

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض عمومی و مشترک							
شماره پیمان: 053 – 073 – 9184	SPECIFICATION FOR MV SWITCHGEAR							شماره صفحه : 1 از 9
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GNRAL	PEDCO	000	EL	SP	0002	D03

طرح نگهداشت و افزایش تولید 27 مخزن

SPECIFICATION FOR MV SWITCHGEAR

نگهداشت و افزایش تولید میدان نفتی بینک

D03	Feb. 2022	AFD	H.Shakiba	M.Fakharian	M.Mehrshad	
D02	Oct. 2021	IFA	H.Shakiba	M.Fakharian	Sh.Ghalikar	
D01	Aug. 2021	IFA	M.Asgharnejad	M.Fakharian	Sh.Ghalikar	
D00	Jul. 2021	IFC	M.Asgharnejad	M.Fakharian	Sh.Ghalikar	
Rev.	Date	Purpose of Issue/Status	Prepared by:	Checked by:	Approved by:	CLIENT Approval

Class: 2

CLIENT Doc. Number: F0Z-707206

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

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>							
شماره پیمان: 053 – 073 – 9184	SPECIFICATION FOR MV SWITCHGEAR							شماره صفحه : 2 از 9
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GNRAL	PEDCO	000	EL	SP	0002	D03

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				
6	X	X	X		
7	X				
8	X				
9	X				
10					
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					

PAGE	D00	D01	D02	D03	D04
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					
61					
62					
63					
64					
65					
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					

 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: 053 – 073 – 9184	SPECIFICATION FOR MV SWITCHGEAR							شماره صفحه : 3 از 9
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GNRAL	PEDCO	000	EL	SP	0002	D03

CONTENTS

1.0	INTRODUCTION	4
2.0	SCOPE	5
3.0	NORMATIVE REFERENCES.....	5
3.1	LOCAL CODES & STANDARDS	5
3.2	INTERNATIONAL CODES & STANDARDS	5
3.3	ENVIRONMENTAL DATA	5
3.4	GUIDANCE FOR USE OF THIS DOCUMENT	5
3.5	ORDER OF PRECEDENCE	6
4.0	SERVICE CONDITION.....	6
5.0	APPLICATION	6
6.0	GENERAL REQUIRMENTS.....	7
7.0	MAJOR COMPONENT	8
8.0	AUXILIARY COMPONENTS.....	8
9.0	TEST & INSPECTION	9
10.0	SPARE PARTS	9
11.0	DOCUMENTATION	9
12.0	SHIPMENT	9
13.0	GUARANTEE	9

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>								
شماره پیمان: 053 – 073 – 9184	SPECIFICATION FOR MV SWITCHGEAR							شماره صفحه : 4 از 9	
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GNRAL	PEDCO	000	EL	SP	0002	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.s.
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 COMPANY rather than by an EPC/EPD CONTRACTOR, supplier or VENDOR.
MAY:	Is used where a provision is completely discretionary.

 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: 053 – 073 – 9184	SPECIFICATION FOR MV SWITCHGEAR							شماره صفحه: 5 از 9	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GNRAL	PEDCO	000	EL	SP	0002		D03

2.0 SCOPE

This document gives amendment and supplement to IPS-M-EL-144 (4) “Materials and Equipment Standard for Medium Voltage AC Switchgear & Controlgear” used in “Binak Oilfield Development”.

3.0 NORMATIVE REFERENCES

3.1 Local Codes & Standards

No amendments or supplements are to state.

3.2 International Codes & Standards

No amendments or supplements are to state.

3.3 Environmental Data

The installation site is in south of Iran with corrosive, hot and high humid atmosphere. Therefore, all equipment shall be designed to fully comply with the performance specification in the environmental conditions. For more information refer to “Process Basis Design; section 11”.

3.4 Guidance for Use of This Document

The amendments/supplement to the related IPS Standard(s) given in this document are directly related to the equivalent sections or clauses in the IPS Standard(s). For clarity, the section and paragraph numbering of the IPS Standard(s) has been used as long as possible. Where clauses in IPS are referenced within this document, it shall mean those clauses are amended by this document. Clauses in “IPS” that are not amended by this document shall remain valid as written.

For ease of reference, the clause or section numbering of the related IPS Standard(s) has been used throughout this specification. For the purpose of this specification, the following definitions shall hold:

Sub. (Substitution): The IPS Std. clause is deleted and replaced by a new clause.

Del. (Deletion): The IPS Std. clause is deleted without any replacement.

Add. (Addition): A new clause with a new number is added.

Mod. (Modification): Part of the IPS Std. clause is modified, and/or a new description and/or condition are added to that Clause.

	<p>نگهداشت و افزایش تولید میدان نفتی بینک</p> <p>سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>							
شماره پیمان: 053 – 073 – 9184	SPECIFICATION FOR MV SWITCHGEAR							شماره صفحه : 6 از 9
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GNRAL	PEDCO	000	EL	SP	0002	D03

3.5 Order of Precedence

In case of conflict between requirements specified herein & the requirements of any other referenced document, the most approved stringent requirements of below listed items shall be considered based on the approval given by the owner's representative:

- Purchase order
- Material Requisition
- MTO & Data Sheet
- This Specification
- Drawing & Other Specification
- Reference Project Specification
- Iranian Petroleum Standard (IPS)
- Reference international Code & Standards

When the term “Authorized”, Authorization”, “Approval”, or “Approved” are used in this specification, it shall mean authorization or Approval from OWNER.

In case of any conflict between the project documents, the most stringent one shall be considered.

4.0 SERVICE CONDITION

The medium voltage switchgear specified herein shall be installed indoor in air-conditioned substation building. (Mod)

The MV Switchgear shall be designed for ambient conditions refer to clause of this document. (Mod)

5.0 APPLICATION

The medium voltage system is 3.3 kV, 11 kV and the high voltage system is 33kV. (Mod)

The highest system voltages according to IEC recommendations are 3.6kV for 3.3kV systems, 12kV for 11kV and 36kV for 33kV systems. (Mod)

The medium voltage switchgear (MV switchgear) is rated 3.3kV and will be fed from generator/s or transformer/s with secondary voltage of 3.3kV. (The primary voltage of transformer/s is 11kV or 33kV). The MV switchgear includes circuit breakers and contactor type motor starters with associated control, measuring, protective and regulating devices as specified in this specification and/or indicated in the single line diagram/s. (Mod)

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>								
شماره پیمان: 053 – 073 – 9184	SPECIFICATION FOR MV SWITCHGEAR							شماره صفحه : 7 از 9	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GNRAL	PEDCO	000	EL	SP	0002	D03	

The high voltage switchgear (HV switchgear) is rated 33kV and will be fed from the power generation and/or power distribution system/s. The HV switchgear includes only circuit breakers which are used as incomer, bus tie breaker, feeder breaker, and motor starter when appropriate, together with the required auxiliary components as specified in this specification and/or indicated in the single line diagram/s. (Mod)

The MV switchgear shall be capable of proper operation for voltage variation $\pm 10\%$ and frequency variation of $\pm 5\%$. (Add.)

The relays and contactors shall be capable of proper operation for maximum short circuit current. (Add.)

If the extension of existing medium voltage (11 kV) switchgear is considered, the new MV switchgears shall be installed side of existing switchgear in the substation & no adaptor for busbars is acceptable. (This note is valid for compressor station).

6.0 GENERAL REQUIRMENTS

Unless otherwise specified in data sheet, the indoor enclosure shall provide a degree of protection of IP42 according to IEC 60529 without using the floor of the switch room as part of the enclosure. (Mod)

Wiring inside the switchgears shall be color coded as following: (Add)

- Phase conductors Red-Yellow-Blue
- Neutral Black
- DC positive conductor Red
- DC negative conductor Black
- Control conductor cables Black (with white numbering)
- Earthing conductors Green /Yellow

Mimic lines on the switchgears shall be color coded as following: (Add.)

- 132 kV Orange
- 66 kV Pink
- 33 kV Red
- 11 kV Brown
- 3.3 kV Yellow
- 0.4 kV Green

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>							 شرکت تولید و پارس 	
شماره پیمان: 053 – 073 – 9184	SPECIFICATION FOR MV SWITCHGEAR							شماره صفحه : 8 از 9	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GNRAL	PEDCO	000	EL	SP	0002		D03

7.0 MAJOR COMPONENT

The following items shall be considered for incomers and couplers: (Add)

- Manual/Auto/manual Transfer selector switch
- Synchronizing check relay (25) fed from incoming feeder potential transformer
- Four positions selector switch with (INCA TO C, INCB TO C, C TO A/B, OFF)
- Bus-Tie breaker is normally open and each section is fed by its own transformer. The coupler shall be closed automatically when one of the incomer breakers opens.
- In auto mode, if under voltage fault occur in one incoming, the related circuit breaker shall be opened and bus-tie breaker shall be closed automatically to feed whole load from the other transformer. This case is not reversible when the lost line comes back. (bus-tie breaker will not be allowed to open and the incoming beaker will not be closed automatically).
- In manual mode, 2 of 3 transfer switching will be done by operator.
- In manual transfer mode, the operator can replace one of incomer feeders with coupler and vice versa without interrupting the power supply. This shall be done by selector switch, pushbutton and synchronize check relay (25). For example, operator may know one of incoming lines planned outage time for network maintenance. In order to avoid any power break, the bus-tie circuit breaker is chosen to replace with the incoming feeder by selector switch. After synchronization check relay (25) checks the desired limits of frequency, phase angle and voltage value of two incoming supply feeders, bus-tie shall be closed which puts the two transformers in parallel for a short time and the selected incoming breaker will be opened. This happens by a specific pushbutton.

Motor starter installed in medium voltage switchgear are intended to control 3 phase 3.3kV electrical motors. 3.3 kV motors rated 150 kW to 1000 kW shall be controlled by contactor type motor starters. (Mod)

Signal lamps (LED) shall be provided for each protection. (Add)

8.0 AUXILIARY COMPONENTS

Instruments and protections shall be flush mounting type and shall have an enclosure with a degree of protection of IP42 for indoor application. (IP55 for outdoor application). (Mod)

Microprocessor type protective relays shall be equipped with RS 485 to send signals by serial link.

(Add)

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>								
شماره پیمان: 053 – 073 – 9184	SPECIFICATION FOR MV SWITCHGEAR							شماره صفحه : 9 از 9	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GNRAL	PEDCO	000	EL	SP	0002		D03

All protection will be according to IPS-E-EL-100(1). (Add)

The secondary of the current transformers shall be earthed on one side. Where current transformers are connected in Wye, the Wye point shall be earthed. The wiring of the secondary circuits shall have a cross section of 4 mm². Separate earth wire shall be used for measuring and protection current transformers. (Mod)

The secondary of current transformers shall have two cores, one core for protection and another for measuring. (Add)

The voltage transformers for measuring purposes shall be of accuracy class 1 and for protection purposes shall be class 3P. Voltage transformers for use with generator AVR/s shall be of accuracy class 0.5. The wiring of the secondary circuits shall have a cross section of 2.5 mm². (Mod)

The secondary of potential transformer shall have two cores, one core for protection and another for measuring. (Add)

9.0 TEST & INSPECTION

No amendments or supplements are to state.

10.0 SPARE PARTS

No amendments or supplements are to state.

11.0 DOCUMENTATION

No amendments or supplements are to state.

12.0 SHIPMENT

No amendments or supplfdements are to state.

13.0 GUARANTEE

No amendments or supplements are to state.