

	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)</p>							 	
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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.

As a part of the Project, a New Gas Compressor Station (adjacent to existing Binak GCS) shall be constructed to gather of 15 MMSCFD (approx.) associated gases and compress & transfer them to Siahmakan GIS.

2.0 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)
OWNER:	OWNER is collectively refer to National Iranian South Oil Company (NISOC) and Petro Iran Development Company (PEDCO)
EPC CONTRACTOR:	Joint Venture of: Hirgan Energy – Design & Inspection (D&I) Companies
VENDOR:	HAVAYAR Company
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.

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3.0 SCOPE

This procedure prescribes the requirements for hydrostatic test of equipment at shop.

4.0 REFERENCE

- ASME Sec.VIII, Div.1, UG99b (36)
- API 618 – Clause 8
- ASME B31.3

5.0 PREPERATION FOR TESTING

- 5.1 Before commencement of testing, make sure that all repair and NDT testing and field PWHT are complete according to inspection procedure.
- 5.2 Inside and outside of equipment shall be cleaned from debris and foreign materials like paint, liquid, oil or other contaminants.
- 5.3 Eliminate all needless items and clean the test space. only authorized persons are allowed for test.
- 5.4 If the test needs some reinforcements, it must be a perfect form for safety inspection. supports and other items never contact with welded parts.


6.0 QUALITY AND TEMPERATURE OF TEST WATER

6.1 Use the clean tap water, if test doesn't require special demand.

Lab test is required
Hy Reply:Not applicable.

6.2 The water to be used for the hydrotest of equipment shall be:

- Potable water with chloride content for stainless < 30 ppm and for carbon steel <50 ppm if the equipment can be completely drained and water pockets / stagnations can be removed by rags.
- Demineralized water with chloride content < 10 ppm when a complete drain is not possible.

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6.3 Temperature of hydrotest water is 60°F (16°C) ~ 120°F (48°C). Water temperature shall be measured before test by temperature gauge (TG).

6.4 The test pressure will not pressurize until the temperature of test units and hydrotest water are at about the same

7.0 PRESSURE GAUGE

shall be checked using calibrated a temperature sensor/ thermometer

HAVAYAR Reply:Noted.

7.1 Calibrated dial gauge used for test which have measurement range of not less than 1.5 nor then 4 times of the test pressure.

7.2 At least two pressure gauges shall be attached to the test unit, during pressure test.

7.3 Pressure gauges are attached to the upper part and lower part.

7.4 The calibration of gauges shall be confirmed by project inspector.

8.0 METHOD OF HYDROSTATIC PRESSURE TEST

8.1 Vent will be provided at all high point of the test unit in the position in which it is to be tested to purge possible air pockets while the test unit is filling.

8.2 Test unit will be filled satisfactorily by the low-pressure hose.

8.3 Before pressurizing, hydrostatic pressure test workers must check the test equipment, if all low-pressure hoses and other appendages put on each other strongly which don't affect to test pressure.

8.4 The design and test pressure of each test unit are according to the test method shown in picture 1.

Table 1
HAVAYAR
Reply:Noted.

8.5 The pressure test doesn't have to exceed 6 percent of the test pressure.

Equipment summary
HAVAYAR Reply:Noted.

8.6 The safety device can be set in the nozzle which was injected by the pressure.

Not clear
Hy Reply: this Note delete in next revision.

8.7 Weld zone should be cleaned before accurate inspection for pressure test.

8.8 Inspectors of quality control department have to check if all parts of the test unit for any leakage during keeping the pressure and if there is a drop in pressure-by-pressure gauge

HAVAYAR Reply:Noted.

8.9 When leakage or other detect matters occur, the test must be stopped and NCR report shall be processed and managed according to quality guaranteed plan.

Where to find?




Hy Reply: This note replace in next revision.

8.10 After hydrostatic test, the pressure should be reduced slowly until the pressure gauge is zero.

8.11 Hydrostatic test is operated by worker of product department under the attendance of quality control department inspector and client and purchaser.

& GC & EPC contractor

HAVAYAR Reply:Noted.

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8.12 The inspector of QC department, shall record inspection documents and sign the test report (Attachment A), the director of QC department must recheck and approve the test reports.

8.13 Gaskets used during test of an assembled compressor frame shall be of the same design as supplied with the compressor frame.

8.14 After hydrostatic test, water must be drain in test unit. After elimination water, air blowing shall be done.

drained from the test unit

HAVAYAR Reply:Noted

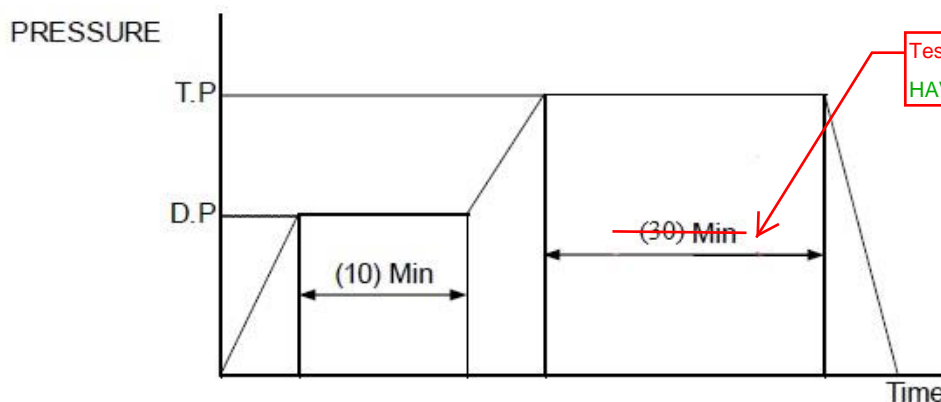
8.15 In order to prevent preparing water pool and problem during draining, it's necessary to drain gate window before evacuation of water.

8.16 The tests shall be performed prior to the installation of the cylinder liner. Compressor cylinders shall be tested as assembled components using the heads, valve covers, clearance pockets, and fasteners to be supplied with the finished cylinder.

8.17 At the time of testing, the main/spare bolts and nuts and gaskets of the equipment shall not be used.

8.18 The hydrotest graph should be recorded by the recorder.

8.19 The hydrotest for all pressure part must be performed before painting.






Test Duration (According to Table 1)
HAVAYAR Reply:Noted.

- D.P : Design Pressure
- T.P : Test Pressure

Picture 1

During filling and draining, test unit has to be properly vented at the highest point.

HAVAYAR Reply:Noted.

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9.0 METHOD OF HELIUM PNEUMATIC TEST FOR BARE BLOCK COMPRESSOR

- 9.1 The helium pneumatic test mainly conducts for checking the safety during operation.
- 9.2 The damage is serious in case the vessel is broken by the helium pneumatic test, so it will conduct after Checking the intensity by hydrostatic test.
- 9.3 Pressure will go up and down slowly.
- 9.4 The gas used in helium pneumatic test need to dry and clean water has to remove and make clean inside the vessel and welded point.
- 9.5 The gas temperature used in the helium pneumatic test has not to occur in danger of brittle fracture in specific units.
- 9.6 Test pressure must keep the design pressure.
- pressure is risen up slowly to test pressure then, hold it during 30min.
- 9.7 Inspect for leaks using soapy water and remove the soapy water completely after testing.

10.0 STANDARD OF TEST PRESSURE

- 10.1 For rotary equipment, as per API 618, Clause 8.3.2.1, hydrostatic test pressure is 1.5 times of design pressure. (MAWP will be considered as design pressure)
- 10.2 For fixed equipment, as per ASME Sec.VIII, Div.1, UG99b (36) hydrostatic test pressure is 1.3 times of design pressure.
- 10.3 For piping, as per ASME B31.3, Clause 345.4.2 (a) hydrostatic test pressure is 1.5 times of design pressure.


Collecting Pot V-2105 A/B/C
shall be added to this list.
HAVAYAR Reply:Noted.

TABLE.1: EQUIPMENT SUMMARY



Row	Equipment Name	Tag Number	Design Pressure (Barg)	Design Temperature (°C)	Test Pressure (Barg)	Test Duration
1	1 st Suction SNUBBER	C-2101-D1 A/B/C	24.5	180	31.8	1 Hour
2	1 st Discharge Snubber	C-2101-D2 A/B/C	24.5	180	31.8	1 Hour
3	1 st Cylinder stage	C-2101-D1 A/B/C	24.5	180	36.8	30 min.
4	2 st Suction SNUBBER	C-2102-D1 A/B/C	62	180	80.6	1 Hour
5	2 st Cylinder stage	C-2102 A/B/C	62	180	93	30 min.

1st stage Cylinder
HAVAYAR Reply:Noted.

2nd stage cylinder
HAVAYAR Reply:Noted.

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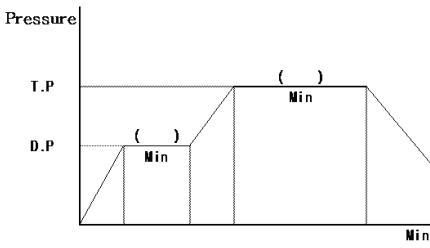
6	2st Discharge SNUBBER	C-2102-D2 A/B/C	62	180	80.6	1 Hour
7	Collecting Pot	V-2104 A/B/C	5	85	6.5	1 Hour
8	Buffer Gas Filter	F-2101-BF A/B/C	10	85	13	1 Hour
9	Main Oil pump	P-2101-MP A/B/C	10	85	As per mfg. Standard	30 min.
10	Auxiliary Oil pump	P-2101-AP A/B/C	10	85	15	30 min.
11	Lube Oil Cooler	AE-2101-OC A/B/C	10	85	13	1 Hour
12	Lube Oil Filter	F-2101-OF A/B/C	10	85	13	30 min.
13	Main Water Pump	P-2101-WP A/B/C	10	85	15	30 min.
15	Auxiliary Water Pump	P-2101-AX A/B/C	10	85	15	30 min.
16	Water Air Cooler	AE-2101-WC A/B/C	10	85	13	1 Hour
17	Cooling Water Filter	F-2101/02-WF A/B/C	10	85	13	1 Hour
18	Strainer	ST-2101/02 A/B/C	7 / 24.5	180/180	9.1 / 31.85	1 Hour (for spool)
19	Heater	H-2101-WH A/B/C	-	85	Full water	30 min.
20	Water Reservoir	-	-	85	Full water	30 min.
21	Process piping	Class CN05	24.5	180	36.8	30 min.
22	Process piping	Class FN05	62	180	93	30 min.
23	Oil Piping	Stainless	10	85	15	30 min.
24	Water Piping	CWS/CWR	7	85	10.5	30 min.

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11.0 ATTACHMENT A, PRESSURE TEST REPORT

Report shall be in standard format of the project (including header and logo,...)

HAVAYAR Reply:Noted.

PRESSURE TEST RECORD						Rec Page	OF
Type of Test <input type="checkbox"/> Hydrostatic Test <input type="checkbox"/> Pneumatic <input type="checkbox"/> Leakage						M/o. No.:	
Project Name			Job No.		Client Name		
Item Name			Item No.		Traveler/Oper. No.		Rev.
Proc. No.		Rev.	Inst. No.		Rev.	DWG. No.	Rev.
Pressure Gauge			1	2	3		4
Identification No.							
Calibration Date							
	Design Pres. (Bar G.)	Test Pres. (Bar G.)	Test Temp. (°C)		Holding Time (Min.)		Remarks
Requirement							
Actual Result		-					
Sketch <div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>* PRESSURE TEST OF ()</p> <p>* () SIDE</p> <p>* M/O No. :</p> </div> </div> <p>❖ D.P.: Design Pressure ❖ T.P.: Test Pressure</p>							
HAVAYAR	TPI	HE/DI	PEDCO		NISOC		
Vendor	Third Party Ins.	EPC Contractor	EPD/EPC Contractor(GC)		Owner		
Name & Sign:	Name & Sign:	Name & Sign:	Name & Sign:		Name & Sign:		
Date:	Date:	Date:	Date:		Date:		

Client
HAVAYAR
Reply:Noted.