

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید بسته نم زدای گاز ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0010_08)</p>							
شماره پیمان: 053 – 073 – 9184	HYDROSTATIC TESTING PROCEDURE (TOWER, COLUMNS, REBOILER, DRUMS & FILTERS)							شماره صفحه : 1 از 10
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	V00	0010	PR	QC	120	MF	GCS	BK

طرح نگهداشت و افزایش تولید 27 مخزن

HYDROSTATIC TESTING PROCEDURE (TOWER, COLUMNS, REBOILER, DRUMS & FILTERS)

نگهداشت و افزایش تولید میدان نفتی بینک

V00	APR. 2025	IFA	MFS	M.Fakharian	S.Faramarzpour	
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IFI: Issued For Information

AFC: Approved For Construction

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1. SCOPE

- This procedure covers requirements of Hydrostatic Test, which will be applied by Masnouat Felezi Sangin Co. for Towers, Columns, Reboiler, Drums & Filters) of Binak Oilfield Development – General Facilities Project.
Applicable equipment:

Row	Tag No.
1	C-100
2	C-200
3	F-100 A/B
4	F-200 A/B
5	R-100
6	V-120

3. DEFINITIONS

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: Hiran Energy – Design & Inspection(D&I) Companies
VENDOR:	MFS Co.

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4. REFERENCE DOCUMENTS

- ASME SECTION VIII DIV.1 Edition 2021
- General Arrangement Drawing for C-100 (Doc No.: BK-GCS-MF-120-ME-DW-0001)
- General Arrangement Drawing for C-200 (Doc No.: BK-GCS-MF-120-ME-DW-0005)
- General Arrangement Drawing for F-100 (Doc No.: BK-GCS-MF-120-ME-DW-0011)
- General Arrangement Drawing for F-200 (Doc No.: BK-GCS-MF-120-ME-DW-0014)
- General Arrangement Drawing for R-100 (Doc No.: BK-GCS-MF-120-ME-DW-0026)
- General Arrangement Drawing for V-120 (Doc No.: BK-GCS-MF-120-ME-DW-0008)

5. PNEUMATIC TEST

Pneumatic tests will be carried out on nozzle reinforcement pad before hydrostatic test and pneumatic test report will be recorded in accordance with the attachment.

The welds of each pad or segment shall be given an air-and-soap solution test with 0.5 barg in the presence of purchaser inspector before testing. Test holes shall be left open for use as tell-tale holes. They shall be filled with corrosion inhibiting grease after hydrostatic test and prior to shipment.

6. HYDROSTATIC TEST

6.1. PRIMARY INSPECTION

- 1) Prior to testing, the vessels shall be thoroughly cleaned and free from dirt, debris, loose scale and slag, pieces of metal, weld spatter, oil and grease, etc.
- 2) All welding will be finished and fully accepted by NDT examination.
- 3) External surfaces will be dried for correct execution of visual inspection.
- 4) Before applying the pressure test, equipment will be examined to see that it is tight.
- 5) Hydrostatic test shall be done prior to painting at weld and/or coating.
- 6) Abnormal deformation or leak test medium is not acceptable.
- 7) The test shall be done after final heat treatment.
- 8) Visual inspection before, during and after the test will be carried out.
- 9) non-welded removable materials shall not be installed in vessels during the hydrostatic test.

6.2. Required Equipment:

1) High-Pressure hydraulic pump:

Hydrostatic test will be carried out by using high-pressure hydraulic pump and also using the here below

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accessories, manometer, high-pressure valves and fittings. Hydraulic pump pressure is equal to 136 Bar.

2) Pressure Gauge:

For the execution of this test, as a minimum, two pressure gauges shall be installed, one on the top part of the vessel and other one on the bottom part. The pressure indicated by the top PG shall be considered as the hydrotest pressure. The Pressure gauges shall be calibrated for the range of test pressure and their valid certificates shall be available at the time of inspection for involved inspection parties. ($1.5 * P_{Test} < \text{range of pressure gauge} < 4 * P_{Test}$).

3) Hydrotest Water:

- Water used for hydrostatic testing shall be potable. Chloride content for CS equipment shall be less than 250 ppm and for SS equipment shall be less than 50 ppm.
- Vessels shall be hydrostatically tested with potable water only; salt, brackish, or raw river water shall not be used.
- All water shall be drained and dried after hydrostatic testing.

6.3. HYDROSTATIC TEST PRESSURE

- Pressure Vessels will be hydrostatic tested to the pressure indicated on general arrangement drawings in accordance with ASME SEC. VIII, Div.1.
- Following table indicates equipment tag number and test pressure:

No.	Tag No.	Design Pressure (Int)(Barg)	Hydrotest Pressure (Int)(Barg)		Holding Time (minutes)
			VER.	HOR.	
1	C-100	62	80.6	81.74	60
2	C-200	4	7.7	8	60
3	F-100 A/B	8	10.5	-	60
4	F-200 A/B	7.5	9.75	-	60
5	R-100	4.1	-	5.4	60
6	V-120	8	-	10.4	60

6.4. HYDROSTATIC TEST PROVISION

- Cleaning Internal and External Surfaces of Vessels.
- Cleaning inside and outside surfaces of equipment from material such as oil, grease, dust, weld spatter and other contaminate solids that may be hidden.
- When liquid is used for cleaning the equipment, after cleaning, inside and outside the equipment must be completely dried.

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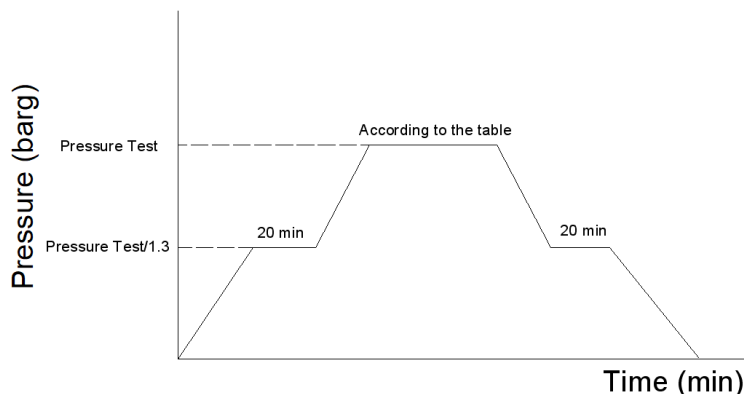
- 4) Plugging all Flanges, Gaskets and couplings.
- 5) Installing fittings and valves for exit of compressed air at the proper place.
- 6) Installing fitting and valves for filling and draining of test water.
- 7) Installing pressure control manometers on top of the vessel in the suitable place.
- 8) Installing pressure gauges on the vessel which must be in the view of test inspector.
- 9) Checking the Saddles of vessel to bearing out the weight of vessel in the full of water situation and for checking influence of vessel and water weights, the vessel stable by condition must be considered before filling it.

6.5. EXECUTING THE TEST

- 1) Vessel to be hydrostatically tested in shop and in the horizontal position shall be supported to adequately keep local stresses in the shell low and not exceeding 90% of the yield strength of the material.
- 2) For the execution of test, openings will be closed by blind flanges or screwed disk.
- 3) Filling and pressurizing will be done from the lowest point and venting will be done from the highest point.
- 4) After filling, a water overflow through the venting is produced in order to assure that no air bubbler remain in the vessel.
- 5) The hydrostatic pressure in the vessel shall be increased at the maximum rate of 1 bar/min to reach test pressure divided by 1.3. After that, it remains at the design pressure for minimum 20 minutes and finally, the pressure increases at a rate of 1 bar/min to reach the amount mentioned in the calculation book.
- 6) Visual inspection before, during and after the test will be carried out.
- 7) In case of occurring any leakage at any stage, the test shall be stopped, vessel emptied up and afterward repairs on leaks shall be done and again all the above procedures shall begin to continue the hydrostatic test by purchaser approval.
- 8) For Vessels made from carbon and alloyed material the hydrostatic test pressure shall be maintained for 1 hour for each 25 mm of wall thickness. For any wall thickness the test pressure shall be maintained for at least 2 hours.
- 9) Following the application of the hydrostatic test pressure, an inspection shall be made of all joints and connections. This inspection shall be made at a pressure not less than the test pressure divided by 1.3. Leakage from Temporary seals will be directed away so as to avoid masking leaks from other joints e.g., manhole and temporary attachments.
- 10) The vessel will be drained and dried immediately after the test. The parts that water can be settled in which will be dried by hot air.
- 11) Pressure-Time Graph

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Filling and draining water for hydrostatic test should be as follow graph:



7. REPAIRS

If any pressure drop is detecting during test, vessel will be depressurized and repairs will be done. If necessary, before refilling water, the related NDTs will be performed after the repair.



8. SAFETY PRECAUTIONS

- 1) Do not allow anyone on, near the vessel while pressure is being applied for first time or while pressure is greater than design pressure.
- 2) Hammering on the shell is not allowed during the test.


9. REPORTING

Sample of hydrostatic and pneumatic tests reports are attached to the next pages.

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				<h2 style="text-align: center;">Nozzle Pad Pneumatic Inspection Report</h2>							
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REVISION NO.:05								REVISION NO.:00			
REVISION DATE: 2024-05-29								REVISION DATE:2024-05-29			
Project:				OWNER:				Report No.:			
Reference:				Equipment No.:				DWG NO.:			
ITP No:				Report Date:				Page:			
Nozzle No.	Pressure (Bar)	Result		Nozzle No.	Pressure (Bar)	Result		Nozzle No.	Pressure (Bar)	Result	
		Acc	Rej			Acc	Rej			Acc	Rej
V:				C:				TPI:			
											

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		<h2 style="text-align: center;">Hydrostatic Test Inspection Report</h2>	
REFERENCE CODE:PR-08-01			FORM CODE:FR-08/01/19
REVISION NO.:05			REVISION NO.:05
REVISION DATE: 2024-05-29			REVISION DATE: 2024-05-29
Project:	OWNER:	Report No:	
Reference:	Equipment No.:	DWG NO.:	
ITP No:	Report Date:	Page:	
Test Liquid:	Test Pressure:	Design Pressure:	
Operating Pressure:	Metal Temperature:	Holding Time:	
Pressure Gauge:	Pressure Range:	MDMT:	
Test Result: T			
V:	C:	O:	T:

