



نگهداشت و افزایش تولید میدان نفتی بینک  
سطح الارض و ابنیه تحت الارض

خرید پکیج پمپ های آب آتشنشانی ایستگاه تقویت فشار گاز بینک  
(قرارداد BK-HD-GCS-CO-0023\_00)



شماره پیمان:

۰۵۳ - ۰۷۳ - ۹۱۸۴

#### HYDROSTATIC TEST PROCEDURE

| نسخه | سریال | نوع مدرک | رشته | تسهیلات | صادرکننده | بسته کاری | پروژه |
|------|-------|----------|------|---------|-----------|-----------|-------|
| V02  | 0005  | PR       | QC   | 120     | KP        | GCS       | BK    |

شماره صفحه : 1 از 7

## طرح نگهداشت و افزایش تولید ۲۷ مخزن

### HYDROSTATIC TEST PROCEDURE

نگهداشت و افزایش تولید میدان نفتی بینک

| Rev. | Date      | Purpose of Issue/Status | Prepared by: | Checked by: | Approved by:   | CLIENT Approval |
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| V02  | APR. 2025 | AFC                     | Kalaye Pump  | M.Fakharian | S.Faramarzpour |                 |
| V01  | FEB. 2025 | AFC                     | Kalaye Pump  | M.Fakharian | S.Faramarzpour |                 |
| V00  | NOV. 2024 | IFA                     | Kalaye Pump  | M.Fakharian | S.Faramarzpour |                 |

#### Status:

IFA: Issued for Approval  
IFI: Issued for Information  
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| <br>NISOC | <p>نگهداشت و افزایش تولید میدان نفتی بینک<br/>سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج پمپ های آب آتشنشانی ایستگاه تقویت فشار گاز بینک<br/>(قرارداد BK-HD-GCS-CO-0023_00)</p>                                                                                                                                 |  |      |         |           |           |       |  |  |      |       |          |      |         |           |           |       |     |      |    |    |     |    |     |    |                    |
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| V02                                                                                        | 0005                                                                                                                                                                                                                                                                                                              | PR                                                                                  | QC   | 120     | KP        | GCS       | BK    |  |  |      |       |          |      |         |           |           |       |     |      |    |    |     |    |     |    |                    |

### REVISION RECORD SHEET

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| 5    | X   | X   |     |     |     | 70   |     |     |     |     |     |
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| شماره پیمان:<br>۰۵۳ - ۰۷۳ - ۹۱۸۴                                                           | HYDROSTATIC TEST PROCEDURE                                                                                                                                                        |       |          |      |         |           |           |                                                                                     | شماره صفحه : 3 از 7 |
|                                                                                            | نسخه                                                                                                                                                                              | سریال | نوع مدرک | رشته | تسهیلات | صادرکننده | بسته کاری | پروژه                                                                               |                     |
|                                                                                            | V02                                                                                                                                                                               | 0005  | PR       | QC   | 120     | KP        | GCS       | BK                                                                                  |                     |

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| <br>NISOC | <p>نگهداشت و افزایش تولید میدان نفتی بینک<br/>سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج پمپ های آب آتشنشانی ایستگاه تقویت فشار گاز بینک<br/>(قرارداد BK-HD-GCS-CO-0023_00)</p>                                                                                                                                 |  |      |         |           |           |       |  |  |      |       |          |      |         |           |           |       |     |      |    |    |     |    |     |    |                     |
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| HYDROSTATIC TEST PROCEDURE                                                                 |                                                                                                                                                                                                                                                                                                                   |                                                                                     |      |         |           |           |       |  |  |      |       |          |      |         |           |           |       |     |      |    |    |     |    |     |    |                     |
| نسخه                                                                                       | سریال                                                                                                                                                                                                                                                                                                             | نوع مدرک                                                                            | رشته | تسهیلات | صادرکننده | بسته کاری | پروژه |  |  |      |       |          |      |         |           |           |       |     |      |    |    |     |    |     |    |                     |
| V02                                                                                        | 0005                                                                                                                                                                                                                                                                                                              | PR                                                                                  | QC   | 120     | KP        | GCS       | BK    |  |  |      |       |          |      |         |           |           |       |     |      |    |    |     |    |     |    |                     |

## 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.

## 2.0 GENERAL DEFINITION

The following terms shall be used in this document.

|                           |                                                                                                                    |
|---------------------------|--------------------------------------------------------------------------------------------------------------------|
| CLIENT:                   | National Iranian South Oilfields Company (NISOC)                                                                   |
| PROJECT:                  | Binak Oilfield Development – Supply Of Fire Water Pumps                                                            |
| EPD/EPC CONTRACTOR (GC):  | Petro Iran Development Company (PEDCO)                                                                             |
| EPC CONTRACTOR/PURCHASER: | Joint Venture of: Hirgan Energy – Design & Inspection (D&I) Companies                                              |
| VENDOR:                   | Kalaye Pump Company                                                                                                |
| EXECUTOR:                 | Executor is the party which carries out all or part of construction and/or commissioning for the project.          |
| TPI:                      | Third Party Inspector.                                                                                             |
| 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.                                                             |

## 3.0 SCOPE

This executive method aims to illustrating the way of the test and testing manufactured/repaired pumps in the factory in order to achieving assurance about its alignment to those determined characteristics as well as its quality.

|                                                                                            |                                                                                                                                                                                   |           |           |         |      |          |       |                                                                                                                                                                                                                      |
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| شماره پیمان:<br>۰۵۳ - ۰۷۳ - ۹۱۸۴                                                           | HYDROSTATIC TEST PROCEDURE                                                                                                                                                        |           |           |         |      |          |       | شماره صفحه : 5 از 7                                                                                                                                                                                                  |
|                                                                                            | پروژه                                                                                                                                                                             | بسته کاری | صادرکننده | تسهیلات | رشته | نوع مدرک | سریال |                                                                                                                                                                                                                      |
|                                                                                            | BK                                                                                                                                                                                | GCS       | KP        | 120     | QC   | PR       | 0005  |                                                                                                                                                                                                                      |
|                                                                                            |                                                                                                                                                                                   |           |           |         |      |          | V02   |                                                                                                                                                                                                                      |

#### 4.0 USAGE DOMAIN

The usage domain of this executive instruction includes all projects of Kalay-E-Pump Company and other common productions.

#### 5.0 LIABILITIES

The quality control director is responsible about executing of this instruction, furthermore product supervisor and technical office representative are present in the examination (Test) steps entirely, as auditors.

#### 6.0 REFERENCES

The testing operation of pumps/Electro pumps/Diesel Pumps belonging to Kalay-E-Pump Company is accomplished based on derivate tests of creditable global collected standard for centrifugal and fire fighting pumps and gathered movements. (API 610, NFPA 20)

-Project specification

-DATA SHEETS (W/PERFORMANCE CURVE) FOR FIRE WATER MAIN DIESEL PUMP

Doc No.: BK-GCS-KP-120-ME-DS-0001

-DATA SHEETS (W/PERFORMANCE CURVE) FOR FIRE WATER MAIN ELECTRICAL PUMP

Doc No.: BK-GCS-KP-120-ME-DS-0002

-DATA SHEETS (W/PERFORMANCE CURVE) FOR FIRE WATER JOCKEY PUMPS

Doc No.: BK-GCS-KP-120-ME-DS-0003

#### 7.0 PROCEEDING DESCRIPTION

Leakage test before hydrostatic test is essential for all pumps. The hydrostatic test for all pumps, will carried out according to determined case provided in the contract or customer application.

##### 7.1. Hydrostatic test

In order to be sure of pump body quality, hydrostatic test is offered to the pump bodies with approximately 1.5 time more than maximum allowable working pressure (MAWP), which is determined according to class and material of the pump casing. As the MAWP for fire fighting pumps is 15bar, this test is carried out in 22.5 bar pressure. Test pressure shall not be less than one and half times the sum of the pump's shutoff head plus its maximum allowable suction head, but in no case shall it be less than 250 psi (17.24bar).

| Pump Model     | Tag No.  | Part   | MAWP (Barg) | Hydrotest (Barg) | Test Temp. |
|----------------|----------|--------|-------------|------------------|------------|
| KPSPFD 150-570 | P-2301 B | Casing | 15          | 22.5             | Amb.       |
| KPSPFE 150-570 | P-2301 A | Casing | 15          | 22.5             | Amb.       |
| KP 2532        | P-2302 A | Casing | 15          | 22.5             | Amb.       |
| KP 2532        | P-2302 B | Casing | 15          | 22.5             | Amb.       |

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| HYDROSTATIC TEST PROCEDURE                                                                 |                                                                                                                                                                                                                                                                                                                   |                                                                                     |      |         |           |           |       |  |  |      |       |          |      |         |           |           |       |     |      |    |    |     |    |     |    |                     |
| نسخه                                                                                       | سریال                                                                                                                                                                                                                                                                                                             | نوع مدرک                                                                            | رشته | تسهیلات | صادرکننده | بسته کاری | پروژه |  |  |      |       |          |      |         |           |           |       |     |      |    |    |     |    |     |    |                     |
| V02                                                                                        | 0005                                                                                                                                                                                                                                                                                                              | PR                                                                                  | QC   | 120     | KP        | GCS       | BK    |  |  |      |       |          |      |         |           |           |       |     |      |    |    |     |    |     |    |                     |

7.1.1. Hydrostatic test shall be carried out before painting and after machining.

7.1.2. Before starting test operation, it shall be checked whether the caps of input-output flanges and testing pump's casing are closed.

7.1.3. Fill out the casing of testing pump with industrial or city water, using equipment. The chloride content of liquids used to test austenitic stainless steel material shall not exceed 50mg/kg. Air vacuuming operation is carried out simultaneously; move the casing in different directions to be sure of air vacuumed condition to evacuate inner air completely.

7.1.4. To adopt desirable pressure, after filling out the casing, exposed the body to determined pressure, using devices and considering pressure gauge, which assembled on the casing.

7.1.5. Test time is at least 30 min and it is successful if there is no failure, leakage, or pressure loss from specified value.

7.1.6. Offload the hydraulic water from casing. All parts of casing shall be cleaned by soap water.

7.1.7. Hydrostatic test report will be issued after test.

Note: preparation for test.

- 1-Prior to testing, the pressure part shall be thoroughly cleaned and free from dirt, debris, slag, oil and grease, etc. Gauge to be accurate to at least 1.6% of Max. range
- 2-- All gauges shall be calibrated against a standard deadweight tester or a calibrated master gauge prior to using of them. Calibration certificate (which is approved by recognized calibration agency) shall be prepared and available at time of inspection.
- 3-Pressure part outside shall be dried completely.
- 4-Calibrated measuring instruments (pressure gauges) shall be provided.

Note: procedure in case that test is not succesful

If problem was from gasket or nut and bolt, it changed and retest.

If leakage from casing, repair procedure according to standard provided and repaired.

Note: after testing necessary actions

Offload the hydraulic water from casing. All parts of casing shall be cleaned by soap water.

|                                                                                   |                                                                                                                                                                          |                  |                                                                                     |             |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------|-------------|
|  | نگهداشت و افزایش تولید میدان نفتی بینک<br>سطح الارض و ابنیه تحت الارض<br><br>خرید پکیج پمپ های آب آتشنشانی ایستگاه تقویت فشار گاز بینک<br>(قرارداد BK-HD-GCS-CO-0023_00) |                  |  |             |
|                                                                                   | شماره پیمان: ۰۵۳ - ۰۷۳ - ۹۱۸۴                                                                                                                                            |                  | شماره صفحه: 7 از 7                                                                  |             |
| HYDROSTATIC TEST PROCEDURE                                                        |                                                                                                                                                                          |                  |                                                                                     |             |
| پروژه<br>BK                                                                       | بسته کاری<br>GCS                                                                                                                                                         | صادر کننده<br>KP | تسهیلات<br>120                                                                      | رشته<br>QC  |
|                                                                                   |                                                                                                                                                                          | نوع مدرک<br>PR   | سریال<br>0005                                                                       | نسخه<br>V02 |

|                                                                                   |                                                                                     |                              |                            |                                                                                     |                                       |                                                                                     |                                                                                       |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------|----------------------------|-------------------------------------------------------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |                                                                                     | KALAY-e-PUMP Co.             |                            |  |                                       |  |                                                                                       |
| HYDROSTATIC TEST REPORT                                                           |                                                                                     |                              |                            |                                                                                     |                                       |                                                                                     |                                                                                       |
| Date: 1401.05.08                                                                  |                                                                                     |                              |                            | Witness: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>        |                                       |                                                                                     |                                                                                       |
| Document Title.                                                                   |                                                                                     | Project Document No.         |                            | Doc. Rev. No.                                                                       |                                       |                                                                                     |                                                                                       |
| Hydrostatic & Leakage Test Procedure                                              |                                                                                     | 1362-EP-PD-PR-009            |                            | A1                                                                                  |                                       |                                                                                     |                                                                                       |
| Project : CHABAHAR BITUMEN STORAGE PLANT                                          |                                                                                     |                              |                            |                                                                                     |                                       |                                                                                     |                                                                                       |
| Consultant : SCETIRAN CONSULTING ENGINEERS                                        |                                                                                     |                              |                            |                                                                                     |                                       |                                                                                     |                                                                                       |
| Contractor : PETROSADIAN CO                                                       |                                                                                     |                              |                            |                                                                                     |                                       |                                                                                     |                                                                                       |
| Client : JEY OIL REFINING CO.                                                     |                                                                                     |                              |                            |                                                                                     |                                       |                                                                                     |                                                                                       |
| Project Job No: 7-4725                                                            |                                                                                     |                              |                            |                                                                                     |                                       |                                                                                     |                                                                                       |
| Pump Type & Model: KP Screw (170HC)                                               |                                                                                     |                              |                            |                                                                                     |                                       |                                                                                     |                                                                                       |
| <b>Liquid Properties</b>                                                          |                                                                                     |                              |                            |                                                                                     |                                       |                                                                                     |                                                                                       |
| Name                                                                              | Temperature (°C)                                                                    | Density (Kg/m <sup>3</sup> ) | Kinematics Viscosity (cSt) | Dynamic Viscosity (centipoise)                                                      | Vapour Pressure (gr/cm <sup>2</sup> ) | Specific Weight                                                                     |                                                                                       |
| Water                                                                             | 20                                                                                  | 999                          | 1                          | 1                                                                                   | 23.83                                 | 0.98                                                                                |                                                                                       |
| <b>Inspection Results</b>                                                         |                                                                                     |                              |                            |                                                                                     |                                       |                                                                                     |                                                                                       |
| row                                                                               | Pump Item No.                                                                       | Pump Serial No.              | Part Name                  | Test Pressure (barg) [1.5 x MAWP]                                                   | Duration (minute)                     | Pressure loss (barg)                                                                | Gauge S.N                                                                             |
| 1                                                                                 | P-501B&P-502C                                                                       | S1704004                     | Casing                     | 30 bar                                                                              | 30min                                 | 0                                                                                   | 00894305                                                                              |
| KP.Co QC Engineer                                                                 |                                                                                     | Contractor                   |                            | Client                                                                              |                                       | INSPECTOR                                                                           |                                                                                       |
| Name                                                                              |                                                                                     |                              |                            |                                                                                     |                                       |                                                                                     |                                                                                       |
| Job Title                                                                         |                                                                                     |                              |                            |                                                                                     |                                       |                                                                                     |                                                                                       |
| Date                                                                              |                                                                                     |                              |                            |                                                                                     |                                       |                                                                                     |                                                                                       |
| Signature                                                                         |  |                              |                            |                                                                                     |                                       |                                                                                     |  |

KP-FRQC-09