STANDARDS PUBLICATION

KUWAIT INTEGRATED PETROLEUM INDUSTRIES COMPANY
AND
KUWAIT NATIONAL PETROLEUM COMPANY

STANDARD SPECIFICATION

SPARE PARTS REQUIREMENT

STD-000-AM-001 (Rev. 0)
February 2023

PARTICIPANTS:

At the time this Standard was approved, the Standard Working Group on "SPARE PARTS REQUIREMENT REVISION 0" had the following members and contributors:

Sr. No.	Company/ Consultant	Name	Designation
1	KIPIC	Meshari R. Al-Saleh	Senior Engineer, Standards
2	KIPIC	Rajab Boland	Senior Engineer, Standards
3	KNPC	Kanagasabai Rathina Sabapathi	Senior Specialist - TPL
4	KIPIC	Suresh Choksi	Specialist (A)
5	KIPIC	Fatmah Bader Abdukareem Almunayes	Senior Engineer, Plant Design
6	KIPIC	Rajeev Tiwari	Senior Engineer, Instrument Standards
7	KNPC	Kumar Kashyap Abhay	Senior Environmental Engineer
8	KIPIC	Kaliyaperumal Udayakumar	Engineer, Electrical Design
9	KIPIC	Ussaimath Poolakkal Kolayil	Engineer, Electrical Design
10	KIPIC	Shailesh Deorao Bagade	Engineer, Rotating Equipment
11	KIPIC	Logachandran Jayachandran	Engineer, Standards
12	KIPIC	Mohammed Anwar	Electrical Engineer, Standards
13	KIPIC	Samir Mansur	Mechanical Engineer, Standards
14	KIPIC	Ravindra Kumar Tiwari	Engineer, Rotating Equipment
15	KIPIC	Salem Muneer Al-Mutairi	Engineer, Electrical Maintenance
16	KIPIC	Mahendrakumar Madhodas Mundada	Engineer, Instrument Maintenance
17	KNPC	Wasim Ahmad	Engineer, Mechanical Design
18	KNPC	Venkaiah Mandava	Engineer, Instrument Maintenance
19	KNPC	Sivanagamalleswara Roa Dhulipudi	Engineer, Rotating Equipment Design
20	TECHNIP	Vikas Kamble	Engineering Manager
21	TECHNIP	Lucas Neder	Process Engineering Manager
Endorsed By:		Mohammad S. Al Rabiah	Team Leader - Standards (KIPIC)

0	21.02.2023	Final Issue	COMPANY/TECHNIP	COMPANY
Rev.	**Date**	**Description**	**Developed**	**Approved**

CONTENTS

TABLES

FIGURES

APPENDICES

SUMMARY OF MAIN CHANGES (REV. 0)

(Only changes with respect to previous revision)

Sl. No.	Clause No.	Brief Description	Page No.

1 INTRODUCTION

1.1 SCOPE

This Standard describes COMPANY's requirements for provision of spare parts and maintenance data for future projects and provides guidelines on identifying the spare parts requirement and its availability for immediate use.

This document is not designed to address the allocation of Asset numbers, Vocabulary numbers and Equipment Identification numbers or the requirements of the Computerized Maintenance Management System but to ensure that the relevant information is made available so that the selected spares and maintenance data can be integrated within these systems as appropriate.

The main objectives of the spare parts requirement are to:

(A) Ensure adequate spares are available for project pre-commissioning and commissioning phases preventing delays and production loss.
(B) Identify and quantify the spares based on durability to enable realistic Operational Spares, Specialist Equipment and Maintenance scheduling to be selected.
(C) Inventory analyses.
(D) Stocking policies for capital & insurance spares.
(E) Manage and reduce the probability of unnecessary production delay that results in margin losses over the first two years of an asset's life following the initially scheduled asset start-up date.

This document "Spare parts requirements" shall be read with the respective equipment Specification and Sparing Philosophy (STD-100-PE-002) (as applicable).

1.2 DISTRIBUTION, INTENDED USE AND REGULATORY CONSIDERATIONS

This standard is intended for use in facilities of Kuwait Integrated Petroleum Industries Company (KIPIC) and Kuwait National Petroleum Company (KNPC) for the development of Unified Engineering Standards for the downstream sector companies of Kuwait Petroleum Corporation (KPC). Distribution and usage of this standard is confined to KIPIC and KNPC.

Other Subsidiaries of KPC shall also have the right to use this standard, if they so desire.

This standard is the property of the COMPANY and shall be distributed to CONTRACTORS, CONSULTANTS or MANUFACTURERS/SUPPLIERS/VENDORS only upon approval from the COMPANY.

Amendments to this COMPANY STANDARD shall be considered part of it and shall be complied.

Compliance with this Standard does neither confer immunity to the MANUFACTURER/SUPPLIER/VENDOR from legal or statutory obligations nor relieves the CONTRACTOR of his responsibility to supply the equipment suited to meet the specified service conditions and applicable regulations.

If national and/or local regulations conflict with some requirements in the standards, more stringent requirement will prevail. In case, any waivers to the regulations are considered necessary on technical grounds, approval from concerned authorities shall be obtained.

1.3 DEFINITIONS

COMPANY means Kuwait Integrated Petroleum Industries Company (KIPIC) and Kuwait National Petroleum Company (KNPC).

COMPANY STANDARDS means the unified engineering standards developed for common use in KIPIC and KNPC.

CONTRACTOR is the party that carries out all or part of the detail design, engineering, procurement, construction, commissioning and/or management of a project or facility for COMPANY.

CONSULTANT is the party that carries out all or part of a study or provide services such as pre-feasibility study, feasibility study, FEED development, detailed engineering, project management and/or other studies related to non-technical aspects.

EXISTING STANDARDS are COMPANY STANDARDS that are already finalized and issued for implementation.

EXTERNAL STANDARDS includes International Codes & Standards and standards developed & maintained by external agencies.

MANUFACTURER/SUPPLIER/VENDOR is the party that manufactures and/or supplies equipment and materials.

PROJECT TECHNICAL SPECIFICATIONS are the specifications generated by the project team to reflect specific technical requirements of the project using selection of applicable requirements from COMPANY STANDARDS.

PROJECT VARIATIONS are project specific requirements that are in variance with the COMPANY STANDARDS that may be necessary for executing a project and approved by the appropriate authorities in the COMPANY.

USER is any Company personnel who is required to utilize the Company Standards for Company business.

The word **shall** indicates a requirement in the standards that is mandatory to be in compliance with COMPANY STANDARDS.

The word **should** indicates a recommendation.

The word **may** indicates a permitted option.

The word **can** indicates a possibility or capability.

Capital Insurance Spares a spare part that is held in the spare parts inventory, that would not be expected to be used in the normal life of the plant / equipment but if not available when needed it would result in significant losses.

Capital Insurance Spares are characterized by:

(A) High operational impact if not available.
(B) Long replacement lead-time.
(C) High purchase cost.
(D) Low likelihood of usage.
(E) Unpredictable demand.
(F) Items which are required for compliance of environmental regulations.

Capital Insurance Spares can be components or complete units, such as complete pumps, large valves, motors, transformers, turbomachinery cartridges, rotor assemblies and heat exchanger tube bundles.

Capital Spares has to be protected against moisture, debris, and other damaging environmental conditions to ensure they are maintained in a fully functional and 100% reliable condition. Routine maintenance tasks should be performed to inspect for damage and verify bearings, shafts, gears, casings, motors, etc. are maintained in a fully functional status.

Commissioning spares are those required to ensure continuous and successful completion of the equipment's pre-commissioning, commissioning and start-up.

Commissioning spares requirements are determined by:

(A) Idle time of equipment prior to start-up.
(B) Testing and functional checking requirements, e.g., frequent opening for inspection.
(C) Potential for abnormal operating conditions during testing and start-up, which could lead to increased wear and tear with premature failure.
(D) Damage during transport to site.
(E) Exposure to weather, dirty environment (e.g., inadequate storage or prolonged not properly planned storage).
(F) Cleaning and de-preservation activities can damage equipment.
(G) New equipment for which there is little or no operating experience.

Commissioning spares typically consist of:

(A) Consumables as start-up elements (e.g., special mesh filters), filter elements, seals, joints, lubricants, oils, chemicals, preservation fluids, recording paper, and chemical drying agents.
(B) Tools as, calibration equipment and special tools.
(C) Spare parts for general use such as, pipe, fittings, bolts, gaskets, electrical fuses, bulbs, cable, instrument tubing/fittings, electrical and instrumentation components.
(D) Set of gaskets, parting plane sealants, repair kits for seals or O-rings required to inspect internals of the equipment such as pump, compressor and turbines.

They are generally specified to cover possible contingencies and known activities, the types and quantities are dictated by experience on previous projects and vendors' recommendations/requirements.

Consumable Spares are expendable items that are regularly required or replaced.

Framework Agreement is a type of agreement that helps to procure goods and services from a list of pre-approved SUPPLIERS/VENDORS, with agreed terms and conditions and legal protections.

Initial operating spares are subset of operating spare parts which are required to safeguard the operation of equipment during the first one year of operation. Initial operating spares quantity for the first one year of operation shall be as per the recommendation from the manufacturer and same shall be reviewed and approved by COMPANY.

Initial operating spares are determined by specific factors which are particular to initial operations. Examples of these are:

(A) Increased potential for trips and subsequent starts can lead to wear and tear.
(B) Unknown/untested equipment.
(C) Increased load on equipment (e.g., high throughput).
(D) Unexpected process conditions (e.g., higher contaminants load).

Equipment a physical entity designed to perform a specific function.

Operating Spares are required for normal operation and routine maintenance during the service life of the equipment.

Operating spares can be classified as:

(A) Operating spares for corrective or condition-based maintenance.
(B) These are components that fail in normal use due to wear and tear and whose replacement is part of a corrective maintenance action or of an overhaul scheduled as a result of monitoring.
(C) Operating spares for preventative maintenance based on RCM or dominant failure modes.
(D) Spares/components that deteriorate gradually and are required for scheduled replacement.

Spare part an interchangeable piece of material, identical to the original, that is kept in an inventory and used for the repair or refurbishment of defective equipment/units.

1.4 ABBREVIATIONS

KPC	Kuwait Petroleum Corporation
KIPIC	Kuwait Integrated Petroleum Industries Company
KNPC	Kuwait National Petroleum Company
BEDD	Basic Engineering Design Data
BoM	Bill of Materials
CIF	Cost, Insurance and Freight

EAM	Enterprise Asset Management
FOB	Free on Board
ITT	Invitation to Tender
MRIR	Material Receiving Inspection Record
OEM	Original Equipment Manufacturer
PO	Purchase Order
PTO	Produce to Order
QA	Quality Assurance
RCM	Reliability Centered Maintenance
SPIR	Spare Parts Interchangeability Record

1.5 CROSS REFERENCES

Where cross-references to other clauses of the same COMPANY STANDARDS are made, the clause number is shown in brackets (). When cross-reference to other documents or standards are made, such documents are listed separately.

2 ENVIRONMENTAL CONDITIONS

The environmental conditions in Kuwait are severe; refer to BEDD (STD-000-GN-004) and project specific BEDD, which provide details needed for design such as the temperature, wind, chemical environmental and site conditions prevailing throughout the project facilities. Refer to the relevant project specification and/or datasheets for utilities supply conditions.

It must be assumed that, unless otherwise specified, equipment may be subjected to sand and fine particle dust storms, sand laden winds, thunderstorms, heavy rain, chemical contaminants, and extreme temperatures.

Except in exceptional cases, all equipment and materials must be able to withstand storage at the desert location's high ambient temperatures and humidity levels until they are needed to meet the anticipated construction schedule. Under sunshade, the ambient temperature might range from -3 °C to 55 °C and relative humidity can reach during long periods levels of 100% as part of the normal weather pattern.

3 SPARE PARTS RECOMMENDATION

CONTRACTOR/MANUFACTURER/VENDOR should identify and recommend the spare parts list for all Equipment items, Instruments, Control Systems, etc., supplied under the project scope. The same should be documented and submitted along with the initial quotation/product technical specification. All spare parts recommended by the MANUFACTURER/VENDOR shall be identical and interchangeable with the parts supplied with parent equipment.

CONTRACTOR shall ensure that all relevant engineering documents required to support the spare parts process are clearly specified in the PO. Accordingly, MANUFACTURER/VENDOR shall deliver the materials along with necessary drawings, datasheets and manuals for the spare parts based on project specifications. MANUFACTURER/VENDOR's initial quotation shall include the lead time along with delivery time, logistics service provider and delivery terms.

Considering the following criticality and categorization, the spare parts list shall be quantified and submitted in the format shown in APPENDIX A – Spare Parts Interchangeability Record (SPIR) form.

All units of measurements and dimensions shall be addressed as indicated in the Project's BEDD.

(A) The completed SPIR document for equipment and instruments installed in the project shall be submitted and approved prior to PTO, and material shall be delivered in COMPANY warehouse before commissioning of the unit.
(B) All supporting vendor quotation (original stamped offer) shall be attached with the submitted SPIR form to confirm the quoted price is correct and not escalated.

It shall be the CONTRACTOR's responsibility to submit the purchase order copy of all the COMPANY's recommended spares.

CONTRACTOR/MANUFACTURER shall submit sectional drawings of each item, and this shall be cross-referenced with the itemized equipment. If special tools are required for the replacement/installation of a part, the MANUFACTURER shall include the special tool in the list of recommended spares as an optional item.

All spare parts shall be new and identical to the parts furnished on the original equipment.

Manufacturers shall recommend the procedures for proper disposal of the unused spare parts upon their storage life expiry. The disposal of the spare parts shall be compatible with local and international regulations.

4 SPARE PARTS INTERCHANGEABILITY RECORD (SPIR)

The SPIR summarizes the MANUFACTURER's recommendation submitted to COMPANY which advise on the spare parts that are required for continuous operation. It also serves as a purchasing document for COMPANY and a base document to monitor the inventory. It shall contain as a minimum all the information required to purchase a spare part as shown below:

(A) The Project title/ Contract number.
(B) The original equipment manufacturer.
(C) The Equipment name and tag number for which the spare parts are proposed.
(D) The Spare parts description and spare parts manufacturer.
(E) Manufacturer part number.
(F) Recommended quantity and price.
(G) Shelf life.
(H) Total Lead time.

Equipment MANUFACTURER/VENDOR should price in FOB basis for the spare parts list against the parent equipment supplied under the project scope. The quoted price by VENDOR shall be fixed and firm for up to two (2) years of issuance of project completion certification.

In the case when the CONTRACTOR obtains a quote for spare parts, the CONTRACTOR needs to ensure that the COMPANY is authorized to purchase all or any specified spares from the VENDOR directly on a CIF basis using the FOB price basis.

MANUFACTURER/VENDOR shall notify regarding the cessation of production of such equipment owned by COMPANY within 10 years following the data of actual purchase to enable COMPANY to purchase spare parts for such equipment as may be required for continuity of operation. This notification shall be issued eighteen (18) months prior to the actual end of the availability of equipment or replacement parts. If the lead time for such equipment's delivery exceeds the first 6 months of notice period, then VENDOR/ MANUFACTURER to inform Company twenty-four (24) months prior to the actual end of the availability of equipment or replacement parts.

5 SPARE PARTS CATEGORIZATION

5.1 GENERAL

The CONTRACTOR shall be responsible to provide details of all spares required for the full life cycle for all equipment ordered. These details shall be presented in the form of a detailed list and supported by the associated SPIR forms.

5.2 BASED ON CRITICALITY

5.2.1 Critical

A spare part shall be categorized as critical when its non-availability causes high loss and regulatory noncompliance due to production downtime and high cost will be involved when the parts are procured on emergency basis.
These spares have to be addressed and priced in SPIR form.

5.2.2 Essential

A spare part shall be considered essential when its non-availability causes significant loss due to production downtime. These spares have to be addressed and priced in SPIR form.

5.2.3 Normal

A spare part shall be considered normal when its non-availability causes moderate loss due to production downtime. These spares have to be addressed and priced in SPIR form.

5.3 BASED ON CHARACTERISTICS

5.3.1 Consumables

Consumables are items which shall be regularly used / changed during maintenance activity such as oils, greases, chemicals, fasteners, seals, gaskets, fuses, etc. CONTRACTOR/MANUFACTURER/VENDOR shall identify and recommend the consumables using the SPIR form as part of the operating spares.

5.3.2 Capital Insurance Spares

These spares are critical and shall be replaced during the capital repair of equipment. The procurement action and receipt of these spares shall be planned at the time of equipment purchase.

CONTRACTOR/MANUFACTURER/VENDOR shall identify and recommend the capital spare parts during the FEED engineering phase using the SPIR form, by means of a dedicated study.

During the detailed engineering phase, the CONTRACTOR shall validate the capital insurance spares study with the relevant MANUFACTURER/VENDOR during the procurement process and include the appropriate spares in the main equipment purchase order.

5.3.3 Initial Operating Spares

MANUFACTURER/VENDOR shall identify and recommend the Initial Operating Spares to be procured for the Project using the SPIR form for COMPANY review and approval. Initial Operational Spares requirements will be finalized by COMPANY.

Commissioning spares that were not consumed during commissioning will be transferred to the Initial Operating Spares stock following the start-up.

Typically, they consist of gaskets, instrument gauges, seal repair kits, bearings, mechanical seals, fuel nozzles, valves, timers, filter elements, belts, electrical relays, electronic cards.

5.3.4 Pre-commissioning and Commissioning Spares

MANUFACTURER/VENDOR shall identify and recommend the spares parts needed during the pre-commissioning and commissioning phases under Commissioning Spares. These spares shall be addressed in SPIR form.

Based on the project specification and requirements, CONTRACTOR shall preserve and make available prior to the commencement of pre-commissioning and commissioning activity.

After commissioning, unused spares parts purchased by CONTRACTOR or provided by VENDOR shall be delivered to the COMPANY.

5.3.5 Operating Spares

MANUFACTURER/VENDOR shall identify and recommend long term operational based spare parts suitable beyond the initial one-year of operation, with a recommended re-ordering schedule for continued operation. These spares should be quantified and listed in the SPIR form and provided for COMPANY approval within three (3) months of date of order for the respective Equipment.

Procurement of operating spares shall follow the particular conditions of the Project as indicated in the Contract.

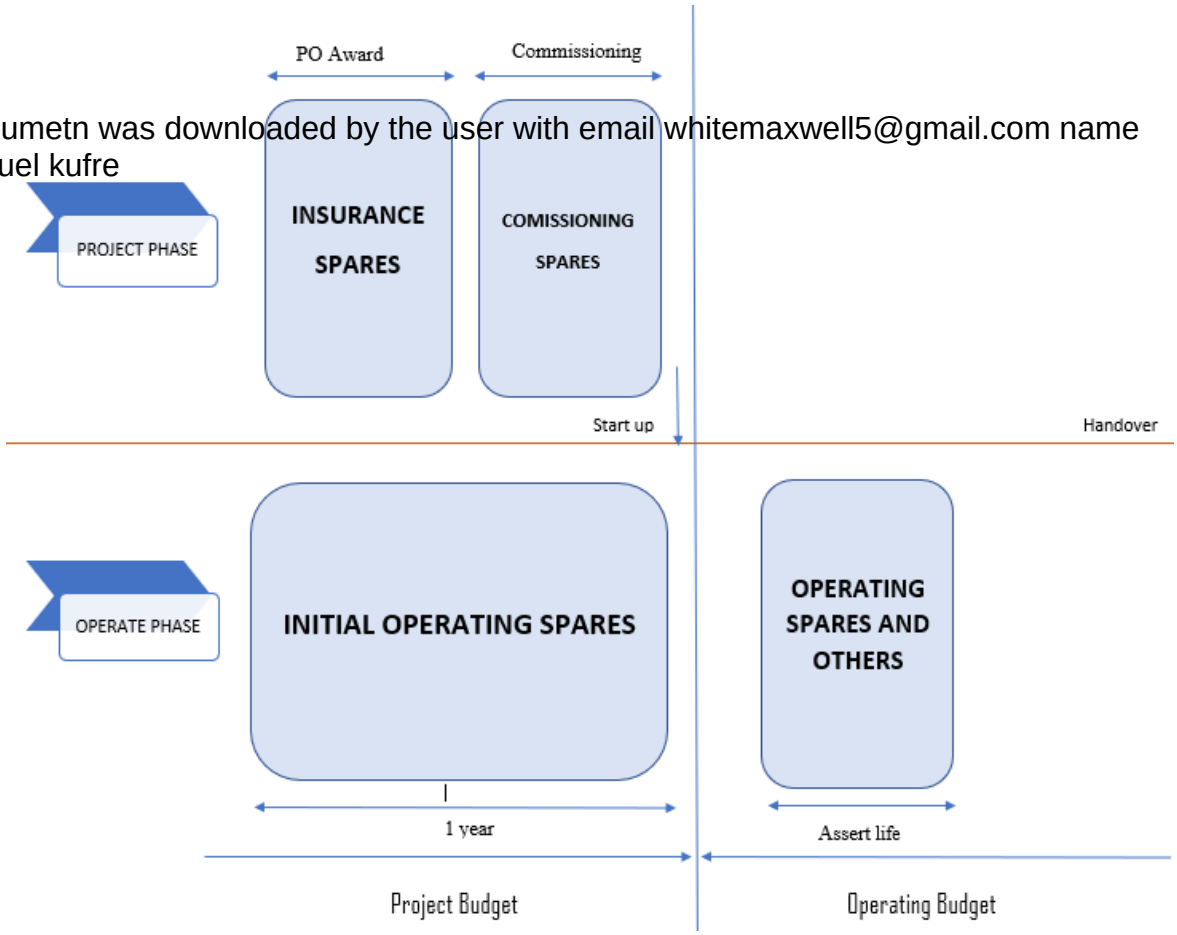

Figure 1– Overview of Spare parts categories

6 SPECIAL EQUIPMENT

Based on each maintenance activity, MANUFACTURER/VENDOR shall identify the special tools and/or equipment required. All special tools shall be included in the equipment supply with the necessary instructions for use and recommendations for preservation and storage. All consumables/spares needed for pre-commissioning/commissioning/initial operation shall be listed in the same manner as those for the main equipment listed below.

The list of such tools/equipment shall include but is not limited to the following.

(A) Utilities
(B) Power tools
(C) Storage equipment
(D) Calibration equipment
(E) Testing equipment
(F) Maintenance equipment, etc.

7 MATERIAL HAND-OVER

In the case when the capital insurance, pre-Commissioning, commissioning and Initial operating spares parts are procured by CONTRACTOR, the following documentation shall be handed over to COMPANY for review and acceptance prior to delivery at site.

(A) Manuals specifying operating instructions, product specifications and supporting document if required.
(B) Warranties on Equipment and Spares.
(C) Testing certificates, if any.
(D) Purchasing history of spares, if any.
(E) SPIR form.
(F) Logistic Requirements.
(G) Material Receiving Inspection Report.
(H) Handling of Material Discrepancy Report.

"Handling of Material Discrepancy" and "MRIR" shall be as per Company standard QA/QC Requirements.

8 FRAMEWORK AGREEMENTS

COMPANY has developed a VEC (Vendor Evaluation Committee) list. This list provides the approved VENDORS/MANUFACTURERS for each category of products. CONTRACTORS should only use the VENDORS/MANUFACTURERS from the list to procure spares.

In the case of package unit/skid, CONTRACTOR to check and provide all equipment and accessories supplied as part of the unit (e.g., instrumentation, valves, fittings, hookups) are also from the MANUFACTURER in COMPANY approved VEC list.

At special cases/project requirement, CONTRACTOR to advise COMPANY the need of spare parts procuring from Vendors out of the VEC list by providing supporting documents.

9 QUALITY ASSURANCE

The MANUFACTURERS shall supply technical data for the products or services that they supply. Also, MANUFACTURER shall submit the previous MTBF (Mean time between failure) data of the equipment to COMPANY along with the recommendation for the spare part list. Each item shall contain an ISO 8000-115 compliant identifier that is resolvable to an ISO 8000-110 compliant record with free decoding of unambiguous, internationally recognized identifiers.

10 PACKING, MARKING AND PROTECTING

The protection of the spare part shall be as per the recommendation from the MANUFACTURER. If not, considering small parts and replacement parts shall be packed in an individual, steel-strapped, rugged wooden box for rail or truck shipment. A steel-strapped, sturdy, well packed carton is permissible for parcel post and air freight shipment.

For each PO for which the CONTRACTOR is responsible, the CONTRACTOR shall ensure that each part delivered is boxed, preserved and identified with a weatherproof label, showing the following.

(A) COMPANY's allocated stock number as specified in the PO.
(B) MANUFACTURER/SUPPLIER's name, Original Equipment Manufacturers (OEM) name and (OEM) part number.
(C) Description of the part number.
(D) Expiry dates for parts having a limited shelf life, or if required for stock maintenance.
(E) Small items with the same part numbers shall be labelled and packed together in a plastic bag or box, with the label shown on the outside of the bag or box.

Each spare part shall have an Identification Tag which shall be made of stainless steel. The tag must comprise of the following:

(F) The spare parts PO number.
(G) Description of the part number.
(H) The MANUFACTURER's part number as indicated in SPIR form.
(I) COMPANY's allocated stock number, which will eventually be sent to the MANUFACTURER/VENDOR during the order.

The SPIR form from the PO must be included along with the VENDOR's packing list when the parts are separately packed or separately shipped.
For more detailed specifications on packaging, shipping and preservation requirements refer to COMPANY STANDARD 'Packing, Shipping & Preservation'.

11 REFERENCES

11.1 GENERAL

This section lists the documents to be used as reference when applying this standard. The latest edition and amendments in effect on the date of contract award shall be used, except as otherwise noted.

11.2 COMPANY STANDARDS

Table 1– Company Engineering Standards

Document Number	Document Title
STD-000-AM-002	Engineering Tagging and Symbology
STD-000-GN-004	Basic Engineering Design Data
STD-000-GN-006	Material Coding System
STD-000-QA-001	QA/QC Requirements
STD-100-PE-002	Sparing Philosophy

11.3 INTERNATIONAL STANDARDS

Table 2– International Codes and Standards

Document Number	Document Title
ISO 8000-110	Data quality — Part 110: Master data: Exchange of characteristic data: Syntax, semantic encoding, and conformance to data specification
ISO 8000-115	Data quality — Part 115: Master data: Exchange of quality identifiers: Syntactic, semantic and resolution requirements

Appendix A – Spare Parts Interchangeability Record (SPIR) form

KIPIC البترولية المتكاملة | شركة البترول الوطنية الكويتية KNPC إحدى شركات مؤسسة البترول الكويتية A subsidiary of Kuwait Petroleum Corporation

SPIR Form Serial No.:		STD. FORM No.: STD-000-AM-001
Authorized for Purchase by:		
Authorization Date:		REVISION __
Required on Site Date:		DATE :

SPARE PARTS AND INTERCHANGEABILITY RECORD (SPIR)
SHEET 1

Purchase Order No ____________________

Vendor Ref. No ____________________

Sheet ________ of ________

1	Equipment Tag Number	
2	Equipment Model Number	
3	Equipment Serial Number	
4	No. of items	
5	Number of Parts Per Item In Use	

Project Title: ....

....

Contract No.: ....

Unit Details:

Description	Service	Tag No.

30

Vendor/Manufacturer's Name:.. VEC Code:...............................

Address:..

Tel.:....................................Fax..............................e-mail:.......................................

Contact Person:..

Website:..

31

Local Agent's Name:.. VEC Code:.................................

Address:..

Tel.:....................................Fax..............................e-mail:.......................................

Contact Person:..

Website:..

(*) To be filled by COMPANY End User

(1)Use Sheet for additional tag items that are interchangeable with spares listed in column 9

(2) Sheet No.1 can be used alone but Sheet No.2 must only be used with Sheet No. 1

(3) Interchangeability of parts is read horizontally in the columns / rows in 5

(4) Column 7 must include parts in use in Sheet No. 2, columns / rows in 5

(5) Each item /set shall be identified with BAR Coding for monitoring and traceability as per attached Guidelines.

Revision (by Vendor)		
No	Description	Date

Total Number of Parts in use	Manufacturer / Vendor Recommendation			Serial No.	Description of Parts	Drawing No. Including Position or Item Number	Shelf life (days)	Single Source (Y/N)	Name of Manufacturer or Brand	Spare Parts Manufacturer & Manufacturer EAM Software Code	Mfg. Part No.	Sectional Drawing / Parts/List No	Material Specification	Unit of Issue (Note-1)	Stock or Direct Charge (S/D)	EAM Software Item No.	Contractor Recommendation			COMPANY Recommendation			Stock Level		Criticality (CR / E / I / N)	Total Parts Ordered	Weight (Kgs)	Delivery Time (days)	Lead Time (days)	(FOB ExFactory) Unit Price	Currency	Validity Date	Total Price
7	8				9	10	11	12	13	14	15	16	17	18	19A	19B	20 (*)			21A (*)			21B (*)		21C (*)	22 (*)	23	24	25	26	27	28	29
	C	2Y	N														C	2Y	N	C	2Y	N	Min	Max									
				A																													
				B																													
				C																													
				D																													
				E																													
				F																													
				G																													
				H																													
				I																													
				J																													
				K																													
				L																													
				M																													
				N																													
				O																													
				P																													
				Q																													

Remarks (32):

Total Value		
	This sheet	
	Cumulative up to this sheet	
	Of the SPIR from last sheet	

6 Notes

Note-1 (LEGEND & DESCRIPTION)

BA= BAG	FT= FEET	PL= PAIL
BX= BOX	GL= GALLON	PR= PAIR
BT= BOTTLE	GR= GRAM	PK= PACK
CL= COIL	IN = INCH	LB= POUND
CT= CARTOON	KG= KILOGRAM	QT= QUART
CY= CYLINDER	KT= KIT	RL= ROLL
CF= CUBIC FEET	LT= LITRE	SH= SHEET
DR= DRUM	MT= METER	SF= SQUARE FT
EA= EACH	OU= OUNCE	ST= SET
TN= TIN		

LEGENDS: C = COMMISSIONING 2Y = FIRST 2 YEARS OPERATION N = NORMAL CR = CRITICAL E = ESSENTIAL I = INSURANCE

Vendor to confirm that:

1. COMPANY has the right to purchase all or any of the spare parts direct from the Vendor at the same FOB price quoted in this list
2. The FOB price quoted in the above list shall be firm and fixed for order at any time up to one year after the date of placing order. Contractor/ Vendor shall provide further validity of unit price in accordance with the contract / purchase order terms & conditions and with price increase for the subsequent five (5) year after initial first year validity period. Therefore, such incremental increase shall be limited to as specific price index, such as Nelson price index (GAS & OIL) in the country of origin of main equipment.

Representative's seal

	Initial	Name		Date
Vendor				
Contractor				
COMPANY (End-user) (Approval)	Initial	Name	Phone	Date

Appendix A – Spare Parts Interchangeability Record (SPIR) form

The CONSULTANT/CONTRACTOR/MANUFACTURER/SUPPLIER/VENDOR shall complete all the columns of the form as described below, with the exception of columns 25 to 31 which shall be completed by COMPANY.

Column No.	Instructions	Column No.	Instructions
1	**EQUIPMENT TAG NO.** Enter the equipment Tag as defined in the engineering.	18	**UNIT OF ISSUE** Indicate the type of unit in which the spare parts are delivered based on the abbreviations listed in Note-1.
2	**EQUIPMENT MODEL NO.** State model, type or other positive identification reference of the equipment.	19A	**STOCK OR DIRECT CHARGE** Any amounts charged directly, which payable to third parties that are arranged or managed by CONTRACTOR for the direct benefit of COMPANY.
3	**EQUIPMENT SERIAL NO.** State serial number or other unique identification designations from the provider of the equipment.	19B	**EAM SOFTWARE ITEM NO.** Indicate the item identification number as per Maximo database.
4	**NO. OF ITEMS** Enter the total number of identical assemblies within the equipment identified in columns 1, 2 and 3.	20	**CONTRACTOR RECOMMENDATION** Enter the quantity of commissioning spares required to prepare the equipment ready for startup. Enter the quantity of initial 2 yearly spare parts required to safeguard the operation of the equipment during the running-in and start-up periods and the first 2 year of operation. Enter the quantity required for normal operation after the first 2 years of operation.
5	**NUMBER OF PARTS PER ITEM IN USE** For each unit or group of identical units, enter in the appropriate space the number of parts fitted in each unit of equipment.	21A	**COMPANY RECOMMENDATION** Enter the quantity of commissioning spares required to prepare the equipment ready for startup. Enter the quantity of initial 2 yearly spare parts required to safeguard the operation of the equipment during the running-in and start-up periods and the first 2 year of operation. Enter the quantity required for normal operation after the first 2 years of operation.
6	**NOTES** Clarifications notes and legends.	21B	**STOCK LEVEL** Minimum / Maximum stock levels determined by COMPANY to ensure continuous operation and optimal inventory cost.
7	**TOTAL NUMBER OF PARTS IN USE** Enter the total number of identical parts covered by the equipment specified. This total is equal to the quantity of column 4 multiplied quantities of each corresponding item in column 5 and added up horizontally. Attention shall be pay in case of using an additional page	21C	**CRITICALITY** Enter the functional criticality of the spare part i.e., N= NORMAL, CR= CRITICAL, E= ESSENTIAL, I= INSURANCE based on MANUFACTURER's / VENDOR's experience.
8	**VENDOR RECOMMENDATION** Enter the quantity of commissioning spares required to prepare the equipment ready for startup. Enter the quantity of initial 2 yearly spare parts required to safeguard the operation of the equipment during the running-in and start-up periods and the first 2 year of operation. Enter the quantity required for normal operation after the first 2 years of operation.	22	**TOTAL PARTS ORDERED** Total number of parts to be purchased for a particular horizontal item. This shall include those listed in Sheet 2, if used.
9	**DESCRIPTION OF PARTS** Enter short identifiable description of part. If an item is interchangeable between two or more units, it should be listed only once.	23	**WEIGHT (KG)** Total weight of spare parts corresponding to that item line.
10	**DRAWING NO. INCLUDING POSITION NO.** For each part in column 9, enter the manufacturer's parts list and/or drawing number including the position number. Documents/drawings referred to must always be attached to the SPIR form by the CONTRACTOR/MANUFACTURER/SUPPLIER/VENDOR.	24	**DELIVERY TIME** The time and date stated in the Purchase Order and accepted by the Vendor as the time and date on which the parts will be delivered.
11	**SHELF LIFE** Enter length of time in weeks for which an item remains usable, fit for consumption.	25	**LEAD TIME** Total Lead Time for purchase order execution.
12	**SINGLE SOURCE (Y/N)** Indicate if an item is single sourced or there are multiple Vendors that can provide it.	26	**FOB FACTORY UNIT PRICE** Unitary price for each individual part in FOB condition from Factory. Reference value to be used in future repurchase and for price adjustment purposes as indicated in the SPIR Form Vendor to confirm item 2.
13	**NAME OF MANUFACTURER OR BRAND** Enter the ORIGINAL ITEM MANUFACTURER NAME for the spare part mentioned in column 9 and part number details entered in column 15.	27	**CURRENCY** Vendor's accepted currency for placing the purchase order.
14	**SPARE PARTS MANUFACTURER & MANUFACTURER EAM SOFTWARE CODE NO.** Enter the ORIGINAL ITEM MANUFACTURER code from Maximo database for the spare part mentioned in column 9 and part number details entered in column 15.	28	**VALIDITY DATE** Last date to place a purchase order for which the prices indicated in the SPIR Form are valid. This is the price keeping compromise from the Vendor.
15	**MANUFACTURER PART NUMBER** Enter the ORIGINAL ITEM MANUFACTURER unique reference number or other information which specifically identifies each part in the MANUFACTURE's organization.	29	**TOTAL PRICE** Total price of spare parts corresponding to that item line.
16	**SECTIONAL DRAWING / PARTS / LIST NO.** Indication of drawings numbers where the parts are indicated.	30	**VENDOR'S CONTACT INFORMATION** Enter full details including email address and telephone number.
17	**MATERIAL SPECIFICATION** Enter material specification in terms of full International Standards and accepted conventions, not manufacturer's or sub-manufacturer's reference, including material certificates if required.	31	**LOCAL AGENT CONTACT INFORMATION** Enter full details including email address and telephone number.

Appendix A – Spare Parts Interchangeability Record (SPIR) form

Notes:

1. If required, CONTRACTOR shall develop SPIR Form as per MANUFACTURER recommendations with the minimum requirements indicated in this Appendix
2. SPIR Form editable file is available as an Excel file, attached images is for illustrative purposes if the standard

B.1 GENERAL

The list of responsibilities and attention points detailed below should be used to determine the roles and responsibilities between COMPANY and CONTRACTOR during Project execution. At times commissioning and initial operating spares are not being identified correctly, which ultimately causes a delayed start-up or Plant shutdown. Thereby, COMPANY's relevant disciplines should be involved in identifying those spares, in addition to CONTRACTOR and MANUFACTURER/VENDOR for Commissioning and one-year spares.

The items listed and described in (B.2) and (B.3) are not exhaustive and should be subjected to the Contract requirements and agreements between the COMPANY and CONTRACTOR.

B.2 COMPANY SPARE PARTS ADMINISTRATOR

The Spare Parts Administrator is the interfaces coordinator between COMPANY's Project Team, and CONTRACTOR Engineering Team.

Duties of the Spare Parts Administrator includes the following:

(A) Ensure that ITT, POs, contracts and project specifications include COMPANY's Material Coding System for spare parts identification and that specification of BoMs are defined.
(B) Ensure receipt and entry of all material master data in relevant EAM Software
(C) Ensure compliance with the COMPANY's spare parts strategy.
(D) Ensure management of surplus materials and spare parts.
(E) Coordinate the inclusion of parts from the SPIR Forms on the Bill of Material in relevant EAM Software.
(F) Ensure Maintenance requirements are included in the BoM.
(G) Ensure that the responsibilities assigned to COMPANY and CONTRACTOR cover the Contract and Project requirements.
(H) Ensure that the implementation of the CONTRACTOR (specially the CONTRACTOR Spare Parts Focal Point) in relation to all spare parts activities are consistent with Project and Contract requirements.
(I) Ensure the CONTRACTOR Includes clauses for completion of SPIR Forms (and Vendor catalogue when applicable) in enquiry/purchase documents.
(J) Ensure that the CONTRACTOR establishes and implements systems and procedures for the reviewing and progressing of all spare parts schedules to ensure availability of operational spares in time for commissioning.
(K) Ensure that the internal roles for the update in relevant EAM Software database are properly assigned and staffed.
(L) Ensure that the latest versions of material codes are loaded in relevant EAM Software and maintain throughout the project.
(M) Ensure that opportunities for standardization are reviewed based on the existing spare parts inventory.

(N) Coordinate with CONTRACTOR's project, maintenance and procurement staff to ensure that project related spare parts are purchased in time for commissioning and start-up.

(O) Coordinate the review, selection and purchase of Insurance, Initial and Operational spare parts.

(P) Ensure materials and BoMs are set up complying to COMPANY's Material Coding System.

(Q) Ensure that surplus materials and spare parts are properly accounted for and managed within COMPANY maintenance and procurement.

(R) Close-out delivery of complete and quality data including reporting benefits and savings at the end of the project.

(S) Refine cost estimates and monitor costs for all project spare parts activities.

(T) Ensure that the CONTRACTOR's spare parts recommendations and documents, including SPIR Forms, comply with the specifications, MANUFACTURER's recommendations and that they are received on time and distributed.

(U) Ensure that maintenance and operations teams provide COMPANY's spare parts recommendations and that they are included in the SPIR Forms on time and distributed for final purchase.

B.3 CONTRACTOR SPARE PARTS FOCAL POINT

CONTRACTOR Spare Parts Focal Point duties shall comprise but not limited to the following:

(A) Ensure that ITT, POs, contracts and project specifications include COMPANY's Material Coding System for spare parts identification and that specification of BoMs are defined and that the appropriate spare parts clauses and specifications are included in the Contracts and Purchase Orders (POs) issued by the CONTRACTOR.

(B) Ensure that all the information required to upload the materials into relevant EAM Software is supplied.

(C) Ensure action is taken on surplus materials and spare parts as per Contract and this standard.

(D) Coordinate the inclusion of parts from the SPIR Forms in the Bill of Material in relevant EAM Software.

(E) Ensure requirements for SPIR Forms are included in enquiry/purchase documents and provides support to the MANUFACTURER/SUPPLIERS on the completion of said forms.

(F) Ensure the establishment and implementation of systems and procedures for the reviewing and progressing of all spare parts schedules to ensure availability of operational spares in time for commissioning.

(G) Coordinate with the COMPANY's project, operations, maintenance and procurement staff to ensure that project related spare parts are purchased in time for commissioning and start-up.

(H) Ensure that the spare parts and documents, including SPIR Forms, comply with the specifications and MANUFACTURER/VENDOR recommendations and that they are received on time, distributed, reviewed and actioned.

(I) Coordinate the review, selection and purchase of insurance, initial/operational spare parts, ensuring their availability at the time of commissioning and start-up.

(J) Maintain and issue an SPIR tracking register, which should be linked to the purchase order register in the SPIR program, to follow-up on the spare parts delivery.

(K) Report spare parts definition and procurement progress monthly (or as best suitable as per COMPANY/CONTRACTOR agreement).

(L) Ensure materials and BoMs are set up complying to COMPANY's Material Coding System.

(M) Ensure that surplus materials and spare parts are properly accounted for and handed over to COMPANY at the end of the start-up phase.

(N) Ensure that systems and procedures are implemented for review and control of all spare parts schedules to guarantee availability in time for commissioning.

(O) Coordinate with COMPANY's project, maintenance, operations and procurement staff to ensure that project related spare parts are purchased on time as per Contract and Project requirements.

(P) Technically verify that the spare parts recommendation matches the equipment supplied (e.g., correct models, equipment are actually fitted) including QA requirements and acceptance criteria.

(Q) Coordinate the review of commissioning spares with CONTRACTOR commissioning engineers and submit the recommendation to COMPANY for approval.

(R) Ensure that an equipment preservation plan is in place, which includes required storage climate (indoor, outdoor, or humidity control), packaging, and any required routine verification as per MANUFACTURERS/VENDORS requirements.