




شماره پیمان: 053 – 073 – 9184	SIL REPORT FOR BINAK B/C MANIFOLD EXTENSION							شماره صفحه: 1 از 13	
	نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری		پروژه
	D01	0005	RT	GE	110	PEDCO	SSGRL		BK



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
FI: Final Issue

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک</p> <p>فعالیت های رو زمینی در بسته های کاری تحت الارض</p> <p>عمومی و مشترک</p>								
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	BK	SSGRL	PEDCO	110	GE	RT	0005		D01

REVISION RECORD SHEET



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 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک</p> <p>فعالیت های روزمینی در بسته های کاری تحت الارض</p> <p>عمومی و مشترک</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, construction of well location, access road, wellhead facilities (with electric power supply) for W007S shall be done. In addition, construction of new flowline from aforementioned well location to Binak B/C unit (with extension of relevant manifold) are in the Project scope of work.



GENERAL DEFINITION

The following terms shall be used in this document.

CLIENT:	National Iranian South Oilfields Company (NISOC)
PROJECT:	Binak Oilfield Development – Construction of Well Location, Wellhead Facilities, Electrification Facilities, Flowlines for W007S and Extension of Binak B/C Manifold
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.

2.0 SCOPE

The scope of SIL study covers all P&IDs for Extension of Binak B/C Manifold. The list of

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک</p> <p>فعالیت های رو زمینی در بسته های کاری تحت الارض</p> <p>عمومی و مشترک</p>								
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P&IDs is presented in appendix B.

3.1 NORMATIVE REFERENCES

3.2 INTERNATIONAL CODES AND STANDARDS

- IEC 61511:2016 Functional Safety – Safety Instrumented Systems for the Process Industry Sector

3.3 THE PROJECT DOCUMENTS

- BK-W007S-PEDCO-110-PR-DG-0001 ESD Block Diagram
- BK-W007S-PEDCO-110-PR-DG-0002 Cause & Effect Diagram

4.0 PURPOSE

The purpose of this document is to provide the results of “SIL Study” for **Binak Oilfield Development – Extension of Binak B/C Manifold**.

The objective of SIL study is to identify the target Safety Integrity Levels (SIL) of all the typical instrumented safety-related loops defined as trip interlocks, i.e. safety instrumented functions (SIF) leading to a safe status for people and to a safe state of the process and assets. The results obtained for target SIL of SIF's then can be used for the design and procurement of the safety instrumented systems and planning of proof test intervals of safety instrumented systems.

5.0 SIL STUDY OVERVIEW



SIL study was performed along with HAZOP Study meetings which were conducted in two sessions on June 25 & 26, 2022 held in Neyshekar Hotel main meeting hall, Ahvaz.

A team comprising of experts from different disciplines of National Iranian South Oilfields Company (NISOC), Petro Iran Development Company (PEDCO) and Hiran Energy Company conducted the study with a third-party HAZOP/SIL Chairman and Scribe. The list of team members is presented in appendix A.

Piping and Instrumentation Diagrams (P&ID's) for Extension of Binak B/C Manifold are listed in appendix B. Each P&ID is used in one or more nodes that is mentioned in the drawing report.

The node list generated during HAZOP Study was also used for SIL Study. Total 2 SIFs were identified and studied. The list of nodes and SIFs in each node is presented in appendix C.

Appendix D describes SIFs in each node and the Target SIL results, and appendix E consists of detailed SIL Worksheets of the study.

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	BK	SSGRL	PEDCO	110	GE	RT	0005		D01



6.0 PROCEDURE

The SIL Study was performed according to the Risk Graph methodology defined by the SIL Procedure Document “BK-GNRAL-PEDCO-000-GE-PR-0003”.

7.0 SIL STUDY OUTCOMES

A total of 2 SIF's were identified as safety critical systems and assessed. The resulting SIL study worksheets and SIL targets are shown in appendix E. Where multiple scenarios were analyzed, the highest value of SIL is selected for the regarding SIF. Following table shows the distribution of Target SIL's.


SIL Target	No. of SIF's
Not Safety Related	0
SIL A	0
SIL 1	1
SIL 2	1
SIL 3	0
SIL 4	0
Total	2

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	BK	SSGRL	PEDCO	110	GE	RT	0005		D01


8.1 ATTACHMENTS

8.2 ATTACHMENT A – TEAM MEMBERS

First Name	Last Name	Company	Expertise
S.Mehdi	Ashrafian	NISOC	Project Manager
Shamsolah	Bahadori	NISOC	Construction Manager
Fatemeh	Ghods	NISOC	Head of I&C
Mohammad	Torfi	NISOC	Process
Sahar	Saba	NISOC	Process
Niloofar	Rezaei Baba ahmadi	NISOC	Process
Mohammad Reza	Cheraghchi	NISOC	Process
Fazel	Moafi	NISOC	Instrument
Behzad	Zandian	NISOC	Instrument
Peyman	Sarvarian	NISOC	Mechanic
Hojjat	Jafarpour	NISOC	Mechanical
Faride	Parvin	NISOC	Mechanical
Mohammad	Khamisi	NISOC	HSE
Mohammad	Shirali	NISOC	Commissioning
Ali	Hamidan	NISOC	Commissioning
Naji	Hamid	NISOC	Commissioning
Khodadad	Kavosi	NISOC	Commissioning
Reza	Gholgheysari	NISOC	Process Engineer
Mobin	Saeedi	NISOC	Instrument
Mohammad	Bakhshi Mohammadi	Gachsaran NISOC	Production Engineer
Shahram	Valizadeh	Gachsaran NISOC	Production Engineer
Vahid	Mussavi	Gachsaran NISOC	Production Engineer
Mohammad	Fakoor	PEDCO	Process Engineer
Farshid	Amiri	PEDCO	Piping Lead Engineer
Hadi	Mozaffari	PEDCO	Electrical Engineer
Mahdi	Karimi	PEDCO	Head of Electrical Department
Pouria	Bavarsad	PEDCO	Piping Engineering
Sadegh	Gharacheh	PEDCO	Process
Morteza	Taherkhani	PEDCO	Head of I&C
Sepideh	Akbari	PEDCO	I&C Engineer
Sasan	Faramarzpour	PEDCO	Head of Process and Safety Department
Pouya	Maleki	PEDCO	Process Engineer
Mehdi	Sadeghian	PEDCO	Surface Manager
Vahid	Abdeshadi	PEDCO	Project Engineer Manager



 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک</p> <p>فعالیت های رو زمینی در بسته های کاری تحت الارض</p> <p>عمومی و مشترک</p>								
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	BK	SSGRL	PEDCO	110	GE	RT	0005		D01

First Name	Last Name	Company	Expertise
Masoud	Asgharnejad	Hirgan Energy	Engineering Manager
Mohsen	Aryafar	Hirgan Energy	Process
Saeed	Ghanbari	Hirgan Energy	Process
Parisa	Hajisadeghi	Hirgan Energy	Head of I&C
Mohammad	Fakharian	Hirgan Energy	Project Manager
Ali	Baghaei	HAZOP Consultant	Process Safety
Firoozeh	Khosravi	HAZOP Consultant	Process Safety

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک</p> <p>فعالیت های رو زمینی در بسته های کاری تحت الارض</p> <p>عمومی و مشترک</p>								
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8.3 ATTACHMENT B – LIST OF DRAWINGS

Drawing No.	Drawing Title	Place(s) Used
BK-W007S-PEDCO-110-PR-PI-0001_D01	Extension of Binak B/C Manifold (6 sheets)	Nodes: 1

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک</p> <p>فعالیت های رو زمینی در بسته های کاری تحت الارض</p> <p>عمومی و مشترک</p>								
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	BK	SSGRL	PEDCO	110	GE	RT	0005		D01

8.4 ATTACHMENT C – NODE LIST


Nodes	Color	Drawings	SIF Initiator	Target SIL
1. Extension of Binak B/C Manifold	Yellow	BK-W007S-PEDCO-110-PR-PI-0001_D01	1. PALL-1701A	SIL 1
			2. PAHH-1701A	SIL 2 (with recommendation)

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک</p> <p>فعالیت های روزمینی در بسته های کاری تحت الارض</p> <p>عمومی و مشترک</p>								
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	BK	SSGRL	PEDCO	110	GE	RT	0005		D01

8.5 ATTACHMENT D – SIF DESCRIPTION

Node: 1. Extension of Binak B/C Manifold

SIF Initiator	Description	Target SIL
1. PALL-1701A	will activate ESD	SIL 1
2. PAHH-1701A	will activate ESD	SIL 2 (with recommendation)

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک</p> <p>فعالیت های رو زمینی در بسته های کاری تحت الارض</p> <p>عمومی و مشترک</p>								
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	D00	0005	RT	GE	120	PEDCO	SSGRL	BK	

Node: 1. Extension of Binak B/C Manifold

SIF Initiator: 2. PAHH-1701A

Causes	Consequences	Safeguards		Risk Graph-Safety					Risk Graph-Asset				Risk Graph-Environment				Recommendations
		Protection Layer	Category	C	F	P	W	SIL	C	P	W	SIL	C	P	W	SIL	
1. FCV-1701A closed more by a failure in any elements of its control loop	1. Increased pressure upstream of valve with possibility of damage, fire and personnel injury	1. FAL-1701A (dependent)	Non-IPL	Sc	F _B	P _A	W ₂	SIL 2	A _C	P _A	W ₂	SIL 2					1. Relocate PRV-1701A to upstream of FCV-1701A with class 600#. Also provide procedure that always one manual valve of flow lines to manifolds A/B shall be open.