

Engineering Procedure

SAEP-50

30 July, 2003

Project Execution Requirements for

Third Party Royalty/Custody Metering Systems

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Saudi Aramco DeskTop Standards

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1 Scope

This procedure establishes the responsibilities of the Customer or Supplier, as applicable, and various Saudi Aramco organizations for executing third party projects involving royalty/custody metering. Saudi Aramco organizations for which responsibilities are specified include, but are not limited to:

- Aramco Oversees Company BV (AOC)
- Aramco Services Company (ASC)
- Communication Engineering & Technical Support Department (CE&TSD)
- Consulting Services Department (CSD)
- Distribution Technical Support Department (DTSD)
- Facilities Planning Department (FPD)
- Gas/NGL Planning & Domestic Marketing Department (GNP&DMD)
- Inspection Department (ID)
- Loss Prevention Department (LPD)
- Oil Supply, Planning & Scheduling Department (OSPAS)
- Process & Control Systems Department (P&CSD)
- Proponent Organization(s)
- Saudi Aramco Project Management Team (SAPMT)

This SAEP does not apply to royalty/custody metering projects developed, funded and executed by Saudi Aramco. SAEP-21 shall apply for these projects.

2 Applicable Documents

Saudi Aramco Engineering Procedures

<i>SAEP-21</i>	<i>Royalty/Custody Metering Facilities Execution Guide</i>
<i>SAEP-121</i>	<i>Operating Instructions for New Facilities</i>
<i>SAEP-122</i>	<i>Project Records</i>
<i>SAEP-302</i>	<i>Instructions for Obtaining a Waiver of a Mandatory Saudi Aramco Engineering Requirement</i>
<i>SAEP-1150</i>	<i>Inspection Coverage on Projects</i>

Saudi Aramco Engineering Standards

<i>SAES-Y-101</i>	<i>Custody Metering of Hydrocarbon Gases</i>
<i>SAES-Y-103</i>	<i>Custody Metering of Hydrocarbon Liquids</i>

Saudi Aramco General Instructions

<i>GI-0002.710</i>	<i>Mechanical Completion & Performance Acceptance of Facilities</i>
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Saudi Aramco Forms and Data Sheets

<i>Form SA 7213-ENG</i>	<i>Mechanical Completion Certificate (MCC)</i>
<i>Form SA 7214-ENG</i>	<i>Performance Acceptance Certificate (PAC)</i>

Other Saudi Aramco Documents

Saudi Aramco Contract Schedule Q

3 Definitions and Acronyms

3.1 Definitions

Approve: Review and formal acceptance characterized by the signature of the final authorizing individual or organization.

Concur: Review and formal acceptance characterized by initials or signature of an individual or organization other than the final authority.

Custody Transfer Measurement: A specialized form of measurement that provides quantity and quality information used for the physical and fiscal documentation of a change in ownership and/or responsibility of commodities. The following measurements are custody transfer measurements:

- Measurement of hydrocarbon liquid or gas movements (deliveries or receipts) between Saudi Aramco and its Customers, suppliers, or transport contractors.
- Measurement of hydrocarbon liquid or gas transfers within, or between, Saudi Aramco business entities (e.g., refineries, bulk plants, terminals, VELA, etc.) where the measurement is used for accounting or loss control.

Customer: The party that takes ownership or responsibility of a hydrocarbon commodity from Saudi Aramco.

Major Gas Metering System: A metering system that is designed to measure more than 200 MMSCFD of hydrocarbon gas.

Major Liquid Metering System: A metering system that is designed to measure more than 100 MBPD of hydrocarbon liquid at reference (standard) conditions.

Meter Skid: The field portion of a metering system consisting of the following components, as applicable: meters, strainers, density meter, flow-conditioning sections, block valves, control valves, piping, instruments, electrical equipment and associated structural steel.

Meter Station: A facility that is primarily dedicated to the measurement of the quantity and quality of a liquid or gas hydrocarbon. The facility may include, but not be limited to storage tanks, pipelines, piping, regulators, valves, strainers/filters, flow straightening and conditioning equipment, samplers, measurement elements, provers, Remote Terminal Units (RTU), pumps, communications (data and SA telephone), metering shelter, UPS, area fencing, area paving, area lighting, ESD valve systems and associated instrumentation, alarms, computers with software programs, peripheral equipment and associated control functions.

Metering System: A complete assembly of equipment that is designed to measure the quantity and quality of a liquid or gas hydrocarbon. The metering system may include, but is not limited to, the meter skid, prover skid, samplers, and control system.

Primary Gas Metering System: A metering system that is designed to measure more than 20 MMSCFD, but not more than 200 MMSCFD of hydrocarbon gas.

Primary Liquid Metering System: A metering system that is designed to measure more than 10 MBPD, but not more than 100 MBPD of hydrocarbon liquid at reference (standard) conditions.

Proponent: The Saudi Aramco organization responsible for signing the Saudi Aramco Form 7213-ENG, Mechanical Completion Certificate.

Prover Skid: The field portion of a metering system consisting of the meter prover, outlet block valve, control valve, piping, instruments, electrical equipment, and associated structural steel

Review: Examination of a document for completeness and correctness. In instances not involving a concurrence or approval, a response from a document or package review grants general acceptance of the item under the condition that any comments are incorporated in the document.

Royalty Measurement: A specialized form of measurement that is used as the basis for paying royalty to the Saudi Arabian Government.

Secondary Gas Metering System: A metering system designed to handle 20 MMSCFD or less of hydrocarbon gas.

Secondary Liquid Metering System: A metering system designed to handle 10 MBPD or less of hydrocarbon liquid at reference (standard) conditions.

Supplier: The party that relinquishes ownership or responsibility of a hydrocarbon commodity to Saudi Aramco.

Third Party Inspector: An independent inspection agency whose function is to conduct an unbiased inspection of certain systems, equipment, materials, etc., against a set of standards, guidelines or procedures. For purposes of this SAEP, the Third Party Inspector has particular knowledge of and experience with industry custody measurement standards and procedures.

Third Party Metering Project (TPMP): A project where a Customer or Supplier enters into a Design Basis Scoping Paper Agreement and Engineering & Construction Agreement with Saudi Aramco to construct or modify a meter station for receiving or delivering a specific quantity of hydrocarbon from or to Saudi Aramco. The facility may be located in a Customer, Supplier or Saudi Aramco plant. Design and construction of said facility is accomplished in accordance with Saudi Aramco engineering documents and General Instructions.

Vendor: The party that supplies or sells integrated metering systems, metering equipment, or components.

3.2 Abbreviations

AFC	- Approved for Construction
AOC	- Aramco Overseas Company BV
ASC	- Aramco Services Company
BI	- Budget Item
CE&TSD	- Communication Engineering & Technical Support Department
CMU	- Process & Control Systems Department/Process Instrumentation Division/Custody Measurement Unit
CSD	- Consulting Services Department
DBSP	- Design Basis Scoping Paper

DTSD	- Distribution Technical Support Department
E&C	Engineering & Construction Agreement
EDSD	- Engineering Drawing Services Division
EIV	- Emergency Isolation Valve
ESD	- Emergency Shutdown
FAT	- Factory Acceptance Test
FPD	- Facilities Planning Department
FSD	- Functional Specification Document
GI	- General Instruction
GNP&DMD	- Gas/NGL Planning & Domestic Marketing Department
IT	- Information Technology
LPD	- Loss Prevention Department
MBPD	- Thousands of Barrels per Day
MCC	- Mechanical Completion Certificate
MINPET	- Ministry of Petroleum and Mineral Resources
MMSCFD	- Millions of Standard Cubic Feet per Day
NAPD/RTPD/TPPU	- Northern Area Projects Department/Ras Tanura Projects Division/Third Party Projects Unit
O&M	- Operations and Maintenance Agreement
OIM	- Operations Instruction Manual
OSPAS	- Oil Supply Planning & Scheduling
PAC	- Performance Acceptance Certificate
PDD	- Power Distribution Department
PID	- Inspection Department/Projects Inspection Division
P&CSD	- Process & Control Systems Department
QA/QC	- Quality Assurance/Quality Control
RTU	- Remote Terminal Unit
SA	- Saudi Aramco
SAEP	- Saudi Aramco Engineering Procedure
SAES	- Saudi Aramco Engineering Standard

SAMSS	- Saudi Aramco Materials System Specification
SAPMT	- Saudi Aramco Project Management Team
SAT	- Site Acceptance Test
TPMP	- Third Party Measurement Project
VID	- Inspection Department/Vendor Inspection Division

4 Instructions

The Customer or Supplier, as applicable, and Saudi Aramco organizations with metering project responsibilities shall ensure that their personnel become familiar with and execute project activities in accordance with this SAEP.

Responsible organizations shall communicate deviations from the requirements of this SAEP to CMU for resolution.

Factory Acceptances Tests (FAT's) and Site Acceptance Tests (SAT's) shall be conducted for the various types of metering systems as follows:

Test	Liquid Metering Systems All Types	Gas Metering Systems All Types
FAT	X	X
Non-Flowing SAT		X
Flowing SAT	X	

5 Responsibilities

5.1 Customer or Supplier

The responsibilities of the Customer or Supplier, as applicable, are summarized below:

- Identify requirement for Third Party Metering Project. Contact DTSD or GNP&DMD, as applicable.
- Define the project scope. Include the basis for the Operating and Maintenance (O&M) Agreement. Obtain concurrence from SAPMT and approval from DTSD or GNP&DMD, as applicable.
- Approve the Supply Agreement.
- Approve the DBSP Support Agreement.
- Prepare the DBSP unless FPD agrees to do so. Submit DBSP to SAPMT for review by various Saudi Aramco Organizations. Prepare comments

spreadsheet and revise DBSP in accordance with any comments received. Transmit the final DBSP to SAPMT for concurrence and approval by various Saudi Aramco organizations.

If FPD prepares the DBSP, approve the DBSP.

- f) Approve the Engineering and Construction (E&C) Agreement.
- g. Approve the Operations and Maintenance (O&M) Agreement.

Commentary Note:

Preparation and approval of the Operations and Maintenance (O&M) Agreement may occur at any time before the Mechanical Completion Certificate, Form SA 7213-ENG, is approved.

- h. Prepare requests for waivers of Saudi Aramco engineering requirements in accordance with SAEP-302. Submit waiver requests to SAPMT for concurrence by SAPMT and Proponent(s), and subsequent transmittal to the CSD Waiver Coordinator for final processing.
 - i. Prepare the Functional Specification Document (FSD) in accordance with SAES-Y-101 or SAES-Y-103, as applicable, and the Saudi Aramco engineering documents referenced therein. Submit the FSD to SAPMT for review by OSPAS, SAPMT, Proponent(s) and CMU. Prepare comments spreadsheet, and revise the FSD in accordance with any comments received. Transmit final FSD to SAPMT for concurrence, and approval by CMU and Proponent(s).
 - j. Prepare the purchase order package(s) for the metering system and other materials. Submit package(s) to SAPMT for review by SAPMT and CMU. Following the review, incorporate any comments into the purchase package(s).
 - k. Purchase metering system and other materials from Saudi Aramco approved vendors.
 - l. Transmit five copies of the issued purchase order package(s) for the metering system and other materials to SAPMT for distribution to VID as appropriate.
 - m. Schedule and conduct a kick-off meeting with the Vendor and VID. Obtain VID approval of Vendor's QA/QC Plan and proposed "hold and inspect" points.
 - n) Prepare Detailed Design Package(s). Submit package(s) to SAPMT for review by various Saudi Aramco organizations. Following each review,
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prepare comments spreadsheet, and revise the drawings and specifications in accordance with any comments received.

Commentary Notes:

As many as three design reviews may be required depending upon the scope of the project.

Each design review will require at least 15 working days after receipt of the design package by the Saudi Aramco reviewing organizations.

- o) Submit "key" design drawings to SAPMT for concurrence by SAPMT and approval by the Proponent(s).
- p) Transmit Approved-for-Construction (AFC) Drawings and specifications to SAPMT for distribution within Saudi Aramco.
- q) Submit Vendor's draft Factory Acceptance Test (FAT) Procedure to SAPMT for review by SAPMT, Proponent(s), CMU and MINPET (royalty metering systems only) at least 60 days prior to the scheduled FAT. Include the Vendor's system drawings, logic and cause and effect drawings, graphic displays, report formats, equipment manuals and literature, and volume calculations with the draft FAT Procedure. Prepare comments spreadsheet. Request Vendor to revise FAT Procedure based on any comments received and re-submit procedure.

Commentary Note:

Review of the FAT Procedure will require at least 15 working days after receipt of the procedure by Saudi Aramco reviewing organizations.

- r) Notify SAPMT of the FAT schedule, and transmit final FAT Procedure to SAPMT for distribution to CMU and Proponent(s) at least 30 days prior to the scheduled FAT.
 - s) Approve the results from the metering system Pre-FAT. Confirm that the Vendor's "as-manufactured" drawings are complete and are available for the FAT.
 - t) Approve the results and all exception items from the metering system FAT.
 - u) Transmit signed FAT report complete with all FAT exception items to SAPMT for distribution to Proponent(s) and CMU.
 - v. Submit Vendor's draft Site Acceptance Test (SAT) Procedure to SAPMT for review by SAPMT, CMU and Proponent(s) no more than 30 days after the FAT and at least 60 days prior to the scheduled SAT. Prepare
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comments spreadsheet. Request Vendor to revise SAT Procedure based on any comments received and re-submit procedure.

Commentary Note:

Review of the SAT Procedure will require at least 15 working days after receipt of the procedure by the Saudi Aramco reviewing organizations.

- w. Transmit final SAT Procedure to SAPMT for distribution to CMU and Proponent(s) at least 30 days prior to the scheduled SAT.
- x. Prepare a construction Quality Assurance/Quality Control (QA/QC) Plan that generally follows Saudi Aramco Contract Schedule Q and SAEP-1150. Transmit final QA/QC Plan to SAPMT for approval by PID.
- y. Construct metering facility in accordance with the applicable Saudi Aramco engineering documents, approved waivers, General Instructions Approved-for Construction (AFC) Drawings and approved QA/QC Plan.
- z. Prepare the Start-Up and Operating Instructions. Submit the Start-Up and Operating Instructions to SAPMT for review by SAPMT and Proponent(s). Revise instructions in accordance with any comments received. Transmit final Start-Up and Operating Instructions to SAPMT for approval by Proponent(s).
- aa. For a liquid metering system, schedule and perform the official calibration by the water draw method in conjunction with a Third Party Inspector. Transmit the prover calibration certificate and calculations to SAPMT for approval by CMU, and MINPET if applicable.
- bb. Schedule and conduct a walk-through with various Saudi Aramco organizations. Compile a list of exception items for the Mechanical Completion Punch List. Submit the list to SAPMT for approval and preparation of the Mechanical Completion Certificate, Form SA 7213-ENG.
- cc. Complete items required for start-up ("yes" items) from Mechanical Completion Punch List. Obtain concurrence from SAPMT and approval from the Proponent(s) and originating individual or organization that each item has been satisfactorily completed.
- dd. For a gas metering system, schedule and conduct non-flowing SAT in accordance with approved SAT Procedure. Include integrated meter system checkout. Submit SAT results to SAPMT for concurrence, and approval by Proponent(s) and CMU.

- ee. Submit Vendor's proposal for on-site training to SAPMT for review by Proponent(s). Request Vendor to revise program in accordance with any comments received. Schedule and conduct training at site for Proponent engineering, operations and maintenance personnel.
- ff. Prepare as-built Start-Up, Operating and Maintenance Manuals in accordance with SAEP-121 and SAEP-122 and transmit the manuals to SAPMT for subsequent distribution to Proponent(s) and CMU. Include technical operating and maintenance documents for all computer systems and equipment.
- gg. Prepare spare parts list for start-up and first Testing and Inspection (T&I). Submit list to SAPMT for review by SAPMT and Proponent(s). Revise list in accordance with any comments received. Transmit final spare parts list to SAPMT for distribution to Proponent(s).
- hh. Procure and store spare parts in accordance with provisions of Operations and Maintenance (O&M) Agreement and the agreed upon spare parts list. Notify SAPMT when all spare parts have been received.
- ii. If applicable, prepare a procedure for the Proponent(s) to request spare parts. Submit procedure to SAPMT for review by the Proponent(s). Revise list in accordance with any comments received. Transmit final procedure to SAPMT for distribution to Proponent(s).
- jj. Following installation and checkout of communications facilities, request SAPMT issue a Partial Mechanical Completion Certificate, SA Form 7213-ENG, for communications portion of the project if applicable.
- kk. Schedule and complete pre-commissioning activities. Include loop checks of the communications to OSPAS and functional tests for all equipment controlled by OSPAS (e.g., remotely-operated emergency isolation valves (ZV's) and/or flow control valves (FCV's)). Obtain concurrence from SAPMT and approval from Proponent(s), CMU, OSPAS, and PID that pre-commissioning has been satisfactorily completed.
- ll. Prepare three sets of as-built "red-line" mark-ups of the Approved-for-Construction (AFC) Drawings, specifications and other engineering documents. Submit drawings, specifications and documents to SAPMT for review by Proponent(s). Revise drawings in accordance with any comments received. Transmit final drawings to SAPMT for distribution to Proponent(s).

- mm. With the Proponent(s), prepare system for commissioning and start-up. Obtain confirmation from SAPMT and CMU that the system is ready for start-up.
- nn. After receipt of the operating order from OSPAS, commission and start-up the system with the Proponent(s) and CMU.

Commentary Note:

Each facility must comply fully with SA standards and field test requirements before they can be officially commissioned.

- oo. For a liquid metering system, schedule and conduct the flowing SAT in accordance with the approved SAT Procedure. Submit SAT results to SAPMT for concurrence and approval by Proponent(s) and CMU.
 - pp. Complete remaining exception items from the Mechanical Completion Punch List and non-flowing or flowing SAT, as applicable. Obtain concurrence from SAPMT and approval from Proponent(s) and the originating individual or organization that each item has been satisfactorily completed.
 - qq. Complete and verify correctness of as-built CADD drawings. Submit drawings to SAPMT for review by SAPMT and Engineering Drawing Services Division. If required, revise drawings based on comments received. Transmit final drawings to SAPMT for distribution to Engineering Drawing Services Division for incorporation into the Saudi Aramco drawing system.
 - rr. Complete project documentation. Compile bound Start-Up and Operating Instructions, Maintenance and Equipment Manuals, Calculation Manuals, As-Built Photostat Books and Inspection and Pre-commissioning Data Books in accordance with SAEP-121 and SAEP-122. Submit project documentation to SAPMT for review by Proponent(s), CMU, Communications operating organization and PDD. Revise documentation in accordance with any comments received. Transmit final documentation to SAPMT for distribution to the various Saudi Aramco organizations.
 - ss. Prepare a list of performance acceptance exception items, the Performance Acceptance Punch List. Submit Performance Acceptance Punch List to SAPMT for concurrence and approval by the Proponent(s).
 - tt. Complete performance acceptance exception items. Obtain concurrence from SAPMT and approval from Proponent(s) that each item has been satisfactorily completed.
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5.2 Aramco Overseas Company BV (AOC)

Aramco Overseas Company BV (AOC)/Inspection Unit is responsible for performing the functions of VID for metering systems manufactured in Europe.

5.3 Aramco Services Company (ASC)

Aramco Services Company (ASC)/Technical Services Department is responsible for performing the functions of VID, and, when requested by CMU, acting on behalf and at the direction of CMU for metering systems manufactured in the United States.

5.4 Computer Engineering & Technical Support Department (CE&TSD)

On projects where data communication or telephones will be connected to the Saudi Aramco communications system, the responsibilities of the Communication Engineering & Technical Support Department are summarized below:

- a. Approve the DBSP.
- b. Upon receipt of a Communications Request, determine availability and condition of existing SA communication system pairs and/or circuits. Assign cable pairs and/or circuits for use by Customer or Supplier.
- c. Review Detail Design Package(s).

Commentary Note:

As many as three design reviews may be required depending upon the scope of the project.

- d. When the communication facilities are complete, cross connect the new project installed pairs to the existing Saudi Aramco communications system in accordance with the approved design and test the complete circuit from OSPAS to the Customer or Supplier facility.

5.5 Consulting Services Department (CSD)

The responsibilities of CSD are summarized below:

- a. Approve the DBSP.

Commentary Note:

CSD review of Third Party Metering Project DBSP's is required as they contain information that is normally included in Project Proposals. Third Party Projects do not have independent Project Proposals.

- b. Approve waivers of Saudi Aramco engineering requirements under CSD jurisdiction in accordance with SAEP-302.
- c. Review Detailed Design Package(s).

Commentary Note:

As many as three design reviews may be required depending upon the scope of the project.

The responsibilities of the CSD Waiver Coordinator are specified in SAEP-302 and are summarized below:

- a. Route all waivers to ID for concurrence and to CSD, IT, LPD or P&CSD, as applicable, for approval.
- b. Distribute approved waivers to Saudi Aramco organizations in accordance with SAEP-302.

5.6 Distribution Technical Support Department (DTSD) and Gas/NGL Planning & Domestic Marketing Department (GNP&DMD)

Distribution Technical Support Department (DTSD) and Gas/NGL Planning & Domestic Marketing Department (GNP&DMD) shall be responsible for the following activities for hydrocarbon liquid metering projects and hydrocarbon gas metering projects, respectively:

- a. Identify possible Third Party Metering Project.
 - b. Approve the project scope and the basis for the Operating and Maintenance (O&M) Agreement.
 - c. Prepare the Supply Agreement. Obtain concurrence from OSPAS and approval from the Customer or Supplier.
 - d. Review the man-hour estimates submitted by SAPMT.
 - e. Initiate Saudi Aramco project(s) if required to provide the necessary capacity.
 - f. Prepare the DBSP Support Agreement. Submit the DBSP Support Agreement to SAPMT for review. Incorporate any comments received into the agreement. Obtain approval of the agreement from the Customer or Supplier.
 - g. Approve the DBSP.
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- h. Prepare the Engineering & Construction (E&C) Agreement. Submit the E&C Agreement to SAPMT for review. Incorporate any comments received into the agreement. Obtain approval of the agreement from the Customer or Supplier.
- i. Prepare the Operating and Maintenance (O&M) Agreement. Obtain approval of the agreement from the Customer or Supplier and Proponent(s).

Commentary Note:

Preparation and approval of the Operations and Maintenance (O&M) Agreement may occur at any time before the Mechanical Completion Certificate, Form SA 7213-ENG, is approved.

- j. Review Detail Design Package(s).
- k. When notified by SAPMT that the system is ready for start-up, request issuance of the operating order from OSPAS.
- l. Close out the project. Advise OSPAS when the project is complete and the allocated feedstock/sales gas deliveries to the Customer or receipts from the Supplier can begin.

5.7 Facilities Planning Department (FPD)

The responsibilities of Facilities Planning Department (FPD) are summarized below:

- a. Confirm that the proposed facilities do not interfere with current or future Saudi Aramco projects.
- b. Review the DBSP when it is prepared by the Customer or Supplier.

If requested by the Customer or Supplier and if acceptable, prepare the DBSP. Submit the DBSP to the Customer or Supplier and other Saudi Aramco organizations for review. Revise DBSP in accordance with any comments received. Submit the DBSP to the various Saudi Aramco organizations, and Customer or Supplier for approval. Forward approved DBSP to SAPMT for distribution.

5.8 Inspection Department (ID)

The Inspection Department (ID) concurs with all waivers of Saudi Aramco engineering requirements in accordance with SAEP-302.

The responsibilities of Inspection Department/Vendor Inspection Division (VID) or its representative(s) are summarized below:

- a. Participate in a kick-off meeting with the Vendor and VID. Approve the Vendor's QA/QC Plan and proposed "hold and inspect" points.
- b. Inspect and approve the fabrication and assembly of the metering system at agreed upon hold points.
- c. For a liquid metering system, witness the calibration of the prover at the Vendor's manufacturing facility.
- d. Provide a list of exception items for the metering system in conjunction with the Factory Acceptance Test (FAT).
- e. Approve the completion of exception items from the FAT.

The responsibilities of Inspection Department/Projects Inspection Division (PID) are summarized below:

- a. Review Detailed Design Package(s).

Commentary Note:

As many as three design reviews may be required depending upon the scope of the project.

- b. Approve the Customer or Supplier Quality Assurance/Quality Control (QA/QC) Plan.

Commentary Note:

As the Customer or Supplier has more than a vested interest in the quality of the facilities, ID/Project Inspection Division's role will be less than on a "normal" SA project. SAPMT will work with the Customer or Supplier to develop an acceptable QA/QC Plan.

- c. Inspect and approve the construction of the metering facility.
 - d. Participate in the walk-through and submit a list of exception items for the Mechanical Completion Punch List.
 - e. If applicable, approve the satisfactory completion of any PID start-up items ("yes items) on the Mechanical Completion Punch List.
 - f. If applicable, concur with the Partial Mechanical Completion Certificate (MCC), Form SA-7213-ENG for the communication facilities.
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- g. Approve the satisfactory completion of pre-commissioning.
- h. Concur with the Mechanical Completion Certificate (MCC), Form SA-7213-ENG.
- i. If applicable, approve the satisfactory completion of any remaining PID items on the Mechanical Completion Punch List.

5.9 Loss Prevention Department (LPD)

The responsibilities of the Loss Prevention Department are summarized below:

- a. Approve the DBSP.
- b. Approve waivers of Saudi Aramco engineering requirements under LPD jurisdiction in accordance with SAEP-302.
- c. Review Detailed Design Package(s).

Commentary Note:

As many as three design reviews may be required depending upon the scope of the project.

- d. Participate in the walk-through and submit a list of exception items for the Mechanical Completion Punch List.
- e. Approve the satisfactory completion of all start-up items ("yes items) on the Mechanical Completion Punch List.
- f. If applicable, concur with the Partial Mechanical Completion Certificate (MCC), Form SA-7213-ENG for the communication facilities.
- g. Approve the satisfactory completion of pre-commissioning.
- h. Concur with the Mechanical Completion Certificate (MCC), Form SA-7213-ENG.

5.10 Oil Supply, Planning and Scheduling Department (OSPAS)

The responsibilities of OSPAS are summarized below:

- a. Provide assistance to DTSD or GNP&DMD during the preparation of the Supply Agreement. Concur with the proposed allocation if applicable.
 - b. Initiate Saudi Aramco projects to provide capacity if required.
 - c. Approve the DBSP.
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- d. Review the Functional Specification Document (FSD).
- e. Review Detailed Design Package(s). On projects that will transmit data to/from OSPAS, agree on inputs, outputs and associated information. Assign OSPAS valve numbers.

Commentary Note:

As many as three design reviews may be required depending upon the scope of the project.

- f. For projects that transmit data to/from OSPAS, install the equipment supplied by the project and build/configure the necessary software to monitor and control the facility.
- g. Participate in the walk-through and submit a list of exception items for the Mechanical Completion Punch List.
- h. If applicable, approve the satisfactory completion of any OSPAS start-up items ("yes" items) on the Mechanical Completion Punch List.
- i. Participate in, and approve the satisfactory completion of, pre-commissioning. Include loop checks of the communications to OSPAS and functional tests for all equipment controlled by OSPAS (e.g., remotely-operated emergency isolation valves (ZV's) and/or flow control valves (FCV's)).
- j. Following receipt of the approved Mechanical Completion Certificate and upon receipt of a request from the DTSD or GNP&DMD, issue an Operating Order (via dispatcher) authorizing start-up of the system.
- k. Approve the results from the Site Acceptance Test (SAT).
- l. If applicable, approve the satisfactory completion of any remaining PID items on the Mechanical Completion Punch List.

5.11 Process & Control Systems Department (P&CSD)

The responsibilities of Process and Control Systems Department (P&CSD) are summarized below:

- a. Approve the DBSP.
- b. Approve any waivers of Saudi Aramco engineering requirements under P&CSD jurisdiction in accordance with SAEP-302.

Process and Control Systems Department/Custody Measurement Unit (CMU) is responsible for providing technical assistance to the Proponent(s), FPD, SAPMT and other organizations. Specific responsibilities of the Custody Measurement Unit are summarized below:

- a. If the project involves a royalty metering system, notify MINPET of the impending project.
- b. Concur with the DBSP.
- c. Approve the Functional Specification Document (FSD). For a royalty metering system, ensure that the FSD meets the requirements of the Ministry of Petroleum and Mineral Resources (MINPET).
- d. Maintain a list of technically acceptable metering system vendors. Provide the list to SAPMT upon request.
- e. Review the purchase order package for the metering system.
- f. Review Detail Design Package(s).

Commentary Note:

As many as three design reviews may be required depending upon the scope of the project.

- g. Review Vendor's draft Factory Acceptance Test (FAT) Procedure and accompanying documentation. For a royalty metering system, submit the draft FAT Procedure to MINPET for review.
 - h. For a royalty metering system, notify MINPET of the FAT schedule, and transmit the final FAT Procedure to MINPET.
 - i. For a liquid metering system or a Major Gas Metering System, attend the FAT. If Saudi Aramco participation in a FAT for a Primary Gas Metering System is deemed prudent, notify Proponent(s) and SAPMT, and attend the FAT. Approve the results and all exception items from any metering system FAT attended.
 - j. For a royalty metering system, transmit the signed FAT report to MINPET.
 - k. Review Vendor's draft Site Acceptance Test (SAT) Procedure.
 - l. For a liquid metering system, witness the official prover calibration and approve the field data. Approve the prover calibration certificate and calculations. For a royalty metering system, obtain MINPET approval of the prover calibration certificate and calculations.
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- m. Transmit approved prover calibration certificate and calculations to SAPMT for distribution to the Customer or Supplier, and Proponent.
- n. Participate in the walk-through and submit a list of exception items for the Mechanical Completion Punch List.
- o. If applicable, approve the satisfactory completion of any CMU start-up items ("yes" items) on the Mechanical Completion Punch List.
- p. For a gas metering system, participate in and approve the results from the non-flowing SAT.
- q. Approve the satisfactory completion of pre-commissioning.
- r. Confirm that the metering system is ready for commissioning and start-up.
- s. Participate in the commissioning and start-up of the metering system.
- t. For a liquid metering system, participate in and approve the results from the flowing SAT. Develop the meter calibration curves. For a royalty metering system, obtain MINPET approval of the meter calibration curves.
- u. Approve the satisfactory completion of any remaining CMU exception items on the Mechanical Completion Punch List and from the SAT.
- v. Review the project documentation.

5.12 Proponent Organization(s)

The responsibilities of the Proponent(s) are summarized below:

- a. Approve the DBSP.
- b. Approve the Operations and Maintenance (O&M) Agreement. Perform agreed tasks therein.

Commentary Note:

Preparation and approval of the Operations and Maintenance (O&M) Agreement may occur at any time before the Mechanical Completion Certificate, Form SA 7213-ENG, is approved.

- c. Concur with any waivers of Saudi Aramco engineering requirements in accordance with SAEP-302.
 - d. Approve the Functional Specification Document (FSD).
 - e. Review Detailed Design Package(s).
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Commentary Note:

As many as three design reviews may be required depending upon the scope of the project.

- f. Approve "key" design drawings.
 - g. Review Vendor's draft Factory Acceptance Test (FAT) Procedure and accompanying documentation.
 - h. For a liquid metering system or a Major Gas Metering System, attend the FAT. When deemed prudent by CMU, attend the FAT for a Primary Gas Metering System. Approve the results and all exception items from any metering system FAT attended.
 - i. Review Vendor's draft Site Acceptance Test (SAT) Procedure.
 - j. Approve the Start-Up and Operating Instructions.
 - k. For a liquid metering system, witness the official prover calibration and concur with the field data.
 - l. Participate in the walk-through and submit a list of exception items for the Mechanical Completion Punch List.
 - m. Approve the satisfactory completion of all start-up items ("yes items) on the Mechanical Completion Punch List.
 - n. For a gas metering system, participate in and approve the results from the non-flowing SAT.
 - o. Review Vendor's proposal for on-site training program. Participate in training at site.
 - p. Review the proposed list of spare parts for start-up and the first Testing and Inspection (T&I).
 - q. When notified by SAPMT, verify all spare parts have been received by Customer or Supplier.
 - r. If applicable, review Customer or Supplier procedure for obtaining spare parts.
 - s. Approve the satisfactory completion of pre-commissioning.
 - t. Review the as-built "red-line" mark-ups of the Approved-for-Construction (AFC) Drawings, specifications and other engineering documents.
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- u. Approve the Mechanical Completion Certificate (MCC), Form SA-7213-ENG.
- v. With the Customer or Supplier, prepare system for commissioning and start-up.
- w. After receipt of the operating order from OSPAS, commission and start-up the system with the Customer or Supplier, and CMU.

Commentary Note:

Each facility must comply fully with SA standards and field test requirements before they can be officially commissioned.

- x. For a liquid metering system, participate in and approve the results from the flowing SAT.
- y. Approve the satisfactory completion of the remaining exceptions items from the Mechanical Completion Punch List and the SAT.
- z. Review the project documentation.
- aa. Submit a list of exception items for the Performance Acceptance Punch List to Customer or Supplier. Approve the final Performance Acceptance Punch List prepared by Customer or Supplier.
- bb. Approve the satisfactory completion of the exception items from the Performance Acceptance Punch List.
- cc. If required, approve Performance Acceptance Certificate (PAC), Form SA 7214-ENG.

5.13 Saudi Aramco Project Management Team (SAPMT)

Commentary Note:

Northern Area Projects Department/Ras Tanura Projects Division/Third Party Projects Unit (NAPD/RTPD/TPPU) normally acts as SAPMT for all third party royalty/custody metering projects

SAPMT acts as the liaison between the Customer or Supplier and other Saudi Aramco organizations during a Third Party Metering Project. Specific responsibilities of SAPMT are summarized below:

- a. Concur with the project scope and the basis for the Operating and Maintenance (O&M) Agreement proposed by the Customer or Supplier. Submit the project scope to DTSD or GNP&DMD, as applicable, for approval.

- b. Initiate the Third Party Metering Project. Prepare the Saudi Aramco manpower estimates for the DBSP Support Agreement, and the Engineering and Construction (E&C) Agreement. Submit estimates to DTSD or GNP&DMD, as applicable, for review. Coordinate the BI assignment, dummy contract number assignment and open the associated accounting files. Notify CMU of impending Third Party Metering Project.
 - c. Review the DBSP Support Agreement.
 - d. If the DBSP is prepared by the Customer or Supplier, circulate the DBSP to various Saudi Aramco organizations for review and comment. Forward any comments received to the Customer or Supplier for incorporation into the DBSP. Circulate the revised DBSP to applicable Saudi Aramco organizations for approval. Approve the DBSP.

If the DBSP is prepared by FPD, approve the DBSP.
 - e. Distribute approved DBSP to Saudi Aramco organizations, and Customer or Supplier.
 - f. Monitor Saudi Aramco project. Track man-hours and costs against the DBSP and/or Engineering and Construction estimates.
 - g. Review the Engineering and Construction (E&C) Agreement.
 - h. Concur with any proposed waivers of Saudi Aramco engineering requirements in accordance with SAEP-302. Submit waiver requests to Proponent for concurrence. Transmit waiver requests to the CSD Waiver Coordinator for final processing.
 - i. Distribute approved waivers to the Customer or Supplier.
 - j. Review the Functional Specification Document (FSD). Submit FSD to OSPAS, Proponent(s) and CMU for review. Forward any comments received to Customer or Supplier for inclusion in the FSD. Concur with the final FSD. Transmit final FSD to Proponent(s) and CMU for approval.
 - k. Distribute approved FSD to Saudi Aramco organizations, and Customer or Supplier.
 - l. Submit Communications Request to CE&TSD.
 - m. Obtain list of technically acceptable metering system vendors from CMU. Transmit vendor list to Customer or Supplier.
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- n. Review purchase order package(s) for metering system and other materials. Submit purchase order package for metering system to CMU for review. Following review by CMU, transmit package(s) and any comments to Customer or Supplier.
 - o. Transmit three copies of the issued purchase order package(s) for the metering system and other materials to VID as appropriate.
 - p. Review Detailed Design Package(s). Submit Detailed Design Package(s) to DTSD or GNP&DMD, (as applicable), Proponent(s), CMU, OSPAS, CE&TSD, PDD, CSD, LPD, and PID for review. Forward any comments received to Customer or Supplier for incorporation into the package(s).
 - q. Concur with "key" drawings. Submit "key" drawings to Proponent(s) for approval. Transmit approved drawings to Customer or Supplier.
 - r. Distribute Approved-for-Construction (AFC) Drawings and specifications.
 - s. Review Vendor's draft Factory Acceptance Test (FAT) Procedure. Submit draft FAT Procedure and accompanying documentation to Proponent(s) and CMU for review, and CMU's submittal to MINPET if required. Forward any comments received to Customer or Supplier for incorporation into the procedure.
 - t. Notify the Proponent(s), CMU and VID of the FAT schedule, and transmit the final FAT Procedure to Proponent(s) and CMU.
 - u. Review the results from the metering system pre-FAT.
 - v. For a liquid metering system or a Major Gas Metering System, attend the FAT. When deemed prudent by CMU, attend the FAT for a Primary Gas Metering System. Concur with the results from any metering system FAT attended.
 - w. Transmit signed FAT report to Proponent(s) and CMU.
 - x. Review Vendor's draft Site Acceptance Test (SAT) Procedure. Submit draft SAT Procedure to Proponent(s) and CMU for review. Forward any comments to Customer or Supplier for incorporation into the procedure.
 - y. Distribute final SAT Procedure to Proponent(s) and CMU.
 - x. Confirm exception items from FAT have been satisfactorily completed.
 - aa. Assist the Customer or Supplier with the development of an acceptable QA/QC Plan. Submit the final QA/QC Plan to PID for approval.
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- bb. Transmit approved QA/QC Plan to Customer or Supplier.
 - cc. Monitor construction of metering facility.
 - dd. Review Start-Up and Operating Instructions. Submit Start-Up and Operating Instructions to Proponent(s) for review. Forward any comments received to Customer or Supplier for incorporation into the document. Transmit final Start-Up and Operating Instructions to Proponent for approval.
 - ee. Transmit approved Start-Up and Operating Instructions to Customer or Supplier.
 - ff. For a liquid metering system, review the prover calibration certificate and calculations. Submit the prover calibration certificate and calculations to CMU for approval.
 - gg. For a liquid metering system, transmit the approved prover calibration certificate and calculations to the Customer or Supplier and Proponent.
 - hh. Participate in the walk-through and submit a list of exception items for the Mechanical Completion Punch List.
 - ii. Approve the satisfactory completion of any SAPMT exception items required for start-up ("yes" items) on the Mechanical Completion Punch List. Obtain approval from the Proponent(s), CMU, OSPAS, PID, and other originating individuals (organizations) that their respective items have been satisfactorily completed.
 - jj. For a gas metering system, participate in and concur with results from the non-flowing SAT.
 - kk. Review Vendor's proposal for on-site training program. Submit proposed training program to Proponent(s) for review. Request Customer or Supplier to have Vendor revise program in accordance with any comments received.
 - ll. Transmit as-built Start-Up, Operating and Maintenance Manuals to Proponent(s) and CMU.
 - mm. Review list of spare parts proposed for start-up and first Testing and Inspection (T&I). Submit spare parts list to Proponent(s) for review. Forward any proposed revisions to the Customer or Supplier for incorporation into the list.
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- nn. When notified by the Customer or Supplier, advise Proponent(s) that all spare parts have been received.
 - oo. If applicable, review Customer or Supplier procedure for the Proponent(s) to request spare parts. Submit the spare parts procedure to the Proponent(s) for review. Forward any comments on the Spare Parts Procedure to the Customer or Supplier for incorporation into the procedure. Transmit final procedure to the Proponent(s).
 - pp. If requested by Customer or Supplier, prepare a Partial Mechanical Completion Certificate, Form SA 7213-ENG, for the communications portion of project. Submit the Partial MCC to the required Saudi Aramco organizations for concurrence and the appropriate Saudi Aramco Communications Operating Organization for approval.
 - qq. If prepared, distribute approved Partial Mechanical Completion Certificate for communications portion of project.
 - rr. Concur that all pre-commissioning activities have been satisfactorily completed.
 - ss. Review the as-built "red-line" mark-ups of the Approved-for-Construction Drawings, specifications and other engineering documents. Submit drawings, specifications and documents to Proponent(s) for review. Forward any comments to Customer or Supplier for incorporation into the drawings, specifications and documents.
 - tt. Prepare Mechanical Completion Certificate (MCC), Form SA 7213-ENG. Circulate MCC to required Saudi Aramco organizations for concurrence and the Proponent(s) for approval.
 - uu. Distribute approved Mechanical Completion Certificate (MCC) to various Saudi Aramco organizations and Customer or Supplier.
 - vv. Monitor preparations for system commissioning and start-up.
 - ww. Notify DTSD or GNP&DMD, as applicable, when the system is ready for start-up
 - xx. For a liquid metering system, concur with results from the flowing SAT. Obtain approvals of the SAT results from the Proponent(s), OSPAS and CMU.
 - yy. Approve the satisfactory completion of any remaining SAPMT items from Mechanical Completion Punch List and Site Acceptance Test (SAT). Obtain approval from Proponent(s), CMU, OSPAS, PID, and other
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originating individuals (organizations) that their respective items have been satisfactorily completed.

- zz. Assist Customer or Supplier with preparation of as-built CADD drawings. When complete, review the as-built drawings for completeness and accuracy. Transmit the final drawings to Engineering Drafting Services Division for incorporation into the Saudi Aramco drawing system and advise the Proponent of the submission.
- aaa. Review project documentation for completeness and correctness. Submit documentation to Proponent(s), CMU, Communications operating organization, and PDD for review. Transmit any comments received to Customer or Supplier. If the documentation is revised, transmit the revised documentation to Proponent(s), CMU, Communications operating organization and PDD Department as applicable.
- bbb. Concur with the final Performance Acceptance Punch List
- ccc. Concur that the exception items from Performance Acceptance Punch List have been satisfactorily completed. Obtain approval from the Proponent(s) that the exception items have been satisfactorily completed.
- ddd. When required, prepare Performance Acceptance Certificate (PAC), Form SA 7214-ENG. Circulate PAC for approval by Proponent(s).
- eee. Distribute approved PAC.
- fff. Inform DTSD or GNP&DMD that project is complete. Receive and consolidate charges from all involved organizations. Close out the project.

5.14 Other Organizations

The responsibilities of other service Saudi Aramco organizations (not specifically mentioned herein support of metering projects) are generally consistent with normal project support requirements.

6 Project Activity Matrix

The following matrix summarizes the general sequence of activities and corresponding responsible organizations for a Third Party Metering Project. Detailed requirements for each organization are specified in Section 5.

Step	Activity/Work Item	Perform	Review	Concur	Approve
1.	Identification of possible Third-Party Metering Project	Customer or Supplier, DTSD or GNP & DMD			
2.	Definition of project scope	Customer or Supplier		SAPMT	DTSD or GNP & DMD
3.	Preparation of Supply Agreement	DTSD or GNP & DMD		OSPAS	Customer or Supplier
4.	Initiation of Third Party Metering Project	SAPMT	DTSD or GNP&DMD		
5.	Initiation of a Saudi Aramco Project (if required)	DTSD or GNP & DMD, OSPAS			
6.	Notification to MINPET (if applicable) (Note 1)	CMU			
7.	Preparation of DBSP Support Agreement	DTSD or GNP & DMD	SAPMT		Customer or Supplier
8.	Preparation of DBSP	Customer or Supplier, or FPD (as applicable) (Note 2)	FPD (if applicable), Other SA organizations (Note 2)	CMU	DTSD or GNP & DMD, Proponent(s), P&CSD, CSD, OSPAS; SAPMT, CE&TSD, LPD, Customer or Supplier (if applicable) (Note 2)
9.	Distribution of approved DBSP	SAPMT			
10.	Monitor Saudi Aramco Project	SAPMT			
11.	Preparation of Engineering & Construction (E&C) Agreement	DTSD or GNP & DMD	SAPMT		Customer or Supplier
12.	Preparation of Operations & Maintenance (O&M) Agreement (Note 3)	DTSD or GNP & DMD			Customer or Supplier, Proponent(s)

Step	Activity/Work Item	Perform	Review	Concur	Approve
13.	Waiver(s) of SA engineering requirements	Customer or Supplier, CSD Waiver Coordinator		Proponent(s), SAPMT, ID	CSD, IT, LPD, P&CSD, as applicable
14.	Distribution of approved Waiver(s)	CSD Waiver Coordinator, SAPMT			
15.	Preparation of Functional Specification Document (FSD)	Customer or Supplier	OSPAS	SAPMT	Proponent(s), CMU
16.	Distribution of approved Functional Specification	SAPMT			
17.	Request for communications	SAPMT	CE&TSD		
18.	List of technically acceptable metering system vendors	CMU, SAPMT			
19.	Preparation of the purchase order package(s) for the metering system and other materials	Customer or Supplier	SAPMT, CMU		
20.	Purchase metering system and other materials	Customer or Supplier			
21.	Distribution of issued purchase order package(s) for metering system and other materials	Customer or Supplier, SAPMT			
22.	Vendor Kick-Off Meeting/Vendor's QA/QC Plan	Vendor, Customer or Supplier			VID
23.	Fabrication and assembly of the metering system	Vendor			VID
24.	Preparation of Detail Design Package(s)	Customer or Supplier	DTSD or GNP & DMD, Proponent(s), CMU, SAPMT, OSPAS, CE&TSD, PDD, CSD, LPD, PID		
25.	Approval of "key" drawings	Customer or Supplier		SAPMT	Proponent(s)
26.	Distribution of Approved-for-Construction (AFC) Drawings and specifications	Customer or Supplier, SAPMT			

Step	Activity/Work Item	Perform	Review	Concur	Approve
27.	Preparation of Vendor's FAT Procedure	Vendor, Customer or Supplier	SAPMT, Proponent(s), CMU, MINPET (Note 1)		
28.	Notification of FAT schedule/Distribution of final FAT Procedure	Vendor, Customer or Supplier, SAPMT, CMU (if required for MINPET) (Note 1)			
29.	Metering system Pre-FAT	Vendor	SAPMT		Customer or Supplier
30.	Factory prover calibration (Note 4)	Vendor, Third Party Inspector			VID
31.	Metering system FAT	Vendor	VID	SAPMT (Note 6)	Customer or Supplier, Proponent(s), CMU, MINPET (Notes 1 & 6)
32.	Distribution of signed FAT report	Vendor, Customer or Supplier, SAPMT, CMU (if required for MINPET) (Note 1)			
33.	Preparation of Vendor's SAT Procedure	Vendor, Customer or Supplier	SAPMT, Proponent(s), CMU		
34.	Distribution final SAT Procedure	Vendor, Customer or Supplier, SAPMT			
35.	Completion of FAT exception items	Vendor	SAPMT		VID
36.	Shipment of metering system	Vendor			
37.	Preparation of Construction Quality Assurance/Quality Control (QA/QC) Plan	Customer or Supplier	SAPMT		PID
38.	Distribution of approved QA/QC Plan	SAPMT			
39.	Construction of metering facility	Customer or Supplier, OSPAS (if required)	SAPMT		PID

Step	Activity/Work Item	Perform	Review	Concur	Approve
40.	Preparation of Start-up & Operating Instructions	Customer or Supplier	SAPMT		Proponent(s)
41.	Distribution of approved Start-Up and Operating Instructions	SAPMT			
42.	Official prover calibration (Note 4)	Customer or Supplier, Third Party Inspector	SAPMT	Proponent(s)	CMU, MINPET (Note 1)
43.	Distribution of approved prover calibration certificate and calculations	CMU, SAPMT			
44.	Walk-through and preparation of Mechanical Completion Punch List	Customer or Supplier, Proponent(s), CMU, SAPMT, OSPAS, PID, LPD, Communication Operations			
45.	Completion of start-up exceptions items ("yes" items) on the Mechanical Completion Punch List	Customer or Supplier			Proponent(s), CMU, SAPMT, OSPAS, PID, LPD, Other individuals (organizations) that initiated the respective items
46.	Non-flowing SAT (Note 5)	Vendor, Customer or Supplier		SAPMT	Proponent(s), CMU
47.	Formal training at site	Vendor, Customer or Supplier	SAPMT, Proponent(s)		
48.	Distribution of as-built Start-Up, Operating & Maintenance Manuals	Customer or Supplier, SAPMT			
49.	Preparation of spare parts list for start-up and first T&I	Customer or Supplier	SAPMT, Proponent(s)		
50.	Procurement and storage of spare parts (if applicable)	Vendor, Customer or Supplier	SAPMT, Proponent(s)		
51.	Preparation of Spare Parts Procedure (if applicable)	Customer or Supplier	SAPMT, Proponent(s)		

Step	Activity/Work Item	Perform	Review	Concur	Approve
52.	Connection of communications facilities	CE&TSD			
53.	Preparation of Partial MCC for communications (if applicable)	Customer or Supplier, SAPMT		LPD, PID, Required signatories	Communications Operating Organization
54.	Distribution of Partial MCC (if applicable)	SAPMT			
55.	Pre-commissioning	Vendor, Customer or Supplier, OSPAS		SAPMT	Proponent(s), CMU, OSPAS, LPD, PID
56.	Preparation of as-built "red-line" mark-ups of Approved-for-Construction (AFC) Drawings and specifications	Customer or Supplier	SAPMT, Proponent(s)		
57.	Preparation of Mechanical Completion Certificate (MCC)	SAPMT		LPD, PID, Other Required Signatories	Proponent(s)
58.	Distribution of Mechanical Completion Certificate (MCC)	SAPMT			
59.	Preparation of system for commissioning and start-up	Customer or Supplier, Proponent(s)	SAPMT, CMU		
60.	Issuance of Operating Order	SAPMT, DTSD or GNP & DMD			OSPAS
61.	Commission and start-up system	Customer or Supplier, Proponent(s), CMU			
62.	Flowing SAT (Note 4)	Vendor, Customer or Supplier		SAPMT	Proponent(s), CMU, OSPAS, MINPET (Note 1)
63.	Completion of remaining items from Mechanical Completion Punch List and SAT	Customer or Supplier			Proponent(s), CMU, SAPMT, OSPAS, PID, Other individuals (organizations) that initiated the respective items
64.	Preparation of as-built drawings	Customer or Supplier	SAPMT, EDSD		

Step	Activity/Work Item	Perform	Review	Concur	Approve
65.	Preparation of project documentation	Vendor, Customer or Supplier	SAPMT, Proponent(s), CMU, Communications Operating Organization, PDD		
66.	Preparation of Performance Acceptance Punch List	Customer or Supplier, Proponent(s)		SAPMT	Proponent(s)
67.	Completion of items from Performance Acceptance Punch List	Customer or Supplier		SAPMT	Proponent(s)
68.	Preparation of Performance Acceptance Certificate (PAC) (when required)	SAPMT			Proponent(s)
69.	Distribution of approved Performance Acceptance Certificate (when required)	SAPMT			
70.	Close-out of project	SAPMT, DTSD or GNP & DMD			

NOTES:

1. MINPET involvement is only required for a royalty metering system.
2. Normally, the Customer or Supplier prepares the DBSP and FPD reviews the DBSP. When requested by the Customer or Supplier and if acceptable, FPD may prepare the DBSP in which case the Customer or Supplier approves the DBSP.
3. Preparation and approval of the Operating and Maintenance (O&M) Agreement may occur at any time before the Mechanical Completion Certificate (MCC), Form SA 7213-ENG, is approved.
4. Required for liquid metering systems only.
5. Required for gas metering systems only.
6. SAPMT, Proponent(s) and CMU participation is required for each liquid metering system and Major Gas Metering System. CMU shall determine when participation is required for a Primary Gas Metering System. Participation by SAPMT, Proponent(s) and CMU is not required for a Secondary Gas Metering System.

30 July, 2003 **Revision Summary**
Major revision.