


 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض عمومی و مشترک																									
شماره پیمان: ۰۵۳ - ۰۷۳ - ۹۱۸۴	<table><tr><th colspan="8">SPECIFICATION FOR PIPING CLEANING AND FLUSHING</th></tr><tr><th>نسخه</th><th>سریال</th><th>نوع مدرک</th><th>رشته</th><th>تسهیلات</th><th>صادرکننده</th><th>بسته کاری</th><th>پروژه</th></tr><tr><td>D03</td><td>0017</td><td>SP</td><td>PI</td><td>000</td><td>PEDCO</td><td>GNRAL</td><td>BK</td></tr></table>	SPECIFICATION FOR PIPING CLEANING AND FLUSHING								نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه	D03	0017	SP	PI	000	PEDCO	GNRAL	BK	شماره صفحه: ۲ از ۱۰
SPECIFICATION FOR PIPING CLEANING AND FLUSHING																										
نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه																			
D03	0017	SP	PI	000	PEDCO	GNRAL	BK																			

REVISION RECORD SHEET



PAGE	D00	D01	D02	D03	D04
1	X	X	X	X	
2	X	X	X	X	
3	X	X			
4	X	X			
5	X	X	X	X	
6		X	X		
7		X			
8		X			
9		X			
10			X		
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					
61					
62					
63					
64					
65					

PAGE	D00	D01	D02	D03	D04
66					
67					
68					
69					
70					
71					
72					
73					
74					
75					
76					
77					
78					
79					
80					
81					
82					
83					
84					
85					
86					
87					
88					
89					
90					
91					
92					
93					
94					
95					
96					
97					
98					
99					
100					
101					
102					
103					
104					
105					
106					
107					
108					
109					
110					
111					
112					
113					
114					
115					
116					
117					
118					
119					
120					
121					
122					
123					
124					
125					
126					
127					
128					
129					
130					

 <p>NISOC</p>	<p>نگهداشت و افزایش تولید میدان نفتی بینک</p> <p>سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>																
شماره پیمان:	SPECIFICATION FOR PIPING CLEANING AND FLUSHING	شماره صفحه: ۳ از ۱۰															
۰۵۳ - ۰۷۳ - ۹۱۸۴	<table><tr><td>پروژه</td><td>بسته کاری</td><td>صادرکننده</td><td>تسهیلات</td><td>رشته</td><td>نوع مدرک</td><td>سریال</td><td>نسخه</td></tr><tr><td>BK</td><td>GNRAL</td><td>PEDCO</td><td>000</td><td>PI</td><td>SP</td><td>0017</td><td>D03</td></tr></table>		پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	BK	GNRAL	PEDCO	000	PI	SP	0017
پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه										
BK	GNRAL	PEDCO	000	PI	SP	0017	D03										

CONTENTS

1.0	INTRODUCTION	4
2.0	SCOPE	4
3.0	NORMATIVE REFERENCES	5
3.1	LOCAL CODES AND STANDARDS	5
3.2	INTERNATIONAL CODES AND STANDARDS	5
3.3	THE PROJECT DOCUMENTS	5
3.4	ENVIRONMENTAL DATA	5
4.0	MATERIALS, EQUIPMENTS AND PERSONNEL FOR CLEANING	6
5.0	CLEANING PROCEDURE AND PROGRAM	6
6.0	CLEANING PREPARATION	7
7.0	SAFETY	8
8.0	FLUSHING OF PIPING	8

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک</p> <p>سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>								
شماره پیمان: ۰۵۳ - ۰۷۳ - ۹۱۸۴	SPECIFICATION FOR PIPING CLEANING AND FLUSHING							شماره صفحه: ۴ از ۱۰	
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GNRAL	PEDCO	000	PI	SP	0017		D03

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 COMPANY (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 Specification covers minimum necessary requirements for Cleaning & flushing of Piping in this PROJECT.

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض عمومی و مشترک																									
شماره پیمان: ۰۵۳ - ۰۷۳ - ۹۱۸۴	<table><tr><th colspan="8">SPECIFICATION FOR PIPING CLEANING AND FLUSHING</th></tr><tr><th>نسخه</th><th>سریال</th><th>نوع مدرک</th><th>رشته</th><th>تسهیلات</th><th>صادرکننده</th><th>بسته کاری</th><th>پروژه</th></tr><tr><td>D03</td><td>0017</td><td>SP</td><td>PI</td><td>000</td><td>PEDCO</td><td>GNRAL</td><td>BK</td></tr></table>	SPECIFICATION FOR PIPING CLEANING AND FLUSHING								نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه	D03	0017	SP	PI	000	PEDCO	GNRAL	BK	شماره صفحه: ۵ از ۱۰
SPECIFICATION FOR PIPING CLEANING AND FLUSHING																										
نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه																			
D03	0017	SP	PI	000	PEDCO	GNRAL	BK																			

3.0 NORMATIVE REFERENCES

The latest edition and addenda of the following industrial Codes & Standards are the main documents and shall be referenced in this specification.

3.1 LOCAL CODES AND STANDARDS

- IPS-C-PI-410 Construction Standard For Inside Pipe Chemical Cleaning
- IPS-C-PI-140 Construction Standard For Transportation Pipelines (Onshore)
- IPS-C-PI-240 Construction Standard For Plant Piping System
- IPS-C-IN-100 Construction and Inspection Standard for General instruments Field Inspection, Calibration and Testing of Instruments and Instrument Systems



3.2 INTERNATIONAL CODES AND STANDARDS

- ASME B31.3 ASME Code for Pressure Piping
- ASTM D 887 Standard Practice For Sampling Water-Formed Deposits
- API Spec. 5L Specification for Line Pipe

3.3 THE PROJECT DOCUMENTS



- BK-GNRAL-PEDCO-000-PI-DC-0001 Piping Design Criteria
- BK-PPL-PEDCO-320-PI-SP-0001 Piping Material Specification
- BK-SSGRL-PEDCO-110-PI-SP-0001 Piping Material Specification
- BK-GCS-PEDCO-120-PI-SP-0001 Piping Material Specification

3.4 ENVIRONMENTAL DATA

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

3.5 ORDER OF PRECEDENCE

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.

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک</p> <p>سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>								
شماره پیمان: ۰۵۳ - ۰۷۳ - ۹۱۸۴	SPECIFICATION FOR PIPING CLEANING AND FLUSHING							شماره صفحه: ۶ از ۱۰	
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GNRAL	PEDCO	000	PI	SP	0017		D03



4.0 MATERIALS, EQUIPMENTS AND PERSONNEL FOR CLEANING

Equipment for the cleaning (flushing or blowing out) should be properly selected and in good working order. Equipment affecting the accuracy of the measurements should be checked during operation. Equipment and personnel for conducting the cleaning should include the following:

- Pumps and Compressors of cleaning shall have required filters to clean the section of the line with the required filling rate or velocity.
- Flow meters and pressure/ temperature indicators and measuring containers as required for pumps and compressors.
- Suitable plastic sheets or similar devices for blowing out.
- If access to the suitable water is not applicable, portable water tank and suitable flexible hoses if needed.
- Temporary connections, supports, branches and service lines, loop lines, end caps, manifolds, except mainline pipe and all accessories.
- Filter and all spare parts required.
- Water, Plant Air, Nitrogen, Electricity, Fuel and Lubricants as required.
- Means of transport and telecommunication.
- The necessary equipment and qualified personnel and technicians to be utilized in conducting the operations and dealing rapidly with an emergency repair.
- Compressed for blowing shall be free of dirt, dust and oil.

5.0 CLEANING PROCEDURE AND PROGRAM

- The client's approval shall be obtained prior to use of materials, equipment, products and apparatus intended for the execution of operation. Therefore, the contractor/subcontractor is required to prepare a list of all items and procedure to be used in execution of cleaning and submit it to the client for his approval at least one month before.
- The client shall have the right to reject any item which, in his opinion, does not conform to the required specification and the contractor/subcontractor shall replace any item rejected by the client.
- The contractor/subcontractor shall provide cleaning technician(s) to supervise all the contractor's/subcontractor's activities, record all data, and provide connections with the client throughout the operation. In addition to manufacturer's cleaning certificate, each piping assembled valve shall be re-cleaned prior to installation.
- Cleaning procedure shall be based on requirements of this specification and shall be marked on P&IDs. The following factors shall be taken into account when a detailed



 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض عمومی و مشترک																									
شماره پیمان: ۰۵۳ - ۰۷۳ - ۹۱۸۴	<table><tr><th colspan="8">SPECIFICATION FOR PIPING CLEANING AND FLUSHING</th></tr><tr><th>پروژه</th><th>بسته کاری</th><th>صادرکننده</th><th>تسهیلات</th><th>رشته</th><th>نوع مدرک</th><th>سریال</th><th>نسخه</th></tr><tr><td>BK</td><td>GNRAL</td><td>PEDCO</td><td>000</td><td>PI</td><td>SP</td><td>0017</td><td>D03</td></tr></table>	SPECIFICATION FOR PIPING CLEANING AND FLUSHING								پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	BK	GNRAL	PEDCO	000	PI	SP	0017	D03	شماره صفحه: ۷ از ۱۰
SPECIFICATION FOR PIPING CLEANING AND FLUSHING																										
پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه																			
BK	GNRAL	PEDCO	000	PI	SP	0017	D03																			

procedure is prepared by the contractor/subcontractor:

- Design pressure anticipated throughout the life of the line
- The length and location of the sections to be cleaned.
- Location of pipe and other piping components in the cleaning section by size, wall thickness, material grade or pressure rating.
- Source of water to be used and water certification or chemical requirements, e.g. for Stainless Steels. Water used for flushing must be clean and fresh.
- For stainless lines, chloride contents shall be reported. (Less than 30 ppm for Stainless lines.)
- Any requirements for corrosion inhibitors, purification or treatment of water and inert boxed up lines to be used.
- Anticipated temperature of water, in above and underground piping
- Safety precautions to be taken and safety practices to be adopted.
- The complete schedule of proposed equipment and materials and where they will be installed.
- The flushing duration for an "open ended" system is such that for a period of > 5 minutes "clear water" (no debris or other foreign materials) must be discharged.
- Closed circuit loop flushing until the circulating pump strainer is free of foreign materials (debris) and the circulating water is clear.
- The list of personnel and their qualifications, responsible for carrying out the program. The contractor/subcontractor shall take into account the fact that he is responsible for any damage and loss caused from improper disposal of water.

6.0 CLEANING PREPARATION

- Prior to pressure testing and for cleaning of new constructed piping, water flushing shall be considered to remove all debris and remained useless parts from lines.
- Air blowing may be used instead of flushing by the written approval of client.
- For this purpose safety requirements of stored energy in compressed air / inert gas shall be considered.
- All sections to be cleaned shall be isolated by blind flanges or blanking plates with a suitable thickness.
- Cleaning shall be carried out only when the client or his authorized representative is present to witness the activities.

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک</p> <p>سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>								
شماره پیمان: ۰۵۳ - ۰۷۳ - ۹۱۸۴	SPECIFICATION FOR PIPING CLEANING AND FLUSHING							شماره صفحه: ۸ از ۱۰	
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GNRAL	PEDCO	000	PI	SP	0017		D03



- Provision shall be made for filling, bleeding and complete drainage of the water from each section. Drain points shall be at the lowest points and bleed off points shall be at the highest points in each section, if practical.
- After the flushing, moisture shall be measured and lines shall be dried entirely. Nitrogen or clean air shall be used for drying and Nitrogen boxing-up shall be performed for the dried line if required. If boxing up is not applicable, night cap or any other protection shall be used for dried lines.
- Dewatering may be accomplished using air compressors. Ambient temperature shall be checked and flushing shall not be performed in temperature below 3° C or near dew points.
- Suitable and appropriate forms and check lists for cleanings shall be considered not only before cleaning but also after that for drying and box-up.

7.0 SAFETY

- At the time when flushing of piping would normally begin there will still be a relatively large number of construction personnel working on the plant or unit. It is absolutely imperative that consideration of these people or anyone else working in the vicinity, is planned.
- Although the lines are being flushed with water, the purpose of the exercise is to remove solids from inside the piping system; it is these solids which can cause serious injury. An area around the exhaust of the system being flushed must be kept free. One person from the crew executing the flushing activities must be present at the discharge end at all times during the flushing exercise.
- If flushing is being executed in winter time there will be a serious possibility of freezing, not only within the piping itself but also freezing of discharged water onto the ground. This is a possible danger to people and must be remembered when planning the exercise.

8.0 FLUSHING OF PIPING

- Verify the type of mesh and cleanliness of temporary strainers prior to and during the flushing/testing operation.
- Verify that, in-line components such as control valves, orifice plates, positive displacement meters, turbine meters, rotameters, etc., are isolated or removed prior to flushing.
- Verify that the instruments isolated or removed from the piping system/line are stored and or protected properly.

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک</p> <p>سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>								
شماره پیمان: ۰۵۳ - ۰۷۳ - ۹۱۸۴	SPECIFICATION FOR PIPING CLEANING AND FLUSHING							شماره صفحه : ۹ از ۱۰	
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GNRAL	PEDCO	000	PI	SP	0017		D03

8.1 CONTROL VALVE WITH BYPASS LINE

- Remove the control valve. Install temporary spool piece leaving the piping system/line unimpaired, or flush through the open ended block valves.

8.2 CONTROL VALVES WITHOUT BYPASS

- Remove the control valve. Install temporary spool piece leaving the piping system/line unimpaired, or flush through the open ended block valves.

8.3 INSTRUMENT CONNECTIONS (TRANSMITTERS, GAUGES, LOCAL INDICATORS, ANALYZER TRAPS, ETC)

- Remove the analyzer probes, close the line block valve(s) and disconnect the instrument leads at the block valve(s). Never fill the instruments with water.

8.4 POSITIVE DISPLACEMENT METERS

- Remove the meter and strainer prior to flushing and hydrostatic testing. (The PD meter bodies should be filled with light oil to prevent corrosion.) Install temporary spool piece or flush through the opened block valves.

8.5 TURBINE METERS



- Remove the turbine meters and strainers prior to flushing and hydrostatic testing. Install temporary spool piece in place of turbine meter, or flush through the open ended block valves.

8.6 ORIFICE PLATES

- Orifice plates and other flow elements such as flow nozzles, pitot tubes, magnetic flow meters, etc. Verify that said instruments and components are removed or isolated prior to flushing/testing.

8.7 SAFETY VALVES

- All safety valves must be spaded off or removed prior to flushing and/or testing.
- Verify, prior to the flushing operation, that the flushing plans, schematic, procedures, etc. do not endanger the installed instruments, equipment, etc.
- Verify that the instruments are properly removed, disconnected, or isolated and stored.
- Verify that temporary spool pieces are adequately fabricated and installed.
- Systems shall be dried after flushing. The drying process may be accomplished by

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض عمومی و مشترک																									
شماره پیمان: ۰۵۳ - ۰۷۳ - ۹۱۸۴	<table><tr><th colspan="8">SPECIFICATION FOR PIPING CLEANING AND FLUSHING</th></tr><tr><th>نسخه</th><th>سریال</th><th>نوع مدرک</th><th>رشته</th><th>تسهیلات</th><th>صادرکننده</th><th>بسته کاری</th><th>پروژه</th></tr><tr><td>D03</td><td>0017</td><td>SP</td><td>PI</td><td>000</td><td>PEDCO</td><td>GNRAL</td><td>BK</td></tr></table>	SPECIFICATION FOR PIPING CLEANING AND FLUSHING								نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه	D03	0017	SP	PI	000	PEDCO	GNRAL	BK	شماره صفحه : ۱۰ از ۱۰
SPECIFICATION FOR PIPING CLEANING AND FLUSHING																										
نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه																			
D03	0017	SP	PI	000	PEDCO	GNRAL	BK																			

blowing warm compressed air through the system or by nitrogen purging approved by the client representative.

- The following piping systems shall not be flushed or cleaned with water:
 - Instrument air lines
 - Nitrogen systems
 - Plant Air