



**TỔNG CÔNG TY PHÂN BÓN VÀ
HÓA CHẤT DẦU KHÍ - CTCP**

DỰ ÁN	ĐẦU TƯ BỒN ACID H₃PO₄ TẠI XƯỞNG NPK
CHỦ ĐẦU TƯ	TỔNG CÔNG TY PHÂN BÓN VÀ HÓA CHẤT DẦU KHÍ – CTCP (PVFCCo)
ĐẠI DIỆN CĐT	CHI NHÁNH QUẢN LÝ VÀ PHÁT TRIỂN DỰ ÁN
NHÀ THẦU	TỔNG CÔNG TY DỊCH VỤ KỸ THUẬT DẦU KHÍ VIỆT NAM (PTSC)
GIAI ĐOẠN	THIẾT KẾ, CUNG CẤP VẬT TƯ THIẾT BỊ VÀ THI CÔNG XÂY DỰNG CÔNG TRÌNH (EPC) BỒN ACID H₃PO₄ TẠI XƯỞNG NPK

**TECHNICAL REQUISITION
DOCUMENT FOR AGITATORS**

**ĐẠI DIỆN
CHỦ ĐẦU TƯ**

PTSC

0	09/02/2026	XB để mua sắm	TPA	TDH	TDH	NKD
LXB	Ngày XB	Mô tả	Thực hiện	Kiểm tra	Xem xét	Phê duyệt

**TỔNG CÔNG TY DỊCH VỤ KỸ THUẬT
DẦU KHÍ VIỆT NAM (PTSC)**

Số Tài Liệu:

H3PO4-00-ME-TRD-0002

Số trang: 11

(Bao gồm cả trang này)



ĐẦU TƯ BÓN ACID H₃PO₄ TẠI XUỐNG NPK



Tài liệu:

**TECHNICAL REQUISITION DOCUMENT
FOR AGITATOR**

Doc No.: H3PO4-00-ME-TRD-0002

Revision: 0

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1. GENERAL INFORMATION

1.1. Purpose of Document

This document is to specify the minimum requirements for Agitators Package which is used in Acid Phosphoric storage tank at NPK Plant project.

1.2. Definitions

The following definitions and abbreviations are used in this document:

PROJECT	Investment Acid Phosphoric storage tank at NPK Plant
OWNER	Petrovietnam Fertilizer and Chemicals Corporation (PVFCCo)
CONTRACTOR/ PURCHASER	Petrovietnam Technical Service Corporation (PTSC)
VENDOR	Party responsible for manufacturing and/or packaging of equipment
DELIVERABLE	Including all documents and drawings issued during execution of the Project.
TRD	Technical Requisition Document

1.3. Reference Document

Refer to Section 13.

2. LANGUAGE AND UNITS

2.1. Language



All documents and drawings to be submitted shall be lettered in English language.

2.2. Units of Measurement

Units of measurement for all engineering documents shall be in System International (SI).

3. SERVICE CONDITIONS

Refer Datasheet and specification for further information.

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4. ITEMS AND QUANTITIES



No.	Item no.	Q'ty	Description	Remark
1	80MX1004	1	Phosphoric Acid Transfer Agitator	
2	80MX1005	1	Acid Sump Tank Agitator	

5. SCOPE OF WORK AND SUPPLY

5.1. Scope of Works

All items shall be furnished in accordance with the requirements specified in this requisition such as data sheets, project specifications and other documents attached herewith.

- Engineering and detail design
- Mechanical and performance guarantee
- Supply of materials
- Fabrication & assembly at shop
- First fill for chemical, lubricants.
- Chemical cleaning for stainless steel (Pickling & Passivation), if any
- PMI (Positive Material Identification) at vendor's shop
- Inspection & tests at shop
- Surface preparation & painting up to finish coat as per painting specification.
- Rust prevention, drying out work, protection.
- Packing for export and site storage for 12 months
- Transportations
- Application of Local Regulations in Design if required
- Coordination meeting



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- Supervision for erection, pre-commissioning and commissioning (per diem rate)
- The expected period and the number of people to be suggested.
- Training at vendor's shop or site (per diem rate)
- Documentation and certification as defined in the VDRL included in the Technical Requisition. This shall include fully detailed drawings for review by the PURCHASER, complete design calculations for all pressure and structural parts of the equipment and data manuals, test certificates etc. required by codes and drawings. Vendor also supply the native files of the vendor document where required.
- Any item not described or expressly set forth herein, but necessary to complete the work to the true intent and meaning of the specifications, shall be furnished by Vendor without extra cost.

5.2. Scope of Supply

The scope of supply shall include, but is not limited to, for each agitator set:

- Top Entry Agitator.
- Electric motor.
- Gear box
- Coupling and coupling guard between agitator and gear box
- Coupling and coupling guard between motor and gear box
- Channel Support for gearbox and motor for 80MX1004
- Motor mounting bolts
- Gear and gear mounting
- Fastening bolts
- Lip seal
- Mounting flange, bolt, nut and gasket
- In tank coupling
- Bottom support with bottom bush bearing

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- Lubrication system
- Special tools as required for pump maintenance include tools for assembly and dis-assembly of agitator components.
- Inspection and test.
- Surface preparation, painting, protective coating and preservation.
- Name plate and rotation arrows.
- Documentation as detailed in the requisition
- Any other items as required for trouble-free installation, operation and maintenance of the agitator, gearbox and motor.
- Pre-Commissioning, Commissioning and Start-Up Spare parts.

The Vendor shall be responsible for submission, together with the Tender, a list of deviations or exceptions to this Specification. The list of exceptions and deviations shall form a separate section in the VENDOR's Tender, and it shall not be the responsibility of the PURCHASER to identify any deviations contained elsewhere. In the absence of any listing, it will be construed that the VENDOR fully complies with this Specification and all other applicable referenced documents.

5.3. Out of Scope



- All civil foundation work
- Erection work

6. CONFLICTING REQUIREMENT

VENDOR shall notify PURCHASER of any conflicts between this TRD, specifications, the related data sheets, the Codes and Standards and any other specifications noted herein. Resolutions and/or interpretation precedence shall be obtained from PURCHASER in writing before proceeding with the design/manufacture.

7. DEVIATION LIST

Vendor's quotation shall be in full conformity with Purchaser's requirements. Unless exceptions, deviations or alternatives are clearly defined and listed on the attached Purchaser's form "Deviation List" and submitted with Vendor's quotation, the

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requirements and conditions of this Requisition shall be deemed to be accepted by the Vendor.

8. GENERAL REQUIREMENT

8.1. General

The material supply shall be strictly in accordance with data sheets, drawings, specifications, codes, and standards specified.

All VENDOR offered pumps shall be of proven hydraulic design and mechanical construction with at least two (2) units having completed a minimum of two (2) years of satisfactory operating experience in similar operating and site conditions at Vietnam.

Compliance by VENDOR with the provision of this requisition does not relieve him of his responsibility to furnish material and accessories of a proper design to meet the specified duty and / or local codes governing health and safety.

All applicable documents mentioned below are attached to the request for inquiry. However, if the VENDOR is not in possession of any of the listed or referenced PURCHASER documents, it shall be VENDOR's sole responsibility to obtain them from the PURCHASER. Otherwise, it shall be assumed that the VENDOR has received, read and understood the total contents of the documents.



All materials and parts shall be new, unused and free from defects and imperfections that would adversely affect the life or performance of the facility.

VENDOR data shall include detailed design drawings (if any) and updated data sheets of each material and appurtenances.

No production would commence until PURCHASER has approved related Vendor Data.

PURCHASER's approval on Vendor Data does not relieve VENDOR of compliance with applicable codes, specifications, safety design, or meeting the requirements of governmental agencies.

Any work and documentation related to facilitating design appraisal approvals and inspection from Purchaser appointed Certification Authority (CA) and QA/QC Inspector (TPI) shall also be included in Vendor 's scope of supply.

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8.2. Design Life, Availability and Reliability

The design life of the facility and all associated material and components is minimum 30 years.

8.3. Preparation for Shipment

Material shall be prepared for export shipment and shall be provided with maximum protection during shipment and extended outdoor storage.

The VENDOR shall submit loading instructions and diagrams for PURCHASER or its authorized representative, approval for all pipes shipped by rail, truck or vessel. However, approval of these documents shall not relieve the VENDOR of its responsibility for damage during shipment.

8.4. Guarantee and Warranty

The VENDOR shall have final and total responsibility for the design and performance of all material supplied under this requisition.

The VENDOR shall replace and install without cost to the PURCHASER any materials and supplies which fail due to defects in material or workmanship if the defect is observed and/or such failure occurs within the guarantee/warranty period. Acceptance of this order will signify acceptance of all conditions of this guarantee.

The guarantee period starts from delivery of the Goods and ending after the first twenty-five (25) months of in-service use of the Goods (such a period not to exceed 36 (thirty-six) months from the date of delivery of the Goods to Buyer)

8.5. Spare Parts

8.5.1. Start-up and Commissioning Spares



The Vendor shall include, as part of his bid, a detailed, price list of start-up and commissioning spares which shall be supplied as part of the original purchase package.

8.5.2. Two Year Spares

The Vendor shall include, as part of his bid, a detailed, list of recommended spare parts for two years continuous operation. These spares shall be costed for separate purchases.

9. INSPECTION AND TEST

Inspection and tests shall be made by the VENDOR in accordance with:

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Test & Inspection should be carried out according to the applicable project documents and applicable codes and standards

Manufacturer's standard plan & procedure as approved by PURCHASER

Local regulation, if any

The COMPANY and/or PURCHASER inspector shall hold a right to be present at any manufacturing stage of materials.

The VENDOR shall state the inspection method, acceptance criteria and the inspection items with "Witness" or "Not witness" in his inspection and test procedure.

10. COORDINATION MEETING

After the purchase order is placed, VENDOR shall, upon receipt of PURCHASER's notice, send a sufficient number of qualified personnel at VENDOR's cost to hold the meetings according to the following schedule:

<input checked="" type="checkbox"/> Kick-off meeting	Two (2) week(s) after the order	<input type="checkbox"/> Vendor office	<input checked="" type="checkbox"/> Purchaser's office
<input checked="" type="checkbox"/> Coordination meeting	Note 1 month(s) after the order	<input type="checkbox"/> Vendor office	<input checked="" type="checkbox"/> Purchaser's office
<input type="checkbox"/> Design review meeting	month(s) after the order	<input type="checkbox"/> Vendor office	<input type="checkbox"/> Purchaser's office
<input checked="" type="checkbox"/> Pre-inspection meeting	01 month(s) before Fab. start	<input checked="" type="checkbox"/> Vendor office	<input type="checkbox"/> Purchaser's office

* Note 1: The time period for the same to be agreed at kick-off meeting

11. APPLICABLE DOCUMENT

Documents listed below shall make an integral part of this technical requisition:

Document No.	Rev.	Document Title	Remark
H3PO4-00-ME-SPC-0002	1	General Specification for Agitator	
H3PO4-00-ME-DAS-0004	1	Mechanical Datasheet for Phosphoric Acid Transfer Agitator	

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Document No.	Rev.	Document Title	Remark
H3PO4-00-ME-DAS-0005	1	Mechanical Datasheet for Acid Sump Tank Agitator	
PIN-PIP-0000-EC-0011_000_04	0	Piping Material Specification	
PIN-EQS-0000-EB-0007_000_01	01	Painting Specification	
H3PO4-00-PI-DRD-0001	0	Bố trí đường ống bồn Acid H ₃ PO ₄	
H3PO4-00-PR-PFD-0001	0	Process Flow Diagram (PFD)	
H3PO4-00-PR-PID-0001	0	Symbol and legend for P&ID	
H3PO4-00-PR-PID-0002	0	P&ID for Existing H ₃ PO ₄ Storage Tank _80TK1001	
H3PO4-00-PR-PID-0003	0	P&ID for New H ₃ PO ₄ Storage Tank _80TK1003	
H3PO4-00-EL-SPC-0002	0	AC Induction Motor Specification	
TBA	0	Vendor Data Control Procedure	



12. VENDOR DATA REQUIREMENT

The VENDOR shall submit the completed documents and drawings, in accordance with the “Vendor Data Requirement List” Appendix No. 1.

13. APPENDICES

Appendix No. 1: Vendor Data Requirement List (12 pages)

Appendix No. 2: Purchaser Form (02 pages)

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APPENDIX No. 1
VENDOR DATA REQUIREMENT LIST
(11 pages, including this page)



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VENDOR DATA REQUIREMENT LIST

VD Code	Description	With Bid	First Issue			Final Issue
			Issue Date	Purpose	Quantity / Type	Quantity / Type
1	COMMERCIAL/ CONTRACTUAL					
C01	Vendor Data Index & Schedule		PO+14D	IFR	*1	*2
C02	Engineering, Procurement, Manufacturing and Test Schedule		PO+14D	IFR	*1	*2
C03	Sub- Contract Work Proposal					
C04	Delivery, Handling and Packing Proposals					
C05	Exception and Non-Conformity Form					
C06	Vendor's Sub-Orders (Un-Priced copy)		PO+56D	IFI	*1	
C07	Warranty/Guarantee Confirmation		PO+56D	IFI	*1	*2
C08	Vendor/Sub-Vendor List		PO+14D	IFR	*1	*2
C09	Project Management Organization					
C10	Progress Reports (Monthly)		PO+14D	IFR	*1	*2
C11	Proven Design and Manufacturing Experience List					
C12	Schedule of Pricing					
2	PROCESS/MECHANICAL/ PIPING/STRUCTURAL					
M01	Foundation Load and Anchor Bolt Location		PO+14D	IFR	*1	*2
M02	Drive Assembly Details		PO+14D	IFR	*1	*2
M03	Equipment Design Calculations including Transportation					
M04	Structural Design Calculations					



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			Issue Date	Purpose	Quantity / Type	Quantity / Type
M05	Pipe Stress Calculations					
M06	Process Flow Diagrams including Heat and Mass Balance					
M07	Piping and Instrument Diagrams					
M08	Process Sizing Calculations		PO+14D	IFR	*1	*2
M09	Exchanger Thermal Rating Calculations					
M10	Hydraulic Calculations					
M11	Thermal Growth Calculations					
M12	Utility Calculations					
M13	Flare/Relief System Calculations					
M14	Flare Dispersion Calculations					
M15	Reliability/Availability Data and Calculations					
M16	Lube and Seal Oil System Sizing Calculations					
M17	Anti Surge Valve Sizing Calculations					
M18	Line List					
M19	Equipment Data Sheet including specialty items		PO+14D	IFR	*1	*2
M20	Prime Mover Data Sheets (Motor)		PO+14D	IFR	*1	*2
M21	Weight Data Sheet		PO+14D	IFR	*1	*2
M22	Noise Level Data Sheets		PO+14D	IFR	*1	*2
M23	General Arrangement Drawings		PO+14D	IFR	*1	*2
M24	Detail / Assembly / Fabrication Drawings					
M25	Cross Section Drawing / Exploded View Drawings					
M26	Internals Drawings / Miscellaneous Drawings					
M27	Mechanical Seal Drawings					

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			Issue Date	Purpose	Quantity / Type	Quantity / Type
M28	Shaft Alignment Drawings					
M29	Bill of Material					
M30	Centre of Gravity Sketch					
M31	Installation & Dismantling Drawings / Procedures (As Applicable)		PO+14D	IFR	*1	*2
M32	Lifting / transportation Drawings					
M33	Name Plate Drawings		PO+14D	IFR	*1	*2
M34	HVAC Schematic and Flow Diagrams					
M35	Skid/Module GA and Detail Drawings					
M36	Lifting Lug Details / Calculations					
M37	Allowable Nozzle Load Calculations					
M38	Weight and Centre of Gravity Calculations					
M39	Lifting Equipment Calculations					
M40	Lateral Critical Speed Calculations					
M41	Torsional Critical Speed Calculations					
M42	Bearing Life Calculations					
M43	Thrust Bearing sizing Calculations					
M44	Pulsation Dampener Design Calculations					
M45	Rotor/Shaft system Unbalanced Response Analysis					
M46	Coupling Selection Calculations					
M47	Dynamic Characteristics: Lateral & Torsional Analysis					



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			Issue Date	Purpose	Quantity / Type	Quantity / Type
M48	Foundation Load Calculations					
M49	HVAC Calculations					
M50	Vibration Calculations					
M51	Miscellaneous Calculations					
M52	Skid Piping GA Drawings					
M53	Pipe Work Support Details					
M54	Valve List					
M55	Piping Isometrics					
M56	Non-Actuated Valve Torque Calculations					
M57	Tie-in Schedule					
M58	Pulsation Analysis					
M59	Relief Valves Calculations and Sizing					
M60	Lifting Lug / Trunnion Calculations					
M61	Structural Skid / Support Calculations					
M62	Tank Tress Calculation					
3	INSTRUMENT/ ELECTRICAL					
J01	Package Electrical Termination Drawings		PO+14D	IFR	*1	*2
J02	Panel Layout and Details					
J03	Panel Wiring Diagrams					
J04	Instrument / Fire and Gas Location Plans / Cable Layouts					
J05	Instrument / Fire and Gas Installation Details / Hook-ups					
J06	Loop Diagrams					
J07	Cause & Effect Charts					
J08	Alarm / Trip Set Point List					
J09	Electrical Wiring Diagrams		PO+14D	IFR	*1	*2
J10	Electrical Schematic Diagrams					



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			Issue Date	Purpose	Quantity / Type	Quantity / Type
J11	Electrical Single Line Diagrams					
J12	Sequence and Logic Diagrams, Cause and Effect Diagrams					
J13	Instrument/Electrical [ISA] Data Sheets					
J14	Instrument schematics and control diagram					
J15	Functional Design Specifications					
J16	Cable block diagram, SR Data link Address & Screen Graphics					
J17	Instrument Calculations including Safety Valves, Control Valves, FE's, RO's, etc.					
J18	Instrument Index					
J19	I/O Schedules					
J20	VDU Screen Display Graphics					
J21	Control and Shutdown Philosophy					
J22	Cable Schedule					
J23	Junction Box - Specification and Drawings					
J24	Electronic Cable detail					
J25	Panel Test Procedure					
J26	Type Test Procedure					
J27	Tie-in Schedule					
4	GENERAL					
G01	Descriptive Literature and Catalogue Information		PO+14D	IFR	*1	*2
G02	Sub Vendor Data Sheets / Manuals					



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G03	Recommended Spare Parts For 2 Year Operation, Priced		PO+14D	IFR	*1	*2
G04	Recommended Spare parts for Start-up & Commissioning, Priced		PO+14D	IFR	*1	*2
G05	List of Special Tools, where applicable					
G06	Utility Requirements – Power / Air / Water / Other					
G07	Consumables list including lubrication		PO+14D	IFR	*1	*2
G08	Loading, Transport and Unloading Details					
G09	Preservation and Storage Procedure					
G10	Hazardous Area Dossier					
G11	Hardware Standard Software Documentation					
G12	Material Safety Data Sheet					
G13	Packing List		PO+24W	IFR	*1	*2
G14	Not used					
G15	Preparation for Shipment Procedure		PO+24W	IFR	*1	*2
5	PERFORMANCE					
P01	Performance and Test Procedure		PO+20W	IFR	*1	*2
P02	Performance Curves and Data (Pump, Compressor, Gas Turbine, Motor, Engine, Fan, Vessel Internals, etc)					
P03	Speed/Torque Curves, Gas Turbine/Gear/Generator vs. Starting Motor					
P04	Trial Assembly Report					
P05	Performance Test Reports					
P06	Noise Reports					
P07	FAT Reports		PO+20W	IFR	*1	*2



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P08	Commissioning and Site Acceptance Test Results					
P09	Vibration Reports		PO+20W	IFR	*1	*2
P10	Acoustic Analysis					
P11	Crane Failure Mode Analysis					
P12	Heat Emission Calculations					
P13	Battery Charge/Discharge Curves					
P14	Electrical Relay Characteristics					
P15	Pulsation Study					
6	QA/CERTIFICATION/ REPORT					
Q01	QA Accreditation Certification					
Q02	Contract Quality Plan					
Q03	Welding Procedures & Qualification Test Reports					
Q04	Inspection and Test Plan		PO+14D	IFR	*1	*2
Q05	Inspection and Test Reports		PO+20W	IFR	*1	*2
Q06	Calibration Procedures & Results					
Q07	Hydro Test / Pneumatic Test Procedures					
Q08	Hydro Test/ Pneumatic Test Reports					
Q09	Material Mill Test Certification		PO+20W	IFR	*1	*2
Q10	Electrical Type Test Certificates		PO+20W	IFR	*1	*2
Q11	Approval of Relevant Authorities					
Q12	Statement of Code Compliance					
Q13	Hazardous Area Certification					
Q14	Heat Treatment Records, where applicable					



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Q15	Charpy Impact Tests, where applicable					
Q16	Vendor Concession (Deviation) Request					
Q17	Surface Preparation for Painting and Internal Coating Procedure		PO+12W	IFR	*1	*2
Q18	NDE Procedure & NDE Location Plan (Weld map)		PO+20W	IFR	*1	*2
Q19	Manufacturing Procedures including Heat Treatment					
Q20	Pre-Commissioning / Commissioning / Site Acceptance Test Procedure					
Q21	Factory Acceptance Test Procedure					
Q22	Weighing Procedure					
Q23	Post Weld Heat Treatment Procedures					
Q24	Non-Conformance Report (NCR) Procedure					
Q25	Erection & Installation Procedure					
Q26	Weld Location Plans					
Q27	Repair Procedures					
Q28	Weight Certificate (equipment > 50 kg)					
Q29	Lifting Equipment Certification					
Q30	Dimensional Control Report		PO+20W	IFR	*1	*2
Q31	Welder Performance Qualification Records/Certificates					
Q32	NDE Operator Qualifications & Certificates					
Q33	Production Test Results (Including welding)					



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VD Code	Description	With Bid	First Issue			Final Issue
			Issue Date	Purpose	Quantity / Type	Quantity / Type
Q34	NDE Reports		PO+20W	IFR	*1	*2
Q35	Material Traceability Records (Location Drawing)					
Q36	Certificate of Compliance					
Q37	Painting/Insulation Inspection Reports		PO+20W	IFR	*1	*2
Q38	Inspection Release Certificate		PO+20W	IFR	*1	*2
Q39	Photographs/Videos		PO+20W	IFR	*1	*2
Q40	Weld Overlay/Cladding Procedures, where applicable					
Q41	Cleaning and Flushing Procedures		PO+20W	IFR	*1	*2
Q42	PMI Procedures and PMI Location Plan					
Q43	Pickling and Passivation Procedures					
Q44	Tube to Tube sheet Joint Mock-Up Test Procedure					
Q45	Tube to Tube sheet Mock-Up Test Results					
Q46	Pitting and Crevice Corrosion Resistance Test Procedure (ASTM G48)					
Q47	Intergranular Corrosion Test Procedure (ASTM 262)					
Q48	Coupon Test Procedure					
Q49	Continuity Test Procedure and Results required for all internal Coatings					
Q50	Weld Repair Report(if applicable)					
Q51	P.M.I Test Certificate for WO Cladding					
Q52	Hardness Test Procedure					
Q53	Hardness Test Certificate					
Q54	Impact Test Record					

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			Issue Date	Purpose	Quantity / Type	Quantity / Type
Q55	NPSH / Acceleration head Test Procedure					
Q56	NPSH / Acceleration head Test Report					
7	MANUAL AND INDICES					
R01	Installation, Operation and Maintenance Manual (IOM)		PO+20W	IFR	*1	*2
R02	Manufacturer's Data Book (MDB)		PO+20W	IFR	*1	*2
R03	Training Manuals (Operation and Maintenance)		PO+20W	IFR	*1	*2
R04	Not used					
R05	Manufacturer's Data Book (MDB) Index		DE-14D	IFR		
8	MISCELLANEOUS					
[TBA]	[TBA]					

Legend:

1* : E *2 : 1OR + 9C + E + 2CD

E : Electronic file **OR** : Original **C** : Copy **CD** : CD-ROM / Thumb drive**PO + XXD**: XX days after PO date**DE – YYD**: YY days before delivery date**IFI**: Issued for Information**IFR**: Issued for Review



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APPENDIX No. 2
PURCHASER FORMAT
(8 pages, including this page)

Deviation from Purchaser's Specification	Project		Vendor	
	PTSC Project No.		Vendor Project No.	
	Item No.		Contract No.	
	Service			

Spec. No.	Paragraph No.	Deviation	PTSC Justification	Client Conclusion	Remarks	Cost Effect When Deviation is Applied

SPECIAL TOOL LIST	Project		Vendor	
	PTSC Project No.		Vendor Project No.	
	Item No.		Contract No.	
	Service			

No.	Tool name	Q'ty	Sketch	Unit price	Total price

