

	<p>نگهداشت و افزایش تولید میدان نفتی بینک</p> <p>سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>							
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## طرح نگهداشت و افزایش تولید 27 مخزن

## SPECIFICATION FOR ANCHOR FLANGES

### نگهداشت و افزایش تولید میدان نفتی بینک

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 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  
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## 1.0 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

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.

## 2.0 SCOPE

This document covers the requirements for fabrication of multi-purpose Anchor Flanges for this project which shall be observed by vendors. This Specification covers the minimum requirements for production and testing of Anchor Flanges from the suitable materials as specified hereunder in this specification.

Deviations from this specification shall be approved by client. Any omission in these requirements

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shall not relieve the vendor of his responsibility of requirements specified in the project documentation.

### 3.0 NORMATIVE REFERENCES

#### 3.1 LOCAL CODES AND STANDARDS

- IPS-M-PI-190 (4) Material and Equipment Standard For Line Pipe
- IPS-M-PI-150 (2) Material Standard For Flanges and Fittings
- IPS-E-TP-100 Engineering Standards for Paints

#### 3.2 INTERNATIONAL CODES AND STANDARDS

- ASME B 16.9 Factory made Wrought Butt welding Fitting
- ASME B31.4 Liquid Transportation System for Hydro Carbons and other liquids
- ASTM A694 Specification For Carbon And Alloy Steel Forgings For Pipe, Flanges , Fittings , Valves And Parts For High Pressure Transmission Service
- ASTM A105 Standard Specification For Carbon Steel Forging Components
- API 5L Specification for Line pipe
- MSS-SP-44 Steel Pipeline Flanges
- MSS-SP-25 Standard Marking System For Valves, Fittings, Flanges & Unions ASME B16.5 Pipe Flange And Flanged Fittings NPS ½ Through NPS 24
- ASME B31.4 Liquid Transportation System for Hydro Carbons and other liquids
- ASME B31.8 Gas Transmission and Distribution Piping Systems
- ASME section 9 ( IX ) Qualification For Welding And Brazing Procedures
- ASME SEC. VIII DIV. 1 ASME Boiler And Pressure Vessel Code
- ASTM A 435 Standard Specification for Straight-Beam Ultrasonic Examination of Steel Plates.
- ASTM E23 Standard Test Methods For Notched Bar Impact Testing Of Metallic Material
- ASTN TC-1A Personnel Qualification and Certification In Non-Destructive Testing
- ISO 8501-1 Preparation of Steel Substrates before Of Paints and Related Products-Visual Assessment of Surface Cleanliness.

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- NACE MR 0175/ISO 15156 Materials For Use In H2S Containing Environments (HIC)

### 3.3 PROJECT DOCUMENTS

The following project specifications and standards shall be use

- BK-PPL-PEDCO-320-PL-DT-0001 Data Sheets For Anchor Flange
- BK-GNRAL-PEDCO-000-PI-SP-0004 Specification For Metallic Pipe
- BK-SSGRL-PEDCO-110-PL-SP-0001 Pipeline Material Specification
- BK-GNRAL-PEDCO-000-PL-SP-0010 Specification For Pipeline Stress Analysis
- BK-GNRAL-PEDCO-000-PI-SP-0001 Specification For Color Coding & Marking
- BK-GNRAL-PEDCO-000-PI-SP-0006 Specification For Painting
- BK-GNRAL-PEDCO-000-PL-SP-0009 Specification For Welding of Transportation Pipeline

### 3.4 ENVIRONMENTAL DATA

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

### 3.5 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.

## 4.0 STRESS ANALYSIS CALCULATION

Stress calculations shall be according to Specification for Specification for Pipeline Stress Analysis (BK-GNRAL-PEDEC-000-PL-SP-0010) and concluding bellow items:

- For longitudinal hub-stress
- For radial flange stress
- For tangential flange stress
- For shear stress

## 5.0 SERVICE CONDITION

Environmental, installation and special conditions shall be given in purchaser order.

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## 6.0 DESIGN REQUIREMENTS

Anchor flange shall be suitable for welding to pipe line and be embedded reinforced Concrete block.

Detail of stress analysis calculation shall be in according to Specification For Pipeline Stress Analysis (BK-GNRAL-PEDEC-000-PL-SP-0010).

The overall length of the anchor flange shall be in according to manufactures standard. The flange is being centrally placed. The bore shall be accurately aligned such that it gives no resistance to flow.

But weld end preparation shall be as prescribed in qualified welding procedure (ASME B16.5).

## 7.0 MANUFACTURING AND MATERIAL

The Anchor Flanges shall have a material compatible to the corresponding adjoining pipeline, which is described in “Specification for Metallic Pipe” BK-GNRAL-PEDCO-000-PI-SP-0004. Therefore all requirements, which are mentioned in these specifications, shall be considered for anchor flanges. ASTM A694(with any grade compatible with line pipe) is recommended with considering the carbon equivalent does not exceed 0.39 and PCM values does not exceed 0.21 to provide good weld ability for the fitting when it is to be butt welded to the pipeline. Also the requirements for sour service conditions shall be considered in accordance with NACE MR0175/ISO 15156 where pipelines carry sour services.

Note: Related standards and procedures and any additional requirements for shop welding, welder performance test, pre-heating procedures and heat treatment shall be specified by contractor / vendor.

## 8.0 INSPECTION AND TESTING

Inspection & test should be done (for approval) at the presence of CLIENT’s representative.

### A. INSPECTION

The Purchaser or his representative shall, for the purpose of inspection, have free access at all reasonable times to those parts of the Manufacturer’s works engaged on the Purchaser’s order. He shall be afforded all reasonable facilities for satisfying himself that the fittings are being manufactured in accordance with this Specification.

The manufacturer/supplier shall be responsible for carrying out all the tests and inspections required. Using his own or other reliable facilities, and he shall maintain complete records of all such tests and inspections. Such records shall be available for review by the Purchaser and

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CLIENT. Certified tests and inspection reports shall be properly identified with each product. The manufacturer shall afford the Purchaser and CLIENT inspector all reasonable facilities necessary to satisfy him that the flange is fabricated in accordance with the provisions of this specification.

The Purchaser reserves the right to perform any inspections set forth in this Part of specification where such inspections are deemed necessary to assure that supplies and services conform to the prescribed requirements.

If the Purchaser desires that his representative inspect or witness the inspection and testing of the product prior to shipment, the manufacturer/supplier shall afford the Purchaser's representative all reasonable facilities to satisfy him that the product meets the requirements of this Specification. Such inspections in no way relieve the manufacturer/ supplier of his responsibilities under the term of this Part of specification.

Purchaser's inspector(s) shall have free access to the manufacturer's works to follow up the progress of the materials covered by this Part of specification and to check the quality of materials. The manufacturer/supplier shall place free of charge at the disposal of the Purchaser's inspector(s) all means necessary for carrying out their inspection: results of tests, checking of conformity of materials with this specification requirements, checking of marking and packing and temporary acceptance of materials.

The test procedures proposed by supplier should be agreed and approved by CLIENT before any tests are carried out.

## B. TEST FACILITIES

Manufacturer shall prepare the necessary test pieces and supply the material required, the labor and appliances for such testing as may be carried out on his premises in accordance with this Standard. In the absence of facilities at his own works for making the prescribed tests, the Manufacturer shall arrange for the tests to be carried out elsewhere.

## C. FACTORY CONTROL AND TEST

Vendor shall perform 100% inspection of all ends to be welded for a length of 50 mm minimum. Said tests shall be carried out by means of ultrasonic tests. Acceptance standards are specified in ASTM A 435.

Surface defects such as indentation and scaling shall be removed provided that wall thickness of the shell remains within the stipulated tolerances. No repair is permitted without the authorization of the purchaser's inspector. Repair by welding shall be performed by qualified welders. Filler metal for repairs shall have the same properties as the parent metal.

Each anchor flanges shall be hydrostatically tested to the requirement of API 5L sections 9.

The weld ends shall be dye penetrant or magnetic particle tested to ensure the flange is not laminated, porous or has no other defects.

Detail of welding and NDT shall be according to Specification for Welding of Transportation Pipeline & NDT "BK-GNRL-PEDCO-000-PL-SP-0009".



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## 9.0 COATING

After all tests and inspections required have been carried out, flange shall be thoroughly cleaned in order to remove rust or impurities. Surface preparation shall be carried out by shot blasting or sand blasting to SA 2½ grade in accordance with ISO 8501-1. After visual inspection, all flanges shall be externally painted with Solvent Free Epoxy (1500 Microns) in accordance with IPS-E-TP-100 and Specification for Painting. The coating shall not be detrimental to welding. Using Rock shield on coated flanges in accordance with IPS-M-TP-316 is mandatory before Concreting.

## 10.0 SHIPPING & MARKING, PREPARATION FOR SHIPMENT:

- The packing and preparation for shipment shall be adequate to avoid mechanical damage during transport, handling and stacking.
- Shipping documents with exact description of equipment for custom release shall be supplied.
- Preparation for shipment shall be in accordance with Manufacturers, standard, unless otherwise noted in the requisition for quotation and/or purchase order. The Manufacturer shall be solely responsible for the adequacy of the preparation for shipment.
- Up to 20" shall be packed in wooden box.
- The packing shall be appropriated for storage without cover. Order No., & the specific item No., shall be clearly identified on each package.

### 10.1 LABELING

- All the anchor flanges shall be marked in accordance with ASME B 16.5 section 4 (Name-Size-Material) and MSS-SP25.
- Each item is to be securely labeled with indestructible tags and the following markings:
  - Destination
  - Purchase order number
  - Purchasers, equipment number
  - Project name
  - Company name
  - Customer name
  - Physical properties (weight ,dimension)
  - Service condition "sour, not sour"
  - Design pressure
  - Trust force
  - Design code

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## 10.2 GUARANTEE AND WARRANTY:

- Manufacturer shall guarantee the operating points for the rated case defined in the data sheet and specification correspondence.
- Manufacturer proposal shall specify the limits of his guarantees concerning the performance and characteristics.
- If any mal-performance or defects occur during the guarantee period, manufacturer shall make available repaired, altered or replacement parts free of any charges whatever direct on the purchaser's job site. Manufacturer shall make available free of charge to the purchaser qualified supervise the removal, repair manner that the guarantee be maintained.
- The supplier shall guarantee his anchor flange during commissioning for 1 year operation as full load against the following defect.
  - All the operational defect
  - All the material defect
  - All construction and design defect

## 11.0 REJECT CAUSE

The anchor flanges may be rejected if measurements and inspection reveal discrepancies between quoted figures resulting in purchase order and those measured actually.