

NIOEC-SP-40-03(1)							
DOCUMENT CODE							NO. of PAGES: 45
PLAN/PRJ/SUB	UNIT	PHASE	DISCIPLINE	DOCUMENT TYPE	SERIAL NO.	REV. NO.	DATE
NIOEC	000	EG	PM	SP	4003	A1	DECEMBER, 2016



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

NIOEC SP

NIOEC SPECIFICATION FOR SPARE PARTS REQUIREMENTS

SECOND EDITION

DECEMBER, 2016

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.

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

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					
4					
3					
2					
1	DECEMBER, 2016	M.R.DEILAMI	GH.R.ANVARI	M.R.FARZAM	A.R.ARMAN-MOGHADAM
0	JULY, 2005	SH.FROUTAN B.ALBAALBAKI	A.SADEGHILAR	M.R.FARZAM	M.A.A.SAJEDI
REV.	DATE	PREPARED	CHECKED	APPROVED	AUTHORIZED

CONTENTS:	PAGE NO.
1. SCOPE.....	2
2. REFERENCES	2
3. UNITS.....	2
4. DEFINITION & TERMINOLOGY	2
5. APPLICATION	3
6. DETAILED PROCEDURE.....	3
7. SPECIAL INSTRUCTIONS	3
ATTACHMENT A.....	4
ATTACHMENT B	6
ATTACHMENT C	9

1. SCOPE

- 1.1. NIOEC Specifications cover the minimum requirements for detailed engineering, procurements, testing inspection & construction of refinery/ oil plant, distribution depots, pump stations and pipelines.
- 1.2. Deviations from this specification will only be permitted on obtaining written approval from NIOEC.
- 1.3. 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.
- 1.4. The purpose of this Specification is to advise the Vendor of his spare parts obligations and responsibilities upon receipt of the original equipment purchase order.
- 1.5. This Specification covers spare required for stock to assure continuous operation of the equipment for two (2) years. All spare parts must be at the jobsite prior to start-up. Vendor shall recommend spares for equipment parts that are subject to the following:
 - 1.5.1. Wear, corrosion or erosion during normal operation.
 - 1.5.2. Failure that would cause shutdown of the equipment.
 - 1.5.3. Damage or breakage during routine maintenance or inspection, and during installation.

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.

NIOEC-SP (NIOEC SPECIFICATIONS)

NIOEC-SP-00-10

“NIOEC Specification for Units”

3. UNITS

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

4. DEFINITION & 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.

Purchaser: National Iranian Oil Engineering & Construction Company in cases where this Specification is part of a direct purchase by National Iranian Oil Engineering & Construction Company; In cases where this Specification is part of Contract Documents, "Purchaser" means the Contractor.

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

5. APPLICATION

- 5.1. The Vendor shall submit to the Purchaser a priced recommended spare parts quotation for his basic and auxiliary equipment as specified in the equipment purchase order.
- 5.2. The Vendor shall complete Purchaser's attached "Spare Parts and Interchangeability Record" using the instructions in Attachments A and B.

6. DETAILED PROCEDURE

- 6.1. Vendor shall consider recommending stocking of rough machined forgings for forged steel Parts which may require unusually long lead times.
- 6.2. Vendor shall consider recommending stocking complete spare assemblies in lieu of component spare for small easy to replace items.
- 6.3. Vendor shall consider recommending special tools required for field maintenance and repairs. Vendor shall advise in writing the avail ability of expensive special tools for loan or rental.
- 6.4. Where Vendor uses his own code numbers to describe spare parts purchased from his Vendors/Contractors, he shall include the manufacturer and manufacturer's part number to allow ordering spare parts directly from the Vendor/Contractor. Examples are anti-friction bearings, mechanical seals, couplings and filter elements.

7. SPECIAL INSTRUCTIONS

- 7.1. All spare parts quoted shall be identical to the parts furnished on the original equipment.
- 7.2. Packing and shipping instructions are not included in this Specification. Prices for such services shall be quoted separately from the spare parts.
- 7.3. Where Vendor's equipment does not require spare parts, a letter so stating shall be submitted.
- 7.4. Vendor shall state, in letter form, the price validity, delivery time, F.O.B. point, and shipping point. This letter shall be submitted with the Spare Parts and Interchangeability record.
- 7.5. The price shall be valid for one year from the date of submission of the spare parts and Interchangeability Record.

ATTACHMENT A

**Instructions for Completion of the Spare Parts List
and Interchangeability Record (SPLIR)**

The manufacturer shall complete the following part of SPLIR form as per listed sequence in English language.

- Line 1: Equipment registration number or tag number of equipment/instrument / etc. as stated on requisitions and/or purchase orders.
- Line 2: Manufacturer's model, type or other identification of equipment/ instrument ordered.
- Line 3: Reference or serial number of equipment/instrument ordered.
- Line 4: Number of identical equipment/instrument/etc., of particular model or type being supplied against purchase order number mentioned under line 6.
- Line 5: Enter in appropriate square the number of parts, listed in column 8, required in each individual unit, for groups of identical units, enter quantity per unit below quantity in Line 4.
- Line 6: NIOEC Equipment Purchase Order Number (s).
- Line 6a: Unit of measure, i. e. No., set, pair, kg, roll, etc.
- Column 7: Total number of identical parts listed in Column 8 for all equipment/ instruments/ etc. for identical units multiply quantity in line 5 by number in same column in line 4 and enter overall total of each line in column 7.
- Column 8: Description of parts, in English. List all parts recommended to be carried in stock for normal operations. If an item is interchangeable between two or more units, it should be listed only once. However all items specified in the appropriate equipment list shall be shown separately.
- Column 9: Drawing and part number. as per Vendor/Contractor's parts list or drawing.
- Column 10: Manufacturer's part identification number to indicate interchangeability of components for Manufacturer's equipment.
- Note Re Columns 9 and 10:
- Due to a wide variety of systems in use for identification of parts, Manufacturers may not be able to complete these columns as started above. Manufacturers shall use their own identification system to identify parts and to show interchangeability. Identical parts, regardless of whether they have the same part number or drawing number, should be shown only once (see also line 5)
- Column 11: Material Specification of parts listed in column 8.
- Column 12: Manufacturer to recommend quantities for two(2) years of operation.
- Column 18: Unit price (up to two decimals) for recommended spare parts of Column 12.
- Column 20: The original Manufacturer's identification numbers for all items of third party Manufacturer (bought-out items such as ball bearings, mechanical seals, couplings bearing lock nuts, bearing lock washers, V-belts, bolts/nuts, gaskets, O-rings and the like, these items should be fully identified by manufacturer's numbers, types, sizes, etc.).

NIOEC/CONTRACTOR shall complete the following part of the SPLIR form:

Column13: Contractor recommended spare parts for 2 years operation.

Column22: This column has to be filled out for the respective spare parts purchase order-item reference. This number should be tagged to the respective material for easy identification upon receipt at site.

Column19: Total price (up to two decimals) of the spare parts for 2 years operation period set upon the quantities approved by NIOEC (see column 15).

Note: Columns 14, 15, 17 and 21 should be left blank, these are for Company's use.

NIOEC should complete the following part of the SPLIR form:

Column15: Final quantity to be ordered and approved by NIOEC.

Column21: This column has to be used to indicate the equipment Class.

V-For: Vital equipment, a breakdown of which would mean an immediate and serious interruption of vital operations in field or plant and with which no risk in the ordering and stocking of spare parts can be justified.

E-For: Essential equipment, engaged in primary operations, but with which a calculated risk can be taken in ordering and stocking of spare parts.

A-For: Auxiliary, general purpose-and stand-by equipment, for secondary operations, the temporary lack of spare parts would not have a serious effect.

Under this heading also comes the equipment of which there is a large number of units in use, thus ensuring a sufficient degree of protections in case of failure of one or more units.

The MESC Project Team Should Complete the Following Part of the SPLIR form:

Column16: For allocation of the final MESC number

Column17: For the classification of spare parts, i.e.

C-For: Parts wearing out or deteriorating during normal operations, thus showing a fairly regular

Q-For: parts not normally stocked, but ordered on request only.

I-For: Insurance items

O-for: Temporary code number

ATTACHMENT B**VENDOR'S GUIDE
FOR RECOMMENDING SPARE PARTS**

1. Spare parts are to cover two (2) years operation. (Estimate specific quantities required for start-up separate from the requirements for the two years operation.)
2. Have prices been included?
3. Is list complete?
4. Has all auxiliary equipment been covered?
5. Has equipment furnished by sub-Vendors/Contractors been covered? Particular care should be taken to include spare parts for equipment in package units.
6. Has interchangeability of parts been covered?
7. Are quantities reasonable? (Consider effects of possible start-up problems)
8. Designate critical emergency spare parts separate from normal wearing spare parts.
9. For extremely costly or seldom used special tools, does Vendor carry a stock available for loan or rental on short notice?
10. If Vendor uses his own code numbers to describe spare parts, include the manufacture's name and the cross reference part number.
11. Has Vendor considered recommending stocking of rough machined forgings, such as forged steel parts, which may require unusually long lead times?

Has Vendor considered recommending stocking an entire spare assembly instead of components on small easy to replace items, e.g., small pumps or switches.

SPARE PARTS LIST AND INTERCHANGEABILITY RECORD



فهرست قطعات یدکی و اقلام مشابه

Equipment class کلاس تجهیزات		Manufacturer's سازنده قطعات		Reference / Serial No. شماره سریال سازنده		NO. OF UNITS تعداد دستگاه		UNIT (KG/MO/PART/SET) تعداد کل قطعات مشابه نصب شده		SPARE PARTS LIST AND INTERCHANGEABILITY RECORD										SPARE PARTS ORDER NO. : شماره سفارش (قطعات یدکی)			
NOTES: توضیحات: 1) ALL equipment having interchangeable items to be stated on same form. 2) Quote in column 10 part numbers showing interchangeability within equipment manufacturer's organization. 3) Quote in column 20 the original identification part numbers for items of third party manufacture ("bought-out items") such as ball bearings, mechanical seals, couplings, flanges, auxiliaries. 4) Quote in column 11 the name and type of material e.g. bronze, cast iron, steel 304, rubber, brass, viton etc.										REQUIRED ON SITE DATE : تاریخ مورد نیاز: REMINDER : ATTACH TO THIS FORM ALL PARTS LISTS AND DRAWINGS AS LISTED IN COLUMNS 9 AND 10 تذکره: کلیه کارچیزهای قطعات یدکی و نقشه های آنها که در ستونهای 9 و 10 درج شده است باید به این فرم پیوست گردد										Approved for purchase by تایید خرید توسط:		DATE: تاریخ:	
MANUFACTURERS DATA اطلاعات مربوط به سازنده										1 Year Operational Spare Parts قطعات مورد نیاز عملیات		MESC NO شماره طبقه بندی کالا		CLASSIFICATION OF PARTS رده ی قطعات		APPROXIMATE UNIT PRICE IN قیمت واحد به دلار آمریکا		REMARKS (SEE NOTES ABOVE) توضیحات (بروز شود به بند 3 توضیحات)		ITEM NO. شماره ردیف			
DESCRIPTION OF PARTS: شرح قطعات		DRAWING / REF. NO. نقشه / شماره مرجع سازنده		MANUFACTURERS REAL PART NO. (see note 2 above) شماره واقعی سازنده		MATERIAL (see note 4 above) نوع جنس و جزئیات		RECOMMENDED BY MANUFACTURER پیشنهاد سازنده		RECOMMENDED BY CONTRACTOR پیشنهاد پیمانکار		COMMISSIONING SPARES قطعات مورد نیاز راه اندازی		QUANTITY TO BE SUPPLIED مقدار مورد نیاز		APPROXIMATE TOTAL PRICE IN قیمت کل به دلار آمریکا							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21			
PROJECT / PLANT : NIOEC CONSIGNEE : ENGINEERED BY : APPROXIMATE TOTAL VALUE : € 0.00 پروژه / واحد : تحویل گیرنده : مهندس توسط : Delivery T 10 weeks EXW Samereau Term of pa 100% at order مشت زمان تحویل : روش پرداخت :																							

Rev. No. :
تجدید نظر

Date :
تاریخ

Sign. :
امضاء

SHEET NO. 1 OF 1

REQUISITION NO.

محلته : 1

شماره درخواست

ATTACHMENT C

EQUIPMENT'S SPARE PARTS TABLES

TABLE-1.1 TWO YEARS SPARE PARTS FOR CENTRIFUGAL PUMPS					
No.	Item	Required Quantities for One Machine	Required Quantities for Two Machines	Required Quantities for Three Machines	Required Quantities for More Than Three Machine
1	Shaft, Impeller, Throat Bushing	1	1	1	$N < 6: R = 2, N > 6 R = N/3$
2	Shaft Sleeve, Bearing Set, Impellers and Case Wearing Rings	1	1	1	$N = 3 \& 4: R = 2, N = 5 \& 6: R = 3,$ $N > 6: R = N/2$
3	Gasket Sets, Packing Mechanical Seal, Non-metallic Faces, O-rings, Gaskets, Springs	2	4	6	2N
4	Mechanical Seal, Metallic faces	1	2	3	N
5	Mechanical Seal Assembly	1	2	3	N
6	Coupling Membranes	1	1	1	N/3
7	Oil Sight Glass	1	2	3	N
8	Lube Oil and Seal Oil Console (C)	Note (C)	Note (C)	Note (C)	Note (C)

REMARKS:

N= Number of Pumps Using Part

R= Number of spare parts

Notes :

(a) The Parts Listed above is the principal parts only. Other parts, such as impeller special bolts etc. shall be considered for recommendation in quantities consistent with the above table.

(b) Spare impellers shall be ordered in the maximum diameters.

(c) For those equipment that are related to Lube and Seal Oil System, Refer to Table 7.1: Lube Oil and Seal Oil Console

TABLE-1.2
TWO YEARS SPARE PARTS FOR ROTARY PUMPS

No.	Item	Required Quantities for One Machine	Required Quantities for Two Machines	Required Quantities for Three Machines	Required Quantities for More Than Three Machine
1	Shaft, Rotary Element Sets Throat Bushing	1	1	1	$N < 6: R = 2, N > 6 R = N/3$
2	Shaft Sleeve, Bearing Set	1	1	1	$N = 3 \& 4: R = 2, N = 5 \& 6: R = 3,$ $N > 6: R = N/2$
3	Gasket Sets, Packing Mechanical Seal, Non-metallic Faces, O-rings, Gaskets, Springs	2	4	6	2N
4	Mechanical Seal, Metallic faces	1	2	3	N
5	Mechanical Seal Assembly	1	2	3	N
6	Coupling Membranes	1	1	1	N/3
7	Oil Sight Glass	1	2	3	N
8	Lube Oil and Seal Oil Console (C)	Note (C)	Note (C)	Note (C)	Note (C)

REMARKS:

N= Number of Pumps Using Part

R= Number of spare parts

Notes :

(a) The Parts Listed above is the principal parts only. Other parts, such as impeller special bolts etc. shall be considered for recommendation in quantities consistent with the above table.

(b) For rotary pumps, provide a matching set of rotors with shaft.

(c) For those equipment that are related to Lube and Seal Oil System, Refer to Table 7.1: Lube Oil and Seal Oil Console

TABLE-1.3
TWO YEARS SPARE PARTS FOR RECIPROCATING PUMPS

No.	Item	Required Quantities for One Machine	Required Quantities for Two Machines	Required Quantities for Three Machines	Required Quantities for More Than Three Machine
1	Valve Seats	1	1	2	N/2
2	O-Rings	2	4	6	2N
3	Gaskets	2	4	6	2N
4	Valve Springs	1	1	2	N/2
5	Suction Valve, Complete Set	1	1	1	N/3
6	Discharge Valve, Complete Set	1	1	1	N/3
7	Seal Packing	3	6	9	3N
8	Plunger	1	1	2	N/2
9	Dampener Bladder	2	4	6	2N
10	Piston	1	1	1	N/3
11	Piston Rings (Sets)	1	1	2	N/2
12	Crankshaft Bearings (Sets)	1	2	3	N
13	Crosshead Bearings (Sets)	1	1	1	N/3
14	Coupling Membranes	2	4	6	2N
15	Oil Sight Glass	1	2	3	N
16	Lube Oil and Seal Oil Console (b)	Note (b)	Note (b)	Note (b)	Note (b)

REMARKS:

N= Number of Pumps Using Part

R= Number of spare parts

Notes :

(a) The Parts Listed above is the principal parts only. Other parts, such as impeller special bolts etc. shall be considered for recommendation in quantities consistent with the above table.

(b) For those equipment that are related to Lube and Seal Oil System, Refer to Table 7.1: Lube Oil and Seal Oil Console

TABLE-1.4
TWO YEARS SPARE PARTS FOR PIPELINE PUMPS

No.	Item	Required Quantities for One Machine	Required Quantities for Two Machines	Required Quantities for Three Machines	Required Quantities for More Than Three Machine
2	Shaft Sleeve, Bearing Set, Impellers and Case Wearing Rings	1	1	2	$N=4 \& 5 \& 6: R=N/2,$ $N>6: R=N/3$
3	Gasket Sets, Packing Mechanical Seal, Non-metallic Faces, O-rings, Gaskets, Springs	2	4	6	2N
4	Mechanical Seal, Metallic faces	1	2	3	N
5	Mechanical Seal Assembly	1	2	3	N

REMARKS:

N= Number of Pumps Using Part

R= Number of spare parts

Notes :

(a) The Parts Listed above is the principal parts only. Other parts, such as impeller special bolts etc. shall be considered for recommendation in quantities consistent with the above table.

(b) Spare impellers shall be ordered in the maximum diameters.

(c) For rotary pumps, provide a matching set of rotors with shaft.

(d) For those equipment that are related to Lube and Seal Oil System, Refer to Table 7.1: Lube Oil and Seal Oil Console