLICT REQUIREMENT

In case of any conflict between requirements specified herein & the requirements of any other referenced document, this subject shall be reflected to CLIENT and the final decision will be made by CLIENT.

1. **PROJECT PIPELINES SPECIFICATION**

PROJECT includes pipelines with following general specification:

* Construction and installation of 8 Inch Gas transfer Pipeline from Binak New Gas Compressor Station to Siahmakan Gas injection unit. (UG)
* Construction and installation of 4 Inch Condenstae Pipeline from Binak Gas Compressor Station to Binak Production Unit unit. (AG).
* Construction and installation of 6 new flow lines from Binak Oil Filed to Manifold (AG).

Below requirements shall be met for pipeline construction:

* A pre-construction survey shall be carried out based on AFC drawings to specify the pipeline corridor considering crossings.
* Aeolian sand shall be used for initial backfilling. CLIENT’s representative shall approve the source and quality of the sand or soft earth.
* Rock shield shall be used to protect coating in rocky lands.
* Temporary cathodic protection system shall be installed when burying the pipe before installation of permanent cathodic protection system.
* Cathodic protection and coating evaluation tests including DCVG, CIPS and PCM shall be done after burying the pipe.
* Necessary arrangements shall be considered to replace corrosion monitoring devices using retrievers.

**PART 1 MATERIAL HANDLING**

No amendments or supplements are to state.

**PART 2 RIGHTS OF WAY**

No amendments or supplements are to state.

**PART 3 DITCHING**

No amendments or supplements are to state.

**PART 4 SUPPLY, STORING, HANDLINGAND USE OF EXPLOSIVE MATERIALS**

No amendments or supplements are to state.

**PART 5 STRINGING**

No amendments or supplements are to state.

**PART 6 PREPARATIONS OF PIPES**

No amendments or supplements are to state.

**PART 7 CHANGE OF DIRECTION**

No amendments or supplements are to state.

**PART 8 WELDING AND LAYING OF PIPE (MOD.)**

1. **SCOPE**

No amendments or supplements are to state.

1. **WELDING WORK**
   1. **Welding of Pipe over the Ditch**

Reference shall be made to IPS-C-PI-270

* 1. **Welding of Pipe at Double Jointing Yard**

All welding work, welding materials, qualification tests for welding procedure and welders, inspection and testing, acceptance criteria, repair or removal of defects shall conform to requirements cited in IPS-C-PI-270.

Non-destructive and destructive tests shall be as per requirements of IPS-C-PI-270.

* 1. **Capping Pipe Ends.**

No amendments or supplements are to state.

1. **LAYING OPERATION**

No amendments or supplements are to state.

**PART 9 CORROSION PROTECTION COATING FOR BURIED PIPELINES**

Reference shall be made to IPS-C-TP-274.

**PART 10 BACKFILLING**

**PART 11 CROSSING**

No amendments or supplements are to state

**PART 12 CASING INSTALLATIONS (MOD.)**

1. **SCOPE**

No amendments or supplements are to state.

1. **GENERAL**

Crossing of plant roads, major public roads, freeways, railways and such other facilities shown on working drawings shall be made by laying pipeline in “steel casings (preferably 3 layers polyethylene coated)”.

1. **PERMITS AND AUTHORIZATIONS**

No amendments or supplements are to state.

1. **METHODS OF CASING INSTALLATION**

No amendments or supplements are to state.

1. **INSPECTION OF CASING PIPE**

5.1 No amendments or supplements are to state.



Welding of casing pipes shall be in accordance with IPS-C-PI-270.



No amendments or supplements are to state.

1. **PAINTING AND COATING**

No amendments or supplements are to state.

1. **BACKFILLING AND TAMPTING**

No amendments or supplements are to state.

1. **SAFETY OF TRAFFIC AND PIPELINE**

No amendments or supplements are to state.

**PART 13 PREFABRICATED ASSEMBLIES (MOD.)**

1. **SCOPE**

No amendments or supplements are to state.

1. **CHECKS**

No amendments or supplements are to state.

1. **INSTALLATIONS**

No amendments or supplements are to state.



No amendments or supplements are to state.



If possible for some parts of assembly, piping, pipe fittings and special components connected to the valves or to scraper traps shall be assembled by the Executor in the ditch or at field workshop.

Such parts of assembly which might be fabricated in workshop shall receive corrosion protective coating as per IPS-E-TP-100 and IPS-C-TP-101 before transportation to installation site.

1. **COATING AND PAINTING**

Surface of all buried parts of prefabricated assemblies shall be cleaned, coated and inspected as specified in IPS-C-TP- 101 and IPS-C-TP-102.



All above ground parts of prefabricated assemblies shall be cleaned and painted as specified in IPS-E-TP-100.

**PART 14 PRESSURE TESTING**

Reference shall be made to IPS-C-PI-370 and Project Specification

BK-GNRAL-PEDCO-000-PL-SP-0008

**PART 15 CLEAN-UP OPERATION AND RESTORATION ACTIVITIES**

No amendments or supplements are to state.

**PART 16 CATHODIC PROTECTION**

Reference shall be made to IPS-C-TP-820.

**PART 17 RECORDS AND AS-BUILT SURVEY (MOD.)**

1. **SCOPE**

No amendments or supplements are to state.

1. **RECORDS**

**2.1**

No amendments or supplements are to state.

**2.2**

The Executor shall maintain during the works record books describing and locating repairs, of whatever nature, to the pipe and pipeline and shall make 3 copies of them available to the Engineer.

The Executor shall provide and submit to the Engineer all reports, documentations cited in individual parts of this Standard, as well as result of inspection and tests performed in accordance with Standards IPS-C-PI-270, IPS-C-PI-370 and project “Specification For Pipeline Coating” Spec. No.: BK-GNRAL-PEDCO-000-PL-SP-0007.

Together with the final survey drawings the Executor shall submit a technical report on the as built survey which follows construction work as well as copies of all field books used on the survey and copies of all computations made during the survey. The report on the survey and its computations shall give full details of all basic data used, methods employed, instruments used, adjustments made, Standards of accuracy observed, reference and bench marks established, special problems or difficulties experienced, index of all drawings and data used and associated with the survey. The Executor shall submit final survey drawings in 5 copies.

1. **AS-BUILT SURVEY**

No amendments or supplements are to state.

**PART 18 ABOVE-GROUND PIPELINES**

No amendments or supplements are to state.

**PART 19 DISTRICT (RIGHT-OF-WAY)**

**OF**

**GAS TRANSMISSION PIPELINES**

**IN**

**NORTHERN REGIONS OF IRAN**

DELETED.