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

NIOEC SP

NIOEC SPECIFICATION FOR WATER POLLUTION CONTROL

SECOND EDITION

JULY, 2009

THIS SPECIFICATION IS THE PROPERTY OF NATIONAL IRANIAN OIL ENGINEERING & CONSTRUCTION COMPANY. IT IS CONFIDENTIAL AND ALL RIGHTS RESERVED TO THE OWNER. NEITHER WHOLE NOR ANY PART OF THIS DOCUMENT MAY BE DISCLOSED TO ANY THIRD PARTY, REPRODUCED, STORED IN ANY RETRIEVAL SYSTEM OR TRANSMITTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN CONSENT OF THE NATIONAL IRANIAN OIL ENGINEERING & CONSTRUCTION COMPANY.

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 ongoing 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.

5					
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INTRODUCTION

To satisfy the requirements of this NIOEC Specification, Iranian Petroleum Standards IPS-E-SF-880 (1) revised on July 2013 with the modifications as specified herein after shall be strictly followed.

Articles 0 to 2 and 4 of this document replace entirely the related articles in the referenced IPS Standard.

The increasing energy demand over the last decades has resulted in a corresponding growth and expansion in the refining and processing of crude petroleum. The proliferation of refineries and petrochemical plants, combined with the increasingly stringent quality requirements for effluents discharged from these facilities, has underscored the need for perfecting existing pollution control technology and developing improved approaches for minimizing the pollution potential in this sector.

Industries and Municipalities account for the largest portion of waste discharges that occur. Industries discharge an enormous variety of materials which include the largest volume of waste and the most toxic of pollutants. Environmental control is a very complex science. The trend is to move in the direction of pollution avoidance rather than control.

This will add a tremendous cost to industrial budget.

The public has tolerated pollution until recently, but the condition has increased to the point that many may suffer or even die because of it.

In this Specification monitoring of wastewater control, equipment, and engineering techniques will be discussed.

The sources of pollution and T.L.V (Threshold Limit Value) of these pollutants in wastewater are described in this Specification and NIOEC-SP-00-83. An effort has been made to present the most appropriate methods and equipment that apply as generally as possible for monitoring surface water, groundwater, cooling or circulating water, boiler water, boiler feed water, wastewater effluents after varying degrees of treatment, and untreated municipal or industrial wastewaters. Here again, the effort has been made to present methods and equipment of the widest possible application, but when monitoring of sample of highly unusual composition are encountered, the equipment of this manual may require modification, or may be wholly inappropriate.

1. SCOPE

This NIOEC Specification covers the minimum requirements for detailed engineering, & construction of refinery/ oil plant, distribution depots, pump stations and pipelines.

This Specification is intended to cover the safety and environmental control aspects as the Company's minimum requirements for water pollution control in refinery production plants. The scope is accomplished under following titles:

- Refinery Water Pollution Standard and Control.
- Petrochemical and Fertilizer Industry Water Pollution Sources, Standard and Control.
- Organic Chemical Manufacturing.
- The National Standard of Environmental Protection Agency.
- Monitoring.

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/relevant 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.

IPS (IRANIAN PETROLEUM STANDARD)

IPS-E-SF-880	“Engineering Standard for Water Pollution Control”
IPS-E-PR-730	“Engineering Standard for Process Design Plant Waste-Water Treatment and Recovery Systems”

NIOEC-SP (NIOEC SPECIFICATIONS)

NIOEC-SP-00-10	“NIOEC Specification for Units”
NIOEC-SP-00-83	“NIOEC Specification for Plant Waste Water Treatment & Recovery Systems”

IRISI (Institute of Standards & Industrial Research of Iran)

ISIRI 1053	“Drinking water - Physical and chemical specifications”
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2.1. Equivalent to IPS Standards

Substitute the following IPS Standards as referred to throughout IPS-E-SF-880 to relevant NIOEC's Specifications as follows:

IPS Standard	Relevant NIOEC Specification
IPS-E-PR-730	NIOEC-SP-00-83

3. ADDENDUM TO IPS STANDARDS

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

4. UNITS (Sub)

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

7. THE NATIONAL STANDARD OF ENVIRONMENTAL PROTECTION AGENCY FOR INDUSTRIAL WASTE AND POTABLE WATER (Mod 7.1 and Add 7.2)

Notes below table 3 shall be substituted by the following:

Notes (Substitution):

- 1) Discharging with higher rates than specified rate in table 3, is permissible, if and only if it does not increase more than 10% of chloride, sulfate densities and other dissolved materials of receiving source in 200 m radial space.
- 2) The only condition that we can discharge with rates higher than those mentioned in table 3 is: Increasing chloride & sulfate & other dissolved materials in wastewater should not ascend 10% of consumed water.
- 3) The effluent temperature should not increase or decrease the temperature of receiving source more than 3 centigrade degrees in 200m radius from the entrance.
- 4) Numbers of nematodes in urban wastewater treated, if being used for irrigation of products which is being consumed uncooked, shall not exceed one unit per liter.

7.2. Drinking Water Properties (Addition)

Drinking water physical and chemical specifications shall be in accordance with ISIRI 1053.

ENGINEERING STANDARD

FOR

WATER POLLUTION CONTROL

FIRST EDITION

NOVEMBER 2005

This standard specification is reviewed and updated by the relevant technical committee on July 2013. The approved modifications are included in the present issue of IPS.

FOREWORD

The Iranian Petroleum Standards (IPS) reflect the views of the Iranian Ministry of Petroleum and are intended for use in the oil and gas production facilities, oil refineries, chemical and petrochemical plants, gas handling and processing installations and other such facilities.

IPS is based on internationally acceptable standards and includes selections from the items stipulated in the referenced standards. They are also supplemented by additional requirements and/or modifications based on the experience acquired by the Iranian Petroleum Industry and the local market availability. The options which are not specified in the text of the standards are itemized in data sheet/s, so that, the user can select his appropriate preferences therein

The IPS standards are therefore expected to be sufficiently flexible so that the users can adapt these standards to their requirements. However, they may not cover every requirement of each project. For such cases, an addendum to IPS Standard shall be prepared by the user which elaborates the particular requirements of the user. This addendum together with the relevant IPS shall form the job specification for the specific project or work.

The IPS is reviewed and up-dated approximately every five years. Each standards are subject to amendment or withdrawal, if required, thus the latest edition of IPS shall be applicable

The users of IPS are therefore requested to send their views and comments, including any addendum prepared for particular cases to the following address. These comments and recommendations will be reviewed by the relevant technical committee and in case of approval will be incorporated in the next revision of the standard.

Standards and Research department

No.17, Street14, North kheradmand

Karimkhan Avenue, Tehran, Iran.

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GENERAL DEFINITIONS:

Throughout this Standard the following definitions shall apply.

COMPANY:

Refers to one of the related and/or affiliated companies of the Iranian Ministry of Petroleum such as National Iranian Oil Company, National Iranian Gas Company, National Petrochemical Company and National Iranian Oil Refinery And Distribution Company.

PURCHASER:

Means the "Company" where this standard is a part of direct purchaser order by the "Company", and the "Contractor" where this Standard is a part of contract documents.

VENDOR AND SUPPLIER:

Refers to firm or person who will supply and/or fabricate the equipment or material.

CONTRACTOR:

Refers to the persons, firm or company whose tender has been accepted by the company.

EXECUTOR:

Executor is the party which carries out all or part of construction and/or commissioning for the project.

INSPECTOR:

The Inspector referred to in this Standard is a person/persons or a body appointed in writing by the company for the inspection of fabrication and installation work.

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 the "Company" rather than by a contractor, supplier or vendor.

MAY:

Is used where a provision is completely discretionary.

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0. INTRODUCTION

The increasing energy demand over the last decades has resulted in a corresponding growth and expansion in the refining and processing of crude petroleum. The proliferation of refineries and petrochemical plants, combined with the increasingly stringent quality requirements for effluents discharged from these facilities, has underscored the need for perfecting existing pollution control technology and developing improved approaches for minimizing the pollution potential in this sector.

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