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| <br>NISOC | <p>نگهداشت و افزایش تولید میدان نفتی بینک<br/>سطح الارض</p> <p>احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک</p> |           |            |         |      |          |       |  |      |
| شماره پیمان:<br><br>053 - 073 - 9184                                                       | CALCULATION NOTE FOR PUMPS                                                                                       |           |            |         |      |          |       | شماره صفحه: 1 از 6                                                                  |      |
|                                                                                            | پروژه                                                                                                            | بسته کاری | صادر کننده | تسهیلات | رشته | نوع مدرک | سریال |                                                                                     | نسخه |
|                                                                                            | BK                                                                                                               | GCS       | PEDCO      | 120     | PR   | CN       | 0001  | D04                                                                                 |      |

## طرح نگهداشت و افزایش تولید 27 مخزن

### CALCULATION NOTE FOR PUMPS

#### نگهداشت و افزایش تولید میدان نفتی بینک

|      |           |                         |              |             |              |                 |
|------|-----------|-------------------------|--------------|-------------|--------------|-----------------|
| D04  | AUG.2022  | IFA                     | M.Aryafar    | M.Fakharian | M.Mehrshad   |                 |
| D03  | JUL.2022  | IFA                     | M.Aryafar    | M.Fakharian | M.Mehrshad   |                 |
| D02  | MAR.2022  | IFA                     | M.Aryafar    | M.Fakharian | M.Mehrshad   |                 |
| D01  | JAN. 2022 | IFA                     | M.Aryafar    | M.Fakharian | M.Mehrshad   |                 |
| D00  | DEC. 2021 | IFC                     | M.Aryafar    | M.Fakharian | M.Mehrshad   |                 |
| Rev. | Date      | Purpose of Issue/Status | Prepared by: | Checked by: | Approved by: | CLIENT Approval |

Class: 2

CLIENT Doc. Number: F0Z-708739

#### Status:

IDC: Inter-Discipline Check  
 IFC: Issued For Comment  
 IFA: Issued For Approval  
 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  
 AB-A: As-Built -Approved

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| شماره پیمان:<br><br>053 - 073 - 9184                                                       | CALCULATION NOTE FOR PUMPS                                                                               |           |           |         |      |          |       | شماره صفحه: 2 از 6                                                                  |      |
|                                                                                            | پروژه                                                                                                    | بسته کاری | صادرکننده | تسهیلات | رشته | نوع مدرک | سریال |                                                                                     | نسخه |
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### REVISION RECORD SHEET

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| شماره پیمان:<br><br>053 - 073 – 9184                                                       | CALCULATION NOTE FOR PUMPS                                                                               |           |           |         |      |          |       | شماره صفحه: 3 از 6                                                                  |      |
|                                                                                            | پروژه                                                                                                    | بسته کاری | صادرکننده | تسهیلات | رشته | نوع مدرک | سریال |                                                                                     | نسخه |
|                                                                                            | BK                                                                                                       | GCS       | PEDCO     | 120     | PR   | CN       | 0001  |                                                                                     | D04  |

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| شماره پیمان:<br><br>053 - 073 – 9184                                                       | CALCULATION NOTE FOR PUMPS                                                                                       |           |            |         |      |          |       |      | شماره صفحه : 4 از 6                                                                 |
|                                                                                            | پروژه                                                                                                            | بسته کاری | صادر کننده | تسهیلات | رشته | نوع مدرک | سریال | نسخه |                                                                                     |
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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.

### GENERAL DEFINITION

The following terms shall be used in this document.

|                              |                                                                                                                    |
|------------------------------|--------------------------------------------------------------------------------------------------------------------|
| CLIENT:                      | National Iranian South Oilfields Company (NISOC)                                                                   |
| PROJECT:                     | Binak Oilfield Development – Surface Facilities; New Gas Compressor Station                                        |
| 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.                                                             |

|                                                                                            |                                                                                                                  |           |            |         |      |          |       |                                                                                     |      |
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| شماره پیمان:<br><br>053 - 073 - 9184                                                       | CALCULATION NOTE FOR PUMPS                                                                                       |           |            |         |      |          |       | شماره صفحه : 5 از 6                                                                 |      |
|                                                                                            | پروژه                                                                                                            | بسته کاری | صادر کننده | تسهیلات | رشته | نوع مدرک | سریال |                                                                                     | نسخه |
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## 2.0 SCOPE

This document provides the pump hydraulic calculation for BINAK Gas Compressor Station.

## NORMATIVE REFERENCES

### 2.1 THE PROJECT DOCUMENTS

- BK-GNRAL-PEDCO-000-PR-DB-0001 Process Basis of Design
- BK-GNRAL-PEDCO-000-PR-DC-0001 Process Design Criteria

### 2.2 ENVIRONMENTAL DATA

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

### 2.3 ORDER OF PRECEDENCE

In case of any conflict between the contents of this document or any discrepancy between this document and other project documents or reference standards, this issue must be reported to the CLIENT. The final decision in this situation will be made by CLIENT.

## 3.0 LIST OF PUMPS

List of pumps are summarized in below table and details of calculations are presented as follow.

| Equipment Tag Number | Equipment Description    | P&ID No.                    |
|----------------------|--------------------------|-----------------------------|
| P-2203A/B            | Sump Pumps               | BK-GCS-PEDCO-120-PR-PI-0017 |
| P-2202 A/B           | Closed Drain Pumps       | BK-GCS-PEDCO-120-PR-PI-0017 |
| P-2101A/B            | Slug Pumps               | BK-GCS-PEDCO-120-PR-PI-0004 |
| P-2209               | Potable Water Pumps      | BK-GCS-PEDCO-120-PR-PI-0024 |
| P-2206 A/B           | Diesel oil Pumps         | BK-GCS-PEDCO-120-PR-PI-0023 |
| P-2201A/B            | LP Flare K.O .Drum Pumps | BK-GCS-PEDCO-120-PR-PI-0020 |
| P-2102               | Glycol Manual Pump       | BK-GCS-PEDCO-120-PR-PI-0014 |
| P-2103 A/B           | Glycol Transfer Pumps    | BK-GCS-PEDCO-120-PR-PI-0014 |
| P-2104               | Glycol Drain Pumps       | BK-GCS-PEDCO-120-PR-PI-0025 |

|                                                                                            |                                                                                                                  |           |            |         |      |          |       |                                                                                     |      |
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| شماره پیمان:<br><br>053 - 073 - 9184                                                       | CALCULATION NOTE FOR PUMPS                                                                                       |           |            |         |      |          |       | شماره صفحه : 6 از 6                                                                 |      |
|                                                                                            | پروژه                                                                                                            | بسته کاری | صادر کننده | تسهیلات | رشته | نوع مدرک | سریال |                                                                                     | نسخه |
|                                                                                            | BK                                                                                                               | GCS       | PEDCO      | 120     | PR   | CN       | 0001  |                                                                                     | D04  |

#### 4.0 CALCULATION REPORT



| Equipment Tag Number | Equipment Description    | PUMP dP<br>bar | Hydraulic Power Consumption<br>kw | Normal Flow Rate<br>m3/hr |
|----------------------|--------------------------|----------------|-----------------------------------|---------------------------|
| P-2203A/B            | Sump Pumps               | 2              | 0.3                               | 5                         |
| P-2202 A/B           | Closed Drain Pumps       | 7              | 0.6                               | 3                         |
| P-2101A/B            | Slug Pumps               | 14             | 4.3                               | 10                        |
| P-2209               | Potable Water Pumps      | 2              | 0.3                               | 5                         |
| P-2206 A/B           | Diesel oil Pumps         | 1              | 0.2                               | 5                         |
| P-2201A/B            | LP Flare K.O .Drum Pumps | 1.5            | 0.1                               | 2                         |
| P-2102               | Glycol Manual Pump       | 1.5            | 0.1                               | 3                         |
| P-2103 A/B           | Glycol Transfer Pumps    | 2              | 0.3                               | 5                         |
| P-2104               | Glycol Drain Pumps       | 2              | 0.2                               | 3                         |

Detail of pump calculation are given in the attached file: **Attachment 1**

**Note:** It should be noted that calculation of close drain pumps and flare K.O.drum pumps are presented for two different destinations to select the worst case basis.