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NATIONAL IRANIAN OIL REFINING & DISTRIBUTION COMPANY
NATIONAL IRANIAN OIL ENGINEERING
& CONSTRUCTION COMPANY

NIOEC SP

NIOEC SPECIFICATION FOR PLANT OPERATING MANUALS

FIRST EDITION

JULY, 2005

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IN THE NAME OF GOD**FOREWORD**

By their very nature, technical Specifications are continuously subject to modifications and revisions. To strengthen their merit and usefulness, continuous improvements, addendum, deletion of disparate information and consequently provision of updated revisions are to be made in order to ascertain that such Specifications meet the current requirements, inclusive of Iranian Petroleum Standards (IPS) and the recognized and acceptable national and international Standards, as well as the optimal codes and practices based on the accumulated in-house know-how and plant knowledge and experiences.

However, in reality, due to several reasons, not to mention the complexity of the matter, the ultimate goal of continuous direct embedment of the required changes on the relevant Specifications may be far reaching. Therefore, in the interim periods between the officially issued revisions, the required changes will appear in other documents related to the engineering and design work of the on going projects.

In response to the initiative of the Design and Engineering Directorate, and considering that the task of the execution of several important and mega projects for the realization of the new oil refineries, pipelines and oil terminals as well as improvements of the existing facilities, has been assigned to NIOEC, it was decided to update the NIOEC Specifications and to issue new official revisions.

The Design and Engineering Directorate was itself entrusted to carry out this important task, and as such by forming several special technical committees, working in close co-operation and cohesion and sharing their expertise and knowledge, the updated and revised NIOEC Specifications were successfully prepared and complied.

These Specifications are intended to be used for Oil Refineries, Distribution Depots, Oil Terminals, Pipelines and Pump Stations within NIOEC's projects, and have been proven to be of high value for such purposes. It must however be appreciated that these Specifications represent the minimum requirements and should in no way be interpreted as a restriction on the use of better procedures, engineering and design practices or materials.

We encourage and highly appreciate the users and other clear sighted and experts to send their comments on the Specifications to the Design and Engineering Director of NIOEC for evaluation and approval.

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NOTES:

- 1) THIS SHEET IS A RECORD OF ALL REVISIONS TO THIS SPECIFICATION.
- 2) WHEN APPROVED EACH REVISION SHALL BE CONSIDERED AS A PART OF THE ORIGINAL DOCUMENT.
- 3) NUMBER OF PAGES EXCLUDES THIS SHEET AND THE COVER SHEET.

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INTRODUCTION

To satisfy the requirements of this NIOEC Specification, Iranian Petroleum Standard IPS-E-PR-290 (Feb. 2001) with the modifications as specified herein after shall be strictly followed.

Articles 1 and 2 of this document replace entirely the related articles in the referenced IPS Standard.

1. SCOPE

NIOEC specifications cover the general requirements for detailed engineering, procurements, testing, inspection & construction of refinery/ oil plant, distribution depots, pump stations and pipelines.

This Specification covers the minimum requirements of format, in preparing process and/or utility units operating manuals, including essential instructions and points of noteworthy.

The purpose of this Manual is to standardize the content and format of operating manuals which shall be prepared by the Contractor. Although operating manuals differ to some extent from process to process, the basic philosophy and general aspects shall conform to the concepts of this Specification.

Deviations from this specification will only be permitted on obtaining written approval from NIOEC.

Resolution on cases not explicitly stipulated in this Specification, or on cases where conflicts may arise among the requirements of the referenced IPS and the international standards, shall be made through written consent and approval of NIOEC.

2. REFERENCES

The following standards, codes, and specifications, to the extent specified hereinafter, shall constitute a part of this NIOEC Specification. Latest edition of the undated referenced documents and the cited edition of the dated references shall apply. The applicability of changes made to the dated references, after the cited date shall be mutually agreed upon between NIOEC and the vendor/contractor.

ISO (INTERNATIONAL ORGANIZATION FOR STANDARDIZATION)

6708-1980 (E) "Pipe Component Definition of Nominal Size", 1st. Ed., 1980

IPS (IRANIAN PETROLEUM STANDARDS)

IPS-E-PR-290 "Engineering Standard for Plant Operating Manuals"

NIOEC SP (NIOEC SPECIFICATIONS)

NIOEC-SP-00-10 "NIOEC Specification for Units"

NIOEC-SP-00-52 "NIOEC Specification for Process Flow Diagram"

NIOEC-SP-00-82 "NIOEC Specification for Process Design of Plant Waste Water Sewer Systems"

2.1. EQUIVALENT TO IPS STANDARDS

Substitute the following IPS Standards as referred to throughout IPS-E-PR-290 for the relevant NIOEC's Specifications as follows:

IPS Standard

IPS-E-GN-100

IPS-E-PR-170

IPS-E-PR-725

Relevant NIOEC Specification

NIOEC-SP-00-10

NIOEC-SP-00-52

NIOEC-SP-00-82

3. UNITS (Modification)

International system of units (SI) shall be used in accordance with NIOEC-SP-00-10, unless otherwise specified.

4. ADDENDUM TO IPS-E-PR-290

This addendum revises the below listed articles of the referenced standard as follows:

6.5 (Addition)**6.5. Electronic file format**

CONTRACTOR shall furnish EMPLOYER with editable type electronic files of Operating Manuals for each UNIT.

9.1.2 Part a (Modification)

(iii) Simplified flow scheme of catalyst reduction, activation, oxidation, regeneration and sulfiding (generally, for Licensed Units).

9.2.1.1 (Substitution)

Type, source and flow rate of feed and unit different operating modes to be specified.

9.2.3.2 (Substitution)

Enthalpy basis (datum level) for all fluids to be identified. Computer software name and property method used for preparation of Heat and Material Balance Tables shall also be specified.

9.2.4 Section F (Modification)

Utility Summary Tables shall cover the following requirements (where applicable) as shown below typical tables (are presented in Appendix F):

- Item number.
- Service.
- Load BkW (BhP), kW.
- Electrical power, kW.
- Steam, 1000 kg/h.
- HP steam, pressure in, bar (ga).
- MP steam, pressure in, bar (ga).
- LP steam, pressure in, bar (ga).

- LLP steam, pressure in, bar (ga).
- Condensate, 1000 kg/h
- Cold Cond., Pressure in, bar (ga).
- HP hot Cond., Pressure in, bar (ga).
- LP hot Cond., Pressure in, bar (ga).
- LLP hot Cond., Pressure in, bar (ga).
- BFW, 1000 kg/h
- Pure demineralized water, 1000 kg/h.
- Loss (steam, condensate, BFW, ...), 1000 kg/h.
- Cooling water.
- Tempered water, m³/h.
- Fresh water, m³/h.
- Sea Water
- Deslined Water
- Temperature rise, °C.
- Fuel (LHV)
- Oil, 1000 kJ/s.
- Gas, 1000 kJ/s.
- Nitrogen, Nm³/h.
- Plant water, m³/h.
- Potable water, m³/h.
- Inert gas, Nm³/h.
- Natural gas, Nm³/h.
- Instrument Air, Nm³/h.
- Plant Air, Nm³/h.

Utility Summary Tables shall be provided separately for summer and winter operating cases when the unit is operated under design flow rate. Additional cases may be included upon the Company's request.

9.3.1 Section A (Substitution)

The following requirements shall be included under the "Nature of Process".

- Introduction.
- Chemistry of the process.
- Typical reactions.
- Reaction rates and heats of reaction.
- Chemical and physical properties of Catalyst (including catalyst species...) and its functions on the reaction.

10. Schedule of Delivery (Addition)

- In Basic Design phase the Operating Manual shall be submitted as per agreed contractual

schedule.

During detail design, Operating Manual shall be submitted to EMPLOYER at least three (3) months prior to Commissioning of the respective UNIT after compilation and inclusion of instruction and information prepared by relevant manufacturers and suppliers (VENDORS) for related MATERIAL (equipment, chemical, Catalyst,...)

Appendix C :VIII. START-UP PROCEDURES (Modification)

A.1 PLANT INSPECTION AFTER MECHANICAL COMPLETION

A.2 CLEANING AND FLUSHING OF PIPING SYSTEM

A.9 CHECKING OF FIRE PROTECTION AND SAFETY FACILITIES

Appendix C :XI. EMERGENCY SHUT-DOWN PROCEDURE (Addition)

C.9 FIRE HEATER FAILURE

C.10 IMPORTANT PACKAGES FAILURES

C.11 OTHER FAULTS AND FAILURES

Appendix C :XII. MISCELLANEOUS PROCEDURES. (Addition)

FF. TEST RUN PROCEDURE

G. SULFIDING PRECEDURE

Appendix C :XIII. SAFETY (Addition)

B. SAFE PLACE TO WORK.

F. HAZARDOUS CHEMICALS (INCLUDING MSDS)

Appendix C :XVI. DRAWINGS (Addition).

G. BLOCK FLOW DIAGRAM

ENGINEERING STANDARD

FOR

PLANT OPERATING MANUALS

ORIGINAL EDITION

JAN. 1996

This standard specification is reviewed and updated by the relevant technical committee on Feb. 2001. The approved modifications are included in the present issue of IPS.

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