
 PETROBRAS E&P	TECHNICAL SPECIFICATION		Nº. I-ET-3010.2Q-1200-919-P4X-001				
	CLIENT: AGP		SHEET: 1 of 13				
	JOB: BASIC PROJECT - REVIT I						
	AREA: MLL/MLS						
TITLE: REQUIREMENTS FOR TRAINING CONTENT AND PROGRAM				UN-BC			
				INTERNAL			
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	TECHNICAL SPECIFICATION	Nº. I-ET-3010.2Q-1200-919-P4X-001	REV.: A
	AGP		SHEET: 3 of 13
	TITLE: REQUIREMENTS FOR TRAINING CONTENT AND PROGRAM	UN-BC	
		INTERNAL	

1. INTRODUCTION

1.1

This technical specification describes minimum requirements comprising BUYER's teams training on all FPSO's Operational Systems (SOP) subject of this contract.

1.2

This technical specification complements what is referred or required in other Exhibits of Contract, as EXHIBIT I SCOPE OF SUPPLY, EXHIBIT V DIRECTIVES FOR PROCUREMENT, EXHIBIT VIII DIRECTIVES FOR COMMISSIONING.

2. REFERENCE DOCUMENTS

EXHIBIT I SCOPE OF SUPPLY

EXHIBIT V DIRECTIVES FOR PROCUREMENT

EXHIBIT VIII DIRECTIVES FOR COMMISSIONING

3. SCOPE OF SUPPLY

3.1.

SELLER shall provide to BUYER's operational and maintenance teams training comprising all FPSO's Operational Systems (SOP) subject of this contract.

3.2.

SELLER shall forward this technical specification for all equipment/packages and system suppliers in order to give them knowledge of all requirements related to training associated to their scope of supply.

3.3.

All training related costs shall be included in the Lump price.

4. TRAINING CONTENT, PROGRAM AND SCHEDULE

4.1.

The training program shall cover all topics related to Operation and Maintenance subject of each operating system. Minimum hours of training listed in Item 10- Annex I of this I-ET-3010.2C.1200-919-P4X-0011 - REQUIREMENTS FOR TRAINING CONTENT AND PROGRAM shall be complied.

4.2.

The training program content and its minimum hours may also be adjusted by BUYER, through comments on Commissioning Management Plan (Package 2) phase as stated on Exhibit VIII – Directives for Commissioning, based on the specific features of each equipment/system.

4.3.


BUYER may adjust and confirm to SELLER, along the procurement phase through comments on Procurement Plan, the list of equipment/systems to be included in the training program.


4.4.


SELLER shall integrate the training program and content for each operating system, considering all supplied equipment packages, outside vendors packages process plant and loose items, e.g. instruments, PLCs or any other device included into the system considered necessary, according to complexity and performance criticality.

4.5.

The following content shall be included into Training Program for all associated equipment/package disciplines (process, mechanical, electrical, piping, instrumentation, automation and control):

 PETROBRAS	TECHNICAL SPECIFICATION	Nº. I-ET-3010.2Q-1200-919-P4X-001	REV.: A
	AGP		SHEET: 4 of 13
	TITLE: REQUIREMENTS FOR TRAINING CONTENT AND PROGRAM	UN-BC	
		INTERNAL	
<ul style="list-style-type: none">• General and detailed functional equipment and system description, features and lay-out presentation;• System/ Equipment start-up procedures and cautions;• Main Operational parameters to be monitored,• Cause & effect matrix alarms and trips;• Emergency and normal shut-down procedures and cautions;• Operational routines and checking, troubleshooting, and maintenances;• Preventive maintenance activities schedule, procedures, applicable consumables, tools and cautions;• Corrective maintenance assembly and dismantle procedures, torques, adjustments and gaps, applicable consumables, tools and cautions;• Recommended and complete spare parts and consumables list presentation. <p>4.6. All training programs for all operating systems shall be detailed for theoretical and practical classes.</p> <p>4.7. Each raining program shall be submitted to BUYER, together with Commissioning Management Plan (Package 2) phase, for content verifications, comments and final approval.</p> <p>4.8. Special attention shall be paid by SELLER to specific electric, automation and/or control devices inside or outside vendors packages that shall be covered into training program content.</p> <p>4.9. For training requirements related to Automation and Instrumentation SOPs, refer to the I-MD-3010.2D-1200-800-P4X-002 - AUTOMATION AND CONTROL SYSTEM - SCOPE DEFINITION and I-ET-3010.2D-1200-800-P4X-005 – FIELD INSTRUMENTATION.</p> <p>4.10. For any SOP that includes a PACKAGE Automation System, additional hours shall be added to the minimum training hours stated in ANNEX I. For training details related to Automation of PACKAGES refer their respective technical specifications and I-MD-3010.2D-1200-800-P4X-002 - AUTOMATION AND CONTROL SYSTEM - SCOPE DEFINITION.</p> <p>4.11. SELLER shall forward to BUYER a complete and updated set with all electronic files that is subject of all operational systems and vendors training presentation files 7 (seven) days before its respective training day. All media presented during the training sessions (photos, videos, presentations) shall be delivered to BUYER.</p> <p>4.12. SELLER shall provide approved training program and didactic material in HD, pen drive, SD or other electronic storage media. Regardless of the files format, a PDF copy of these files shall also be delivered.</p> <p>4.12.1. SCORM (Sharable Content Object Reference Model) based training can be considered as an alternative didactic material.</p> <p>4.13. All training sessions shall be recorded by SELLER and provided in electronic video file to BUYER.</p> <p>4.14. SELLER shall present to BUYER to comment and approve the training program schedule for all systems, together with Commissioning Management Plan (Package 2) phase, in order to allow BUYER Teams schedule planning. a. Training program schedule shall be conceived in a way to avoid training’s superpositions. When it is not possible, training superpositions shall be presented to BUYER for approval.</p> <p>4.15. Doubts and additional explanations shall be cleared out along theoretical class.</p> <p>4.16. All training programs for all operating systems shall present how Human Factors influence human performance during the operation and maintenance of the systems as presented in IOGP 454 and SGSO Regulation. Human Factors shall include, at a minimum, technological factors, environmental factors and individual factors that affect</p>			

 PETROBRAS	TECHNICAL SPECIFICATION	Nº. I-ET-3010.2Q-1200-919-P4X-001	REV.: A
	AGP		SHEET: 5 of 13
	TITLE: REQUIREMENTS FOR TRAINING CONTENT AND PROGRAM		UN-BC
			INTERNAL
<p>human interaction with equipment, systems, processes and other individuals or work teams focusing on mitigating operational failures and the possibility of accidents.</p> <p>4.17. All system training completion shall take place according to “phase for training” presented on Annex I of this technical specification.</p> <p>5. KNOWLEDGE MANAGEMENT</p> <p>5.1. Based on SELLER training content, BUYER may develop internal content targeted to internal workforce (new operators, maintainers, engineers, etc).</p> <p>5.2. SELLER herein explicitly authorizes BUYER to use all educational materials (presentations, photos, videos, etc.) to create internal courses.</p> <p>6. TRAINING PLACE</p> <p>6.1. System training shall be applied at the SELLER’s integration job site and/or aboard the UNIT.</p> <p>6.2. If the SELLER identifies that some specific training is not possible to be performed in the integration site or aboard the unit or will be necessary a more complex infrastructure to perform it, the SELLER shall indicate this fact to the BUYER when presenting the training program in the Commissioning Management Plan. The SELLER shall explain why it is not possible to perform the training in the integration site, the benefits to the BUYER of changing the training site and the new proposed site. The BUYER will evaluate this information to accept or decline the SELLER’s proposal.</p> <p>6.3. Training shall take place in theoretical and practice.</p> <p>6.4. Theoretical content shall be presented in classroom with all necessary resources, as example, but not only, in air conditioning room, sufficient desks chairs for attendees, and data-show for complementary presentations. Complementary issues and raised doubts shall be discussed and cleared out in classroom.</p> <p>6.5. Practice content shall be presented in the FPSO systems area/plant or also into the shipyard or FPSO workshops, as applicable and necessary. Raised doubts shall be cleared out along the training session.</p> <p>7. INSTRUCTOR KNOWLEDGE AND SKILLS</p> <p>7.1. SELLER and respective vendors and sub-vendors instructors shall have necessary skills and experience with corresponding system/equipments/package, as well with training activity and shall also provide all required documentation and materials to carry out the training program (including "As-Built"/last revision issued documentation, maintenance and operating manuals, brochures, catalogues, presentations, video record medias, software applications, etc).</p> <p>7.2. All necessary electronic data shall be available for data show presentation in classroom.</p> <p>7.3. Sellers, vendors and sub-vendor instructors shall have extensive knowledge of operation and maintenance subject and all equipment and system scope of supply.</p>			


 PETROBRAS	TECHNICAL SPECIFICATION	Nº. I-ET-3010.2Q-1200-919-P4X-001	REV.: A
	AGP		SHEET: 6 of 13
	TITLE: REQUIREMENTS FOR TRAINING CONTENT AND PROGRAM		UN-BC
			INTERNAL
8. TRAINING CLASS GROUPS			
<p>8.1. For each Operational System (SOP) subject of the contract, SELLER shall prepare training classes groups to attend thirty (30) BUYER’s attendees. As training classes shall cover maintenance and operation aspects. If necessary, SELLER shall segregate the training in two (2) different groups – one for maintenance and other for operation team, each of them with thirty attendees.</p> <p>8.2. BUYER could transmit the training session online to a remote classroom. SELLER shall provide an 100Mbps internet wireless link at the training classroom.</p> <p>8.3. Attendees shall be awarded with training vendors certificates, upon completion of the course. Certificates shall be handed over to BUYER representative, not to attendees.</p> <p>8.4. Training shall be performed in Brazilian Portuguese language or in English with translation.</p>			
9. TRAINING EXAMS RECORD			
<p>9.1. SELLER, Vendors and sub-vendors shall provide a comprehensive list of questions to be applied as an exam for training attendees. It is expected a list with, at least, twenty questions. This list of questions shall cover extensive aspects that show the attendee got sufficient knowledge about equipment and systems features, procedures and care. This list shall be handed over to BUYER representative with corresponding answers to be used as exam. BUYER may request the training instructor to apply such exam and evaluate the answers.</p> <p>9.2. Buyer may additionally record the practical training sessions and shall have the right to use all materials for future BUYER internal trainings.</p>			


10. ANNEX I


10.1. Operation and maintenance training systems list Note:


- Minimum total training hours is based in 8 training hours per day.


N-1710 CODE	SYSTEM		MINIMUM TOTAL TRAINING HOURS	PHASE FOR TRAINING
1210	Well	HYDRAULIC POWER UNIT FOR SUBSEA SYSTEMS CONTROL PANEL	40	Before TAP-1
		HYDRAULIC POWER UNIT FOR SUBSEA SYSTEMS		
		SATELLITE PRODUCTION WELLS PIG RECEIVER		
		PWAGFLEX WELL PIG RECEIVER		
		WAG-LOOP WELL PIG RECEIVER		
		WAG-LOOP WELLS PIG RECEIVER HIGH FLOW		
1212	Oil and Gas Transfer and Metering Station	COMPACT PROVER OF FISCAL METERING SKID	40	Before TAP-1
		FISCAL METERING SKID		
1223	Petroleum Processing (Mobile Units or Platforms)	GAS CHROMATOGRAPH FIELD PANEL	32	Before TAP-1
		SETTLING TANKS		
		PRE-OIL DEHYDRATOR TRANSFORMER		
		OIL DEHYDRATOR TRANSFORMER		
		PRE-OIL DEHYDRATOR		
		OIL DEHYDRATOR		
1225	Petroleum Vapor Recovery	CLEAN IN PLACE UNIT	24	Before TAP-1
		VAPOR RECOVERY UNIT CONTROL PANEL - CONTROLLER PANEL		
		VAPOR RECOVERY UNIT CONTROL PANEL - REMOTE TERMINAL UNIT		
		VAPOR RECOVERY UNIT - CCR WORKSTATION		
		HEATER PANEL OF SEAL FOR VAPOR RECOVERY UNIT		
		VAPOR RECOVERY UNIT		
1231	Processing and Handling Unit (Compression, Distribution, etc)	MAIN GAS COMPRESSION UNIT - CONTROLLER PANEL	40	Before TAP-1
		MAIN GAS COMPRESSION UNIT - REMOTE TERMINAL UNIT		
		MAIN GAS COMPRESSION UNIT - CCR WORKSTATION		
		GAS BOOSTER/ EXPORT COMPRESSION UNIT - CONTROLLER PANEL		
		GAS BOOSTER/ EXPORT COMPRESSION UNIT - REMOTE TERMINAL UNIT		
		EXPORTATION GAS COMPRESSION UNIT - CCR WORKSTATION		
		GAS EXPORT/IMPORT FISCAL METERING SKID		
		HEATER PANEL OF SEAL FOR MAIN GAS COMPRESSOR		
		HEATER PANEL OF SEAL FOR EXPORTATION GAS COMPRESSOR		
		MAIN COMPRESSION SUCTION COOLER		
		MAIN COMPRESSION DISCHARGE COOLER		
		GAS BOOSTER/EXPORT COMPRESSION 1ST STAGE DISCHARGE COOLER		
		GAS BOOSTER/EXPORT COMPRESSION 2ND STAGE DISCHARGE COOLER		
		MAIN COMPRESSION UNIT		
		GAS BOOSTER/EXPORT COMPRESSION UNIT		


 PETROBRAS	TECHNICAL SPECIFICATION		Nº. I-ET-3010.2Q-1200-919-P4X-001	REV.: A
	AGP			SHEET: 8 of 13
	TITLE: REQUIREMENTS FOR TRAINING CONTENT AND PROGRAM			UN-BC
				INTERNAL
1233	Dehydration Unit	MOLECULAR SIEVE REGENERATION GAS COMPRESSION UNIT MOLECULAR SIEVE UNIT CONTROL PANEL MOLECULAR SIEVE UNIT REMOTE PANEL MOLECULAR SIEVE REGENERATION GAS HEATER RESISTOR PANEL 690V MOLECULAR SIEVE REGENERATION GAS PRE-HEATER MOLECULAR SIEVE REGENERATION GAS HEATER MOLECULAR SIEVE REGENERATION GAS COMPRESSION UNIT MOLECULAR SIEVE UNIT	32	Before TAP-1
1235	CO2 Recovery Unit	TOXIC GAS ANALYZER FIELD PANEL GAS CHROMATOGRAPH FIELD PANEL CO2 REMOVAL UNIT CONTROL PANEL CO2 REMOVAL UNIT REMOTE PANEL CO2 REMOVAL UNIT	32	Before TAP-1
1238	Natural Gas Cooling Unit	GAS CHROMATOGRAPH FIELD PANEL COALESCER FILTER COMPRESSOR SKID HYDROCARBON DEW POINT CONTROL SYSTEM	20	Before TAP-1
1244	Gas Lift System	SATELLITE PRODUCTION WELL PIG LAUNCHER	4	Before TAP-1
1251	Water Injection System	MAIN INJECTION WATER PUMP CONTROL PANEL ULTRAFILTRATION UNIT CONTROL PANEL SULPHATE REMOVAL UNIT CONTROL PANEL UV STERILIZER UNIT CONTROL PANEL VACUUM SYSTEM CONTROL PANEL SRU CIP TANK HEATER INJECTION WATER BOOSTER PUMP INJECTION WATER MAIN PUMP SEAWATER BOOSTER PUMP SRU CIP PUMP SRU BIOCIDES METERING PUMP SRU ANTISCALANT METERING PUMP SRU SBS METERING PUMP SRU FEED BOOSTER PUMP VACUUM SYSTEM PUMP VACUUM DEAERATOR COLUMN VACCUM SYSTEM EJECTOR INJECTION WATER COARSE FILTER INJECTION WATER FINE FILTER SRU CIP FILTER SULPHATE REMOVAL UNIT VACUUM DEAERATOR UNIT	80	Before TAP-1
1261	Chemical Injection in Oil or Gas	OIL AND GAS CHEMICAL INJECTION UNIT	8	Before TAP-1
1262	Chemical Injection in Oily Waters	PRODUCED WATER CHEMICAL INJECTION UNIT	8	Before TAP-1
1263	Chemical Injection in Injection or Intake Water	INJECTION WATER CHEMICAL INJECTION UNIT	8	Before TAP-1
1350	Unit And/Or Storage (Fpso Or Fso Type)	CARGO PUMP ACCOMMODATION SANITARY GALLEY EQUIPMENT LAUNDRY EQUIPMENT	32 16 16 8	Before TAP-1
1351	Hull	IMPRESSED CURRENT CATHODIC PROTECTION RECTIFIER	8	Before TAP-1

 PETROBRAS	TECHNICAL SPECIFICATION		Nº. I-ET-3010.2Q-1200-919-P4X-001	REV.: A
	AGP			SHEET: 9 of 13
	TITLE: REQUIREMENTS FOR TRAINING CONTENT AND PROGRAM			UN-BC
				INTERNAL
1357	Mooring System (Anchoring)	MOORING FAIRLEAD	16	Offshore - before mooring operations, during sail away to final location
1358	Cargo Tanks and Empty Spaces (Voids and Cofferdams) and HC Blankt operation.	REMOTE ULLAGE. PRESSURE AND TEMPERATURE MONITORING PANEL REMOTE ULLAGE. PRESSURE AND TEMPERATURE MONITORING WORKSTATION STABILITY AND LOAD CALCULATION WORKSTATION HIGH LEVEL OVERFILL SYSTEM PANEL HIGH LEVEL OVERFILL ALARM VIEWER PANEL SLOP OIL SKIMMING PUMP HYDRAULIC PUMP MOTOR	40	Before TAP-1
1359	Offloading System	OFFLOADING HOSE REEL (AFT) CONTROL PANEL HAWSER REEL (AFT) CONTROL PANEL OFFLOADING HOSE REEL (FWD) CONTROL PANEL HAWSER REEL (FWD) CONTROL PANEL OFFLOADING HYDRAULIC POWER UNIT CONTROL PANEL COMPACT PROVER OF OFFLOADING TRANSFER METERING SKID OFFLOADING TRANSFER METERING SKID Offloading Hydraulic Power Unit OFFLOADING HOSE REEL (AFT) HAWSER REEL (AFT) AUXILIARY WINCH FOR HOSE MESSENGER / HAWSER MESSENGER (AFT) EMERGENCY OFFLOADING STATION/WINCH (AFT) OFFLOADING HOSE REEL (FWD) HAWSER REEL (FWD) AUXILIARY WINCH FOR HOSE MESSENGER / HAWSER MESSENGER (FWD) EMERGENCY OFFLOADING STATION/WINCH (FWD) OFFLOADING HYDRAULIC POWER UNIT OFFLOADING SYSTEM (AFT) QUICK RELEASE MOORING HOOK (QRMH) (FWD) HOSE REEL SPOOLING DEVICE (FWD) OFFLOADING SYSTEM (FWD) QUICK RELEASE MOORING HOOK (QRMH) (AFT) HOSE REEL SPOOLING DEVICE (AFT)	40	Before TAP-1
5100	Utilities	DIESEL OIL AND FRESH WATER HOSE REELS CONTROL PANEL DIESEL OIL AND FRESH WATER HOSE REELS	16	Before TAP-1
5111	Salt Water Intake	SEA WATER LIFT PUMP CONTROL PANEL START-UP SEA WATER LIFT PUMP CONTROL PANEL ENGINE ROOM COOLING SEAWATER PUMP ENGINE ROOM COOLING SEA WATER PUMP FILTER SEA WATER LIFT PUMP START-UP SEA WATER LIFT PUMP SEA WATER LIFT FILTER	48	Before TAP-1

 PETROBRAS	TECHNICAL SPECIFICATION		Nº. I-ET-3010.2Q-1200-919-P4X-001	REV.: A
	AGP			SHEET: 10 of 13
	TITLE: REQUIREMENTS FOR TRAINING CONTENT AND PROGRAM			UN-BC
				INTERNAL
5121	Water Treatment Unit	START-UP SEA WATER LIFT FILTER		
		POTABLE WATER MAKER	16	Before
		ULTRAVIOLET STERILIZER UNIT		TAP-1
5122	Water Desalination Unit	SEA WATER ELECTROCHLORINATION UNIT		
		FRESH WATER MAKER	16	Before
		FRESH WATER MAKER FOR OIL DILUTION		TAP-1
5124	Water Cooling Unit (Cooling Towers)	FRESH WATER CHLORINATION UNIT		
		COOLING WATER CIRCULATION PUMP - CLASSIFIED AREA	24	Before
		COOLING WATER CIRCULATION PUMP - NON CLASSIFIED AREA		TAP-1
5125	Water Heating Unit	START-UP COOLING WATER PUMP - NON CLASSIFIED AREA		
		COOLING WATER FILTER - CLASSIFIED AREA		
		PLATE HEAT EXCHANGER COOLING WATER - CLASSIFIED AREA		
5133	Central Liquid Fuel Station	PLATE HEAT EXCHANGER COOLING WATER - NON CLASSIFIED AREA		
		HOT WATER CIRCULATION PUMP	24	Before
		UTILITY HOT WATER CIRCULATION PUMP		TAP-1
5134	Compressed Air Station	HOT WATER DUMP COOLER PUMP		
		WELL SERVICE PUMP	24	Before
		DIESEL OIL PURIFIER	16	TAP-1
5138	Starting Air Station	LOW CAPACITY WELL SERVICE PUMP		
		LEAK TEST PUMP		
		DIESEL OIL SERVICE PUMP		
5139	Hydraulic Station	WELL SERVICE DIESEL TRANSFER PUMP		
		AIR DRYING UNIT	32	Before
		INSTRUMENT / SERVICE AIR COMPRESSION UNIT		TAP-1
5140	Electric Energy System	START-UP AIR COMPRESSOR	8	Before
		HYDRAULIC CONTROL RACK - M09	40	Before
		HPU FOR TOPSIDES VALVES - M09	(topside)	TAP-1
		ENGINE ROOM	40 (hull)	
		SOLENOID VALVE RACK		
		MAIN DECK CARGO AREA		
		SOLENOIDS BOX		
		MAIN DECK AFT AREA		
		SOLENOIDS BOX		
		HYDRAULIC VALVES REMOCON UNIT (HULL SYSTEMS)		
		HYDRAULIC POWER UNIT FOR SUBMERGED PUMPS		
		AUXILIARY HYDRAULIC UNIT FOR SUBMERGED PUMPS		
		HYDRAULIC OIL TRANSFER UNIT FOR SUBMERGED PUMPS		
		HYDRAULIC POWER UNIT FOR MOORING SYSTEM		
		POWER MANAGEMENT SYSTEM (PMS)	80	Before
		TOPSIDE ELECTRICAL SYSTEM AUTOMATION PANEL		TAP-1
		TOPSIDE ELECTRICAL SYSTEM AUTOMATION SWITCHES PANEL		
		HULL ELECTRICAL SYSTEM AUTOMATION PANEL		
		HULL ELECTRICAL SYSTEM AUTOMATION SWITCHES PANEL		
		TOPSIDE ELECTRICAL SYSTEM AUTOMATION OPERATIONAL WORKSTATION		
		TOPSIDE ELECTRICAL SYSTEM AUTOMATION MAINTENANCE WORKSTATION		

 PETROBRAS	TECHNICAL SPECIFICATION		Nº. I-ET-3010.2Q-1200-919-P4X-001	REV.: A
	AGP			SHEET: 11 of 13
	TITLE: REQUIREMENTS FOR TRAINING CONTENT AND PROGRAM			UN-BC
				INTERNAL
		TOPSIDE ELECTRICAL SYSTEM AUTOMATION OPERATIONAL PORTABLE DEVICE COMBINED CYCLE POWER (5132) HULL ELECTRICAL SYSTEM AUTOMATION OPERATIONAL WORKSTATION HULL ELECTRICAL SYSTEM AUTOMATION MAINTENANCE WORKSTATION HULL ELECTRICAL SYSTEM AUTOMATION OPERATIONAL PORTABLE DEVICE TOPSIDE ELECTRICAL SYSTEM AUTOMATION CONTROLLER TOPSIDE ELECTRICAL SYSTEM AUTOMATION REAL TIME DATA SERVER ELECTRICAL SYSTEM AUTOMATION TIME SERVER TOPSIDE ELECTRICAL SYSTEM AUTOMATION DMZ SERVER HULL ELECTRICAL SYSTEM AUTOMATION CONTROLLER HULL ELECTRICAL SYSTEM AUTOMATION REAL TIME DATA SERVER		
5143	Normal Electrical Distribution System (Networks and Associated Equipment)	PRODUCTION TRANSFORMER 13.8-6.6KV GROUNDING RESISTOR HULL TRANSFORMER 13.8-6.6KV GROUNDING RESISTOR Production Transformer 13.8-0.69-0.69kV Production Transformer 13.8-6.6kV Heating Transformer 13.8-0.69kV Topside Power Socket-Outlets Transformer 0.69-0.48kV Heating Transformer 13.8-0.69kV Topside Normal Transformer 690-220V Topside Heat Tracing Transformer 690- 220V Hull Transformer 13.8-6.6KV Hull Transformer 13.8-0.69-0.69kV Hull Power Socket-Outlets Transformer 0.69-0.48kV HULL NORMAL TRANSFORMER 690-220V ACCOMMODATION NORMAL TRANSFORMER 690-220V	40	Before Mechanical Completion
5145	Normal Lighting System (Networks, Panels, and Associated Equipment)		8	Before Mechanical Completion
5147	Main Generation Station (Generators, Panels, Substation when only for Generation or Mixed Generation / Utility Company and Associated Equipment)	TURBOGENERATOR CONTROL PANEL (TGCP) MAIN TURBOGENERATOR UNIT - CCR WORKSTATION MAIN GENERATOR TURBOGENERATOR WASTE HEAT RECOVERY UNIT	58	Before Mechanical Completion
5148	Essential Electrical Distribution System (Networks, Panels, and Associated Equipment)	Hull Power Receptacle for Diving Equipment Transformer 0.69-0.48kV Hull Power Receptacle for Diving Equipment Transformer 0.69-0.48kV	8	Before TAP-1
5149	Essential Lighting System (Networks, Panels, and Associated Equipment)		8	Before Mechanical Completion
5241	Inert Gas Generation Unit and	INERT GAS GENERATOR SEAWATER PUMP INERT GAS GENERATOR NITROGEN GENERATION UNIT HC Blanket System (1350) NITROGEN GENERATION UNIT FOR FLARE	24 - topsides 32 - hull	Before TAP-1
5252	Air Conditioning		32	Before TAP-1
5254	Ventilation - Supply			

 PETROBRAS	TECHNICAL SPECIFICATION		Nº. I-ET-3010.2Q-1200-919-P4X-001	REV.: A
	AGP			SHEET: 12 of 13
	TITLE: REQUIREMENTS FOR TRAINING CONTENT AND PROGRAM			UN-BC
				INTERNAL
5255	Ventilation – Exhaust			
5260	Auxiliary Systems	MARINE GROWING PROTECTION SYSTEM	24	Before TAP-1
5261	Emergency Generation System (Generators, Substation, Panels, and Associated Equipment)	EMERGENCY GENERATOR PACKAGE	32	Before TAP-1
5262	Auxiliary Generation System (Generators, Substation, Panels, and Associated Equipment)	AUXILIARY GENERATOR PACKAGE	32	Before TAP-1
5265	Direct Current and UPS System (Networks, Panels, UPSs, Battery Chargers, Rectifiers, and Associated Equipment)	EMERGENCY LOADS UPS 220VAC	32	Before TAP-1
5266	Load Handling Unit	FIXED BOOM CRANE 40 T DECK TROLLEY 10 T DECK TROLLEY 5 T DECK TROLLEY PRESENTATION OF MODULES AND CRITICAL EQUIPMENT HANDLING PLANS DEVELOPED BY SELLER	80	Before TAP-1
5267	Cathodic Protection System (Networks, Panels, and Associated Equipment)		24	Before TAP-1
5268	Pull In/Pull Out Station	MAIN RISER PULL-IN WINCH AUXILIARY RISER PULL-IN WINCH (FWD) AUXILIARY RISER PULL-IN WINCH (AFT) TUGGING SERVICE WINCH (AFT) TUGGING SERVICE WINCH (FWD)	40	Before TAP-1 or load test, whatever comes first
5271	Washing of Cargo Tanks ("COW" and "SWW")	SLOP PUMP BUTTERWORTH PUMP TANK CLEANING MACHINE (FIXED)	24	Before TAP-1
5312	Sanitary Wastewater Treatment Unit	SEWAGE TREATMENT UNIT	24	Before TAP-1
5330	Effluent Treatment	OILY WATER SEPARATOR	16	Before TAP-1
5331	Primary Treatment (Oil and Water Separation and Flotation)	PRODUCED WATER DESANDER PRODUCED WATER BOOSTER PUMP PRODUCED WATER TANK BOOSTER PUMP PRODUCED WATER TRANSFER PUMP HYDROCYCLONE GAS FLOTATION UNIT PRODUCED WATER FILTER PRODUCED WATER COOLER PRODUCED WATER FLASH DRUM	24	Before TAP-1
5336	Slop Tankage	SLOP DISCHARGE PUMP SLOP TREATMENT CENTRIFUGE SLOP TREATMENT UNIT SLOP VESSEL PUMP OIL SKIMMING PUMP AFT SLOP VESSEL PUMP	24	Before TAP-1
5412	Flare System	FLARE IGNITION & MONITORING PANEL FLARE TURNDOWN CONTROL SYSTEM PANEL SPARKING PELLET IGNITION SYSTEM FLARE AND SLOP VESSEL GAS RECOVERY UNIT HP FLARE STAGING SKID	24	Before TAP-1
5420	Fire Fighting System	DIESEL HYDRAULIC FIRE WATER PUMPING UNIT HYDRAULIC POWER TRANSMISSION SYSTEM	40	Before TAP-1

 PETROBRAS	TECHNICAL SPECIFICATION		Nº. I-ET-3010.2Q-1200-919-P4X-001	REV.: A
	AGP			SHEET: 13 of 13
	TITLE: REQUIREMENTS FOR TRAINING CONTENT AND PROGRAM			UN-BC
				INTERNAL
5424	Foam System	FIXED FOAM SYSTEM FOR HELIDECK FOAM CONCENTRATE SUPPLY PACKAGE - TOPSIDE FIXED FOAM SYSTEM FOR OFFLOADING STATION FIXED FOAM SYSTEM FOR MAIN DECK	32	Before TAP-1
5425	Inert Gas System (CO2, Halon)	CO2 VENT POST SNUFFING SYSTEM	24	Before TAP-1
5430	Salvage And Abandonment System	RESCUE BOAT LIFEBOAT LIFERAFT RESCUE BOAT DAVIT LIFEBOAT DAVIT LIFERAFT DAVIT	40	Before Sail Away to final location
5512	Fixed Radio	TELECOMMUNICATION TRANSMISSION	8	Before TAP-1
5513	Television System (TV and CATV)	VIDEOCONFERENCE	8	Before TAP-1
5514	Closed Circuit TV (CCTV)		8	Before TAP-1
5515	Portable Radio/Intercommunication System	OPERATIONAL RADIO	8	Before TAP-1
5516	Telephone System	TELECOMMUNICATION VOICE	8	Before TAP-1
5517	Data Transmission System	POB MANAGEMENT	24	Before TAP-1
5518	Ambient Sound System	PAGA - DESK ACCESS UNIT (CA-COMAND ALARM SWITCH MIC-PRIORITY MICROPHONE. AND ECC-PAGE PARTY STATION) PUBLIC ADDRESS CENTRAL STATION	16	Before TAP-1
5521	Environmental Monitoring System	METOCEAN (ENV) & HMS SYSTEM WORKSTATION	16	Before TAP-1
5522	Fire and Gas Detection System	TOPSIDES ADDRESSABLE FIRE DETECTION SYSTEM PANEL HULL ADDRESSABLE FIRE DETECTION SYSTEM VIEWER PANEL	40	Before TAP-1
5523	Central Operation and Supervision Control Station (ECOS)	CSS - AUTOMATION SYSTEM CONFIGURATION - PLC CSS SYSTEM MAINTENANCE CSS - COMINICATION NETWORK SYSTEM ALARM CLOTS AMS ELECTRIC AUTOMATION SYSTEM CARGO LOAD CALCULATOR	220 16	Before TAP-1 Before Sail Away
5524	Subsea Data Acquisition System (SAS and SSAS)	SUBSEA SIGNAL ACQUISITION SYSTEM RACK (SAS)	8	Before TAP-1
5529	Stress Monitoring System for Anchor Chains, Tendons, and Risers	MODA PANEL	8	Before TAP-1
5535	Ballast System		16	Before TAP-1
5537	Integrated Positioning System	ARTEMIS WORKSTATION DARPS WORKSTATION POSITIONING SYSTEM FOR OFFSET DIAGRAM WORKSTATION	30	Before TAP-1
5591	Automation Network		32	Before TAP-1