طرح نگهداشت و افزایش تولید 27 مخزن

ESD Philosophy

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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

REVISION RECORD SHEET

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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, New Gas/Condensate Pipelines (from Binak New GCS to Siahmakan GIS/Binak PU) shall be constructed

GENERAL DEFINITION

The following terms shall be used in this document.

CLIENT:	National Iranian South Oilfields Company (NISOC)
PROJECT:	Binak Oilfield Development – Surface Facilities; Gas & Gas-Condensate Pipelines
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

This Specification is aimed to provide the minimum requirements for the plant shut-down and depressurizing philosophy. It covers the technical requirements to ensure that safe conditions are created during different emergency situations.

3.0 NORMATIVE REFERENCES

3.1 LOCAL CODES AND STANDARDS

- IPS-E-PI-470 Process Design of Emergency Measures
- IPS-G-IN-260 Alarm and Protective System

In addition to the relevant international codes and standards, the ESD shall comply with the relevant Iranian Petroleum Standards (IPS).

3.2 THE PROJECT DOCUMENTS

- Piping & Instrumentation Diagrams: BK-PPL-PEDCO-320-PR-PI-0001

3.3 ENVIRONMENTAL DATA

Refer to "Process Basis of Design; Doc. No. BK-00-HD-000-PR-DB-0001

4.0 EMERGENCY SHUTDOWN PROVISION

- In case of uncontrollable upsets of the operating parameters, incorrect operation or failure of critical controls or services, the compression section is provided with an emergency shutdown system (E.S.D), independent from PCS, both for equipment protection and personnel safety, (whose signals are alarmed on the PCS operator screen) to allow the completion of the safe shutdown procedures or to restart the plant (or the part of the plant) in shutdown phase.
- ESD systems shall be provided for all Owner Facilities that process, transport, or otherwise handle combustible, flammable, or potentially toxic materials. This includes all installed equipment in BINAK Gas Compressor Station .
- ESD systems shall be designed and implemented as separate and independent instrumented protection levels, which, in addition to other mechanical over-pressure protective devices (e.g., safety-relief valves), protect plant personnel, surrounding communities and the environment from potential adverse effects of emergencies (e.g., fires, explosions, and hydrocarbon or toxic gas releases).
- ESD systems consist of a structured logic network of sensors or actuating devices, logic solvers, emergency isolation valves, and “permissive”' interlocks (e.g., for rotating equipment). These systems react automatically upon detection of an abnormal process,

condition or upset, or manually by operator intervention to do the following:

- Isolate hazardous process streams entering or exiting plant equipment or process units
- depressurizing of the highly pressurized sections
- Shutdown associated rotating equipment
- Electrical power isolation

The ESD system consists of at least one hierarchical levels of shutdown and/or isolation, as described in following section.

5.0 DESCRIPTION OF HIERARCHICAL LEVELS FOR GAS PIPELINE (TO SIAHMAKAN G.I. STATION)

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5.1 LEVEL 1– GCS PROCESS EMERGRNCY SHUT DOWN

ESD level 1 is isolates and brings into safe condition. It shall be initiated through the below causes:

- ESD level 1 Pig launcher of PPL: shall follow ESD philosophy of GCS (Refer to “ESD Philosophy; Doc. No. BK-GCS-PEDCO-120-PR-PH-0005): Low low pressure gas pipline from dehydration package
- ESD through LBV is self-operated and shall follow process limit conditions.

Effect:

- Close ESDV valve into gas pipeline from dehydration package (ESDV-3201)

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5.2 LEVEL 1– EMERGENCY SHUTDOWN FROM EXISTING PLANT (TO SIAHMAKAN G.I. STATION)

- ESD level 1 of Pig receiver in Siahmakan: shall follow ESD philosophy of existing ESD system of Siahmakan.

Effect:

- Close ESDV valve gas pipeline to SIAHMAKAN.

6.0 ESD SYSTEM SEGREGATION

ESD systems, associated logic and alarms shall be designed such that they are segregated from, and totally independent of, other regulatory control and monitoring systems.

6.1 ESD SYSTEM FAILURE MODES

All ESD loops and systems shall have a defined failure or fail-safe state. The fail-safe state shall be the de-energized state. This means that all ESD modules, subsystem components, process

measuring elements and final control elements shall be designed and implemented in such a manner that there is a defined "de-energized" failure state: fail-open, fail-close, or fail-steady.

6.2 PROCESS CAUSE AND EFFECTS DIAGRAMS

All causes and effects mentioned in this document including, all shut-down commands resulting to actions such as trip of rotating equipment and packages, closing the ESDVs and permissive interlocks and resulting actions will be identified on the cause and effects diagrams.