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

NIOEC SP

NIOEC SPECIFICATION
FOR

GAS TURBINE DRIVEN MAIN LINE PUMPING SET

FIRST EDITION

OCT. , 2005

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IN THE NAME OF GOD**FOREWORD**

By their very nature, technical standard 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 standard 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 standard 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 Division of the Engineering and Construction 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 Division of the Engineering and Construction 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 Deputy of the Engineering and Construction Director of NIOEC for evaluation and consideration.

S. R. KASAEIZADEH



EXECUTIVE DIRECTOR

REVISION INDEX

REV. PAGE	1	2	3	4	5	REV. PAGE	1	2	3	4	5	REV. PAGE	1	2	3	4	5	REV. PAGE	1	2	3	4	5
1						26						51						76					
2						27						52						77					
3						28						53						78					
4						29						54						79					
5						30						55						80					
6						31						56						81					
7						32						57						82					
8						33						58						83					
9						34						59						84					
10						35						60						85					
11						36						61						86					
12						37						62						87					
13						38						63						88					
14						39						64						89					
15						40						65						90					
16						41						66						91					
17						42						67						92					
18						43						68						93					
19						44						69						94					
20						45						70						95					
21						46						71						96					
22						47						72						97					
23						48						73						98					
24						49						74						99					
25						50						75						100					

NOTES:

- 1) THIS SHEET IS A RECORD OF ALL REVISIONS TO THIS SPECIFICATION.
- 2) REMARKS RELATED TO EACH REVISION SHOW A BRIEF DESCRIPTION. THESE REMARKS SHALL BE INTERPRETED IN CONJUNCTION WITH THE REVISED TEXT MARKED BY REVISION NUMBERS.
- 3) WHEN APPROVED EACH REVISION SHALL BE CONSIDERED AS A PART OF THE ORIGINAL DOCUMENT.
- 4) NUMBER OF PAGES EXCLUDES THIS SHEET AND THE COVER SHEET.

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CONTENTS:**PAGE NO.**

1. SCOPE.....	2
2. REFERENCES	2
3. UNITS.....	3
4. GENERAL REQUIREMENT	3
5. SERVICE CONDITION.....	5
6. TESTS	6
7. INSPECTION DURING MANUFACTURE.....	8
8. REJECT CAUSES	8
9. DRAWINGS AND DATA	8
10. LABELLING	13
11. PAINTING AND SURFACE PREPARATION	13
12. ASSEMBLY, PACKING AND SHIPPING INSTRUCTIONS :	13
13. TECHNICAL ASSISTANCE.....	14
14. COORDINATION WITH OTHER SUPPLIERS.....	15
15. GUARANTEE	15
16. SPARE PARTS.....	15
17. LANGUAGE.....	15
18. SCHEDULE AND PROGRESS REPORT	15
19. DETAILED SPECIFICATION	16
20. ATTACHMENTS.....	19

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1. SCOPE

This Specification covers the general requirements for the supply of Turbine Driven main line pumping set. This specification has 3 attachments that mentioned in section 20.

2. REFERENCES

Throughout this Specification the following dated and undated standards/ codes are referred to. These referenced documents shall, to the extent specified herein, form a part of this Specification.

For undated references, the latest edition of the referenced document (including any supplements and amendments) applies. For dated references, the edition cited applies.

The applicability of changes in dated references that occur after the cited date, shall mutually be agreed upon by NIOEC and the Vendor/Contractor.

API (AMERICAN PETROLEUM INSTITUTE)

API 610 "Centrifugal pumps for general refinery service"

API 614 "Lubrication, shaft sealing, and control oil system"

API 616 "Gas turbines for Petroleum, Chemical and Gas Industry Services"

ASME (AMERICAN SOCIETY OF MECHANICAL ENGINEERS)

ASME As applicable

ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS)

ASTM As applicable

ISA (INSTRUMENT SOCIETY OF AMERICA)

ISA As applicable

IEC (INTERNATIONAL ELECTROTECHNICAL COMMISSION)

IEC As applicable

NIOEC-SP (NIOEC SPECIFICATIONS)

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

[NIOEC-SP-60-04](#) "Low voltage switch- gear and control-gear"

[NIOEC-SP-60-09](#) "Medium and High voltage switch- gear and control-gear"

[NIOEC-SP-60-02](#) "Low voltage induction motors"

[NIOEC-SP-60-20](#) "Medium and high voltage induction motors"

[NIOEC-SP-60-36](#) "Electrical components of package units"

[NIOEC-SP-70-14](#) "Control panels and system cabinets"

[NIOEC-SP-70-09](#) "Logic Systems"

[NIOEC-SP-70-01](#) "Instrumentation"

3. UNITS

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

4. GENERAL REQUIREMENT

4.1 Vendor shall supply Turbine Driven Pumping Sets, generally including combustion gas turbine, pumps, pressurized lubrication system, load and auxiliaries drive-gears, couplings, starter, control system, and all other auxiliary equipment specified in Para 19 "Detailed specification" and any other equipment and/or component seemed necessary by the vender to fulfill purchaser's requirement.

The complete pumping set, lubrication system, etc shall be skid mounted (Preferably single skid) on a common base plate.

4.2 In the reference numbers of this specification "Purchaser" shall mean National Iranian oil Engineering and Construction (NIOEC).

Vendor shall mean the manufacturer of products in accordance with this specification and who is willing to enter into contract with the purchaser.

4.3 The main Vendor shall be the turbine vendor, having the responsibilities for the overall co-ordination for supply and the satisfactory operation and performance of the complete pumping set, incorporating all auxiliary equipment inclusive within the package, i.e. pumps/driver, transmission/auxiliary piping/lubrication system etc. fulfilling the requirement of Para 4.1 of this specification.

4.4 All the equipment shall be designed, manufactured, assembled, and tested in accordance with the applicable requirement of the latest editions of revisions (the one in effect at the time the requisition is issued) of codes, specifications, references and practices as defined in the governing API standard's, this specification, data sheets, and the inquiry documents, where editions or revisions are not specifically mentioned.

4.5 Compliance with the requirements of this Specification does not relieve Vendor of his responsibility to furnish equipments and accessories of proper design, mechanically suited to meet operating guarantees at the specified conditions.

4.6 The equipment offered shall be the product of a vendor regularly engaged in production of such machinery, and shall be the same frame size, but not a prototype, of what has been previously manufactured and been in continuous service for at least 12 months without modifications or changes during such period. If during the past 12 months the unit offered has been changed in any significant manner since it was originally designed, Vendor shall state so and explain in his proposal.

4.7 Main Vendor's responsibilities shall include, but are not limited to the following :

4.7.1 Furnishing all components required for each complete set including pumps, lube and control oil system, and controls and instrumentation, all other equipment and/or component detailed in Para 4.1.

4.7.2 Co-ordinating and resolving all engineering information and problems related to equipments rating, design, manufacture, testing and installation.

4.7.3 Ensuring that all components of the set, including pumps, the gas turbine, controls and instrumentation, lube and control oil system(s), all accessories, and all auxiliaries, are in strict accordance with corresponding purchaser's Specifications, Data Sheets, and purchase Requisition. Those responsibilities of vendors of

- individual items as specified in purchaser's specification, Data Sheets, related standards, or purchase Requisition concerned, will also be the responsibilities of the main Vendor, jointly and individually.
- 4.7.4** Selecting and rating all power transmission components.
 - 4.7.5** Arranging and mounting equipment and designing baseplates.
 - 4.7.6** Conducting torsional and lateral vibration studies, resolving problems so revealed and furnishing components such that the entire set is free from criticals in accordance with governing API standards.
 - 4.7.7** On-time manufacture, assembly, shop-testing and delivery of each complete set.
 - 4.7.8** Reviewing and providing comments, on purchaser's equipment and shelter layout to ensure that the equipment and shelter layout to ensure that the equipment installation requirement are fully covered.
 - 4.7.9** Establishing and providing the requirement for the acoustic treatment of the complete unit, such that purchaser's noise criteria specified in Para 4.12 are met.
 - 4.7.10** Co-ordinating with the Purchaser on all information related to equipments standardization and spare parts interchangeability.
 - 4.7.11** Reviewing and providing comments on purchaser's start-up, operating, assembling and disassembling procedures relevant to the equipments.
 - 4.7.12** Furnishing complete set of special tools and equipment necessary for the assembly and disassembly of each type of set supplied.
 - 4.7.13** Providing recommendation and full information, in the proposal, on the assembling and disassembling procedure and also on the supporting facilities for equipments servicing at job site, and on control system of pump station.
 - 4.7.14** Examining the relevant site data given and commenting accordingly on the necessity for the provision of on anti-icing system.
- 4.8** Co-ordination of design and installation of auxiliary equipment which are within the Vendor's scope of supply, to ensure the ease of maintenance and overall reliability and to minimize installation and start-up problems.
- 4.9** All other requirements specifically called for in the detailed specification which is in the limit of vendor scope of supply specified in Para 4.1 above.
- 4.10** In case of conflict between this specification and other documents the following will take precedence in the same order as mentioned.
- 1.Purchase order
 - 2.Drawings and Data Sheets
 - 3.This Specification
 - 4.Reference Standards
- 4.11** If a conflict or lack of sufficient instructions still exists after reference to the Para 4.10 then the Vendor shall refer to the Purchaser, clearly stating the Purchaser's reference number, and specification number(s) or drawing(s) which have caused the conflict or misunderstanding, and ask for clarification.
- 4.12** The Vendor shall state in his enquiry the consideration included in his design to meet the noise requirement specified herein.