		TECHNIC	AL SPECIFIC	ATION	Nº:	I-ET-301	0.00-1200-9	70-P4X-005		
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1 INTRODUCTION

1.1 Objective

1.1.1 Present some risk scenarios and necessary minimum safeguards to be considered and provided by the seller during onshore commissioning activities

1.2 General

SELLER is responsible to provide all necessary equipment and assistance to make available the safeguards described in each system as per item 1.3

1.3 Commissioning risks per system

RISK SCENARIOS BY SOP								
SOP	DESCRIPTION	RISK SCENARIOS	RISK TREATMENT/SAFEGUARD S					
1210	WELL	- High pressure with risk of leakage and water splashes; - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash.	- Portable firefighting systems - Fire extinguishers (CO2 and/or dry chemical powder) - Fixed firefighting systems - Hydrants (Even if temporary) - Cabinets of materials for fire fighting - Personal protective equipment - Emergency showers and eyewash - Blocking and signaling of the tested pipes - Oil leak mitigation kit.					
1212	CRUDE OIL AND GAS METERING	- N/A	- N/A					
1010		- High pressure with risk of leakage and water splashes; - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash; - Electric shock - Electric motors with risk of fire - Explosion risk electrical panels	- Where there is an electrical panel - (PPE suitable for intervention, energy isolation and de-energization and grounding stick); - Rubber floor for electrical panel testing; - Portable firefighting systems - Fire extinguishers (CO2 and/or dry chemical powder) - Fixed firefighting systems - Hydrants (Even if temporary)					

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		C	OMMIS	SIONING		ESUP)		
			- Hi (TO/V-	gh voltage TO)	fighting - Pers equipment showers ar - Blocking the tested - A depressuri	•	tective rgency ing of for est		
1225	VAPOR REC	COVERY	(Leak N2+He - Hiç with ris and IL splashe - Op closing SDV/B of leak splash; - Pi lubrica (flamm possibi leakag combu - Elect - Ex electric - Ele	gh pressure sk of leakage ubricating oil es; pening and of DV/XV, risk tage and oil gresence of ting oil able) with lity of e with	panel - (intervention and de-e grounding - Rubber panel testin - Fixed fire Hydrants (I - Cabinets fighting - Porta systems - (CO2 and powder) - Pers equipment showers ar - Blocking the tested - A depressuri	floor for ele ng; efighting sys Even if temp of materials able firefi Fire extingu I/or dry cho onal pro - Emer nd eyewash g and signal pipes	le for colation and ectrical tems - corary) for fire ghting iishers emical tective gency ing of for		
1231	GAS PROCI HANDLING	ESSING /	- Pre (Leak N2+He - Hiç with ris leakage - Elec with ris - P lubricar (flamm possibi leakage combu - High risk of splash oil;	essure Test test with e) gh pressure ek of inert gas e; etric shock plosion risk eal panels ectric motors ek of fire resence of ting oil able) with elity of e with stion; pressure with leakage and of lubricating	- Where th panel - (intervention and de-eigrounding - Rubber panel testin - Porta systems - (CO2 and powder) - Pers equipment - Emerge eye wash; - Blocking the tested - Al depressuris	ere is an ele PPE suitab n, energy isc energization stick); floor for ele ng; able firefi Fire extingu l/or dry che onal pro-	le for colation and ectrical ghting gishers emical tective s and ing of for		

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		closing, SDV/BDV/XV spill and s hazard, SDV BDV oil leak splash hazard leak and s hazard	and d, oil	
1227	GAS DEHYDRATION GDU-1	- Pressure (Leak test N2+He) - High pre with risk of ine leakage; - Electric shoot - Hot (Regeneration - Handling of I material (lo stuffing into vessels) - Hot (Regeneration - Opening closing SDV/BDV/XV, of leakage ar splash	with panel - (intervention ssure and de-e rt gas grounding - Rubber k panel testin Fluid - Porta systems - neavy (CO2 and ading powder) the - Pers equipment Fluid showers an of - Blocking and the tested of - Al risk depressuri	floor for electrical ng; able firefighting Fire extinguishers l/or dry chemical onal protective
1233	GAS DEHYDRATION GDU-2	- Pressure (Leak test N2+He) - High pre with risk of ine leakage (N2+H	with panel - (intervention ssure and de-e rt gas grounding le); - Rubber panel testin ading - Port systems - (CO2 and powder)) - Fixed fir k Hydrants (in risk - Cabinel list fire fighting notors - Pers equipment showers an of - Blocking risk the tested and oil - Al depressuri	floor for electrical ng; able firefighting Fire extinguishers l/or dry chemical efighting systems - Even if temporary) is of materials for gonal protective

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H2S REMOVAL	- Pressure Test (Leak test with N2+He) - High pressure with risk of inert gas leakage (N2+He); - Handling of heavy material (loading stuffing into the vessels) - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash	panel - (intervention and de-e grounding - Rubber panel testin - Port systems - (CO2 and powder) - Pers equipment showers ar - Blocking the tested - Al depressurit - Oil leak	floor for electrical ng; able firefighting Fire extinguishers l/or dry chemical sonal protective - Emergency nd eye wash; g and signaling of circuit pipes ignment for zation after test mitigation kit		
CO2 REMOVAL	- Loading of membranes and inerting; - Electrical panels; - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash	- Portable firefighting systems - Fire extinguishers (CO2 and/or dry chemical powder) - Where there is an electrical panel - (PPE suitable for intervention, energy isolation and de-energization and grounding stick); - Rubber floor for electrical panel testing; - Oil leak mitigation kit			
HYDROCARBON DEW POINT	- Pressure Test (Leak test with N2+He) - High pressure with risk of inert gas leakage (N2+He); - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire - Handling of heavy material (loading stuffing into the vessels) - Asphyxiating fluid loading (R-134_A) - High pressure with risk of gas leakage (R-134_A); - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash	panel - (intervention and de-e grounding - Rubber panel testin - Porta systems - (CO2 and powder) - Pers equipment showers ar - Blocking the tested - Al depressuri	floor for electrical ng; able firefighting Fire extinguishers l/or dry chemical conal protective		
	HYDROCARBON	TECHNICAL SPECIFICATION AREA: TITLE: SAFETY REQUIREMENTS FOR ON COMMISSIONING - Pressure Test (Leak test with N2+He) - High pressure with risk of inert gas leakage (N2+He); - Handling of heavy material (loading stuffing into the vessels) - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash - Loading of membranes and inerting; - Electrical panels; - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash - Pressure Test (Leak test with N2+He) - High pressure with risk of inert gas leakage (N2+He); - Electrical panels - Ele	TECHNICAL SPECIFICATION AREA: TITLE: SAFETY REQUIREMENTS FOR ONSHORE COMMISSIONING - Pressure Test (Leak test with N2+He) - High pressure with risk of inert gas leakage (N2+He); - Electric shock - Explosion risk electrical panels of RDV/BDV/XV, risk of leakage and oil splash - Pressure Test (Leak test with risk of fire - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash - Pressure Test (Leak test with N2+He) - High pressure with risk of inert gas leakage (N2+He); - Electric motors with risk of inert gas leakage (N2+He); - Electric motors with risk of fire - Handling of heavy material (loading stuffing into the vessels) - Asphyxiating fluid loading (R-134_A); - High pressure with risk of gas leakage (R-134_A); - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash - Pressure Test (Leak test with N2+He) - High pressure with risk of fire - Handling of heavy material (loading stuffing into the vessels) - Asphyxiating fluid loading (R-134_A); - Opening and closing of SDV/BDV/XV, risk of leakage and oil showers and closing of SDV/BDV/XV, risk of leakage and oil showers and provider) - Pressure Test (Leak test with N2+He) - High pressure with risk of fire - Handling of heavy material (loading stuffing into the vessels) - Asphyxiating fluid loading (R-134_A); - Opening and closing of SDV/BDV/XV, risk of leakage and oil showers and closing of SDV/BDV/XV, risk of leakage and oil showers and closing of SDV/BDV/XV, risk of leakage and oil showers and closing of SDV/BDV/XV, risk of leakage and oil showers and closing of SDV/BDV/XV, risk of leakage and oil showers and closing of SDV/BDV/XV, risk of leakage and oil showers and closing of SDV/BDV/XV, risk of leakage and oil showers and closing of SDV/BDV/XV, risk of leakage and oil showers and closing of SDV/BDV/XV, risk of leakage and oil showers and closing of SDV/BDV/XV, risk of leakage and oil showers and closing of SDV/BDV/XV, risk of leakage and oil showers and closing of SDV/BDV/XV, risk of leakage and oil showers and closing of S		

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1244	WELL PIG LAUNCHERS	- High pressure with risk of leakage and water splashes; - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash	equipment showers a	conal protective t - Emergency nd eye wash; mitigation kit		
1251	WATER INJECTION	- High pressure with risk of leakage and water splashes; - Pressure Test (Leak test with N2+He) - High pressure with risk of inert gas leakage; - Presence of lubricating oil (flammable) with possibility of leakage with combustion; - High pressure with risk of leakage and splashing of toxic/corrosive fluid (Chemical Injection and CIP) - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash	panel - intervention and degrounding - Rubber panel testing - Port systems - (CO2 and powder) - Fixed find Hydrants (- Cabine fire fighting - Persequipment showers a - Blocking the tested - Adepressuri	floor for electrical ing; table firefighting Fire extinguishers d/or dry chemical refighting systems - (Even if temporary) ets of materials for g sonal protective t - Emergency and eye wash; ag and signaling of		
1252	GAS INJECTION	- High pressure with risk of leakage and water splashes; - Pressure Test (Leak test with N2+He) - High pressure with risk of inert gas leakage; - Presence of lubricating oil (flammable) with possibility of leakage with combustion; - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire	panel - intervention and degrounding - Rubber panel testing - Portico systems - (CO2 and powder); - Fixed fire Hydrants (- Cabine fire fighting - Persishowers a - Blockin	floor for electrical fing; table firefighting Fire extinguishers d/or dry chemical refighting systems - (Even if temporary) ets of materials for g sonal protective		

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PEINUBNAS		COMMISSIONING			
		- Opening and closing of SDV/BDV/XV, risk of leakage and oil splash.		gnment for ition after test; itigation kit	
1254	CO2 INJECTION	Compressor - Pressure Test (Leak test with N2+He) - High pressure with risk of inert gas leakage (N2+He); - High pressure with risk of leakage and lubricating oil splashes; - High pressure with risk of inert gas leakage; - Presence of lubricating oil (flammable) with possibility of leakage with combustion; - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire Turbine - Presence of lubrication system (flammable) - Hot and asphyxiating gases from combustion	panel - (PI intervention, and grounding explosion in - Rubber flc panel testing - Portab systems - F (CO2 and/o powder) - Fixed firef Water Mist S - Fixed firef Hydrants (Ev - Cabinets fire fighting - Portab systems - LG - Cabinets fire fighting - Person equipment showers and - Person equipment - Identificati - Person	poor for electrical control of firefighting control of dry chemical control of dry chemical control of dry chemical control of materials for contr	
1261	CHEMICAL INJECTION FOR OIL AND GAS	- Pressure Test (Leak test with N2+He) - High pressure with risk of inert gas leakage (N2+He); - High pressure with risk of inert gas leakage; - High pressure with risk of leakage and splashing of toxic/corrosive fluid (Chemical Injection and CIP)	panel - (Pl intervention, and de-en grounding sti - Rubber flo panel testing - Portable fire - Fire extir and/or dry ch - Persor equipment showers and	por for electrical ; efighting systems inguishers (CO2 inemical powder) inal protective - Emergency leye wash; and signaling of	

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PETROBRAS	5 OAILIIKL	COMMISSIONING				
		- Electric shock - Explosion risk electrical panels - Electric motors with risk of fire - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash.	- Alignı depressurizatic - Oil leak mitiç	on after test		
1262	CHEMICAL INJECTION FOR OILY WATER	- Pressure Test (Leak test with N2+He) - High pressure with risk of inert gas leakage; - High pressure with risk of leakage and splashing of toxic/corrosive fluid (Chemical Injection and CIP) - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire - SDV/BDV/XV opening and closing, SDV/BDV/XV oil spill and splash hazard, SDV and BDV oil leak and splash hazard, oil leak and splash	panel - (PPE intervention, e and de-ener grounding stick - Rubber floor panel testing; - Portable systems - Fire (CO2 and/or powder) - Personal equipment - showers and e	firefighting extinguishers dry chemical protective Emergency ye wash; and signaling of built pipes ment for on after test		
1263	CHEMICAL INJECTION FOR INJECTION WATER / SEA WATER	hazard - Pressure Test (Leak test with N2+He) - High pressure with risk of inert gas leakage (N2+He); - High pressure with risk of inert gas leakage; - High pressure with risk of leakage and splashing of toxic/corrosive fluid (Chemical Injection and CIP) - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire - Opening and closing of	panel - (PPE intervention, e and de-ener grounding stick - Rubber floor panel testing; - Portable systems - Fire (CO2 and/or powder) - Personal equipment - showers and e	firefighting extinguishers dry chemical protective Emergency ye wash; and signaling of uit pipes ment for on after test		

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					E30	r
			//XV, risk ge and oil			
1353	HELIDECK	with risk	psion risk panels ric motors of fire of the LGE (toxic or	panel - (intervention and de-c grounding - Rubber panel testin - Portable f - Fire ex and/or dry - Person	floor for el ng; irefighting s dinguishers chemical po onal pro	ble for solation and ectrical ystems (CO2 bwder) btective ergency
1357	MOORING	splash	of //XV, risk ge and oil of cable	- Portable f - Fire ex and/or dry	irefighting s ktinguishers chemical po mitigation k	ystems (CO2 owder)
1358	CARGO TANKS, CARGO PUMPS AND VOID SPACES	room/con in the hul - Oper closing SDV/BD\ of leaka splash; - Electri with risk - Electri with explosior - Risk	ning and of //XV, risk ge and oil ric motors of fire;	unobstruct - Unobstr doors - Autono equipment - Where th panel - (intervention and de-e grounding - Portable f - Fire ex and/or dry	narcated ed escape r ucted eme omous br ; ere is an el PPE suita n, energy is energization	eathing ectrical ble for solation and systems (CO2 bwder)
1359	OFFLOADING AND TELEMETRY	- Oper closing SDV/BD\ of leakar splash; - Electr with risk received electrical - Comp cannon (ning and of //XV, risk ge and oil ric motors of fire osion risk panels ressed air line) of cable	- Where the panel - (intervention and de-e grounding - Rubber panel testin - Port systems - (CO2 and powder)	ere is an el PPE suita n, energy is energization stick); floor for el ng;	ectrical ble for solation and ectrical fighting uishers nemical

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1522	WELL PIG LAUNCHERS AND RECEIVERS	- High pressure with risk of leakage and water splashes; - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash.	- Fire exand/or dry - Fixed fir Hydrants ((Recomme - Cabine fire fighting - Persequipment showers at Blocking the tested	sonal protective t - Emergency nd eyewash g and signaling of circuit pipes mitigation kit
5111	SEA WATER	- System located in room/compartment in the hull - High pressure with risk of leakage and water splashes; - Pressure Test (Leak test with N2+He) - High pressure with risk of inert gas leakage (N2+He); - High pressure with risk of leakage and splashing of toxic/corrosive fluid (Chemical Injection) - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash.	- De unobstruct - Unobst doors - Auton equipment - Where the panel - (intervention and derogrounding - Rubber panel testin - Port systems - (CO2 and powder) - Fixed fir Hydrants ((Recomme - Cabine fire fighting - Persequipment showers and - Blocking the tested - Adepressuri	emarcated and ted escape route tructed emergency formous breathing there is an electrical (PPE suitable for in, energy isolation energization and stick); floor for electrical ing; table firefighting Fire extinguishers dor dry chemical refighting systems - (Even if temporary) tended practice) ts of materials for the graph of the sonal protective

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	1			
5115	FRESH WATER	- System located in room/compartment in the hull - High pressure with risk of leakage and water splashes; - Pressure Test (Leak test with N2+He) - High pressure with risk of inert gas leakage (N2+He); - High pressure with risk of leakage and splashing of toxic/corrosive fluid (Chemical Injection) - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash.	unobstructi - Unobstri doors - Autono equipment - Where tli panel - (intervention and de-e grounding - Rubber panel testin - Porta systems - (CO2 and powder) - Fixed fir Hydrants ((Recomme - Cabinel fire fighting - Pers equipment showers ar - Blocking the tested - A depressuri	marcated and ed escape route fucted emergency omous breathing; here is an electrical PPE suitable for in, energy isolation energization and stick); floor for electrical ing; able firefighting Fire extinguishers d/or dry chemical efighting systems - Even if temporary) ended practice) ts of materials for ground protective
5121	POTABLE WATER	- System located in room/compartment in the hull	- Temporal - Der unobstruct - Unobstr doors - Autono equipment - Where th panel - (intervention and de-o grounding - Rubber panel testin - Port systems - (CO2 and powder) - Fixed fir Hydrants ((Recomme - Cabinel fire fighting - Pers equipment showers an - Blocking	ry lighting; marcated and ed escape route ructed emergency mous breathing ; here is an electrical PPE suitable for n, energy isolation energization and stick); floor for electrical ng; able firefighting Fire extinguishers flor dry chemical refighting systems - Even if temporary) ended practice) ts of materials for general

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		hazard, SDV or XV oil leak and splash hazard, oil leak and splash hazard	 Alignment for depressurization after test Oil leak mitigation kit
5121	HYPOCHLORITE INJECTION	- System located in room/compartment in the hull	- Temporary lighting; - Demarcated and unobstructed escape route - Unobstructed emergency doors - Autonomous breathing equipment; - Where there is an electrical panel - (PPE suitable for intervention, energy isolation and de-energization and grounding stick); - Rubber floor for electrical panel testing; - Portable firefighting systems - Fire extinguishers (CO2 and/or dry chemical powder) - Personal protective equipment - Emergency showers and eye wash; - Blocking and signaling of the tested circuit pipes - Alignment for depressurization after test - Oil leak mitigation kit
5121	HULL MARINE GROWTH PROTECTION SYSTEM	- System located in room/compartment in the hull - Pressure Test (Leak test with N2+He) - High pressure with risk of inert gas leakage (N2+He); - High pressure with risk of leakage and splashing of toxic/corrosive fluid (Chemical Injection and CIP) - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash.	- Temporary lighting; - Demarcated and unobstructed escape route - Unobstructed emergency doors - Autonomous breathing equipment; - Where there is an electrical panel - (PPE suitable for intervention, energy isolation and de-energization and grounding stick); - Rubber floor for electrical panel testing; - Portable firefighting systems - Fire extinguishers (CO2 and/or dry chemical powder) - Personal protective equipment - Emergency showers and eye wash; - Blocking and signaling of the tested circuit pipes - Alignment for depressurization after test

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PETROBRAS				SIONING	TOTIONE	ESUP)	
			1					
5122	FRESH MAKER	WATER	room/o in the I	igh pressure isk of leakage ater splashes; ressure Test test with e) gh pressure isk of inert gas te (N2+He); resence of ting oil hable) with illity of the with ustion; gh pressure isk of leakage isplashing of orrosive fluid hical Injection in (P) etric shock call panels ectric motors isk of fire the pening and the peni	unobstructe - Unobstructe - Unobstructe - Unobstructe - Autonome equipment; - Where the panel - ((intervention and de-egroundings) - Rubber panel testire - Portasystems - (CO2 and powder) - Fixed fire Hydrants (I (Recomme - Cabinet fire fightings) - Persequipment showers are - Blockings the tested of the coll leak in the coll l	marcated ed escape roructed emererated emererated emererated emererates an elegant emererated emererates an elegant emererated emere	athin athin actric le fo blatic an actric ghtin isher emic tems orar e) als fo tectiv geno fo est	ey ng al or on d ng rs al ng rs al or ey
5122	FRESH MAKER DILUTION	WATER FOR	room/o in the I	igh pressure sk of leakage ater splashes; ressure Test test with e) gh pressure sk of inert gas re (N2+He); resence of ting oil nable) with restion; gh pressure sk of leakage splashing of orrosive fluid nical Injection	unobstructe - Unobstructe - Unobstructe - Unobstructe - Unobstructe - Autonome equipment; - Where the panel - ((intervention and grounding explosion in - Rubber - Portage systems - (CO2 and powder) - Fixed fire Hydrants (I (Recomme	marcated ed escape roructed emeroructed emeroructed emeroructed emeroructed emeroructed emeroructed emeroructed energis rod, ris n panel); floor for element fire extinguous for dry chefighting system if temponded practics of materia	athin ctrice le fo latic cation k cetric ghtin isher tems orary e)	ey al or on n, of al rs al

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PETROBRAS	SAFETYRE	SAFETY REQUIREMENTS FOR ONSHORE COMMISSIONING			
		COMMISSIONING			
5124	COOLING WATER	- Electric motors with risk of fire - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash. - System located in room/compartment in the hull - High pressure with risk of leakage and water splashes; - Pressure Test (Leak test with N2+He) - High pressure with risk of inert gas leakage (N2+He); - High pressure with risk of leakage and splashing of toxic/corrosive fluid (Chemical Injection and CIP) - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire - Opening and closing of SDV/BDV/XV, risk of leakage and oil splashes	equipment showers an - Blocking the tested - A depressuri - Oil leak - Tempora - De unobstruct - Unobst doors - Auton equipment - Where the panel - (intervention and de-en with hook) - Rubber panel testin - Port systems - (CO2 and powder) - Fixed fir Hydrants ((Recomment of the fighting of the tested of the panel showers and the tested of the showers and t	nd eye wash; g and signaling of circuit pipes lignment for zation after test mitigation kit ry lighting; marcated and ed escape route ructed emergency omous breathing ; here is an electrical (PPE suitable for n, energy isolation ergization and bar ; floor for electrical ng; able firefighting Fire extinguishers d/or dry chemical refighting systems - Even if temporary) ended practice) ts of materials for g sonal protective - Emergency nd eye wash; g and signaling of circuit pipes lignment for	
		- System located in room/compartment in the hull	- Oil leak - Tempora - Der	zation after test mitigation kit ry lighting; marcated and ed escape route	
5125	HOT WATER	- High pressure with risk of leakage and water splashes; - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash; - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire - Risk of burning with hot fluid	- Unobstr doors - Autono equipment - Where th panel - (interventio and de-order grounding - Rubber panel testiin - Port systems -	omous breathing in the property of the propert	

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		COMMISSIONING		ESUP
		- WHRU (5147) - Risk of high pressure if there is trapped water.	Hydrants (- Cabine fire fighting - Pers equipment showers a - Blockin the tested - A depressuri	sonal protective
5133.1	DIESEL	- System located in room/compartment in the hull - High pressure with risk of leakage and oil splash;	unobstruct - Unobst doors - Auton equipment - Where t panel - (interventio and de-(grounding - Rubber panel testi - Port systems - (CO2 and powder)" - Fixed fir Water Mist - Fixed ff - Hydra temporary practice) - Cabine fire fighting - Port systems Cabine fire fighting - Pers equipment showers a - Oil leak	marcated and ed escape route ructed emergency omous breathing; here is an electrical PPE suitable for n, energy isolation energization and stick); floor for electrical ng; able firefighting Fire extinguishers d/or dry chemical refighting systems irefighting systems ints (Even if o (Recommended ts of materials for grable firefighting LGE ts of materials for grable protective - Emergency and eyewash mitigation kit
5133.2	WELL SERVICE PUMP	- System located in room/compartment in the hull - High pressure with risk of leakage and water splashes; - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash; - Electric shock	- Tempora	ry lighting; marcated and ed escape route ructed emergency omous breathing ; here is an electrical PPE suitable for n, energy isolation energization and

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PETROBRAS	SAFETY RE	QUIREMENTS FOR ON	SHORE	NP-1
		COMMISSIONING		ESUP
		- Explosion risk electrical panels - Electric motors with risk of fire	panel testin - Ports systems - (CO2 and powder) - Fixed fir Hydrants ((Recomme - Cabinet fire fighting - Pers equipment showers ar - Blocking the tested - Oil leak	able firefighting Fire extinguishers I/or dry chemical efighting systems - Even if temporary) ended practice) ts of materials for Jonal protective - Emergency and eye wash; g and signaling of circuit pipes mitigation kit
5134	COMPRESSED AIR	- Presence of lubricating oil and/or with (flammable) with possibility of leakage with combustion; - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire	unobstructi - Unobst doors - Where tl panel - (intervention and de-e grounding - Rubber panel testin - Porti systems - (CO2 and powder) - Cabinet fire fighting - Blocking the tested - A	marcated and ed escape route ructed emergency here is an electrical PPE suitable for n, energy isolation energization and stick); floor for electrical ng; able firefighting Fire extinguishers l/or dry chemical ts of materials for
5135	FUEL GAS	- Pressure Test (Leak test with N2+He) - High pressure with risk of inert gas leakage (N2+He); - Risk of leakage of asphyxiating fluid - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash - Explosion risk electrical panels	- Temporal - De unobstruct - Unobst doors - Where tl panel - (intervention and de-e grounding - Rubber panel testin - Port systems - (CO2 and powder) - Cabinet fire fighting - Blocking	ry lighting; marcated and ed escape route ructed emergency here is an electrical PPE suitable for n, energy isolation energization and stick); floor for electrical ng; able firefighting Fire extinguishers l/or dry chemical

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PETROBRAS	SAFETY REQUIREMENTS FOR ONSHORE NP-1			
i Liliobilae		COMMISSIONING		
				lignment for zation after test
5138	START UP AIR	- Pressure Test (Leak test with N2+He) - High pressure with risk of inert gas leakage (N2+He); - Presence of lubricating oil and/or with (flammable) with possibility of leakage with combustion; - Explosion risk electrical panels	unobstruct - Unobstr doors - Where th panel - (intervention and de-c grounding - Rubber panel testin - Rubber panel testin - Portable t - Fire ex and/or dry - Cabinets fighting - Blocking the tested - A depressuri	marcated and led escape route ructed emergency lere is an electrical (PPE suitable for in, energy isolation energization and stick); floor for electrical lng; floor for electrical
5139.1	HYDRAULIC POWER UNIT- Vessel	- High pressure, with risk of leaking and squirting hydraulic oil - Presence of oil (flammable) with possibility of leakage with combustion; - Toxic fluid - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire	- Temporal - Der unobstruct - Unobstr doors - Where th panel - (intervention and de-d grounding - Rubber panel testin - Portable t - Fire ex and/or dry - Cabinets fighting - Fixed fire Hydrants ((Recomme - Cabinets fighting - Portal systems - I - Cabinet	ry lighting; marcated and ed escape route ructed emergency here is an electrical (PPE suitable for in, energy isolation energization and stick); floor for electrical ing; firefighting systems etinguishers (CO2 chemical powder) of materials for fire efighting systems - Even if temporary) ended practice) of materials for fire able firefighting LGE ts of materials for
5139.2	HYDRAULIC POWER UNIT- Topside	High pressure, with risk of leaking and squirting hydraulic oil	- Tempora - Der unobstruct	

doors

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		OMMISSIONING		ESUP		
		- Presence of oil (flammable) with possibility of leakage with combustion; - Toxic fluid - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire	panel - (intervention and de-c grounding - Rubber panel testin - Port systems - (CO2 and powder) - Cabinet fire fighting - Fixed fir Hydrants ((Recomme - Cabinet fire fighting - Port systems - I - Cabinet fire fighting - Oil leak	floor for eleng; able firefightion dry checks of material from the firefighting system of the firefighting system of the firefighting system of the firefighting system of the firefighting	e for plation and ctrical ghting ishers emical als for ems - corary) e) als for ghting als for als for ghting als for	
5139.3	HYDRAULIC POWER UNIT- Subsea	- High pressure, with risk of leaking and squirting hydraulic oil - Presence of oil (flammable) with possibility of leakage with combustion; - Toxic fluid - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire	unobstruct - Unobst doors - Where tl panel - (intervention and de-e grounding - Rubber panel testin - Portable t - Fire ex and/or dry - Cabinets fighting - Fixed fire Hydrants (- Cabinets fighting - Portable t - Portable f	marcated ed escape ro ructed emer here is an ele PPE suitabl n, energy isc energization stick); floor for ele	gency ctrical e for blation and ctrical stems (CO2 vder) for fire ems - orary) for fire stems	

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PETROBRAS	SAFETY REQUIREMENTS FOR ONSHORE		SHORE	NP-1	
		COMMISSIONING		ESUP	
5143	NORMAL ELECTRICAL DISTRIBUTION	- Electricity generation and/or room with electrical panels (risk with electricity)	- Fire extinand/or dry chand/or dry chand/or dry chand extended the panel - (Plantervention, and de-engrounding start - Rubber flopanel testing - Temporary - Demanded the panel testing - Panel te	oor for electrical i; lighting; arcated and d escape route cted emergency	
5145	NORMAL LIGHTING	- Electricity generation and/or room with electrical panels (risk with electricity)	- Portable firefighting systems - Fire extinguishers (CO2 and/or dry chemical powder) - Where there is an electrical panel - (PPE suitable for intervention, energy isolation and de-energization and grounding stick); - Rubber floor for electrical panel testing;		
5147	ELECTRICAL TURBO GENERATOR (GTG - Gas Turbine Generator)	- System located in room/compartment in the hull	- Temporary - Demain unobstructed -	lighting; arcated and descape route cted emergency nous breathing re is an electrical PE suitable for energy isolation ergization and ick); for for electrical gighting systems - system ighting systems - ven if temporary) ded practice) f materials for fire firefighting se f materials for fire le firefighting ire extinguishers dry chemical and protective - Emergency	

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		COMMISSIONING		ESUP
			equipment - Identifica - Check people in before equipment presence of cleaning of - Check temporary (mesh) us before star - Keep	filters or mesh sed for oil flushing rting the machines.
5148	ESSENTIAL ELECTRICAL DISTRIBUTION	- Electricity generation and/or room with electrical panels (risk with electricity)	- Fire exand/or dry - Where the panel - (intervention and decording example) - Rubber panel testin - Tempor - De unobstruct doors	floor for electrical ng; ary lighting, marcated and electricated escape route tructed emergency omous breathing
5149	ESSENTIAL LIGHTING	- Electricity generation and/or room with electrical panels (risk with electricity)	- Portable of and/or dry and/or dry - Where to panel - (intervention and grounding explosion i	firefighting systems attinguishers (CO2 chemical powder) here is an electrical (PPE suitable for n, energy isolation de-energization, rod, risk of in panel); floor for electrical
5241.1	INERT GAS for Cargo Tanks blanketing	- Risk of leakage of asphyxiating fluid - Risk of leakage and splashing of diesel oil (Fuel); - Presence of diesel oil (flammable) with possibility of leakage with combustion; - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire	unobstruct - Unobstr doors - Autono equipment - Portable t - Fire ex and/or dry - Where th panel - (interventio	marcated and ded escape route ructed emergency emous breathing gradients; firefighting systems extinguishers (CO2 chemical powder) dere is an electrical (PPE suitable for n, energy isolation energization and

- Opening and closing of SDV/BDV/XV, risk of leakage and oil splash; - Electric shock; - Explosion risk electrical panels - Electric motors with risk of fire - Portable firefighting system - Fire extinguishers (CO and/or dry chemical powder) - Where there is an electrical panel - (PPE suitable for intervention, energy isolation and de-energization and grounding stick); - Rubber floor for electrical panel testing; - Risk of leakage of asphyxiating fluid; - Opening and closing of SDV/BDV/XV, risk - Unobstructed escape route - Unobstructed emergence		TECHNICAL SPECIFIC	SATION N°:	I-ET	REV.		
SAFETY REQUIREMENTS FOR ONSHORE COMMISSIONING - Rubber floor for electrical panel testing: - Risk of leakage of asphyxiating fluid; - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash; - Electric shock; - Explosion risk electrical panels - Electric motors with risk of fire - Rubber floor for electrical panel testing: - Temporary lighting; - Demarcated an unobstructed escape route - Unobstructed emergency doors - Autonomous breathin equipment; - Portable firefighting system - Fire extinguishers (CO and/or dry chemical powder) - Where there is an electrical panel testing: - Risk of leakage of asphyxiating fluid; - Opening and closing of SDV/BDV/XV, risk doors - Temporary lighting; - Temporary lighting; - Demarcated an unobstructed escape route - Unobstructed escape route	IBR	AREA:	l .		SHEET 22 of 39		
- Rubber floor for electrical panel testing; - Risk of leakage of asphyxiating fluid; - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash; - Electric shock; - Explosion risk electrical panels - Electric motors with risk of fire - Risk of leakage of asphyxiating fluid; - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash; - Electric shock; - Explosion risk electrical panels - Electric motors with risk of fire - Risk of leakage of asphyxiating fluid; - Opening and closing of SDV/BDV/XV, risk of SDV/BDV/XV, ri	PETROBRAS	$_{4S}$ \mid SAFETY REC	SAFETY REQUIREMENTS FOR ONSHORE NP-1				
FOR PROCESS PLANT PLANT PART PLANT PART PART PART PROCESS PLANT PLANT PART PART PROCESS PLANT PLANT PLANT PART PROCESS PLANT PLANT PLANT PROCESS PLANT PLANT PLANT PROCESS PLANT PLANT PLANT PROCESS PLANT PLANT PROCESS PLANT PLANT PLANT PROCESS PLANT PLANT PROCESS PLANT PLANT PROCESS PLANT PORTABLE PROCESS PLANT PROCESS PLANT PROCESS PLANT PROCESS PROCESS PROCES			COMMISSIONING		ESUP		
asphyxiating fluid; - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash; N2 GENERATOR FOR PROCESS PLANT PLANT Selectric shock; - Electric shock; - Electric motors with risk of fire FOR PROCESS PLANT - Risk of leakage of asphyxiating fluid; - Opening and closing of SDV/BDV/XV, risk SPURCESS PLANT - Risk of leakage of asphyxiating fluid; - Opening and closing of SDV/BDV/XV, risk - Demarcated an unobstructed escape route - Unobstructed escape route - Unobstructed escape route - Unobstructed escape route - Unobstructed energence - Nemerotated an unobstructed escape route - Unobstructed escape route - Unobstructed emergence - Unobstructed escape route - Unobstructed emergence - Unobstructed escape route - Unobstructed emergence - Portable firefighting system -							
asphyxiating fluid; - Demarcated an - Opening and unobstructed escape route closing of - Unobstructed emergenc SDV/BDV/XV, risk doors	5241.2	FOR PROCESS	asphyxiating fluid; - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash; - Electric shock; - Explosion risk electrical panels - Electric motors with risk of fire	- De unobstructi - Unobst doors - Auton equipment - Fire ex and/or dry - Where the panel - (intervention and de-egrounding - Rubber	marcated and ed escape route ructed emergency omous breathing; irrefighting systems (CO2 chemical powder) here is an electrical PPE suitable for in, energy isolation energization and stick); floor for electrical		
splash; - Electric shock; - Explosion risk system Splash; - Electric shock; - Explosion risk electrical panels - Electric motors with risk of fire splash; - Portable firefighting system - Fire extinguishers (CO and/or dry chemical powder) - Where there is an electrical panel - (PPE suitable for intervention, energy isolation)	5241.3		asphyxiating fluid; - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash; - Electric shock; - Explosion risk electrical panels - Electric motors	- Temporal - De unobstruct - Unobst doors - Auton equipment - Portable f - Fire ex and/or dry - Where tl panel - (intervention and de-e grounding - Rubber panel testin	ry lighting; marcated and ed escape route ructed emergency omous breathing ; irrefighting systems ktinguishers (CO2 chemical powder) here is an electrical PPE suitable for in, energy isolation energization and stick); floor for electrical ng;		
- System located in room/compartment in the hull - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire VENTILATION - System located in room/compartment in the hull - Electric shock - Explosion risk electrical panels - Autonomous breathin equipment; - Where there is an electrical panel - (PPE suitable for intervention, energy isolation and de-energization and grounding stick); - Rubber floor for electrical panel testing;	5251	VENTILATION	room/compartment in the hull - Electric shock - Explosion risk electrical panels - Electric motors	- Temporal - De unobstruct - Unobst doors - Auton equipment - Where tl panel - (intervention and de-e grounding - Rubber panel testin - Port systems - (CO2 and	ry lighting; marcated and ed escape route ructed emergency omous breathing ; here is an electrical PPE suitable for n, energy isolation energization and stick); floor for electrical ng; able firefighting Fire extinguishers		
					/or dry chemical		

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5252	AIR CONDITIONING	- System located in room/compartment in the hull - High pressure with risk of leakage and water splashes; - Pressure Test (Leak test with N2+He) - High pressure with risk of inert gas leakage (N2+He); - High pressure with risk of leakage and splashing of water - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash.	unobstructer - Unobstructer - Unobstructer - Unobstructer - Unobstructer - Unobstructer - Autono equipment; - Where the panel - (Pintervention, and de-er grounding single - Portal systems - Fortal systems - For	narcated and d escape route ucted emergency mous breathing ere is an electrical PPE suitable for energy isolation nergization and tick); oor for electrical g; ble firefighting Fire extinguishers or dry chemical fighting systems - ven if temporary) is of materials for onal protective - Emergency d eye wash; and signaling of
5261	ELECTRICAL EMERGENCY GENERATOR	- System located in room/compartment in the hull - Electricity generation and/or room with electrical panels (risk with electricity) - Presence of fuel (flammable) - Presence of lubricating oil (flammable) with possibility of leakage with combustion; - Presence of lubricating oil with potential for leakage and possibility of contact with skin and eyes; - Hot and asphyxiating gases from combustion - Risk of burning with hot fluid and/or hot parts of the	- Temporary - Dem- unobstructer - Unobstructer - Unobstructer doors - Autonor equipment; - Where the panel - (Pintervention, and de-er grounding steps - Rubber fl panel testing - Portal systems - F (CO2 and/opowder) - Fixed fire Water Mist Steps - Fixed fire Hydrants (E (Recomment - Cabinets fire fighting - Portal systems - Lo	r lighting; arcated and d escape route acted emergency mous breathing ere is an electrical PPE suitable for energy isolation ergization and tick); oor for electrical g; ble firefighting Fire extinguishers or dry chemical fighting systems - system fighting systems - iven if temporary) ended practice) s of materials for ble firefighting

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		COMMISSIONING				
5262	ELECTRICAL AUXILIARY GENERATOR	turbine and/or engines - Risk of suffocation in the room (if doors and dampers closed) - System located in room/compartment in the hull - Electricity generation and/or room with electrical panels (risk with electricity) - Presence of fuel (flammable) - Presence of lubricating oil (flammable) with possibility of leakage with combustion; - Presence of lubricating oil with potential for leakage and possibility of contact with skin and eyes; - Hot and asphyxiating gases from combustion - Risk of burning with hot fluid and/or hot parts of the turbine and/or engines - Risk of suffocation in the room (if doors and dampers closed)	- Keep standby followed and systems - Forta systems - Forta systems - London and systems - Cabinets fire fighting - Porta systems - London and systems - London and systems - London and systems - London and systems - Forta systems - London and systems - London a	- Emergy d eyewash onal prote - Clothing; tition of hot parameter is an electory lighting in the extra solution of hot parameter is an electory lighting in the extra solution of hot parameter is an electory light in the extra solution of the extra solution of materials for the extra solution of materials for the extra solution of hot parameter is mous breat the extra solution of the extra solution of hot parameter is mous breat the extra solu	ctive rts; on t. and te ency thing trical for ation and trical hting shers mical strical ctive ency thing on	
5262	ELECTRICAL HULL GENERATOR 6.6 KV 7MW	- System located in room/compartment in the hull - Electricity generation and/or room with electrical panels (risk with electricity) - Explosion risk electrical panels	unobstructe - Unobstructe - Unobstructe doors - Autono equipment; - Where the panel - (F intervention and de-e grounding s - Rubber fl panel testing - Porta	marcated ed escape rou ucted emerg emous brea ere is an elec epe suitable a, energy isola nergization etick); floor for elect g;	ency thing trical for ation and trical	

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7 2 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		(COMMISSIONING			ESUP		
5263		JPS for EMERGENCY IGHTING	room/d in the h - genera	Electricity ation and/or with electrical (risk with city) Explosive	powder) - Pers equipment - Temporar - Der unobstructe - Unobstructe - Unobstructe - Unobstructe - Autome equipment; - Where th panel - (intervention and de-e grounding servention - Rubber panel testir - Portable ferorand/or dry	- Clothing; ry lighting; marcated ed escape ro ructed emer omous bre ; nere is an ele PPE suitable n, energy isc energization stick); floor for ele ng; irefighting sy ttinguishers chemical pov	and ute gency athing ctrical le for and actrical stems (CO2	dd // // // // // // // // // // // // /
5264		ELECOMMUNICATI ON POWER	room/d in the h - genera	Electricity ation and/or with electrical (risk with	equipment showers ar - Temporar - Del unobstructe - Unobstructe - Unobstructe - Autone equipment; - Where the panel - (intervention and grounding explosion in - Rubber panel testir - Porta systems -	- Clothing; conal prot - Emer nd eyewash ry lighting; marcated ed escape ro ructed emer omous bre comous bre gree is an ele PPE suitable n, energy iso de-energiz rod, rish n panel); floor for ele ng; able firefi Fire extingu /or dry che	and ute gency athing ctrical le for olation, ctrical ghting gishers	e y y dd

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		COMMISSIONING		ESUP
5265	DIRECT CURRENT AND UPS	- System located in room/compartment in the hull	- Unobstruct doors - Autonom equipment; - Where ther panel - (PF intervention, and de-ene grounding stic - Rubber flo panel testing; - Portabl systems - Fir (CO2 and/or powder) - Person equipment - Self-conta apparatus - Person equipment - C - Person equipment - Emergency eyewash	reated and escape route of the control of the contr
5266	CARGO HANDLING	 Electric motors with risk of fire Hoses handling 	- Fire extin	fighting systems guishers (CO2 emical powder)
5267	CATHODIC PROTECTION	- Electricity generation and/or room with electrical panels (risk with electricity) - Access to Cathodes from inside the tank (confined space)	- Portable fire - Fire extin and/or dry ch - Where there panel - (PF intervention, and de-ene grounding stic - Rubber flo panel testing; - Temporary I - Demai	fighting systems guishers (CO2 emical powder) e is an electrical PE suitable for energy isolation ergization and ck); or for electrical ighting;
5268	PULL IN / PULL OUT STATION	- Risk of possible breakage of cables; - Electric motors with risk of fire	areas; - Portabl systems - Fi	est and adjacent e firefighting re extinguishers r dry chemical

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1 LI II O DII A O	COMMISSIONING			Е	SUP			
5269	EMERGENCY ELECTRICAL DISTRIBUTION	room/o in the h - genera room v panels electric - Exp electric	Electricity ation and/or with electrical (risk with city) plosion risk cal panels	unobstructe - Unobstructe doors - Autone equipment; - Where th panel - (intervention and de-e grounding: - Rubber panel testir - Porte systems - (CO2 and powder) - Pers equipment	marcated ed escaperucted escape	d pe rou emerç brea n elec uitable y iso tion firefic tingui che prote ng;	geno athir ctric e fo latic ar ctric ghtir shel	ey ng al or on ad al
5271	CARGO TANK CLEANING AND RECIRCULATION	room/o in the h - O closing SDV/B of leal splash - Ele with ris - Ex electric - Ris	pening and of DV/XV, risk kage and oil	unobstructe - Unobstructe doors - Autono equipment; - Where th panel - (intervention	narcated ed escapucted escapucated esca	brea brea n elecuitable y iso tion r elec	geno athir ctric e fo latio ar ctric stem (CC	ey al or on ad al al
5310	SEWAGE	room/o in the h - O closing SDV/B of leal splash - Ele with ris - Ex electric - Ris	pening and of DV/XV, risk kage and oil	- Temporar - Den unobstructe - Unobstructe doors - Autone equipment; - Where th panel - (intervention	ry lighting narcated ed escaped escape	g; d pe rou emerg n elec uitable y iso tion r elec ng sys ers al pow	ar ute geno athir ctric e fo latic ar ctric stem (CC	ad Ey al or on ad al

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		COMMISSIONING	ESUP	
5331	PRODUCED WATER TREATMENT	- System located in room/compartment in the hull	unobstructive - Unobstructive - Unobstructive - Autonome equipmentive - Where the panel - (intervention and desegrounding - Rubber panel testing - Portage - Fixed fire Hydrants (Intervention - Persum equipmentius - Persum equipmentius - Persum equipmentius - Autonome - Auton	marcated and ed escape route ructed emergency omous breathing; here is an electrical PPE suitable for in, energy isolation energization and stick); floor for electrical ng; able firefighting Fire extinguishers d/or dry chemical efighting systems - Even if temporary) ts of materials for general protective
5335	BALLAST	- System located in room/compartment in the hull - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash; - Electric motors with risk of fire - Electric shock - Explosion risk electrical panels - Risk of water leakage in tests	unobstructive - Unobstructive - Unobstructive - Autonome equipmentive - Where the panel - (intervention and de-egrounding - Rubber panel testinue - Portable fund/or dry	narcated and ed escape route ructed emergency omous breathing; ere is an electrical PPE suitable for n, energy isolation energization and stick); floor for electrical

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5336	DRAINAGE / SLOP (OPEN DRAIN)	- System located in room/compartment in the hull - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash; - Electric motors with risk of fire - Electric shock - Risk of water leakage in tests	unobstructe - Unobstructe - Unobstructe - Autonomequipmente - Where the panel - (interventioner and deserrander estirus - Portable functioner experience e	narcated and ed escape route ructed emergency omous breathing in the received emergency omous breathing in the received emergical properties and electrical emergization and estick); floor for electrical energization systems attinguishers (CO2)
5336	DRAINAGE / SLOP (CLOSED DRAIN)	- System located in room/compartment in the hull - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash; - Electric motors with risk of fire - Electric shock - Explosion risk electrical panels - Risk of water leakage in tests	- Temporar - De unobstructe - Unobstructe - Unobstructe - Autone equipment; - Where th panel - (intervention and de-e grounding - Rubber panel testir - Portable f - Fire ex and/or dry	marcated and ed escape route ructed emergency omous breathing mere is an electrical PPE suitable for n, energy isolation energization and stick); floor for electrical
5412	FLARE and FGRS	- Pressure Test (Leak test with N2+He) - High pressure with risk of leakage and lubricating oil splashes; - Presence of lubricating oil (flammable) with possibility of leakage with combustion; - Opening and closing of SDV/BDV/XV, risk of leakage and oil splash; - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire	- Temporar - Der unobstructe - Unobstr doors - Autonomequipmente - Where th panel - (intervention and de-e grounding e - Rubber panel testir - Portable f - Fire ex and/or dry - Fixed fire Hydrants ((Recomme	ry lighting; narcated and ed escape route ucted emergency mous breathing ere is an electrical PPE suitable for n, energy isolation energization and stick); floor for electrical

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PETROBRAS	SAFETY RE	QUIREMENTS FOR ON	ISHORE	NP-1		
		COMMISSIONING		ESUP)	
5415	ATMOSPHERIC VENT FIREFIGHTING WATER	- N/A Firefighting - High pressure with risk of leakage and water splashes; Combustion engine - Presence of lubricating oil and/or with (flammable) with possibility of leakage with combustion; - Presence of fuel (flammable) - Presence of lubricating oil with potential for leakage and possibility of contact with skin and eyes - Hot and asphyxiating gases from combustion - Risk of burning with hot fluid and/or hot parts of the turbine and/or engines Firefighting pump - High pressure with risk of leakage and water splashes; - Electric motors with risk of leakage and water splashes; - Electric shock - Electric shock - Electric shock - Electric shock - Electric motors with risk of leakage and water splashes; - Electric shock - Electric motors with risk of leakage and water splashes; - Electric shock - Electric motors with risk of fire	- Blocking the tested - Adepressuri - Oil leak in - N/A - Tempora - Der unobstruct - Unobstruct - Unobstruct - Unobstruct - Unobstruct - Unobstruct - Where the panel - (intervention and de-degrounding - Rubber panel testin - Fixed fir Water Mist - Fixed fir Hydrants (Recomment - Cabinet fighting - Port systems - Cabinets fighting - Port systems - (CO2 and powder) - Persequipment showers at - Persequipment - Identific	ry lighting; marcated ed escape routed emergization stick); floor for elements of materials able fireficable firef	an aute gence athin actrical an actrical an actrical and actrical actr	of or all or

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BR	TITLE: SAFFTY REC	SAFETY REQUIREMENTS FOR ONSHORE		
PETROBRAS		COMMISSIONING	NO NO NE	ESUP
5424	FIREFIGHTING FOAM	- Risk of leakage and splashing of toxic or corrosive fluid - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire	unobstruct - Unobstr doors - Autono equipment - Where th panel - (intervention and de-e grounding - Rubber panel testin - Perso equipment showers an	narcated and ed escape route ucted emergency omous breathing; ere is an electrical PPE suitable for n, energy isolation energization and stick); floor for electrical ng; onal protective
5425	FIREFIGHTING INERT GAS	- Risk of leakage of asphyxiating fluid - High pressure with risk of leakage of inert gas (CO2); - Risk of breakage of locks and hinges of the doors of the rooms - Inadvertent triggering in rooms protected by the system;	- Temporal - Der unobstruct - Unobstr doors - Autono	ry lighting, marcated and ed escape route ructed emergency omous breathing trobras procedure
5428	FIREFIGHTING PORTABLE EQUIPMENT	- N/A	- N/A	
5431	LIFE SAVING	- N/A	- N/A	
5511	TELECOMMUNICATI ON SPECIALIZED	- System located in room/compartment in the hull - Electricity generation and/or room with electrical panels (risk with electricity) - Explosion risk electrical panels	unobstruct - Unobstr doors - Autono equipment - Where tl panel - (intervention and de-en with hook); - Rubber panel testii - Portable t - Fire ex and/or dry	marcated and ed escape route ucted emergency omous breathing; here is an electrical PPE suitable for n, energy isolation ergization and bar floor for electrical ng; firefighting systems (tinguishers (CO2 chemical powder) sonal protective

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		COMMISSIONING	ESUP	
5512	TELECOMMUNICATI ON TRANSMISSION	- System located in room/compartment in the hull - Electricity generation and/or room with electrical panels (risk with electricity) - Explosion risk electrical panels	- Der unobstruct - Unobstruct - Unobstruct doors - Autonomequipment - Where the panel - Intervention and degrounding - Rubber panel testi - Portable - Fire exand/or dry - Per equipment	nere is an electrical (PPE suitable for n, energy isolation energization and stick); floor for electrical ng firefighting systems extinguishers (CO2 chemical powder) sonal protective exting:
5513	VIDEOCONFERENC E	- System located in room/compartment in the hull - Electricity generation and/or room with electrical panels (risk with electricity) - Explosion risk electrical panels	- Tempora - Der unobstruct - Unobstruct doors - Autone equipment - Where th panel - e interventio and de- grounding - Rubber panel testi - Portable - Fire ex and/or dry - Pers	ry lighting; marcated and ted escape route ructed emergency omous breathing t; here is an electrical (PPE suitable for n, energy isolation energization and stick); floor for electrical
5514	CLOSED-CIRCUIT TELEVISION (CCTV)	- System located in room/compartment in the hull	- Tempora - De unobstruct - Unobst doors - Auton equipment - Where t panel - interventio and grounding explosion - Rubber panel testi - Port systems - (CO2 and powder) - Pers	ry lighting; marcated and ited escape route tructed emergency momous breathing i; here is an electrical (PPE suitable for n, energy isolation de-energization, rod, risk of in panel); floor for electrical

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		COMMISSIONING		ESUP		
5515	OPERATIONAL RADIO	- System located in room/compartment in the hull - Electricity generation and/or room with electrical panels (risk with electricity) - Explosion risk electrical panels	unobstructe - Unobstructe - Unobstructe doors - Autonome equipment; - Where th panel - (intervention and de-e grounding servente - Rubber panel testing - Portable for Fire exand/or dry	narcated and ed escape route ucted emergency omous breathing ere is an electrical PPE suitable for n, energy isolation energization and stick); floor for electrical ng; irefighting systems tinguishers (CO2 chemical powder) conal protective		
5516	TELECOMMUNICATI ON VOICE	- System located in room/compartment in the hull - Electricity generation and/or room with electrical panels (risk with electricity) - Explosion risk electrical panels	- Temporar - Den unobstructe - Unobstructe - Unobstructe - Autonomequipment; - Where th panel - (interventioner and de-e groundingse- Rubber panel testirung Portable f - Fire ex and/or dry - Pers	ry lighting; narcated and ed escape route ucted emergency mous breathing mere is an electrical PPE suitable for n, energy isolation energization and estick); floor for electrical ng; irefighting systems ettinguishers (CO2 chemical powder) conal protective		
5517	TELECOMMUNICATI ON DATA	- System located in room/compartment in the hull - Electricity generation and/or room with electrical panels (risk with electricity) - Explosion risk electrical panels	unobstructe - Unobstructe - Unobstructe - Autonomequipment; - Where th panel - (interventioner and de-e groundingse- Rubbere panel testiructe - Portable functioner - Fire ex - Autonome - Autonome - Rubbere - Rubbere - Portable functioner - Fire ex - Autonome - Autonome - Rubbere - Rubbere - Portable functioner - Fire ex	ry lighting; narcated and ed escape route ucted emergency mous breathing mere is an electrical PPE suitable for n, energy isolation energization and estick); floor for electrical ng; irefighting systems tinguishers (CO2 chemical powder) conal protective		

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5518	PUBLIC ADDRESS AND GENERAL ALARM (PAGA)	- System located in room/compartment in the hull - Electricity generation and/or room with electrical panels (risk with electricity) - Explosion risk electrical panels	- De unobstruct - Unobstruct - Unobstruct - Auton equipment - Where the panel - interventice and degrounding - Rubber panel test - Portable - Fire eand/or dry - Per	here is an electrical (PPE suitable for on, energy isolation energization and j stick); floor for electrical
5521	ENVIRONMENTAL MONITORING	- System located in room/compartment in the hull - Electricity generation and/or room with electrical panels (risk with electricity) - Explosion risk electrical panels	- Tempora - De unobstruc - Unobs doors - Autor equipmen - Where t panel - interventic and de- grounding - Rubber panel test - Portable - Fire e and/or dry - Pers equipmen breathing - Per	ary lighting; emarcated and sted escape route tructed emergency nomous breathing at; there is an electrical (PPE suitable for on, energy isolation energization and g stick); floor for electrical
5522	FIRE AND GAS DETECTION	- System located in room/compartment in the hull - Electricity generation and/or room with electrical panels (risk with electricity) - Explosion risk electrical panels	- Tempora - De unobstruc - Unobst doors - Auton equipmen - Where ti panel - interventic and de- grounding - Rubber panel test - Portable	ary lighting; emarcated and sted escape route tructed emergency nomous breathing at; here is an electrical (PPE suitable for on, energy isolation energization and g stick); floor for electrical

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FLINUDNAS		COMMISSIONING		ESUP
			- Pers equipment	sonal protective - Clothing;
5523	AUTOMATION / SUPERVISION AND OPERATION CONTROL	- System located in room/compartment in the hull	unobstruct - Unobstr doors - Autono equipment - Where th panel - (intervention and de-e grounding - Rubber panel testin - Portable f - Fire ex and/or dry - Pers equipment	narcated and ed escape route ucted emergency omous breathing; ere is an electrical PPE suitable for n, energy isolation energization and stick); floor for electrical ng; firefighting systems (tinguishers (CO2 chemical powder) conal protective - Clothing;
5524	SUBSEA / RESERVOIR MONITORING	- System located in room/compartment in the hull - Electricity generation and/or room with electrical panels (risk with electricity) - Explosion risk electrical panels	- Temporal - Der unobstruct - Unobstr doors - Autono equipment - Where th panel - (intervention and de-e grounding - Rubber panel testin - Portable f - Fire ex and/or dry	ry lighting; marcated and ed escape route ucted emergency omous breathing ; ere is an electrical PPE suitable for n, energy isolation energization and stick); floor for electrical ng; cirefighting systems ctinguishers (CO2 chemical powder) conal protective
5529	RISER MONITORING	- System located in room/compartment in the hull - Electricity generation and/or room with electrical panels (risk with electricity) - Explosion risk electrical panels	unobstruction - Unobstructions - Autonomequipment - Where the panel - (intervention and degrounding - Rubber panel testing - Portable funds - Fire extension - Unions	marcated and ed escape route ucted emergency omous breathing; here is an electrical PPE suitable for n, energy isolation energization and stick); floor for electrical

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FEINUBNAS		COMMISSIONING		ESUP
	•		- Doro	onal protective
			- Pers equipment	onal protective - Clothing;
5537	POSITIONING	- System located in room/compartment in the hull - Electricity generation and/or room with electrical panels (risk with electricity) - Explosion risk electrical panels	unobstruction - Unobstructions - Autonomequipment - Where the panel - (intervention and degrounding - Rubber panel testing - Portable for the example of the panel testing - Portable for the panel te	narcated and ed escape route ucted emergency omous breathing ere is an electrical PPE suitable for n, energy isolation energization and estick); floor for electrical ng; irefighting systems tinguishers (CO2 chemical powder) conal protective - Clothing;
5590	TELEVISION (TV)	- System located in room/compartment in the hull	- Temporal - Der unobstruct - Unobstr doors - Autono equipment - Where th panel - (intervention and de-e grounding - Rubber panel testin - Portable f - Fire ex and/or dry - Pers equipment	ry lighting, narcated and ed escape route ucted emergency mous breathing ere is an electrical PPE suitable for n, energy isolation energization and estick); floor for electrical ng; irefighting systems ettinguishers (CO2 chemical powder) conal protective - Clothing;
5591	AUTOMATION NETWORK	- System located in room/compartment in the hull - Electricity generation and/or room with electrical panels (risk with electricity) - Explosion risk electrical panels	unobstruction - Unobstructions - Autonomequipment - Where the panel - (intervention and degrounding - Rubber panel testing - Portable function - Fire expension - Unions - Uni	narcated and ed escape route ucted emergency omous breathing ere is an electrical PPE suitable for n, energy isolation energization and stick); floor for electrical

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			- Pers equipment	onal protective - Clothing;
6410	FILLING STATION	- Storage of flammable material - Electric shock - Explosion risk electrical panels - Electric motors with risk of fire	- Demarcated and unobstructed escape route - Unobstructed emergency doors - Autonomous breathing equipment; - Portable firefighting systems - Fire extinguishers (CO2 and/or dry chemical powder) - Personal protective equipment - Clothing;	
8215	HOSPITAL	- System located in room/compartment in the hull	- Temporary lighting; - Demarcated and unobstructed escape route - Unobstructed emergency doors - Autonomous breathing equipment; - Portable firefighting systems - Fire extinguishers (CO2 and/or dry chemical powder)	
8217	COMMUNICATION CENTRAL STATION	- System located in room/compartment in the hull	- Temporar - Der unobstructe - Unobstr doors - Autono equipment; - Where th panel - (intervention and de-e grounding : - Rubber panel testir - Portable f - Fire ex and/or dry	ry lighting; narcated and ed escape route ucted emergency mous breathing here is an electrical PPE suitable for n, energy isolation energization and estick); floor for electrical ng; irefighting systems tinguishers (CO2 chemical powder) onal protective
8221	CENTRAL CONTROL ROOM	- System located in room/compartment in the hull	- Temporary lighting; - Demarcated and unobstructed escape route - Unobstructed emergency doors - Autonomous breathing equipment; - Where there is an electrical panel - (PPE suitable for intervention, energy isolation and de-energization and grounding stick); - Rubber floor for electrical panel testing;	

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		COMMISSIONING		
		- System located in room/compartment in the hull	- Fire exand/or dry - Persequipment - Temporal	narcated and
8224	MAINTENANCE WORKSHOP	- Electricity generation and/or room with electrical panels (risk with electricity) - Machine tools - Explosion risk electrical panels	- Unobstr doors - Autonot equipment - Where th panel - (intervention and de-of grounding - Rubber panel testin - Portable for the exand/or dry - Pers	; ere is an electrical PPE suitable for n, energy isolation energization and stick); floor for electrical
8226	WAREHOUSE	- System located in room/compartment in the hull - Storage of flammable material	- Temporal - Der unobstruct - Unobstruct doors - Autono equipment - Where th panel - (intervention and de-e grounding - Rubber panel testin - Portable f - Fire ex and/or dry - Pers	ry lighting; marcated and ed escape route ructed emergency mous breathing ; here is an electrical PPE suitable for in, energy isolation energization and stick); floor for electrical
N/A	ON SHORE N2/He LEAK TEST	- Pressure test - The maintenance of pressurized lines for the offshore stage must be clearly identified throughout the pressurization time	regarding signaling isolation of must be to as well a times must with the low in the vicin. Blocking the pipes of a signal of the color	Recommendations pressure tests, of tested circuits, of adjacent areas aken into account, as test execution st be compatible west flow of people

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