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

NIOEC SP

NIOEC SPECIFICATION FOR STEAM JET EJECTORS

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 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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1	SEPTEMBER, 2014	Z.HEZARKHANI	G.R.ANVARI	M.R.FARZAM	A.ARMAN MOGHADAM
0	JULY, 2005	S. GHASSEMI	M.R.FARZAM	M.R.FARZAM	M.A.A.SAJEDI
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1. SCOPE

This specification defines NIOEC's minimum requirements for the design, manufacture, test and inspection for supplying direct contact/boiler feedwater spray type Deaerators to be installed in refineries.

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.

ASME (AMERICAN SOCIETY OF MECHANICAL ENGINEERS)

Rules for Construction of Pressure Vessels, Section VIII Division 1

ASME B1.20.1 "PIPE THREADS, GENERAL PURPOSE (INCH)"

ASME B16.5 "Pipe Flanges and Flanged Fittings NPS 1/2 through NPS 24"

ASME B31.1 "Process Piping"

ASME B31.3 "Power Piping"

ASME PTC 24 "Ejectors, (Performance Test Codes)"

ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS)

NIOEC-SIP (NIOEC SHOP INSPECTION PROCEDURE)

NIOEC-SIP-47-01 "NIOEC Shop Inspection Procedure for Ejectors"

HEI (HEAT EXCHANGER INSTITUTE)

"Standards for Steam Jet Vacuum Systems"

"Standards for Direct Contact Barometric and Low Level Condensers"

"Standards for Steam Surface Condensers"

NIOEC-SP (NIOEC SPECIFICATIONS)

[NIOEC-SP-00-10](#) "NIOEC Specification for Units"

[NIOEC-SP-00-11](#) "NIOEC Specification for Site Conditions"

[NIOEC-SP-40-03](#) "NIOEC Specification for Spare Parts Requirement"

[NIOEC-SP-41-03](#) "NIOEC Specification for Pressure Vessels"

[NIOEC-SP-47-10](#) "NIOEC Specification for Noise Control and Vibration"

[NIOEC-SP-80-02](#) "NIOEC Specification for Painting"

3. UNITS

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

4. DEFINITIONS & TERMINOLOGY

Employer: National Iranian Oil Engineering and Construction Company (NIOEC).

Contractor: The person, firm, company or consortium whose tender has been accepted by the Employer or legal successors in title to such person.

Inspector: The Employer's representative appointed by the Employer from time to time to inspect execution of works.

Purchaser: “National Iranian Oil Engineering & Construction Company”. When quoted in this specification as part of a direct purchase order by NIOEC and “Contractor” where this specification is part of contract documents.

Vendor: The manufacturer's from which the equipment is to be purchased.

5. GENERAL CRITERIA

5.1. Technical Specification

5.1.1. The main characteristics and the process requirements of the ejectors are specified in the dedicated Data sheets. A sample blanked data-sheet is presented in appendix A.

5.1.2. The supplied equipment shall be suitable for heavy and continuous duty adequate for continuous and safe operation and delivered in such a condition to ensure ease of erection and maintenance.

5.1.3. The supply shall be in accordance with the requirements of this specification. For parts of the supply not covered by this specification, Vendor shall submit his standards for Purchaser/Employer approval. Also see 9.1.3 and 9.1.4 .

5.2. Site Condition

The site condition is as per NIOEC-SP-00-11.

6. PROCESS REQUIREMENTS

6.1. Basic Information

6.1.1. Suction pressure:

The suction pressure of ejector shall be determined in absolute unit. For calculating this value, required vacuum at the critical point of the system and pressure drop from this point to the location of suction flange of the first stage shall be calculated.

6.1.2. Discharge pressure:

The pressure against which a single stage or the last stage of a multistage ejector must discharge shall be specified in absolute pressure.