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

NIOEC SP

NIOEC SPECIFICATION

FOR

FIRE WATER DISTRIBUTION AND STORAGE FACILITIES

FIRST EDITION

JULY, 2005

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.

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INTRODUCTION

To satisfy the requirements of this NIOEC Specification, Iranian Petroleum Standards IPS-E-SF-220(3) revised on October 2013 with the modifications as specified herein after shall be strictly followed.

Articles 1 through 3 of this document replace entirely the related articles in the referenced IPS Standards.

1. SCOPE

This Specification specifies minimum requirements for water supply for fire-fighting purposes. It is important that all authorities concerned should work together to provide and maintain these minimum water supplies. The fire stations should include not only the water available from the hydrants but also help to assure the continuous and adequate flow of water for fire-fighting.

The following items are also included in this Specification:

- a) Basis for a fire-fighting water system;
- b) fire-water pumping facilities;
- c) Water tanks for fire protection;
- d) Fire hose reel (water) for fixed installation; and,
- e) Fixed water spray system.

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.

BSI (BRITISH STANDARDS INSTITUTION)

BS 5306-1	“Code of practice for fire extinguishing installations and equipment on premises – Part 1: Hose reels and foam inlets”
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IPS (IRANIAN PETROLEUM STANDARD)

IPS-E-EL-110	“Engineering Standard for Hazardous Area”
IPS-G-ME-110	“General Standard for Large Welded Low Pressure Storage Tank”
IPS-E-ME-130	“Engineering Standard for LPG Pressure Storage Spheres”
IPS-E-SF-200	“Engineering Standard for Fire Fighting Sprinkler System”
IPS-E-SF-220	“Engineering Standard for Fire Water Distribution and Storage Facilities”

NIOEC-SP (NIOEC SPECIFICATIONS)

NIOEC-SP-00-10	“NIOEC Specification for Units”
NIOEC-SP-41-01	“NIOEC Specification for Storage Tank Field Erection”
NIOEC-SP-41-03	“NIOEC Specification for Pressure Vessels”
NIOEC-SP-47-27	“NIOEC Specification for Active Fire Protection Design Criteria”

NIOEC-SP-47-36	“NIOEC Specification for Fire Fighting Sprinkler System”
NIOEC-SP-60-00	“NIOEC Specification for General Design Philosophy”

NFPA (NATIONAL FIRE PROTECTION ASSOCIATION CODES)

NFPA 15	“Standard for Water Spray Fixed Systems for Fire Protection”
NFPA 20	“Standard for the Installation of Stationary Pumps for Fire Protection”
NPFA 22	“Standard for Water Tanks for Private Fire Protection Effective”

2.1. Equivalent to IPS Standards

Substitute the following IPS Standards as referred to throughout IPS-E-SF-220 for the relevant NIOEC's Specifications as follows:

IPS Standard	Relevant NIOEC Specification
IPS-E-EL-110	NIOEC-SP-60-00
IPS-G-ME-110	NIOEC-SP-41-01
IPS-E-ME-130	NIOEC-SP-41-03
IPS-E-SF-200	NIOEC-SP-47-36
IPS-E-SF-220	NIOEC-SP-47-28

3. UNITS

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

4. ADDENDUM TO IPS-E-SF-220

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

The wording “NIOC” used through [IPS-E-SF-220](#) shall be substituted by "NIOEC" unless otherwise specified.

Article 4. DEFINITIONS AND TERMINOLOGY

Addition: Company: Means National Iranian Oil Engineering & Construction Company.

Addition: Purchaser: Means National Iranian Oil Engineering and Construction Company in cases where this specification is part of direct order by NIOEC and Contractor where this specification is part of contract Documents.

Article 5.3: General (Modification)

Petrochemical works, crude oil production areas shall be deleted from this article.

Article 6.6: Substitution

6.6 The minimum size of fire water main network shall be 8 inch.

Article 7.3:

Paragraph a): Substitution.

- a) There will be two major fires *in refineries* and one major fire *in pump stations, distribution depots and oil terminals* at a time. For detail information see NIOEC-SP-47-27.

Paragraph b) Substitution

- b) It is assumed that approximately 30% of fire water is blown away and evaporates and the remaining shall be drained via a drainage system.

Article 7.6 (substitution):

7.6 Fire hose reels shall be located in each process units and utility area, normally 30~45 m apart at certain strategic points as a minimum

Article 7.7 (Modification):

Add “as guideline” to the end of the sentence.

Article 7.10.2 (Modification), the last sentence shall be modified as follows:

The jockey pump shall be ‘spared’ and both pumps shall have a capacity of 22.5 m³/h *in pumping stations and tank farms* and 113 m³/hr *in refineries* to compensate for leakages.

Article 7.10.5 (Deletion)

Whole paragraph of this article “7.10.5” shall be Deleted:

Article 8.1.3 (Modification):

In the third line, 60% shall be changed to 50%.

Article 8.1.8 (Modification):

Change “15%” to “20%”

Article 8.1.9 (Modification):

Change “four to six” to “six”

Article 11.4.1 (Modification): The first sentence of the second paragraph shall be modified as follows:

Storage facilities may consist of atmospheric storage tank made of steel or an open tank of concrete or a basin of sufficient capacity.

Article 11.6 (Deletion):

The whole article shall be deleted.

Article 11.8 (Deletion):

The whole article shall be deleted.

Article 11.9 (modification):

“IPS-E-ME-110” shall be replaced by “IPS-G-ME-110”.

Article 11.10 Tank's material (Substitution):

Types of materials shall be limited to steel and concrete. The elevated steel tanks shall be supported on steel or reinforced concrete towers.

ENGINEERING STANDARD

FOR

FIRE WATER DISTRIBUTION

AND

STORAGE FACILITIES

ORIGINAL EDITION

NOVAMBER 1993

This standard specification is reviewed and updated by the relevant technical committee on May 1998(1), May 2007(2) and Oct. 2013(3). 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.

Postal Code- 1585886851

Tel: 021-88810459-60 & 021-66153055

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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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