PETROBRAS	**REPORT**	Nr: I-RL-3010.19-1320-970-TNA-001	
	CLIENT: UN-BC/ENGP/ENAVI-P19		SHEET: 1 of 216
	PROGRAM: **Gerenciamento Integrado de Engenharia Naval (GIEN)**		FSSEN 20/0046
	AREA: **PETROBRAS 19 (P-19)**		-
UN-BC/ENGP/ENAVI	TITLE: **INVENTORY OF HAZARDOUS MATERIAL (IHM) REPORT – PART I**		NP-1
			UN-BC/ENGP/ENAVI

BUREAU VERITAS DO BRASIL INSPEÇÕES LTDA CNPJ 02.861.221/001402	BV Nr:	TECHNICAL RESP.: MARCO SANTOS
	CONTRACT Nr: 4600675256	CREA Nr: RJ-2000104906

MICROSOFT OFFICE 365/ I-RL-3010.19-1320-970-TNA-001.doc

INDEX OF REVISIONS

REV.	DESCRIPTION AND/ OR REVISED SHEETS
0	ORIGINAL ISSUE – FOR APPROVAL

	REV. 0	REV. A	REV. B	REV. C	REV. D	REV. E	REV. F	REV. G	REV. H
DATE	03/07/25								
DESIGN	TNA								
EXECUTION	R.Yamaki								
CHECK	L. Gomes								
APPROVAL	M. Santos								

INDEX

1 INTRODUCTION

The objective of this document is to provide a thorough and accurate identification and cataloging of hazardous materials present on the P-19, thereby ensuring compliance with regulatory standards.

This survey regarding hazardous materials was carried as described in the Guidelines for the development of the IHM, mentioned in Resolution MEPC.269(68), adopted on 15 May 2015 and with reference to the Hong Kong Convention, EMSA's Best Practice Guidance on the IHM and EU SRR 1257/2013.The IHM surveying, carried out in December 2024.

The collected samples were subsequently analyzed by certified laboratory Global Asbest Laboratory, based in Istanbul, Turkey, to accurately identify hazardous substances. The report prepared detailing their findings and methodologies, can be found in the appendix.

FOR THE BUSINESS AHEAD

BUREAU VERITAS SOLUTIONS Marine & Offshore

Inventory of Hazardous Materials
Manual Part I

Ship / Vessel name	PETROBRAS XIX
Flag	Panama
Distinctive No. / Letters	3FHI5
Port of Registry	PANAMA
Type of vessel	Floating storage unit
Gross Tonnage	22589
IMO Number	8753720
Name of Shipbuilder	
Name of Shipowner	BRASPETRO OIL SERVICES CO.
Date of delivery	31/12/1982
IHM Inventory Number	RJN0/2024/8753720/ssf
Revision Number	4.0

This inventory was developed in accordance with the IMO Guidelines for the Development of the Inventory of Hazardous Materials.
The IHM has been developed to cover additional requirements of the EU Ship Recycling Regulation (EU) 1257/2013.

Signatories

Prepared by:	Mr Roberto Yamaki
Company:	BV Solutions Marine & Offshore
Address:	Rua Evaristo da Veiga, 65, Setor 1, Sala 201, Centro, Rio de Janeiro-RJ - Brazil
Position:	Surveyor
Date:	10/12/2024

Contents

Foreword

This survey regarding hazardous materials was carried as described in the Guidelines for the development of the IHM, mentioned in Resolution MEPC.379(80), adopted on 07 July 2023 and with reference to the Hong Kong Convention, EMSA's Best Practice Guidance on the IHM and EU SRR 1257/2013.
The survey was conducted according to the steps below.

IHM process is the whole process of development and maintenance of an IHM throughout the operational life-cycle of the ship. It involves all the steps of developing an IHM including issuing/checking of relevant documentation (e.g. Material Declarations), sampling and analysis, verification and life-cycle management.

IHM Part I Development Process

The overall objective is to identify the presence or absence of HM contained in the equipment, systems, and/or areas on board a ship by suitable and generally accepted methods such as laboratory analysis.
Sampling methodology, Visual/Sampling Check Plan (VSCP) and on board survey performance is carried out in accordance with EMSA Guidance on IHM development.

Wherever accessible, samples of the materials suspected of containing hazardous materials were taken for testing of hazardous content. These materials were analysed by an accredited laboratory. In the analysis certificates from the laboratory, shown in the appendices, the type of hazardous material and its properties are shown.

During this inspection, all safety and appropriate HSE precautions and equipment were used such as a coverall, gloves and other PPE necessary to maintain a safe working environment. In cases where sample-taking was deemed impossible, the techniques used were recorded e.g. document referral or visual inspection. The tables on the next pages contain a summary of the hazardous materials researched, sampled and / or identified. IHM Manual Part 1 also includes a descriptive chapter summarising the hazardous material properties and typical checkpoint locations.

Parties involved

Client

Company name:	BRASPETRO OIL SERVICES CO.
Address:	AV.REPUBLICA DO CHILE 65 SALA 1106
Contact name:	To be informed by Owner
Contact email:	marco.santos@bvsolutions-m-o.com
Telephone number:	+55 21 22069328

IHM HAZMAT Expert Company

Name:	BV Solutions Marine & Offshore
Address:	Rua Evaristo da Veiga, 65, Setor 1, Sala 201, Centro, Rio de Janeiro-RJ,
Telephone number:	+55 21 22069328
Survey date:	17/12/2024
Project coordinator:	Marco Santos
HazMat Experts:	Roberto Yamaki

Laboratory

Company:	GLOBAL ASBEST RAPORLAMA HIZ. TIC. LTD.

Abbreviations / Terminology

Abbreviation / Term	Description
Organotin compounds	Organotin compounds include Tributyl Tins (TBT), Triphenyl Tins (TPT) and Tributyl Tin Oxide (TBTO)
PBB	Polybrominated Biphenyl
PBDE	Polybrominated Diphenyl Ethers
PCB	Polychlorinated Biphenyl
HBCDD	Hexabromocyclododecane (Brominated Flame Retardant)
PFOS	Perfluorooctane Sulfonic acid
ODS	Ozone Depleting Substance
PCN	Polychlorinated Naphthaleness
IHM	Inventory of Hazardous Materials
HM	Hazardous Materials
VSCP	Visual / Sampling Check Plan
AFS	Anti•fouling System
PCHM	Potentially containing Hazardous Material
MD	Material Declaration
SDoC	Suppliers Declaration of Conformity
SCCP	Short Chain Chlorinated Paraffin
Sb	Starboard side
Ps	Port side

Relevant Legislation

Below is a summary of relevant legislations and regulations.

Relevant Legislation

[1] SOLAS Chapter II-1 regulation 3-5, MSC.194(80) (May 20, 2005)
[2] Resolution MEPC.179(59) - Guidelines for the development of the IHM, adopted during the Hong Kong Convention on 17 July 2009, revoked by MEPC.379(80)
[3] IMO MSC/Circ. 1045 - Guidelines for Maintenance and monitoring of on-board materials containing asbestos, 28-05-2002
[4] RoHS - 2002/95/EC (RoHS) and all subsequent Amendments of the Directive
[5] IMO Guidelines on ship recycling - Resolution A.962(23)
[6] Regulation (EU) No. 1257/2013
[7] EMSA's Best Practice Guidance on the Inventory of Hazardous Materials
[8] MARPOL Annex VI Convention
[9] AFS Convention 2001
[10] EMSA Study of two hazardous substances (PFOS and HBCDD) included in the annexes of regulation (EU) 1257/2013 on ship recycling
[11] Hong Kong Convention

Desktop research / Documentation review

The following list of technical documentation, drawings, material declarations, specifications and certificates have been used for reference in compiling this manual. An archive of all reference materials is available on-board the vessel and should be made available as an IHM archive to all external parties for review in support of this manual.

- Fire control and safety (Safety Plan)
- IAPP Supplement (IAPP Certificate)
- Ships certificates and related manuals (ShipStatus)

Desktop research / Documentation review

General Arrangement drawing

Please find the general arrangement drawing in the following page

FIRE CONTROL AND LIFESAVING EQUIPMENT PLAN

PLANO DE EQUIPAMENTO DE SEGURANÇA E SALVATAGEM

FIRE FIGHTING/COMBATE A INCENDIO

SIMBYL	DESCRIPTION - DESCRIÇÃO	MAIN C.PRINC.	TWEEN C.INT.	LOWER C.INF.	SPIDER C.SUSP.	COLLUMN COLUNA	PONTOON	HELID.	UPPER DECK	PERFIL	MDA EL.47825	MDA EL.50725	MDA EL.53625	TOTAL
	A CLASS DIVISION ANTEPARA CLASSE A													
	B CLASS DIVISION ANTEPARA CLASSE B													
	PORTABLE WATER EXTINGUISHER (10 LITERS) EXTINTOR PORTATIL DE AGUA	2	3	5	-	-	-	-	-	-	1	1	1	13
	PORTABLE DRY CHEMICAL EXTINGUISHER (12Kg) EXTINTOR PORTATIL DE PO QUIMICO (12Kg)	17	-	15	1	6	8	-	2	-	-	-	-	49
	PORTABLE CO2 EXTINGUISHER (6Kg) EXTINTOR PORTATIL DE CO2 (6Kg)	34	5	20	3	2	4	-	4	-	-	-	-	72
	WHEELED DRY CHEMICAL EXTINGUISHER (50Kg) EXTINTOR MOVEL DE PO QUIMICO (50Kg)	5	-	3	2	-	-	2	-	-	-	-	-	12
	PORTABLE ABC EXTINGUISHER (1Kg) EXTINTOR PORTATIL DE ABC (1Kg)	18	-	-	-	-	-	-	-	-	-	-	-	18
	PORTABLE ABC EXTINGUISHER (6Kg) EXTINTOR PORTATIL DE ABC (6Kg)	-	-	-	-	-	-	-	-	-	1	1	1	03
	FIRE HIDRANT HIDRANTE	13	3	14	3	6	6	-	4	-	1	1	1	52
	FIRE FIGHTING EQUIPMENT LOCKER WITH FOAM APPLICATION FITTING ARMÁRIO C/EQUIPAMENTO DE COMBATE A INCÊNDIO/ESPUMA	8	-	6	3	-	-	-	1	-	-	-	-	18
	FIRE FIGHTING EQUIPMENT LOCKER ARMÁRIO COM EQUIPAMENTO DE COMBATE A INCÊNDIO COM ÁGUA	5	3	8	-	6	6	-	2	-	2	2	2	36
	WATER/ FOAM MONITOR CANHÃO DE AGUA/ ESPUMA	2	-	-	-	-	-	-	2	-	-	-	-	4
	PORTABLE WATER MONITOR CANHÃO MONITOR PORTÁTIL DE AGUA	1	-	-	1	-	-	-	-	-	-	-	-	2
	SPACE PROTECTED BY DELUGE SYSTEM ÁREA PROTEGIDA POR SISTEMA DE DILUVIO	-	-	-	-	-	-	-	-	-	-	-	-	-
	SPACE PROTECTED BY CO2 ÁREA PROTEGIDA POR SISTEMA DE CO2	-	-	-	-	-	-	-	-	-	-	-	-	-
	SPACE PROTECTED BY FOAM ESPAÇO PROTEGIDO POR ESPUMA	-	-	-	-	-	-	-	-	-	-	-	-	-
	INTERNAL CO2 WARNING SIGN BUZINA INTERNA DE CO2	16	-	6	-	1	-	-	1	2	-	-	-	26
	LOCAL CO2 BATERY BATERIA LOCAL DE CO2	7	1	-	-	-	-	-	-	-	-	-	-	8
	CO2 BATTERY BATERIA CENTRAL DE CO2	2	-	-	-	-	-	-	-	-	-	-	-	2
	CO2 REMOTE RELEASE STATION ESTAÇÃO DE DISPARO DE CO2	14	1	13	-	-	-	-	1	1	-			30
CO2	EXTERNAL CO2 WARNING SIGN SINALIZAÇÃO EXTERNA DE CO2	16	1	12	-	-	-	-	1	-	-	-	-	30
	AUDIBLE EMERGENCY ALARM ALARME DE EMERGENCIA AUDITIVO	24	1	23	-	5	2	-	4	2	4	4	4	73
	PUSH BOTTON FOR FIRE ALARM BOTAO ACIONADOR DO ALARME DE INCENDIO	13	3	17	3	6	6	-	2	1	2	2	2	57
	FOAM INSTALLATION ESTAÇÃO FIXA DE EXTINÇÃO DE INCÊNDIO P/ ESPUMA	2	-	-	-	-	-	-	1	-	-	-	-	3
	PORTABLE FOAM APPLICATOR APLICADOR PORTATIL DE ESPUMA	3	-	1	2	-	-	-	-	-	-	-	-	6
	FLAME DETECTOR ESPAÇO MONITORADO POR DETECTOR DE CHAMA	-	-	13	-	-	-	-	-	-	-	-	-	13
	GAS DETECTOR ESPAÇO MONITORADO POR DETECTOR DE GÁS P/ HIDROGENIO	89	2	35	50	2	4	-	-	-	2	-	-	184
H2	GAS DETECTOR FOR HYDROGEN	2	-	2	-	2	-	-	-	-	-	-	-	6
FL	FIRE LOCKER ARMARIO DE INCENDIO	-	-	-	-	-	-	-	-	-	1	1	1	03
TV	RATE OF TEMPERATURE RAISE FIRE DETECTION ESPAÇO MONITORADO POR DETECTOR DE CALOR (TIPO TERMOVELOCIMETRICO)	14	12	60	-	4	-	-	-	2	-	-	-	92
	SMOKE DETECTION ESPAÇO MONITORADO POR DETECTOR DE FUMAÇA	34	64	86	-	10	16	-	2	2	12	12	12	250
VM	MECHANICAL VENTILATION AREA COM VENTILAÇÃO MECANICA	6	-	8	-	-	-	-	1	-	-	-	-	15
P-	NEGATIVE PRESSURIZATION AREA COM PRESSURIZAÇÃO NEGATIVA	-	-	2	-	-	-	-	-	-	-	-	-	2
P+	POSITIVE PRESSURIZATION AREA COM PRESSURIZAÇÃO POSITIVA	-	-	4	-	-	-	-	-	-	-	-	-	4
FE	FIREMAN S OUTFIT LOCKER ARMÁRIO DE APOIO	5	-	-	3	-	-	-	-	-	-	-	-	8
F	FIRE STATION POSTO DE COMBATE A INCÊNDIO	2	-	-	-	-	-	-	-	-	-	-	-	2
SOPEP	SOPEP BOX CAIXA SOPEP COM ACESSÓRIOS	2	-	-	1	-	-	-	-	-	-	-	-	3
ESD 2	LEVEL 2 EMERGENCY PUSH-BUTTON BOTOEIRA DE EMERGENCIA-NIVEL2	1	-	-	-	-	-	-	-	-	-	-	-	1
ESD 3P	LEVEL 3 PARTIAL EMERGENCY PUSH-BUTTON BOTOEIRA DE EMERGENCIA-NIVEL 3 PARCIAL	1	-	-	-	-	-	-	-	-	-	-	-	1
ESD 3T	LEVEL 3 TOTAL EMERGENCY PUSH-BUTTON BOTOEIRA DE EMERGENCIA-NIVEL 3 TOTAL	1	-	-	-	-	-	-	-	-	-	-	-	1
ESD 4	LEVEL 4 EMERGENCY PUSH-BUTTON BOTOEIRA DE EMERGENCIA-NIVEL 4	1	-	-	-	-	-	-	-	-	-	-	-	1
ABAN	ABANDON PUSH BUTTON BOTOEIRA DE ABANDONO	1	-	-	-	-	-	-	-	-	-	-	-	1
G	GENERAL FIRE ALARME ALARME GERAL DE INCÊNDIO	1	-	-	-	-	8	-	-	-	-	-	-	9
	LOCAL FIRE ALARME ALARME LOCAL DE INCÊNDIO	1	-	-	-	-	9	-	-	-	-	-	-	10
	BILGE PUMP BOMBA DE ESGOTO	-	-	-	-	-	6	-	-	-	-	-	-	6
	FIRE PUMP BOMBA DE INCÊNDIO	1	-	-	-	-	2	-	-	-	-	-	-	3
C	CONTROL STATION ESTAÇÃO DE CONTROLE	5	-	-	-	-	-	-	-	-	-	-	-	5
FIRE PLAN	FIRE CONTROL PLAN PLANO DE SEGURANÇA	4	2	1	-	-	-	-	-	-	-	-	-	7
	EMERGENCY TELEPHONE STATION TELEFONE DE EMERGÊNCIA	12	1	5	1	2	4	-	2	1	-	-	-	28
	CLOSING APPLIANCE FOR EXTERNAL VENTILATION DAMPER DE ESTANQUEIDADE PARA VENTILAÇÃO EXTERIOR	19	-	-	-	-	-	-	10	-	-	-	-	29
	INTERNATIONAL SHORE CONNECTION CONECÇÃO INTERNACIONAL	2	-	-	-	-	-	-	-	-	-	-	-	2
G	EMERGENCY GENERATOR GERADOR DE EMERGÊNCIA	1	-	-	-	-	-	-	-	-	-	-	-	1
	FIRE DAMPER DAMPER CORTA FOGO	7	6	6	-	-	-	-	-	-	-	-	-	19

LIFE SAVING / SALVATAGEM

SIMBYL	DESCRIPTION - DESCRIÇÃO	MAIN C.PRINC.	TWEEN C.INT.	LOWER C.INF.	SPIDER C.SUSP.	COLLUMN COLUNA	PONTOON	HELID.	UPPER DECK	PERFIL	MDA EL.47825	MDA EL.50725	MDA EL.53625	TOTAL
	FLASHING WARNING SIGN ALARME LUMINOSO	20	-	20	-	5	-	-	1	-	-	-	-	45
FRIG	REFRIGERATION FLASH WARNING ALARME LUMINOSO DE REFRIGERAÇÃO	-	3	1	-	-	-	-	-	-	-	-	-	4
	RESCUE AND SEARCH LIGHT HOLOFOTE DE BUSCA E SALVAMENTO	4	-	-	2	-	-	-	-	-	-	-	-	6
	BOAT LOWERING LIGHT HOLOFOTE DE DESCIDA DA EMBARCAÇÃO	7	-	-	-	-	-	-	-	-	-	-	-	7
	ESCAPE ROUTE ROTA DE FUGA	-	-	-	-	-	-	-	-	-	-	-	-	-
	SAFETY SHOWER AND EYE-WASH UNIT CHUVEIRO E LAVA-OLHOS	2	-	3	1	-	-	-	-	-	-	-	-	6
	NAVEGATION LIGHT (U LIGHT) LAMPADA DE AUXILIO A NAVEGAÇÃO (CODIGO MORSE U)	4	-	-	-	-	-	-	-	-	-	-	-	4
	STRETCHER MACA	4	-	3	1	-	-	-	-	-	-	-	-	8
	EPIRB EPIRB	1	-	-	-	-	-	-	-	-	-	-	-	1
	DAVIT-LAUNCHED LIFERAFT BALSA INFLÁVEL LANÇADA POR TURCO	15	-	-	-	-	-	-	-	-	-	-	-	15
	RESCUE BOAT BOTE DE RESGATE	1	-	-	-	-	-	-	-	-	-	-	-	1
	LIFEBOAT BALEEIRA	4	-	-	-	-	-	-	-	-	-	-	-	4
	RADAR TRANSPONDER RADAR TRANSPONDER	6	-	-	-	-	-	-	-	-	-	-	-	6
	PORTABLE VHF RADIO RADIO PORTATIL VHF	7	-	-	-	-	-	-	-	-	-	-	-	7
	PARACHUTE TYPE DISTRESS SIGNALS SINAL DE SOCORRO TIPO PARAQUEDAS	36	-	-	-	-	-	-	-	-	-	-	-	36
	LINE-THROWING APPLIANCE LANÇA RETINIDA	4	-	-	-	-	-	-	-	-	-	-	-	4
	FIRST AID KIT CAIXA DE 1º SOCORROS	6	-	-	-	-	-	-	-	-	-	-	-	6
	SELF-CONTAINED BREATHING APPARATUS ARMÁRIO COM APARELHO DE RESPIRAÇÃO AUTONOMA	17	-	6	2	1	2	-	-	-	-	-	-	28
	LOCKER WITH ADDITIONAL BREATHING APPRATUS MASCARA AUTONOMA DE FUGA	-	-	-	-	-	-	-	-	6	-	-	-	6
	LANDING NET REDE ANTIDERRAPANTE	-	-	-	-	-	-	1	-	-	-	-	-	1
	LIFEJACKET COLETES SALVA-VIDAS	228	61	64	-	-	-	-	-	-	16	16	16	401
15	LIFEJACKET LOCKERS ARMÁRIO DE COLETES SALVA-VIDAS	12	-	-	-	-	-	-	-	-	-	-	-	12
	LIFE BUOYS BOIA CIRCULAR	2	-	1	3	2	-	-	-	-	-	-	-	8
	LIFE BUOYS WITH LIFELINE BOIA CIRCULAR COM RETINIDA	6	-	2	4	2	-	-	-	-	-	-	-	13
	LIFEBUOY WITH SELF IGNITING LIGHTS AND SELF ACTIVATING SMOKE SIGNALS BOIA COM DISPOSITIVO DE ILUMINAÇÃO E SINAL FUMIGENO	2	-	-	-	-	-	-	-	-	-	-	-	2
	LIFE BUOYS WITH IGNITING LIGHTS BOIA CIRCULAR COM DISPOSITIVO DE ILUMINAÇÃO	6	-	-	2	1	-	-	-	-	-	-	-	9
	EMBARKATION LADDER OR ALTERNATIVE APPROVED DEVICE ESCADA DE EMBARQUE	3	=	=	=	=	=	=	=	=	=	-	-	3

OTHERS / DIVERSOS

SIMBYL	DESCRIPTION - DESCRIÇÃO	MAIN C.PRINC.	TWEEN C.INT.	LOWER C.INF.	SPIDER C.SUSP.	COLLUMN COLUNA	PONTOON	HELID.	UPPER DECK	PERFIL	MDA EL.47825	MDA EL.50725	MDA EL.53625	TOTAL
	AVIATION OBSTRUCTION LIGHTS LUZ DE OBSTACULO AEREO	4	-	-	-	-	-	-	-	-	-	-	-	4
	REMOTE CONTROL VALVE FOR FUEL AND LUB. OIL TANK VALVULA CONTROLADA REMOTAMENTE NOS TANQUES DE ÓLEO COMB. E LUB.	-	-	3	-	-	-	-	-	-	-	-	-	3
	RISK AREA DIVISION DIVISÃO DE ÁREA DE RISCO	-	-	-	-	-	-	-	-	-	-	-	-	-
	EMERGENCY SWITCHBOARD PAINEL ELÉTRICO DE EMERGÊNCIA	-	-	-	-	-	-	-	1	-	-	-	-	1
	HELIDECK PERIMETER LIGHT LUZ DE PERIMETRO DO HELIDECK	-	-	-	-	-	-	30	-	-	-	-	-	30
	WIND DIRECTION INDICATOR BIRUTA	-	-	-	-	-	-	-	1	-	-	-	-	1
	SUFOCATION CLOAK MANTA DE ABAFAMENTO	1	2	4	-	-	-	-	1	-	-	-	-	8

DOCUMENTOS DE REFERENCIA

NOTAS GERAIS

REV.	DESCRIÇÃO	DATA	POR	APROV.
AA	REVISADAS QUANTIDADES DE BALSAS PELA UN-BC/ATP-MRL/OP-P19	05/03/20	RENAN	HENRIQUE
Z	REVISADAS QUANTIDADES DE BÓIAS E COLETES PELA UN-BC/ATP-MRL/OP-P19	09/01/20	RENAN	HENRIQUE
Y	INCLUSÃO DO MTA	20/06/18	RENAN	HENRIQUE
X	REVISADO CONFORME LEVANTEMENTO DE CAMPO PELA UO-BC/ATP-MRL/OP-P19 E UO-BC/SMS/SEG	20/06/18	RODRIGO	MONNERAT
W	REVISADO TABELA DE QUANTITATIVO DE SENSORES DE GÁS POR ÁREA PELA UO-BC/ATP-MRL/OP-P19	18/10/2017	RODRIGO	CUNHA
V	REVISADO CONFORME LEVANTAMENTO DE CAMPO PELA UO-BC/ATP-MRL/OP-P19	18/09/2017	RODRIGO	CUNHA
U	REVISADO DEVIDO A RETIRADA DE SENSORES DE GÁS (RL-3010.19-5522-855-PSE-002)	18/07/2016	P. Damy	David
T	REVISADO PARA ACRÉSCIMO P-UC-122302	16/04/15	CYM6	DAAQ
S	REVISADO PARA ATUALIZAÇÃO DAS ESCADAS DE EMBARQUE - MAIN DECK BB & BE	09/10/2014	TECNITAS	MARCELO RAMOS
R	AS BUILT PARA ATENDER A SE 2908	15/08/2014	TECNITAS	MARCELO RAMOS
Q	REVISADO PARA RETIRADA DO CESTO DE QUEIMA DE LIXO - BALEEIRA 1	03/09/2010	PETROBRAS	LIRIS
P	REVISADO PARA ACRÉSCIMO DE DOIS RADARES TRANSPONDER NO MAIN DECK- PROA	13/05/2010	PETROBRAS	LIRIS
N	REVISADO PARA ACRÉSCIMO DAS BOMBAS DE ESGOTO NAS CASAS DE BOMBAS - PONTOON BB & BE (SE-895)	01/02/2007	TECNITAS	MARCELO RAMOS
M	REVISADO PARA ATENDER SOLICITAÇÃO DA BV CARTA N 00245/04-MAC/RJN	28/03/2005	TECNITAS	MARCELO RAMOS
L	AS BUILT COM REVISÃO GERAL PELO B.T.	10/02/2005	TECNITAS	MARCELO RAMOS
K	AS BUILT COM REVISÃO GERAL PELO B.T.	23/11/2004	TECNITAS	MARCELO RAMOS
J	REVISADO CONFORME RELOCAÇÃO E INCLUSÃO DE EQUIPAMENTOS	07/05/2004	MOTOMURA	BARROCO
H	AS BUILT COM REVISÃO GERAL PELO B.T.	17/12/2003	TECNITAS	MARCELO RAMOS
G	REVISADO PARA ATENDER SOLICITAÇÃO DA PETROBRAS	15/06/2002	BATTISACO	EDIVALDO
F	REVISADO PARA ATENDER SOLICITAÇÃO BV CARTA N 01616/01-RPO/RJN	14/12/2001	ARNON	EDIVALDO
E	REVISADO QUANTIDADE DE MARCAS E LOCALIZAÇÃO DO ARMÁRIO DA BRIGADA DE INCÊNDIO, PELA CPR , PARA ATENDER AO SMS.	20/01/2001	BETO	EDIVALDO
D	REVISADO PELA CPR CONFORME CONSTRUIDO P/ATENDER AO SMS (AS-219-BR).	31/10/00	BETO	EDIVALDO
C	REV. CONF. BV 283/98 DE 29/01/98.	12/01/98	MARCO	VICENTE/E.GIL
B	REV. CONF. BV 119/97 DE 13/01/97 E AS BUILT.	19/01/98	MARCO	VICENTE/E.GIL
A	ALT. CONF. ADP NR.4446/97-06/06/97 E CARTA BV NR.1343/97-20/06/97	19/09/97	MARCO	VICENTE/E.GIL

DESTINO	COPIA
BR	01
BV	04

IVI SADE VIGESA

IVI Industrias Verolme - Ishibras S.A.
ESTALEIRO VEROLME - ANGRA DOS REIS

PETRÓLEO BRASILEIRO S.A. PETROBRAS

SEGEN

CLIENTE OU USUÁRIO: E & P / E & P BACIA DE CAMPOS

EMPREENDIMENTO OU PROGRAMA: CAMPO DE MARLIM

ÁREA OU UNIDADE: PLATAFORMA SEMI-SUBMERSIVEL - P 19

TÍTULO: PLANO DE SEGURANÇA E SALVATAGEM

DES. MARCO	PROJ. DUARTE	VERIF. VICENTE	APROV. E. GIL
ESCALA 1:200			FOLHA 1

DATA

SOC. CLASS. B.V.

NÚMERO IESA / IVI: 4A46008

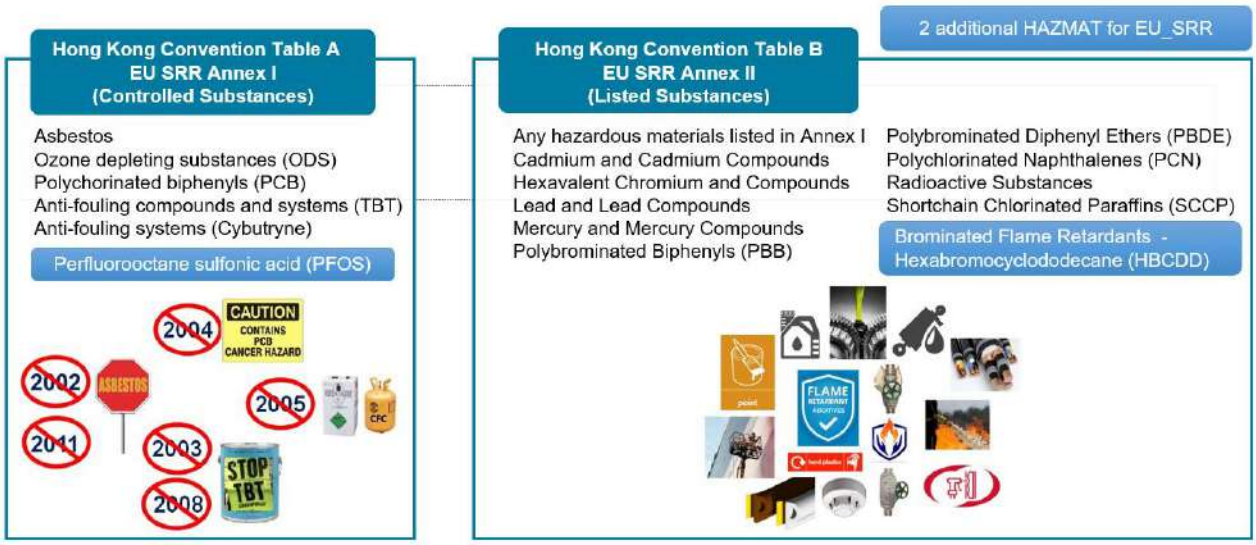
OBRA IVI/IESA: KPV1005

NÚMERO PETROBRAS: DE-3010.19-5400-947-IVI-010

IHM • Hazardous Material Summary and checkpoints

EU Ships recycling regulations (EU_SRR) specifies 16 hazardous materials split into 2 categories of Annex I (Controlled substances) and Annex II (Listed substances).

Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships specifies 14 materials split into 2 categories of Table A (Controlled substances) and Table B (Listed substances).



The control measures for the 2 additional materials included in EU_SRR, are defined in the table below.

HM	EU SRR			IMO HKC
	Control measure			Control measures
	EU ships		Non-EU ships	
	New ships	Existing ships		
PFOS	✓	✓	-	-
HBCDD	✓	-	-**	-

* After the initial preparation of the IHM, it shall be properly maintained and updated reflecting new installations containing HM referred to in Annex II of the SRR (meaning that thereafter all the HM included in Annex I and **Annex II** of the SRR should be included in the IHM).

** After the initial preparation of the IHM, it shall be properly maintained and updated reflecting new installations containing HM referred to in **Annex II** of the SRR taking into account the exemptions and transitional arrangements applicable to those materials under international law.

IHM • Hazardous Material Summary and checkpoints

IHM Manual Part 1 for an existing ship, according to applicable regulations, will provide an investigation into, as a minimum, Annex I hazardous materials for EU_SRR and Table A hazardous materials for Hong Kong convention. The table above provides explanation of the exceptions and exclusions for EU and non-EU flag vessels.

Annex 2 / Table B materials will be investigated and listed, as far as is reasonable and practicable. In many cases, for an existing vessel, Annex II / Table B materials will not form part of IHM Manual Part 1 during the ships service lifecycle.

Annex II / Table B materials will instead be investigated and categorised within IHM Manual Part II (Operationally generated wastes) and IHM Manual Part III (Stores, liquids and gases sealed in the ship's machinery and equipment; and regular consumable goods). IHM Manual Parts II and III are usually prepared at a time immediately prior to the ships end of life voyage to a recycling shipyard.

The threshold values for all 16 hazardous materials are listed as follows:

HAZARDOUS MATERIAL	THRESHOLD VALUE
Asbestos	0.1%
Ozone Depleting Substances (ODS)	No threshold value
Polychlorinated Biphenyls (PCB)	50 mg/kg
Perfluorooctane sulfonic acid (PFOS) and its derivatives (CAS No:1763-23-1) $C_8F_{17}SO_2X$ (X-OH, Metal salt (O-M +), halide, amide, and other derivatives including polymers) Examples of PFOS derivatives: Potassium perfluorooctane sulfonate (CAS No: 2795-39-3); Lithium perfluorooctane sulfonate (CAS No: 29457-72-5); Ammonium perfluorooctane sulfonate (CAS No: 29081-56-9); Diethanolammonium perfluorooctane sulfonate (CAS No: 70225-14-8); Tetraethylammonium perfluorooctane sulfonate (CAS No: 56773-42-3); Didecyldimethylammonium perfluorooctane sulfonate (CAS No: 251099-16-8).	Concentrations of PFOS **above** 10 mg/kg (0.001% by weight) when it occurs in substances or in preparations or Concentrations of PFOS in semi-finished products or articles, or parts thereof **equal to or above** than 0.1% by weight calculated with reference to the mass of structurally or micro-structurally distinct parts that contain PFOS or For textiles or other coated materials, if the amount of PFOS is **equal to or above** than 1 µg/m^2 of the coated material.
Anti-fouling systems containing organotin compounds as a biocide (TBT)	2500 mg total tin/kg
Anti-fouling systems containing Cybutryne	1000 mg/kg
Cadmium and Cadmium Compounds	100 mg/kg
Hexavalent Chromium and Hexavalent Chromium Compounds	1000 mg/kg

HAZARDOUS MATERIAL	THRESHOLD VALUE
Lead and Lead Compounds	1000 mg/kg
Mercury and Mercury Compounds	1000 mg/kg
Polybrominated Biphenyls (PBBs)	50 mg/kg
Polybrominated Diphenyl Ethers (PBDEs)	1000 mg/kg
Polychlorniated Naphthalenes (more than 3 chlorine atoms)	50 mg/kg
Radioactive Substances	No threshold value
Certain Shortchain Chlorinated Paraffins (Alkanes, C10-C13, chloro)	1%
Brominated Flame Retardant (HBCDD) EC No: 221-695-9, 247-148-4, CAS No: 3194-55-6 25637-99-4, alpha-hexabromocyclododecane CAS No: 134237-50-6, beta-hexabromocyclododecane CAS No: 134237-51-7, gamma-hexabromocyclododecane CAS No: 134237-52-8.	100 mg/kg (0.01%)

IHM • Hazardous Material Summary and checkpoints

For a new ship, as defined by EU_SRR, an IHM will provide evidence of a Quality Control Process that samples, verifies and monitors the new construction shipyard supply chain to prevent installation of hazardous materials.

For an existing ship, the IHM will provide evidence of an equivalent quality control process, by way of visual and sampling verification, that had not been enforced or controlled at new building shipyards at the time of the ships construction.

The goal of the IHM Manual Part I is to provide evidence of an investigation into the vessels construction components and materials aiming to prove that the hazardous materials sampled for are not present in known and justifiably targeted locations.

Those hazardous materials that are identified above the given thresholds or are presumed to be present on-board pending further investigation, are described and quantified within the IHM Inventory.

A summary of the hazardous materials and an indicative appraisal of selected checkpoint locations are given below.

Asbestos

Asbestos poses a danger to health more than an environmental concern, and is proven to cause asbestosis (lung scarring), lung cancer and mesothelioma (cancer of lung lining).

Anyone that might come into contact with asbestos in their day to day activities should have the relevant training based on the risk assessment of the exposure relative to the task at hand.

● Awareness ● Sampling ● Maintenance ● Removal

Bureau Veritas Solution is in no part involved in the business or operation of asbestos maintenance or removal. The training and duties contracted and performed by a Bureau Veritas Solution IHM expert covers asbestos awareness and asbestos sampling duties only.

Exposure to the fibres of this mineral can cause significant health effects. In the event of asbestos being positively identified above the given threshold value, a risk level assessment will be reported in the IHM Manual Part 1.

Asbestos sampling locations are generally targeted at structural fire protection / boundaries and equipment or components that offer thermal insulation or friction and heat resisting properties. Insulation boards, pipe and exhaust laggings, brake linings, gland packings and flange gaskets are commonly targeted locations. Other sampling locations for asbestos may include (but are not limited to) vinyl or thermoplastic flooring tiles, cements, composites, adhesives, putty, mastics, bulkhead and deck glands, as well as electrical components such as arc shields.

IHM • Hazardous Material Summary and checkpoints

Polychlorinated biphenyls (PCBs)

PCBs are acutely toxic, damaging to the immune system and liver function, carcinogenic, weaken fertility and teratogenic (able to disturb the growth and development of an embryo).

However some of the characteristics of PCBs made them ideal for industrial use, being a good isolator, providing good heat conductance, fire resistant, insoluble, incompressible, low volatility and cheap to manufacture.

As such PCBs were commonly used as a flame retardent additive in rubbers, plastics, coatings and electrical components. Sampling locations for PCB are widespread owing to the potential for its existence. An indicative list of sampling locations would include (but is not limited to) insulating and hydraulic oils, heating mediums, rubber mounts and pipe clamps, plastic foam insulation, thermal insulation, rubber hoses and gaskets, oil based paints, caulkings, electric cabling and numerous electrical components, switches and voltage regulators.

Ozone Depleting Substances (ODS)

Ozone depleting substances cause no direct harm to humans, but have the ability to reduce ozone and have a climate effect greater than that of carbon dioxide.

The presence of and sampling for ODS is generally targeted at refrigerants used in air conditioning and refrigerating equipment and compressors, urethane formed foams in thermal insulation panels, as well as blowing agents used in cryogenic insulating foams for LNG pipe and tank insulation.

Anti-fouling compounds and systems (AFS)

TBT used in anti-fouling systems can cause severe reproductive effects, impairs the immune system and causes growth defects in aquatic organisms. Exposure and inhalation of TBT in humans may cause breathing problems, headaches, irritated skin, fatigue, dizziness and stomach pains.

Sampling will be aimed at the ships anti-fouling coatings wherever possible, to provide evidence that underwater hull coatings are TBT free.

After the International Convention on the Control of Harmful Anti-Fouling Systems on Ships (AFS Convention) took effect in 2008, tributyltin (TBT) was removed from anti-fouling paints and replaced by several new biocides. One of these replacements was Cybutryne which is used in hull paint to prevent biofouling growth.

It is now recognised that Cybutryne is acutely and chronically toxic for a variety of marine organisms and in some respects even more harmful than TBT. The substance accumulates in sediments and causes long-term effects on the marine environment. As such it should not be permitted. The AFS certificate and Material Declarations will be checked, and samples of anti-fouling coatings may be taken.

IHM • Hazardous Material Summary and checkpoints

Perfluorooctane Sulfonic acid (PFOS)

PFOS is chronically toxic, injurious to reproduction, carcinogenic, toxic to aquatic organisms and widely distributed in the global environment. Exposure in humans has been linked to bladder and kidney cancers as well a cause of diabetes.

Ideal sampling locations for PFOS may include (but are not limited to) fire fighting foams (usually in fixed storage tanks), hydraulic fluids, cable sheathing, coatings, adhesives, PVC floorings, gaskets and seals, chromium platings as well as textiled surface treatments.

Cadmium and cadmium compounds

Exposure / breathing of cadmium oxide fumes can cause sore eyes, nose and throat, coughing, headache, weakness, fever, chest pains and breathlessness.

Cadmium and its compounds are used in many processes and products. Sampling locations may include cadmium plated bearings, cadmium-copper alloyed wiring for fire detection systems (cadmium copper conductors), electrical cabling, soldering, pigments in plastics, ceramics and glasses; stabilisers in polyvinylchloride, protective plating on steel / surface films, nickel-cadmium batteries, and paints.

Chromium and chromium compounds

Breathing or swallowing hexavalent chromium or chromium dust, fumes or mist can cause inflammation and cancer of the lungs, kidney damage, irritation and inflammation of the nose and upper respiratory tract, as well as ulcers and fertility problems.

Chromium and its compounds are also used and found in numerous processes and products. Sampling locations for chromium may include (but are not limited to) plating films and surface finishes, stainless steels and other chromium alloyed materials and weldings, dyes and pigments for paints and coatings, catalysts in stored chemicals; leather tanning agents and many other electroplated or anodised components.

Lead and lead compounds

Hot cutting in demolition and dismantling operations as well as paint stripping produces lead dust, fume or vapours that can cause a risk of lead poisoning.

The possible presence of lead is again widespread and sampling when performed will most commonly be targeted at locations known for its use such as lead-acid batteries for emergency power, GMDSS power source or backup power source, starting batteries of aux and emergency generators, spare batteries in emergency generator room, batteries in engine control room and ME control systems, switchboards, automation batteries, life-boat batteries, GMDSS telephones & portable VHF radios, emergency lighting systems, emergency fire pump casings, corrosion resistant primer and paints, solders, preservative coatings, electrical cable insulation, lead sheathed battery cables and lead ingots for ballasting.

IHM • Hazardous Material Summary and checkpoints

Mercury and mercury compounds

Mercury is the most volatile of all metals and its vapour is very toxic. Easily adsorbed, concentrated, and stored over long time periods in mineral and organic matter. Through the food chain heavy metals eventually enter human organs and can cause chronic or acute neurological damage (irritability, paralysis, blindness, insanity, headache and/or depression).

Sampling for mercury components when performed will most commonly be aimed at equipment such as fluorescent light bulbs with mercury arc lamps, electrical switches, mercury batteries, mercury vapour lighting ballasts, high intensity discharge type fluorescent lamps, anodes, thermometers and temperature sensors, as well as some gyrocompass control elements.

Polybrominated Biphenyls (PBB)

PBBs are a group of manufactured chemical compounds used most commonly as a flame retardant additive. Their chlorine based derivatives are known as PCBs. PBBs can cause cancer in humans and can cause skin problems in consumers of contaminated foods.

Suitable sampling locations for PBB may include (but are not limited to) non-flammable plastics, television sets, computer hardware housings and monitors, printed circuit boards, numerous electrical components, distribution boxes for electrical lines, insulation within electrical cabling, cellular rubbers and seals, white goods including washing machines and tumble dryers, polystyrene foams, polyurethane foams, expandable polystyrene foams (EPS) and extruded polystyrene foams (XPS).

Polybrominated Diphenyl Ethers (PBDE)

PBDEs are organ bromine compounds that are also used as flame retardants and are structurally similar to the PCBs. Exposure to low levels of PBDEs through ingestion of food and inhalation accumulates in blood, breast milk, and fat tissues. PBDEs can reduce fertility in humans at higher levels. Increasing PBDE levels have been detected in the blood of marine mammals.

Suitable sampling locations for PBDE may include (but are not limited to) non-flammable plastics, television sets, computer hardware housings and monitors, printed circuit boards, numerous electrical components, distribution boxes for electrical lines, insulation within electrical cabling, cellular rubbers and seals, white goods including washing machines and tumble dryers, polystyrene foams, polyurethane foams, expandable polystyrene foams (EPS) and extruded polystyrene foams (XPS).

Polychlorinated Naphthalene (PCN)

PCN products are made by chemically reacting chlorine with naphthalene (a pungent solid made from coal or petroleum). Exposure causes severe skin rashes. Chronic exposure increases risk of liver disease and a suspected link with cancer.

The presence of and sampling for PCN is generally targeted at paints, lubricating oils, insulating coatings for electrical cabling, wood preservatives, rubber and plastic additives, and capacitor dielectric components.

IHM • Hazardous Material Summary and checkpoints

Radioactive materials

Radioactive materials on ships are generally permanently sealed in a capsule or closely bonded and in a solid form that is used as a source of radiation (not radioactive residues or contamination).

Most of the ionizing radiation that people are exposed to in day-to-day activities comes from natural, rather than manmade, sources.

Radioactive sources are included in the IHM inventory, regardless of the number, type or amount of radioactivity. Physical sampling will not be performed.

Equipment or components sometimes identified on ships that are known to have radioactive sources are typically, ionization chambers in smoke detectors, instruments/signs containing gaseous tritium light sources or radioactive paints, high intensity discharge lamps, radioactive lightning rods and gamma ray level gauges.

Short chain chlorinated paraffin (SCCP)

SCCP is toxic to aquatic organisms at low concentrations. It remains in the environment for a significant time and can bio-accumulate in animal tissues. Certain SCCPs bio-magnify, concentrations increasing as they move through food chains. SCCPs are highly toxic to small aquatic invertebrates and plants. SCCPs are transported in water by adherence to particles and are strongly adsorbed in sediment. A manufacturing growth raises concerns for worldwide exposure levels for people and wildlife.

SCCP in the marine industry is primarily used in coolants and lubricants in metal forming and workshop cutting tools, however suitable sampling locations for SCCP may also include (but are not limited to) softeners and flame retardants in rubbers, paint coatings, adhesives, sealants and plastics.

Hexabromocyclododecane (HBCDD)

HBCDD is very toxic to aquatic organisms, persistent and may cause long-term adverse effects in the aquatic environment. Potential human health concerns are based on animal test results indicating reproductive and neurological effects.

HBCDD is used as flame retardant additive in the manufacturing process of numerous components and products. Suitable sampling locations may include (but are not limited to) expanded foams (EPS) and extruded foams (XPS), polystyrene foam insulations, expanded polystyrene (EPS) used for cryogenic insulations around liquefied gas cargo or fuel tanks, thermal insulation foams in refrigerated areas, switch plug covers, electrical extension covers, polymer material of electrical switch boards, fire sensor or alarm covers, light covers, cable sheathing, polymer made fire resistant insulation, paint coatings, hard plastics, PVC flooring materials as well as gaskets and seals.

Visual / Sampling Check Plan (VSCP)

Location / Zone / Deck	Compartment or Equipment	Details	Objects to check / Parts of use Components	Expected Hazardous Materials	Document Analysis Result	Check Proce-dure	Sample No.	Check Result	Quantity of the component / material / parts of use containing HM	Quantity of the Hazardous material (calcu-lated)	Remarks
Accommo-dation - Lower Deck	Accommodation - Wall	Bulkhead insulation / Laboratory / Fr. 40 - PS	Insulation	Asbestos	Not Contained	Sampling	A72	Not Contained			
Accommo-dation - Lower Deck	Miscellaneous	Ruuber packing door / Access to column 5 (FWdD-PS) / Fr. 45 - PS	Rubber applications	PCB	Not Contained	Sampling	A71	Not Contained			
Accommo-dation - Lower Deck	Accommodation - Ceiling	Ceiling insulation / Changing room / FR. 39 - PS	Insulation	ODS	Not Contained	Sampling	A73	Not Contained			
Accommo-dation - Main Deck	Accommodation - Floor	Floor covering / Corridor / Fr. 41 - STB	Corridor lining	PFOS	Not Contained	Sampling	A11	Not Contained			
Accommo-dation - Tween Deck 1	Accommodation - Floor	Floor covering / Corridor / Fr. 42 - PS	Floor covering	PFOS	Not Contained	Sampling	A70	Not Contained			
Cargo Area - Lower Deck	Piping - Miscellaneous	External area / Piping insulation (attached Tk V533601) / Fr. 6 - STB	Insulation	Asbestos	Not Contained	Sampling	A50	Not Contained			
Cargo Area - Lower Deck	Piping - Miscellaneous	External area / Piping insulation (attached Tk V541203) / Fr. 8 - STB	Insulation	Asbestos	Not Contained	Sampling	A52	Not Contained			
Cargo Area - Lower Deck	Bulkhead plating	Passive protection transverse beam / Fr. 9 - STB	Concrete	HBCDD	Not Contained	Sampling	A53	Not Contained			

Visual / Sampling Check Plan (VSCP)

Location / Zone / Deck	Compartment or Equipment	Details	Objects to check / Parts of use Components	Expected Hazardous Materials	Document Analysis Result	Check Proce-dure	Sample No.	Check Result	Quantity of the component / material / parts of use containing HM	Quantity of the Hazardous material (calcu-lated)	Remarks
Cargo Area - Lower Deck	Lagging material and insulation	External area / Piping insulation (attached Tk V541203) / Fr. 8 - STB	Lagging material	Asbestos	Not Contained	Sampling	A51	Not Contained			
Cargo Area - Lower Deck	Miscellaneous	External area / Tk V541203 insulation / Fr. 8 - STB	Insulation	Asbestos	Not Contained	Sampling	A54	Not Contained			
Cargo Area - Lower Deck	Miscellaneous	Hydraulic Oil Tank (Tk UH-12-1001) / Transfer pump room / Fr. 11 - PS	Hydraulic oil	PFOS	Contained	Visual	A110	Contained	7.6 m3		Confirmed by visual check
Cargo Area - Lower Deck	Miscellaneous	External area / Tk V533601 insulation / Fr. 6 - STB	Insulation	Asbestos	Not Contained	Sampling	A49	Not Contained			
Cargo Area - Lower Deck	Battery	Battery / Exportation pump room / Fr. 10 - PS	Battery plates	Lead	Contained	Visual	A109	Contained	300 PCS		Confirmed by visual check
Cargo Area - Main Deck	Cargo hatch	Manhole packing - Furnance F512501A / Fr. 9 - STB	Gasket for manhole	Asbestos	Not Contained	Sampling	A27	Not Contained			
Cargo Area - Main Deck	Miscellaneous	External area / Tk P123302A insulation / Fr. 23 - PS	Insulation	Asbestos	Not Contained	Sampling	A41	Not Contained			
Cargo Area - Main Deck	Piping - Miscellaneous	External area / Piping insulation (attached Tk 122301A) / Fr. 19 - STB	Insulation	Asbestos	Not Contained	Sampling	A20	Not Contained			

Visual / Sampling Check Plan (VSCP)

Location / Zone / Deck	Compartment or Equipment	Details	Objects to check / Parts of use Components	Expected Hazardous Materials	Document Analysis Result	Check Proce-dure	Sample No.	Check Result	Quantity of the component / material / parts of use containing HM	Quantity of the Hazardous material (calcu-lated)	Remarks
Cargo Area - Main Deck	Piping - Miscellaneous	External area / Piping insulation / Fr. 14 - PS	Insulation	Asbestos	Not Contained	Sampling	A32	Not Contained			
Cargo Area - Main Deck	Air Conditioner (compressor)	External area / Air condit-ionary / Fr. 38 - PS	Refrigerants	ODS	Not Contained	Visual	A107	Not Contained			
Cargo Area - Main Deck	Miscellaneous	External area / Tank P122301B insulation / Fr. 15 - STB	Insulation	Asbestos	Not Contained	Sampling	A21	Not Contained			
Cargo Area - Main Deck	Miscellaneous	External area / Separator tank SG 122303 insulation / Fr. 25 STB	Insulation	Asbestos	Not Contained	Sampling	A15	Not Contained			
Cargo Area - Main Deck	Piping - Miscellaneous	External area / Piping insulation / Fr. 37 - CL	Insulation	Asbestos	Not Contained	Sampling	A14	Not Contained			
Cargo Area - Main Deck	Piping - Miscellaneous	External area / Piping insulation / Fr. 15 - PS	Insulation	Asbestos	Not Contained	Sampling	A34	Not Contained			
Cargo Area - Main Deck	Miscellaneous	External area / Tank 122301A insulation / Fr. 19 - STB	Insulation	Asbestos	Not Contained	Sampling	A19	Not Contained			
Cargo Area - Main Deck	Piping - Miscellaneous	External area / Piping insulation / Fr. 23 - PS	Insulation	Asbestos	Not Contained	Sampling	A38	Not Contained			
Cargo Area - Main Deck	Miscellaneous	External area / Tank 122301B insulation / Fr. 22 - STB	Insulation	Asbestos	Not Contained	Sampling	A17	Not Contained			

Visual / Sampling Check Plan (VSCP)

Location / Zone / Deck	Compartment or Equipment	Details	Objects to check / Parts of use Components	Expected Hazardous Materials	Document Analysis Result	Check Proce-dure	Sample No.	Check Result	Quantity of the component / material / parts of use containing HM	Quantity of the Hazardous material (calcu-lated)	Remarks
Cargo Area - Main Deck	Electric cable penetrations	External area / MCT mass (close to Turbo-co-mpressor C) / Fr. 13 - STB	Putty	HBCDD	Not Contained	Sampling	A28	Not Contained			
Cargo Area - Main Deck	Miscellaneous	External area / Tank P122302A insulation / Fr. 14 - STB	Insulation	Asbestos	Not Contained	Sampling	A25	Not Contained			
Cargo Area - Main Deck	Piping - Miscellaneous	External area / Piping insulation (attached Tk 122301B) / Fr. 22 - STB	Insulation	Asbestos	Not Contained	Sampling	A18	Not Contained			
Cargo Area - Main Deck	Cargo space	External area / Piping insulation / Fr. 35 - STB	Insulation	Asbestos	Not Contained	Sampling	A13	Not Contained			
Cargo Area - Main Deck	Piping - Miscellaneous	External Area / Piping insulation (btw MB122-304B / MB122-304A) / Fr. 15 - STB	Insulation	Asbestos	Not Contained	Sampling	A26	Not Contained			
Cargo Area - Main Deck	Piping - Miscellaneous	External area / Piping insulation (attached Tk SG 122303) / Fr. 25 - STB	Insulation	Asbestos	Not Contained	Sampling	A16	Not Contained			

Visual / Sampling Check Plan (VSCP)

Location / Zone / Deck	Compartment or Equipment	Details	Objects to check / Parts of use Components	Expected Hazardous Materials	Document Analysis Result	Check Proce-dure	Sample No.	Check Result	Quantity of the component / material / parts of use containing HM	Quantity of the Hazardous material (calcu-lated)	Remarks
Cargo Area - Main Deck	Piping - Miscellaneous	External area / Piping insulation / Fr. 15 - PS	Insulation	Asbestos	Not Contained	Sampling	A33	Not Contained			
Cargo Area - Main Deck	Cargo space	External area / Piping insulation / Fr. 18 - STB	Insulation	Asbestos	Not Contained	Sampling	A30	Not Contained			
Cargo Area - Main Deck	Piping - Miscellaneous	External area / Piping insulation (attached Tk P122301B) / Fr. 15 - STB	Insulation	Asbestos	Not Contained	Sampling	A22	Not Contained			
Cargo Area - Main Deck	Piping - Miscellaneous	External area / Piping insulation (attached Tk P122301A) / Fr. 13 - STB	Insulation	Asbestos	Not Contained	Sampling	A24	Not Contained			
Cargo Area - Main Deck	Miscellaneous	External area / Tank P122301A insulation / Fr. 13 - STB	Insulation	Asbestos	Not Contained	Sampling	A23	Not Contained			
Cargo Area - Main Deck	Piping - Miscellaneous	External area / Piping insulation / Fr. 17 - STB	Insulation	Asbestos	Not Contained	Sampling	A31	Not Contained			
Cargo Area - Main Deck	Miscellaneous	External area / Tk V133301 insulation / Fr. 24 - PS	Insulation	Asbestos	Not Contained	Sampling	A40	Not Contained			
Cargo Area - Main Deck	Piping - Miscellaneous	External area / Piping insulation (close to Tk 122301A) / Fr. 18 - STB	Insulation	Asbestos	Not Contained	Sampling	A29	Not Contained			

Visual / Sampling Check Plan (VSCP)

Location / Zone / Deck	Compartment or Equipment	Details	Objects to check / Parts of use Components	Expected Hazardous Materials	Document Analysis Result	Check Proce-dure	Sample No.	Check Result	Quantity of the component / material / parts of use containing HM	Quantity of the Hazardous material (calcu-lated)	Remarks
Cargo Area - Main Deck	Miscellaneous	External area / Tk V-UC-1-22302 (Booster) insulation / Fr. 28 - PS	Insulation	Asbestos	Not Contained	Sampling	A39	Not Contained			
Cargo Area - Spider Deck	Deck coatings	Deck painting / Fr. 15 - STB	Coatings & paint	TBT	Not Contained	Sampling	A57	Not Contained			
Cargo Area - Spider Deck	Cargo space	External area / Passive protection transverse beam / Fr. 9 - STB	Concrete	PCB	Not Contained	Sampling	A78	Not Contained			
Cargo Area - Spider Deck	Piping - Miscellaneous	Piping insulation (attached Tk V533602) / Fr. 15 - STB	Insulation	Asbestos	Not Contained	Sampling	A56	Not Contained			
Cargo Area - Spider Deck	Piping - Miscellaneous	Piping insulation / Fr. 17 - STB	Insulation	PCB	Not Contained	Sampling	A58	Not Contained			
Cargo Area - Spider Deck	Miscellaneous	TkV533602 insulation / Fr. 15 - STB	Insulation	Asbestos	Not Contained	Sampling	A55	Not Contained			
Cargo Area - Upper Deck	Miscellaneous	External area / Tk P.UC.122-301A-02 insulation / Fr. 13 - PS	Insulation	Asbestos	Not Contained	Sampling	A37	Not Contained			
Cargo Area - Upper Deck	Miscellaneous	External area / Tk SG123302 insulation / Fr. 13 - STB	Insulation	Asbestos	Not Contained	Sampling	A42	Not Contained			
Cargo Area - Upper Deck	Miscellaneous	External area / Tk SG123-301-A insulation / Fr. 12 - STB	Insulation	Asbestos	Not Contained	Sampling	A43	Not Contained			

Visual / Sampling Check Plan (VSCP)

Location / Zone / Deck	Compartment or Equipment	Details	Objects to check / Parts of use Components	Expected Hazardous Materials	Document Analysis Result	Check Proce-dure	Sample No.	Check Result	Quantity of the component / material / parts of use containing HM	Quantity of the Hazardous material (calcu-lated)	Remarks
Cargo Area - Upper Deck	Miscellaneous	External area / Tk V512501 insulation / Fr. 13 - STB	Insulation	Asbestos	Not Contained	Sampling	A48	Not Contained			
Cargo Area - Upper Deck	Miscellaneous	External area / Tk SG123-301-B insulation / Fr. 15 - STB	Insulation	Asbestos	Not Contained	Sampling	A44	Not Contained			
Cargo Area - Upper Deck	Transformer	Electrical transformer - TF-TQ1-22301A / Fr. 18 - STB	Insulating oil	PCB	Not Contained	Visual	A114	Not Contained			
Cargo Area - Upper Deck	Miscellaneous	External area / Tk P.UC.122-301A-03 insulation / Fr. 13 - PS	Insulation	Asbestos	Not Contained	Sampling	A35	Not Contained			
Cargo Area - Upper Deck	Piping - Miscellaneous	External area / Piping insulation (attached Tk SG1223-01-B) / Fr. 15 - STB	Insulation	Asbestos	Not Contained	Sampling	A46	Not Contained			
Cargo Area - Upper Deck	Piping - Miscellaneous	External area / Piping insulation (attached Tk SG122302) / Fr. 13 - STB	Insulation	Asbestos	Not Contained	Sampling	A45	Not Contained			
Cargo Area - Upper Deck	Miscellaneous	External area / Tk P.UC.122-301A-01 insulation / Fr. 13 - PS	Insulation	Asbestos	Not Contained	Sampling	A36	Not Contained			

Visual / Sampling Check Plan (VSCP)

Location / Zone / Deck	Compartment or Equipment	Details	Objects to check / Parts of use Components	Expected Hazardous Materials	Document Analysis Result	Check Proce-dure	Sample No.	Check Result	Quantity of the component / material / parts of use containing HM	Quantity of the Hazardous material (calcu-lated)	Remarks
Cargo Area - Upper Deck	Transformer	Electrical transformer - TF-TQ1-22301B / Fr. 22 - STB	Insulating oil	PCB	Not Contained	Visual	A115	Not Contained			
Cargo Area - Upper Deck	Piping - Miscellaneous	External area / Piping insulation (attached discharge Turbo Compr-essor \C\) / Fr. 15 - PS	Insulation	Asbestos	Not Contained	Sampling	A47	Not Contained			
Cargo Area - Upper Deck	Fire protection-/fighting system	Foam tank (Tk 5424500B) / Fr. 35 - PS	Extinguishing agent	PFOS	Contained	Visual	A112	Contained	0.75 m3		Confirmed by visual check
Cargo Area - Upper Deck	Fire protection-/fighting system	Foam tank (Tk 542500A) / Fr. 18 - PS	Extinguishing agent	PFOS	Contained	Visual	A113	Contained	0.75 m3		Confirmed by visual check
Engine Room - Lower Deck	Miscellaneous	Hydroc-yclone CI 5336501B insulation / Hydroc-yclone room / Fr. 14 - STB	Insulation	Asbestos	Not Contained	Sampling	A67	Not Contained			
Engine Room - Lower Deck	AC system	Air Condit-ionary Plant insulation / PS AFT column / Fr. 10 - PS	Insulation	PCB	Not Contained	Sampling	A61	Not Contained			

Visual / Sampling Check Plan (VSCP)

Location / Zone / Deck	Compartment or Equipment	Details	Objects to check / Parts of use Components	Expected Hazardous Materials	Document Analysis Result	Check Proce-dure	Sample No.	Check Result	Quantity of the component / material / parts of use containing HM	Quantity of the Hazardous material (calcu-lated)	Remarks
Engine Room - Lower Deck	Piping - Miscellaneous	Piping insulation (close to pump \B 122302A\) / Exportation pumps room / Fr. 16 - PS	Insulation	Asbestos	Not Contained	Sampling	A62	Not Contained			
Engine Room - Lower Deck	Piping - Miscellaneous	Piping insulation - Pump MB 5125001-B / Injection water pumps room / Fr. 19 - STB	Insulation	Asbestos	Not Contained	Sampling	A66	Not Contained			
Engine Room - Lower Deck	Piping - Miscellaneous	Piping insulation close to pump \B122301D\ / Exportation pumps room / Fr. 23 - STB	Insulation	Asbestos	Not Contained	Sampling	A64	Not Contained			
Engine Room - Lower Deck	Electrical equipment	Electrical Rubber floor / TGs control room / Fr. 11 - PS	Rubber applications	PCB	Not Contained	Sampling	A60	Not Contained			
Engine Room - Lower Deck	Bulkhead plating	Bulkhead insulation / Auxiliary generators room / Fr. 21 - PS	Insulation	Asbestos	Not Contained	Sampling	A59	Not Contained			
Engine Room - Lower Deck	Deck coatings	Deck painting / Exportation pumps room / FR. 16 - PS	Coatings & paint	TBT	Not Contained	Sampling	A80	Not Contained			

Visual / Sampling Check Plan (VSCP)

Location / Zone / Deck	Compartment or Equipment	Details	Objects to check / Parts of use Components	Expected Hazardous Materials	Document Analysis Result	Check Proce-dure	Sample No.	Check Result	Quantity of the component / material / parts of use containing HM	Quantity of the Hazardous material (calcu-lated)	Remarks
Engine Room - Lower Deck	Miscellaneous	Tk V123302 insulation / Exportation pumps room / Fr. 25 - CL	Insulation	Asbestos	Not Contained	Sampling	A63	Not Contained			
Engine Room - Lower Deck	Electric cabling	Electrical cable insulation / Main deck / Lower Deck / General places	Cable sheathing	Asbestos	Not Contained	Sampling	A69	Not Contained			
Engine Room - Lower Deck	Piping - Miscellaneous	Piping insulation (attached Pump B122301B) / Exportation pumps room / Fr. 20 - STB	Insulation	Asbestos	Not Contained	Sampling	A76	Not Contained			
Engine Room - Lower Deck	Piping - Miscellaneous	Piping insulation / Exportation pumps room / Fr. 12 - PS	Insulation	Asbestos	Not Contained	Sampling	A75	Not Contained			
Engine Room - Lower Deck	Piping - Miscellaneous	Piping insulation / Auxiliary generators room / Fr. 25 - PS	Insulation	Asbestos	Not Contained	Sampling	A74	Not Contained			
Engine Room - Lower Deck	Piping - Miscellaneous	Piping insulation - Pump MB 5125001-B / Injection water pumps room / Fr. 19 - STB	Lagging material	Asbestos	Not Contained	Sampling	A65	Not Contained			

Visual / Sampling Check Plan (VSCP)

Location / Zone / Deck	Compartment or Equipment	Details	Objects to check / Parts of use Components	Expected Hazardous Materials	Document Analysis Result	Check Proce-dure	Sample No.	Check Result	Quantity of the component / material / parts of use containing HM	Quantity of the Hazardous material (calcu-lated)	Remarks
Engine Room - Lower Deck	Piping - Miscellaneous	Piping insulation (attached MB5125-001C) / Injection water pumps room / Fr. 20 - STB	Insulation	Asbestos	Not Contained	Sampling	A77	Not Contained			
Engine Room - Lower Deck	Piping - Miscellaneous	Piping insulation attached to hydroc-yclone CI 533601A / Hydroc-yclone room / Fr. 14 - STB	Insulation	Asbestos	Not Contained	Sampling	A68	Not Contained			
Main Deck - Main Deck	Miscellaneous	External area / Lifeboat #1 - Rubber fender / Fr. 38 - PS	Rubber applications	PCB	Not Contained	Sampling	A04	Not Contained			
Main Deck - Main Deck	Lagging material - exhaust pipe	Exhaust gas - Emergency generator - DGE 514002 / Fr. 42 - STB	Lagging material	Asbestos	Not Contained	Sampling	A05	Not Contained			
Main Deck - Main Deck	Exhaust gas system	Exhaust gas - Emergency generator - DGE 514002 / Fr. 42 - STB	Insulation	Asbestos	Not Contained	Sampling	A06	Not Contained			
Main Deck - Main Deck	Miscellaneous	Rubber door packing / TGs battery room / Fr. 42 - STB	Rubber applications	PCB	Not Contained	Sampling	A10	Not Contained			

Visual / Sampling Check Plan (VSCP)

Location / Zone / Deck	Compartment or Equipment	Details	Objects to check / Parts of use Components	Expected Hazardous Materials	Document Analysis Result	Check Proce-dure	Sample No.	Check Result	Quantity of the component / material / parts of use containing HM	Quantity of the Hazardous material (calcu-lated)	Remarks
Main Deck - Main Deck	Bulkhead plating	Bulkhead insulation / Emergency generator room / Fr. 42 - STB	Insulation	Asbestos	Not Contained	Sampling	A07	Not Contained			
Main Deck - Main Deck	Battery	Emergency generator room (DGE 514002) / Fr. 39 - STB	Battery plates	Lead	Contained	Visual	A103	Contained	5 PCS		Confirmed by visual check
Main Deck - Main Deck	Bulkhead plating	Bulkhead insulation / Battery charger room / Fr. 41 - STB	Insulation	Asbestos	Not Contained	Sampling	A08	Not Contained			
Main Deck - Main Deck	Diesel Engine	External area / Diesel Fire Pump PS - MB-UB 542001A / Fr.43 - PS	Insulation	Asbestos	Not Contained	Sampling	A03	Not Contained			
Main Deck - Main Deck	Battery	Battery room / Fr. 44 - STB	Battery plates	Lead	Contained	Visual	A104	Contained	313 PCS		Confirmed by visual check
Main Deck - Main Deck	Battery	Diesel Fire Pump MB-UB-5-42001B / Fr. 44 - STB	Battery plates	Lead	Contained	Visual	A102	Contained	4 PCS		Confirmed by visual check
Main Deck - Main Deck	Electrical equipment	Electrical Rubber floor / Battery charger room / Fr. 41 - STB	Rubber applications	PCB	Not Contained	Sampling	A09	Not Contained			
Main Deck - Main Deck	Battery	Diesel Fire Pump MB-UB-5-42001A / Fr. 44 - PS	Battery plates	Lead	Contained	Visual	A101	Contained	4 PCS		Confirmed by visual check
Miscell-aneous - Helideck	Fire protection-/fighting system	Foam tank (Tk 542401) / Fr.45 - PS	Extinguishing agent	PFOS	Contained	Visual	A111	Contained	0.935 m3		Confirmed by visual check

Visual / Sampling Check Plan (VSCP)

Location / Zone / Deck	Compartment or Equipment	Details	Objects to check / Parts of use Components	Expected Hazardous Materials	Document Analysis Result	Check Proce-dure	Sample No.	Check Result	Quantity of the component / material / parts of use containing HM	Quantity of the Hazardous material (calcu-lated)	Remarks
Miscell-aneous - Lower Deck	Mooring winches	Anchorage winch UH GN665-101A UH GN665-101B UH GN665-101C UH GN665-101D / Columns FWD (P/S) AFT (P/S) / Fr. 6 - P/S Fr.45 - P/S	Hydraulic oil	PFOS	Contained	Visual	A108	Contained	3.600 m3		Confirmed by visual check
Miscell-aneous - Upper Deck	Deck covering	External area / Football field / Fr. 37 - PS	Rubber applications	PCB	Not Contained	Sampling	A02	Not Contained			
Miscell-aneous - Upper Deck	Electrical equipment	External area / Electric cable tray / Fr. 38 - STB	Equipment parts / spares	HBCDD	Not Contained	Sampling	A79	Not Contained			
Miscell-aneous - Upper Deck	Electrical equipment	External area / Electric cable tray / Fr. 43 - STB	Equipment parts / spares	ODS	Not Contained	Sampling	A01	Not Contained			
Miscell-aneous - Upper Deck	Deck penetrations	MCT mass / Essential panel room / Fr. 40 - STB	Putty	PCB	Not Contained	Sampling	A12	Not Contained			
Superst-ructure - Upper Deck	Transformer	Electrical transformer - TF514503 / Essential Panel room / Fr. 37 - STB	Insulating oil	PCB	Unknown	Visual	A106	Not Contained			

Visual / Sampling Check Plan (VSCP)

Location / Zone / Deck	Compartment or Equipment	Details	Objects to check / Parts of use Components	Expected Hazardous Materials	Document Analysis Result	Check Proce-dure	Sample No.	Check Result	Quantity of the component / material / parts of use containing HM	Quantity of the Hazardous material (calcu-lated)	Remarks
Superst-ructure - Upper Deck	Transformer	Electrical transformer - TF514504 / Essential Panel room / Fr. 37 - STB	Insulating oil	PCB	Unknown	Visual	A105	Not Contained			

IHM Inventory

I-1 Paints and Coating Systems containing materials listed in Annex I and Annex II of Regulation (EU) No 1257/2013 on Ship Recycling.

None detected

No.	Name of equipment or compartment to which the coating is applied	Color of paint	Location	Deck	Additional description	Sample No.	Hazardous Materials	Approxi-mative quantity	Remarks

I-2 Equipment and Machinery containing materials listed in Annex I and Annex II of Regulation (EU) No 1257/2013 on Ship Recycling.

No.	Name of equipment and machinery	Location	Deck	Additional description	Sample No.	Hazardous Materials	Parts where used	Approxi-mative quantity	Remarks
1	Battery	Main Deck	Main Deck	Emergency generator room (DGE 514002) / Fr. 39 - STB	A103	Lead	Battery plates	5 PCS	Confirmed by visual check
2	Battery	Main Deck	Main Deck	Battery room / Fr. 44 - STB	A104	Lead	Battery plates	313 PCS	Confirmed by visual check
3	Mooring winches	Miscellaneous	Lower Deck	Anchorage winch UH GN665101A UH GN665101B UH GN665101C UH GN665101D / Columns FWD (P/S) AFT (P/S) / Fr. 6 - P/S Fr.45 - P/S	A108	PFOS	Hydraulic oil	3.600 m3	Confirmed by visual check
4	Fire protection/fighting system	Cargo Area	Upper Deck	Foam tank (Tk 5424500B) / Fr. 35 - PS	A112	PFOS	Extinguishing agent	0.75 m3	Confirmed by visual check
5	Battery	Main Deck	Main Deck	Diesel Fire Pump MB-UB-542001B / Fr. 44 - STB	A102	Lead	Battery plates	4 PCS	Confirmed by visual check
6	Miscellaneous	Cargo Area	Lower Deck	Hydraulic Oil Tank (Tk UH-121001) / Transfer pump room / Fr. 11 - PS	A110	PFOS	Hydraulic oil	7.6 m3	Confirmed by visual check
7	Fire protection/fighting system	Cargo Area	Upper Deck	Foam tank (Tk 542500A) / Fr. 18 - PS	A113	PFOS	Extinguishing agent	0.75 m3	Confirmed by visual check
8	Fire protection/fighting system	Miscellaneous	Helideck	Foam tank (Tk 542401) / Fr.45 - PS	A111	PFOS	Extinguishing agent	0.935 m3	Confirmed by visual check
9	Battery	Cargo Area	Lower Deck	Battery / Exportation pump room / Fr. 10 - PS	A109	Lead	Battery plates	300 PCS	Confirmed by visual check
10	Battery	Main Deck	Main Deck	Diesel Fire Pump MB-UB-542001A / Fr. 44 - PS	A101	Lead	Battery plates	4 PCS	Confirmed by visual check

I-3 Structure and Hull containing materials listed in Annex I and Annex II of Regulation (EU) No 1257/2013 on Ship Recycling.

None detected

No.	Name of structural element	Location	Deck	Additional description	Sample No.	Hazardous Materials	Parts where used	Approxi-mative quantity	Remarks

Report of visual checks and sampling locations – Contained, PCHM and Contained below threshold value

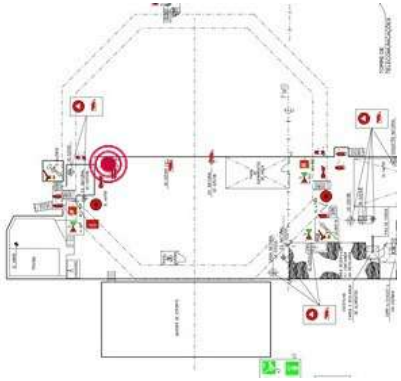
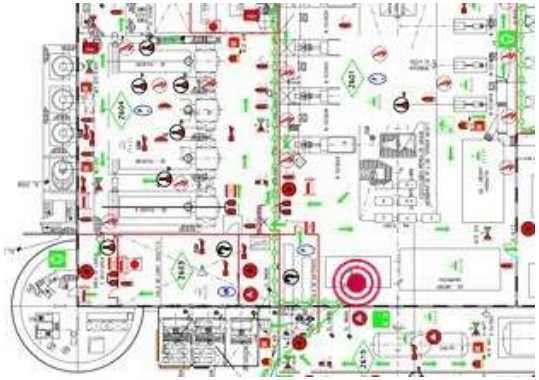
General Interpretation of Risk Assessment Level

Risk Assessment Level	Interpretation of the Recommended Control Action
High	Control measures and suitable safety precautions to be implemented immediately. Flag consultation recommended.
Medium	Safety precautions to be considered as soon as practicable. Flag instructions followed. In interim period, materials re-examined regularly.
Low	No immediate control action considered necessary. Material condition to be maintained. Flag to be informed and instructions followed.

Asbestos Management - No data

Report of visual checks and sampling locations – Contained, PCHM and Contained below threshold value

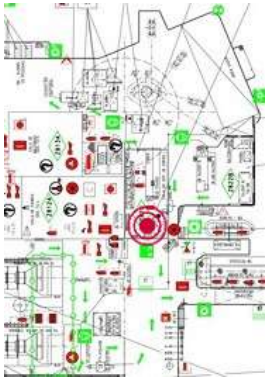
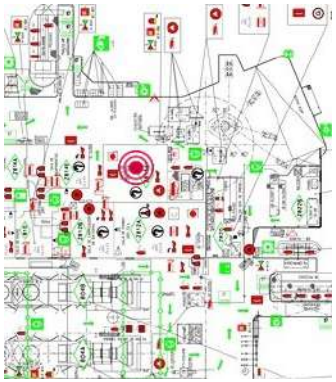
All other HazMats (non Asbestos) Management

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Recommended Action
Helideck Miscellaneous	PFOS	Visual	A111	Contained	0.935 m3	No immediate action required
Fire protection/fighting system-Extinguishing agent-Foam tank (Tk 542401) / Fr.45 - PS						
Lower Deck Cargo Area	PFOS	Visual	A110	Contained	7.6 m3	No immediate action required
Miscellaneous-Hydraulic oil-Hydraulic Oil Tank (Tk UH-121001) / Transfer pump room / Fr. 11 - PS						

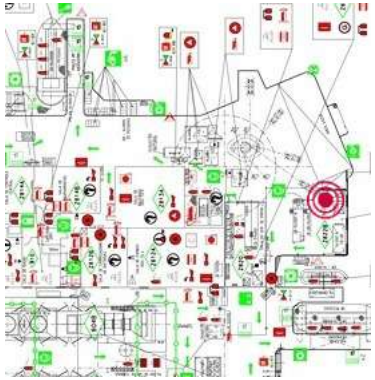
Report of visual checks and sampling locations – Contained, PCHM and Contained below threshold value

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Recommended Action
Lower Deck Cargo Area	Lead	Visual	A109	Contained	300 PCS	No immediate action required
Battery-Battery plates-Battery / Exportation pump room / Fr. 10 - PS						
Lower Deck Miscellaneous	PFOS	Visual	A108	Contained	3.600 m3	No immediate action required
Mooring winches-Hydraulic oil-Anchorage winch UH GN665101A UH GN665101B UH GN665101C UH GN665101D / Columns FWD (P/S) AFT (P/S) / Fr. 6 - P/S Fr.45 - P/S						

Report of visual checks and sampling locations – Contained, PCHM and Contained below threshold value

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Recommended Action
Main Deck Main Deck	Lead	Visual	A103	Contained	5 PCS	No immediate action required
Battery-Battery plates-Emergency generator room (DGE 514002) / Fr. 39 - STB						
Main Deck Main Deck	Lead	Visual	A104	Contained	313 PCS	No immediate action required
Battery-Battery plates-Battery room / Fr. 44 - STB						

Report of visual checks and sampling locations – Contained, PCHM and Contained below threshold value

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Recommended Action
Main Deck Main Deck	Lead	Visual	A102	Contained	4 PCS	No immediate action required
Battery-Battery plates-Diesel Fire Pump MB-UB-542001B / Fr. 44 - STB						
Main Deck Main Deck	Lead	Visual	A101	Contained	4 PCS	No immediate action required
Battery-Battery plates-Diesel Fire Pump MB-UB-542001A / Fr. 44 - PS						

Report of visual checks and sampling locations – Contained, PCHM and Contained below threshold value

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Recommended Action
Upper Deck Cargo Area	PFOS	Visual	A112	Contained	0.75 m3	No immediate action required
Fire protection/fighting system-Extinguishing agent-Foam tank (Tk 5424500B) / Fr. 35 - PS						
Upper Deck Cargo Area	PFOS	Visual	A113	Contained	0.75 m3	No immediate action required
Fire protection/fighting system-Extinguishing agent-Foam tank (Tk 542500A) / Fr. 18 - PS						

Inventory of Hazardous Materials

Hazardous materials per location - Contained and PCHM

		Hazardous materials															
Location / Zone	**Sub-section**	**Asbestos**	**ODS**	**PCB**	**TBT**	**Cybutryne**	**PFOS**	**Cadmium**	**Chromium**	**Mercury**	**Lead**	**PBB**	**PBDE**	**PCN**	**Radioactive Substances**	**SCCP**	**HBCDD**
Main Deck	Electric equipment										4						
Miscellaneous	Mooring equipment						1										
	Miscellaneous						1										
Cargo Area	Miscellaneous						3										
	Electric equipment										1						

Maintenance of IHM

EU Ships recycling regulations (EU_SRR) & Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships both stipulate that after initial preparation and delivery of an IHM Manual Part I, a shipping company or ship owner is thereafter responsible for appointing a "Designated Person" for maintenance of IHMs during the lifetime of the ship.

Part I of the IHM belongs to the ship owner / operator and should be routinely maintained by a designated person nominated by the ship owner / operator for this task. Continuity, conformity and upkeep of the information contained within the IHM is a continuous process and should be confirmed throughout the ships lifecycle, especially if the flag, owner or operator of the ship changes.

The aim is to have valid information on the hazardous materials situation on board at all times, accounting for procurement, stores delivery, refit periods, major or minor conversions as well as any unscheduled works involving changes, replacements or repairs to the structure, equipment, systems, fittings, arrangements and materials, any of which having impact on the validity of the IHM Inventory.

In this context and in accordance with the IMO guidelines on IHM management, ship owners should implement a series of measures to ensure on-going conformity of Part I of the Inventory.

1. The nomination of and the duties assigned to the companies designated person should be incorporated in the ship owners quality management system.

2. The ship operator’s quality management system should include specific provisions to safeguard the quality and continuity of the IHM when building, buying or selling a ship or changing ship’s registry or ship’s IHM designated person.

3. The ship operator’s quality management system should make proper provision for maintenance of an IHM archive of all associated documentation, ensuring that new installations of equipment, repairs or replacements are accompanied by MD’s and SDoC’s, wherever appropriate, as provided by the suppliers of parts and equipment delivered.

4 IHM must be properly maintained and updated throughout the operational life of the ship and when regulations require, should be supplemented by an ‘Inventory Certificate’ or
‘Statement of Compliance’ issued by any Member State or authorised organisation.

IHM Manual Part I and supporting certification will in future be controlled by the Port State Control. Therefore, Material Declarations (MD) and Suppliers Declaration of Conformity (SDoC) should be requested and collected from suppliers for all components and materials that are falling under the scope of IHM Part I (structure and equipment). An up to date IHM archive may be used as supporting evidence of an on-going IHM development and maintenance process and quality management of all IHM relevant documents, information and data.

Maintenance of IHM

IHM Maintenance Responsible Person

Full Name	To be informed by Owner
Position	
Email address	marco.santos@bvsolutions-m-o.com
Phone number	+55 21 22069328

Signatories

Prepared by:

Title	Mr
Name	Roberto Yamaki
Company	BV Solutions Marine & Offshore
Address	Rua Evaristo da Veiga, 65, Setor 1, Sala 201, Centro, Rio de Janeiro-RJ - Brazil
Position	Surveyor
Date	10/12/2024

Appendix - Report of visual checks and sampling locations – Not Contained

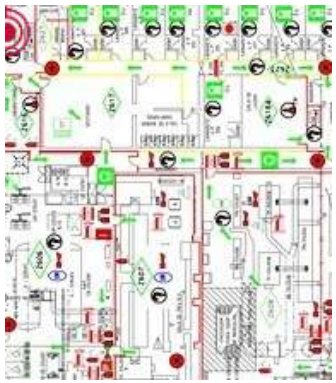
General Interpretation of Risk Assessment Level

Risk Assessment Level	Interpretation of the Recommended Control Action
High	Control measures and suitable safety precautions to be implemented immediately. Flag consultation recommended.
Medium	Safety precautions to be considered as soon as practicable. Flag instructions followed. In interim period, materials re-examined regularly.
Low	No immediate control action considered necessary. Material condition to be maintained. Flag to be informed and instructions followed.

Asbestos Management

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Lower Deck Accommodation	Asbestos	Sampling	A72	Not Contained			

Accommodation - Wall-Insulation-Bulkhead insulation / Laboratory / Fr. 40 - PS



Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Lower Deck Cargo Area	Asbestos	Sampling	A50	Not Contained			
Piping - Miscellaneous-Insulation-External area / Piping insulation (attached Tk V533601) / Fr. 6 - STB							
Lower Deck Cargo Area	Asbestos	Sampling	A52	Not Contained			
Piping - Miscellaneous-Insulation-External area / Piping insulation (attached Tk V541203) / Fr. 8 - STB							

Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Lower Deck Cargo Area	Asbestos	Sampling	A51	Not Contained			
Lagging material and insulation-Lagging material-External area / Piping insulation (attached Tk V541203) / Fr. 8 - STB							
Lower Deck Cargo Area	Asbestos	Sampling	A54	Not Contained			
Miscellaneous-Insulation-External area / Tk V541203 insulation / Fr. 8 - STB							

Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Lower Deck Cargo Area	Asbestos	Sampling	A49	Not Contained			
Miscellaneous-Insulation-External area / Tk V533601 insulation / Fr. 6 - STB							
Lower Deck Engine Room	Asbestos	Sampling	A67	Not Contained			
Miscellaneous-Insulation-Hydrocyclone Cl 5336501B insulation / Hydrocyclone room / Fr. 14 - STB							

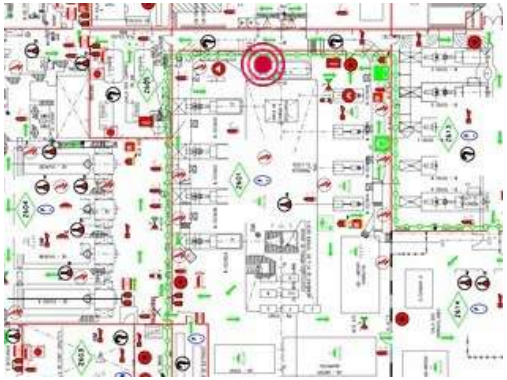
Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Lower Deck Engine Room	Asbestos	Sampling	A62	Not Contained			
Piping - Miscellaneous-Insulation-Piping insulation (close to pump \B 122302A\) / Exportation pumps room / Fr. 16 - PS							
Lower Deck Engine Room	Asbestos	Sampling	A66	Not Contained			
Piping - Miscellaneous-Insulation-Piping insulation - Pump MB 5125001-B / Injection water pumps room / Fr. 19 - STB							

Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Lower Deck Engine Room	Asbestos	Sampling	A64	Not Contained			
Piping - Miscellaneous-Insulation-Piping insulation close to pump \B122301D\ / Exportation pumps room / Fr. 23 - STB							
Lower Deck Engine Room	Asbestos	Sampling	A59	Not Contained			
Bulkhead plating-Insulation-Bulkhead insulation / Auxiliary generators room / Fr. 21 - PS							

Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Lower Deck Engine Room	Asbestos	Sampling	A63	Not Contained			
Miscellaneous-Insulation-Tk V123302 insulation / Exportation pumps room / Fr. 25 - CL							
Lower Deck Engine Room	Asbestos	Sampling	A69	Not Contained			
Electric cabling-Cable sheathing-Electrical cable insulation / Main deck / Lower Deck / General places							

Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Lower Deck Engine Room	Asbestos	Sampling	A76	Not Contained			
Piping - Miscellaneous-Insulation-Piping insulation (attached Pump B122301B) / Exportation pumps room / Fr. 20 - STB							
Lower Deck Engine Room	Asbestos	Sampling	A75	Not Contained			
Piping - Miscellaneous-Insulation-Piping insulation / Exportation pumps room / Fr. 12 - PS							

Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Lower Deck Engine Room	Asbestos	Sampling	A74	Not Contained			
Piping - Miscellaneous-Insulation-Piping insulation / Auxiliary generators room / Fr. 25 - PS							
Lower Deck Engine Room	Asbestos	Sampling	A65	Not Contained			
Piping - Miscellaneous-Lagging material-Piping insulation - Pump MB 5125001-B / Injection water pumps room / Fr. 19 - STB							

Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Lower Deck Engine Room	Asbestos	Sampling	A77	Not Contained			
Piping - Miscellaneous-Insulation-Piping insulation (attached MB5125001C) / Injection water pumps room / Fr. 20 - STB							
Lower Deck Engine Room	Asbestos	Sampling	A68	Not Contained			
Piping - Miscellaneous-Insulation-Piping insulation attached to hydrocyclone CI 533601A / Hydrocyclone room / Fr. 14 - STB							

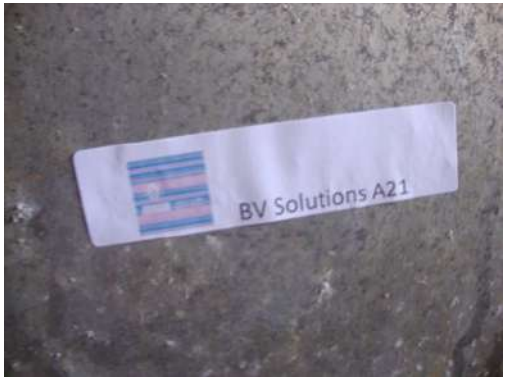
Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Main Deck Cargo Area	Asbestos	Sampling	A27	Not Contained			
Cargo hatch-Gasket for manhole-Manhole packing - Furnance F512501A / Fr. 9 - STB							
Main Deck Cargo Area	Asbestos	Sampling	A41	Not Contained			
Miscellaneous-Insulation-External area / Tk P123302A insulation / Fr. 23 - PS							

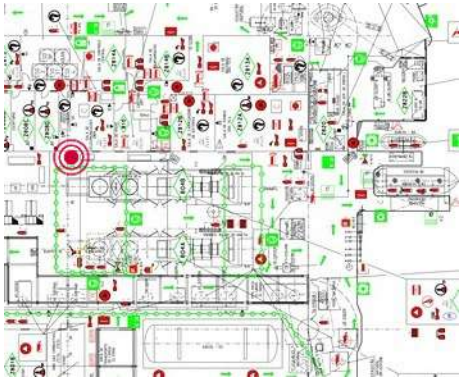
Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Main Deck Cargo Area	Asbestos	Sampling	A20	Not Contained			
Piping - Miscellaneous-Insulation-External area / Piping insulation (attached Tk 122301A) / Fr. 19 - STB							
Main Deck Cargo Area	Asbestos	Sampling	A32	Not Contained			
Piping - Miscellaneous-Insulation-External area / Piping insulation / Fr. 14 - PS							

Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Main Deck Cargo Area	Asbestos	Sampling	A21	Not Contained			
Miscellaneous-Insulation-External area / Tank P122301B insulation / Fr. 15 - STB							
Main Deck Cargo Area	Asbestos	Sampling	A15	Not Contained			
Miscellaneous-Insulation-External area / Separator tank SG 122303 insulation / Fr. 25 STB							

Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Main Deck Cargo Area	Asbestos	Sampling	A14	Not Contained			
Piping - Miscellaneous-Insulation-External area / Piping insulation / Fr. 37 - CL							
Main Deck Cargo Area	Asbestos	Sampling	A34	Not Contained			
Piping - Miscellaneous-Insulation-External area / Piping insulation / Fr. 15 - PS							

Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Main Deck Cargo Area	Asbestos	Sampling	A19	Not Contained			
Miscellaneous-Insulation-External area / Tank 122301A insulation / Fr. 19 - STB							
Main Deck Cargo Area	Asbestos	Sampling	A38	Not Contained			
Piping - Miscellaneous-Insulation-External area / Piping insulation / Fr. 23 - PS							

Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Main Deck Cargo Area	Asbestos	Sampling	A17	Not Contained			
Miscellaneous-Insulation-External area / Tank 122301B insulation / Fr. 22 - STB							
Main Deck Cargo Area	Asbestos	Sampling	A25	Not Contained			
Miscellaneous-Insulation-External area / Tank P122302A insulation / Fr. 14 - STB							

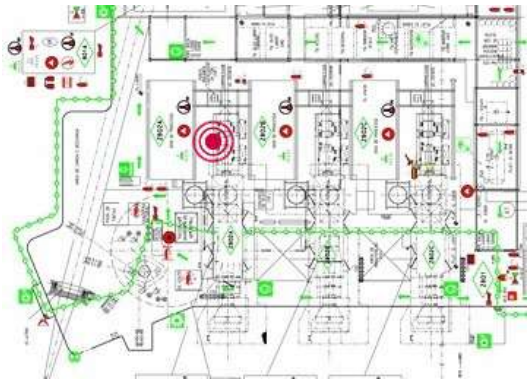
Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Main Deck Cargo Area	Asbestos	Sampling	A18	Not Contained			
Piping - Miscellaneous-Insulation-External area / Piping insulation (attached Tk 122301B) / Fr. 22 - STB							
Main Deck Cargo Area	Asbestos	Sampling	A13	Not Contained			
Cargo space-Insulation-External area / Piping insulation / Fr. 35 - STB							

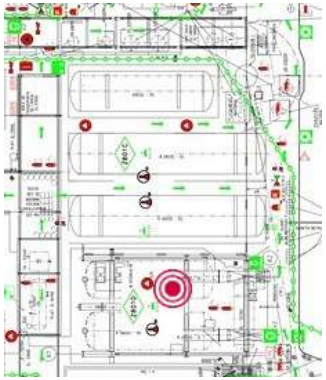
Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Main Deck Cargo Area	Asbestos	Sampling	A26	Not Contained			
Piping - Miscellaneous-Insulation-External Area / Piping insulation (btw MB122304B / MB122304A) / Fr. 15 - STB							
Main Deck Cargo Area	Asbestos	Sampling	A16	Not Contained			
Piping - Miscellaneous-Insulation-External area / Piping insulation (attached Tk SG 122303) / Fr. 25 - STB							

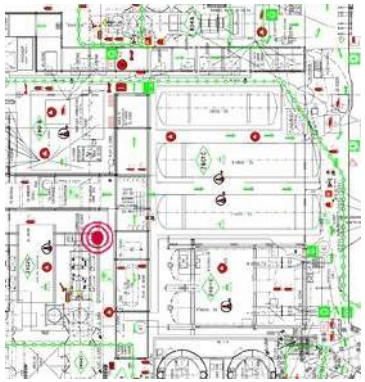
Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Main Deck Cargo Area	Asbestos	Sampling	A33	Not Contained			
Piping - Miscellaneous-Insulation-External area / Piping insulation / Fr. 15 - PS							
Main Deck Cargo Area	Asbestos	Sampling	A30	Not Contained			
Cargo space-Insulation-External area / Piping insulation / Fr. 18 - STB							

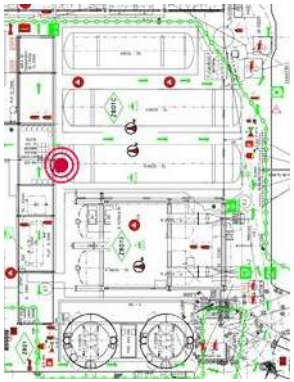
Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Main Deck Cargo Area	Asbestos	Sampling	A22	Not Contained			
Piping - Miscellaneous-Insulation-External area / Piping insulation (attached Tk P122301B) / Fr. 15 - STB							
Main Deck Cargo Area	Asbestos	Sampling	A24	Not Contained			
Piping - Miscellaneous-Insulation-External area / Piping insulation (attached Tk P122301A) / Fr. 13 - STB							

Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Main Deck Cargo Area	Asbestos	Sampling	A23	Not Contained			
Miscellaneous-Insulation-External area / Tank P122301A insulation / Fr. 13 - STB							
Main Deck Cargo Area	Asbestos	Sampling	A31	Not Contained			
Piping - Miscellaneous-Insulation-External area / Piping insulation / Fr. 17 - STB							

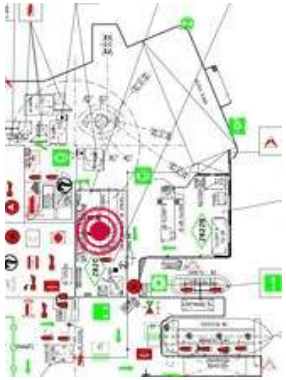
Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Main Deck Cargo Area	Asbestos	Sampling	A40	Not Contained			
Miscellaneous-Insulation-External area / Tk V133301 insulation / Fr. 24 - PS							
Main Deck Cargo Area	Asbestos	Sampling	A29	Not Contained			
Piping - Miscellaneous-Insulation-External area / Piping insulation (close to Tk 122301A) / Fr. 18 - STB							

Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Main Deck Cargo Area	Asbestos	Sampling	A39	Not Contained			
Miscellaneous-Insulation-External area / Tk V-UC-122302 (Booster) insulation / Fr. 28 - PS							
Main Deck Main Deck	Asbestos	Sampling	A05	Not Contained			
Lagging material - exhaust pipe-Lagging material-Exhaust gas - Emergency generator - DGE 514002 / Fr. 42 - STB							

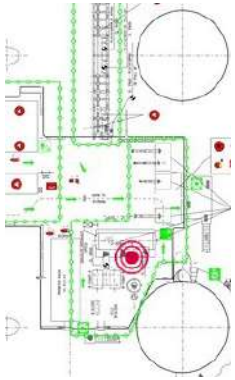
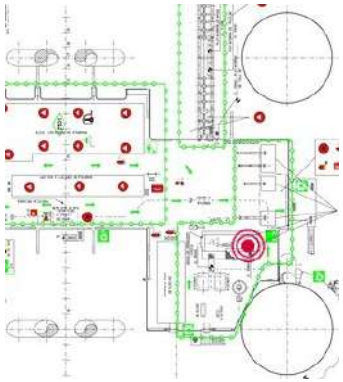
Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Main Deck Main Deck	Asbestos	Sampling	A06	Not Contained			
Exhaust gas system-Insulation-Exhaust gas - Emergency generator - DGE 514002 / Fr. 42 - STB							
Main Deck Main Deck	Asbestos	Sampling	A07	Not Contained			
Bulkhead plating-Insulation-Bulkhead insulation / Emergency generator room / Fr. 42 - STB							

Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Main Deck Main Deck	Asbestos	Sampling	A08	Not Contained			
Bulkhead plating-Insulation-Bulkhead insulation / Battery charger room / Fr. 41 - STB							
Main Deck Main Deck	Asbestos	Sampling	A03	Not Contained			
Diesel Engine-Insulation-External area / Diesel Fire Pump PS - MB-UB 542001A / Fr.43 - PS							

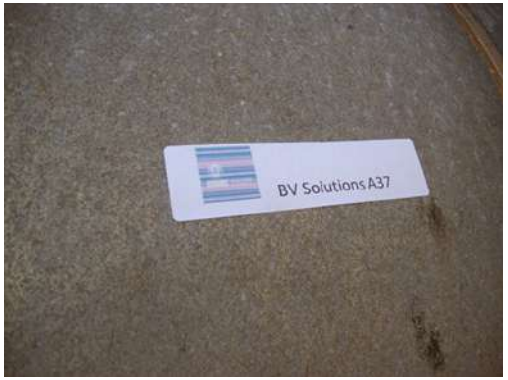
Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Spider Deck Cargo Area	Asbestos	Sampling	A56	Not Contained			
Piping - Miscellaneous-Insulation-Piping insulation (attached Tk V533602) / Fr. 15 - STB							
Spider Deck Cargo Area	Asbestos	Sampling	A55	Not Contained			
Miscellaneous-Insulation-TkV533602 insulation / Fr. 15 - STB							

Appendix - Report of visual checks and sampling locations – Not Contained

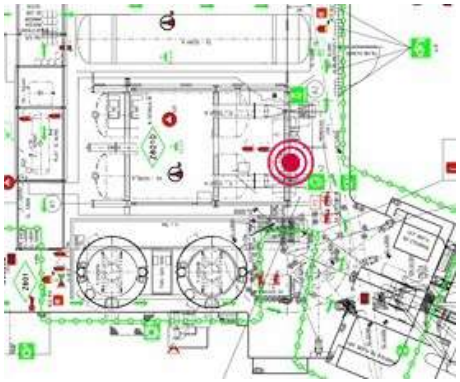
Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Upper Deck Cargo Area	Asbestos	Sampling	A37	Not Contained			

Miscellaneous-Insulation-External area / Tk P.UC.122301A-02 insulation / Fr. 13 - PS

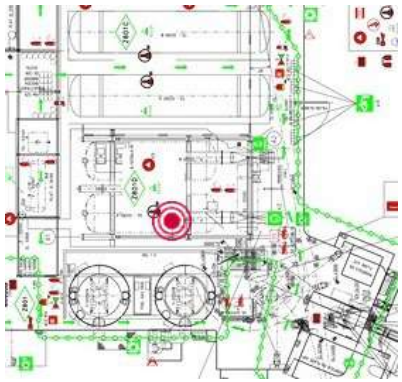


Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Upper Deck Cargo Area	Asbestos	Sampling	A42	Not Contained			

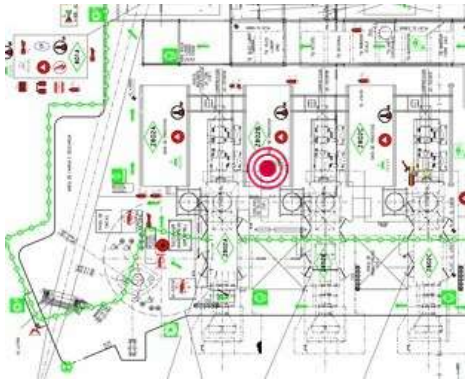
Miscellaneous-Insulation-External area / Tk SG123302 insulation / Fr. 13 - STB



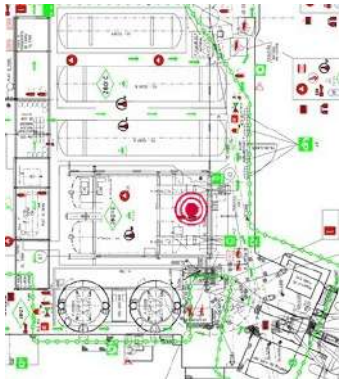
Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Upper Deck Cargo Area	Asbestos	Sampling	A43	Not Contained			
Miscellaneous-Insulation-External area / Tk SG123301-A insulation / Fr. 12 - STB							
Upper Deck Cargo Area	Asbestos	Sampling	A48	Not Contained			
Miscellaneous-Insulation-External area / Tk V512501 insulation / Fr. 13 - STB							

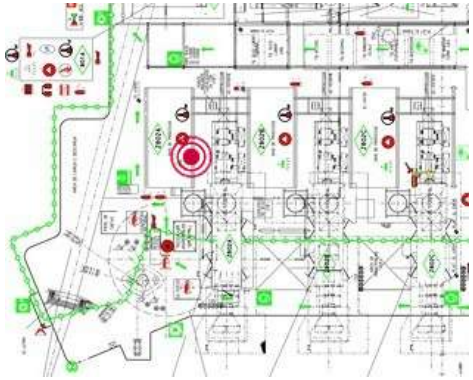
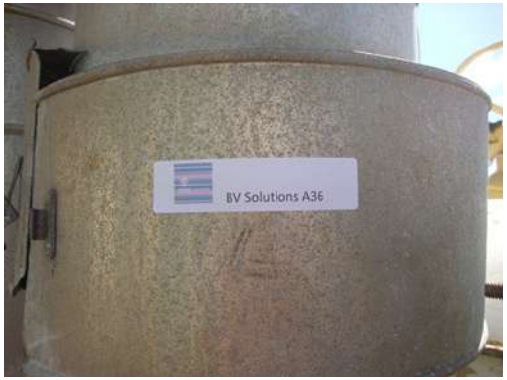
Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Upper Deck Cargo Area	Asbestos	Sampling	A44	Not Contained			
Miscellaneous-Insulation-External area / Tk SG123301-B insulation / Fr. 15 - STB							
Upper Deck Cargo Area	Asbestos	Sampling	A35	Not Contained			
Miscellaneous-Insulation-External area / Tk P.UC.122301A-03 insulation / Fr. 13 - PS							

Appendix - Report of visual checks and sampling locations – Not Contained

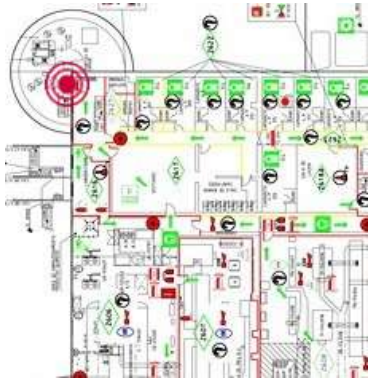
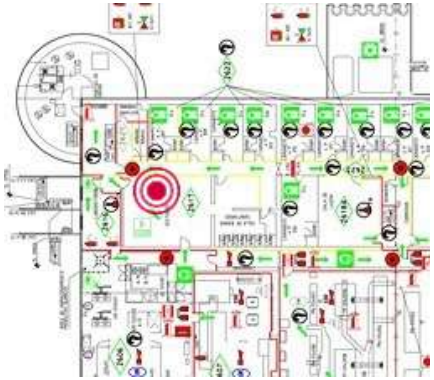
Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Upper Deck Cargo Area	Asbestos	Sampling	A46	Not Contained			
Piping - Miscellaneous-Insulation-External area / Piping insulation (attached Tk SG122301-B) / Fr. 15 - STB							
Upper Deck Cargo Area	Asbestos	Sampling	A45	Not Contained			
Piping - Miscellaneous-Insulation-External area / Piping insulation (attached Tk SG122302) / Fr. 13 - STB							

Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Risk Level Assessment	Remarks
Upper Deck Cargo Area	Asbestos	Sampling	A36	Not Contained			
Miscellaneous-Insulation-External area / Tk P.UC.122301A-01 insulation / Fr. 13 - PS							
Upper Deck Cargo Area	Asbestos	Sampling	A47	Not Contained			
Piping - Miscellaneous-Insulation-External area / Piping insulation (attached discharge Turbo Compressor \C\) / Fr. 15 - PS							

Appendix - Report of visual checks and sampling locations – Not Contained

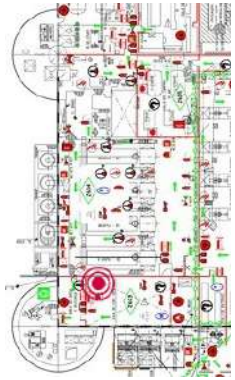
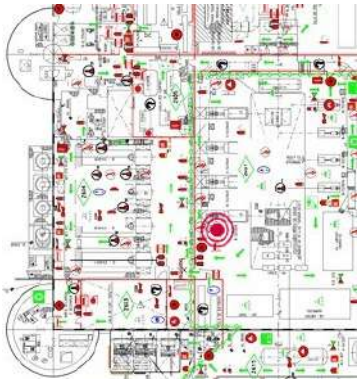
All other HazMats (non Asbestos) Management

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Remarks
Lower Deck Accommodation	PCB	Sampling	A71	Not Contained		
Miscellaneous-Rubber applications-Ruuber packing door / Access to column 5 (FWdD- PS) / Fr. 45 - PS						
Lower Deck Accommodation	ODS	Sampling	A73	Not Contained		
Accommodation - Ceiling-Insulation-Ceiling insulation / Changing room / FR. 39 - PS						

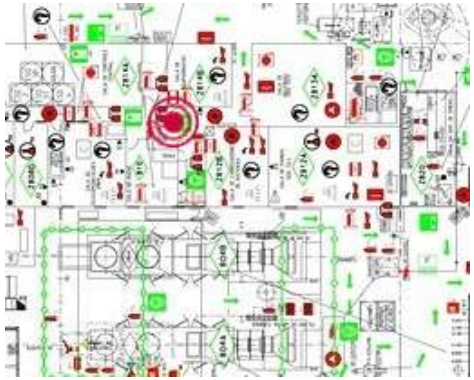
Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Remarks
Lower Deck Cargo Area	HBCDD	Sampling	A53	Not Contained		
Bulkhead plating-Concrete-Passive protection transverse beam / Fr. 9 - STB						
Lower Deck Engine Room	PCB	Sampling	A61	Not Contained		
AC system-Insulation-Air Conditionary Plant insulation / PS AFT column / Fr. 10 - PS						

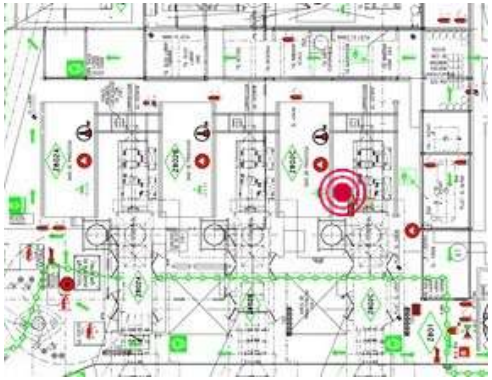
Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Remarks
Lower Deck Engine Room	PCB	Sampling	A60	Not Contained		
Electrical equipment-Rubber applications-Electrical Rubber floor / TGs control room / Fr. 11 - PS						
Lower Deck Engine Room	TBT	Sampling	A80	Not Contained		
Deck coatings-Coatings & paint-Deck painting / Exportation pumps room / FR. 16 - PS						

Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Remarks
Main Deck Accommodation	PFOS	Sampling	A11	Not Contained		
Accommodation - Floor-Corridor lining-Floor covering / Corridor / Fr. 41 - STB						
Main Deck Cargo Area	ODS	Visual	A107	Not Contained		
Air Conditioner (compressor)-Refrigerants-External area / Air conditionary / Fr. 38 - PS						

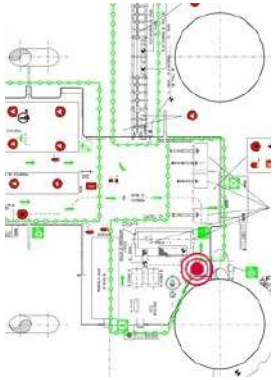
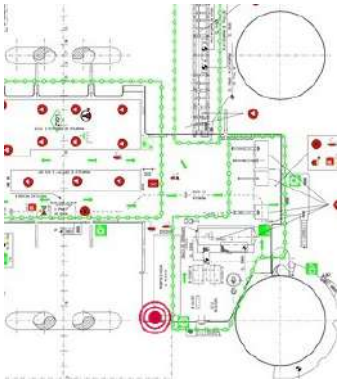
Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Remarks
Main Deck Cargo Area	HBCDD	Sampling	A28	Not Contained		
Electric cable penetrations-Putty-External area / MCT mass (close to Turbo-compressor C) / Fr. 13 - STB						
Main Deck Main Deck	PCB	Sampling	A04	Not Contained		
Miscellaneous-Rubber applications-External area / Lifeboat #1 - Rubber fender / Fr. 38 - PS						

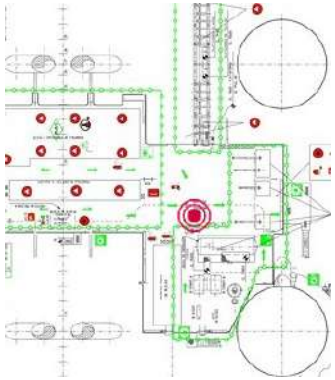
Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Remarks
Main Deck Main Deck	PCB	Sampling	A10	Not Contained		
Miscellaneous-Rubber applications-Rubber door packing / TGs battery room / Fr. 42 - STB						
Main Deck Main Deck	PCB	Sampling	A09	Not Contained		
Electrical equipment-Rubber applications-Electrical Rubber floor / Battery charger room / Fr. 41 - STB						

Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Remarks
Spider Deck Cargo Area	TBT	Sampling	A57	Not Contained		
Deck coatings-Coatings & paint-Deck painting / Fr. 15 - STB						
Spider Deck Cargo Area	PCB	Sampling	A78	Not Contained		
Cargo space-Concrete-External area / Passive protection transverse beam / Fr. 9 - STB						

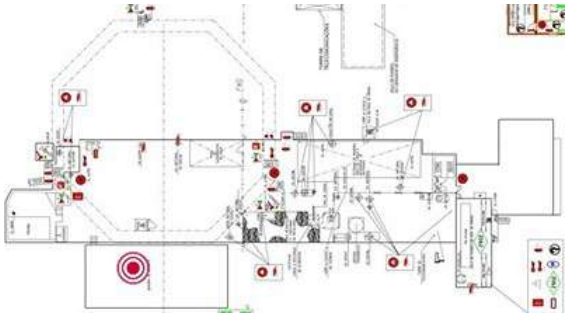
Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Remarks
Spider Deck Cargo Area	PCB	Sampling	A58	Not Contained		
Piping - Miscellaneous-Insulation-Piping insulation / Fr. 17 - STB						
Tween Deck 1 Accommodation	PFOS	Sampling	A70	Not Contained		
Accommodation - Floor-Floor covering-Floor covering / Corridor / Fr. 42 - PS						

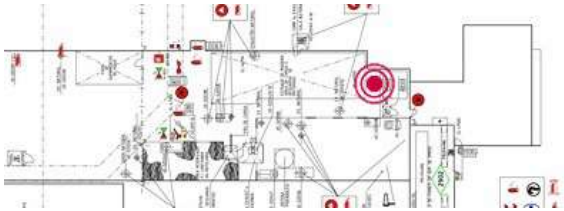
Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Remarks
Upper Deck Cargo Area	PCB	Visual	A114	Not Contained		
Transformer-Insulating oil-Electrical transformer - TF-TQ122301A / Fr. 18 - STB						
Upper Deck Cargo Area	PCB	Visual	A115	Not Contained		
Transformer-Insulating oil-Electrical transformer - TF-TQ122301B / Fr. 22 - STB						

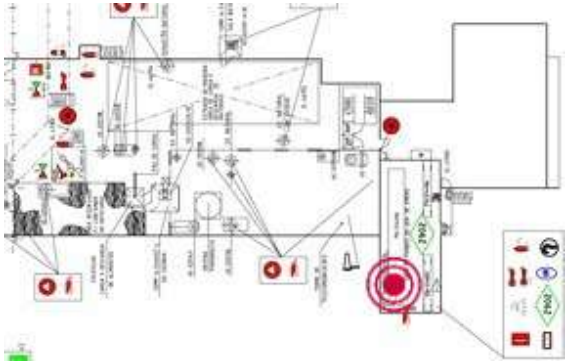
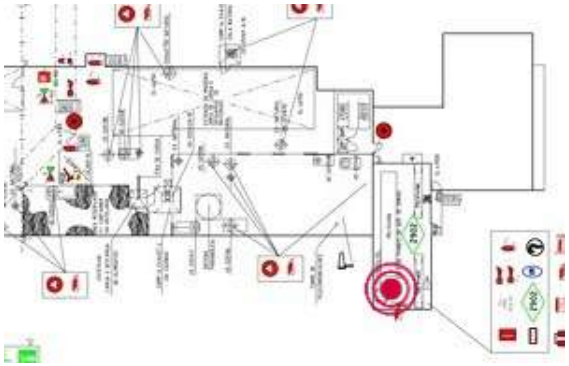
Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Remarks
Upper Deck Miscellaneous	PCB	Sampling	A02	Not Contained		
Deck covering-Rubber applications-External area / Football field / Fr. 37 - PS						
Upper Deck Miscellaneous	HBCDD	Sampling	A79	Not Contained		
Electrical equipment-Equipment parts / spares-External area / Electric cable tray / Fr. 38 - STB						

Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Remarks
Upper Deck Miscellaneous	ODS	Sampling	A01	Not Contained		
Electrical equipment-Equipment parts / spares-External area / Electric cable tray / Fr. 43 - STB						
Upper Deck Miscellaneous	PCB	Sampling	A12	Not Contained		
Deck penetrations-Putty-MCT mass / Essential panel room / Fr. 40 - STB						

Appendix - Report of visual checks and sampling locations – Not Contained

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Remarks
Upper Deck Superstructure	PCB	Visual	A106	Not Contained		
Transformer-Insulating oil-Electrical transformer - TF514503 / Essential Panel room / Fr. 37 - STB						
Upper Deck Superstructure	PCB	Visual	A105	Not Contained		
Transformer-Insulating oil-Electrical transformer - TF514504 / Essential Panel room / Fr. 37 - STB						

Supporting documents

- Attachment 1: Analysis report collected samples
- Attachment 2: Accreditation of laboratory
- Attachment 3: HazMat Expert Certificate
- Attachment 4: IHM Expert Company Certificate
- Attachment 5: Ship status
- Attachment 6: IAPP certificate
- Attachment 7: Platform description

GLOBAL ASBEST

RAPORLAMA HIZ. TİC. LTD. ŞTİ.

www.globalasbest.com
Çamlık Mah. İkbal Cad. No:166/4 Ümraniye/ISTANBUL
Tel:+90 216 999 93 38 info@globalasbest.com

İŞ HIJYENI KATI MALZEMELERDE ASBEST TÜR TAYİNİ RAPORU

ASBESTOS TYPE DETERMINATION IN SOLID MATERIALS REPORT

AB-1408-T
25-01-G622
01-25

Müşteri Adı :	BUREAU VERITAS MARINE & OFFSHORE(SHIP NAME : PETROBRAS 19)
Customer Name :	
Teklif Numarası :	BUR6912-T12
Order No :	
Numune Alma Tarihi:	External
Sampling date:	
Numunenin adı ve tarifi:	Asbest Içerebilecek Katı Materyal
Name and identity of the test item :	Solid material that may contain asbestos
Numunenin kabul tarihi:	17.01.2025
The date of receipt of the test item :	
Açıklamalar:	Yapılan laboratuvar testleri sonucunda aşağıda açıklanan numunelerde asbest lifi tespit edilmemiştir.
Remarks :	As a result of the laboratory tests, no asbestos fibers were detected in the samples described below.
Numune Analiz Tarihi:	20-21.01.2025
Date of test :	
Raporun sayfa sayısı:	21 Sayfa
Number of pages of the report:	21

Deney laboratuarı olarak faaliyet gösteren Global Asbest Raporlama Hizmetleri Tic Ltd. Şti. , TÜRKAK 'tan AB-1408-T ile 17025/2012 göre akredite edilmiştir.
Global Asbest Raporlama Hizmetleri Tic Ltd. Şti. accredited by TÜRKAK under registration number AB-1408-T for 17025/2012 as test laboratory "

Türk Akreditasyon Kurumu (TÜRKAK) deney raporlarının tanınması konusunda Avrupa Akreditasyon birliği (EA) ve uluslar arası laboratuvar akreditasypn birliği (ILAC) ile karşılıklı tanınma anlaşması imzalanmıştır.
The Turkish accreditaion Agency (TURKAK) is signatory to the multilateral agreements of the European co-operation for the accreditaion (EA) and of the International Labrotory Accreditation (ILAC) for the mutual recognatiin of the reports.
Deney ve/veya ölçüm sonuçları, genişletilmiş ölçüm belirsizlikleri (olması halinde) ve deney metotları bu sertifikanın tamamlayıcı kısmı olan takip eden sayfalarda verilmiştir.
The test and /or mearusement results, the uncertainties (if applicable) with confidence probability and test methods are given on on the following pages which are part of this reports.

Mühür/Kaşe	*Tarih date*	*Deney Sorumlusu Test Responsibility*	*Onay/Laboratuvar Müdürü Approved by Laboratory Manager*
GLOBAL ASBEST Rp. Hizmetleri Tic. Ltd. Şti. Çamlık Mah. İkbal Cad. No:166/6 Ümraniye/İstanbul Alemdağ V.D. 396 104 0326	22.01.2025	Tibet KILIÇ Analysis Staff Global Asbest Lab.	VOLKAN YILMAZ ASBEST SORUMLUSU İş Güvenliği Uzmanı A Sınıfı İş Güvenliği Uzmanı Belge No : 280
e-sign			

CONTENTS

SECTION 1: Instrument Information Used in Analysis

Table 1.1. Used Asbestos Analyzers

Equipment Name	Manufacturer / Model	Serial Number
Polarized Light Microscope	Bab-Lam	2015:31
Stereo Microscope	Bab-STR45	2015:133

SECTION 2: Company Information

Table 2 Company Information

TITLE	BUREAU VERITAS MARINE & OFFSHORE (SHIP NAME :PETROBRAS 19)
NUMBER	-
FAX	-

STANDARD, METHODS AND REGULATIONS

Measurement Parameter	STANDARD / REGULATION / METHOD USED
Asbestos Specimen Analysis Methods in Solid Samples	Asbestos Specimen Analysis in Solid Samples using dispersion staining under PLM light microscope with NIOSH Manual of Analytical Methods (NMAM)9002
Regulations	Implementing Regulation on Health and Safety Measures in Working with Asbestos

SECTION 3.1: Analysis Method

61 samples were taken from the PETROBRAS 19 vessel and analyzed in accordance with the principles specified in the NIOSH Manual of Analytical Methods (NMAM)9002 asbestos guide in our laboratory.

SECTION 3.2.1: Information on samples taken

Table 3.2.1: Information on Asbestos Samples Taken

Order No	Sample No.	Lab-Code	Equipment	Object to Check	Result
1)	BVA03	G622-BVA03	Exhaust gas insulation - Diesel Fire Pump PS - MB-UB 542001A	Insulation	No Asbestos*
2)	BVA05	G622-BVA05	Exhaust gas - Emergency generator - DGE 514002	Lagging	No Asbestos*
3)	BVA06	G622-BVA06	Exhaust gas - Emergency generator - DGE 514002	Insulation	No Asbestos*
4)	BVA07	G622-BVA07	Bulkhead insulation	Insulation	No Asbestos*
5)	BVA08	G622-BVA08	Bulkhead insulation	Insulation	No Asbestos*
6)	BVA13	G622-BVA13	Piping insulation	Insulation	No Asbestos*
7)	BVA14	G622-BVA14	Piping insulation	Insulation	No Asbestos*
8)	BVA15	G622-BVA15	Separator tank SG 122303 insulation	Insulation	No Asbestos*
9)	BVA16	G622-BVA16	Piping insulation (attached Tk SG 122303)	Insulation	No Asbestos*
10)	BVA17	G622-BVA17	Tank 122301B insulation	Insulation	No Asbestos*
11)	BVA18	G622-BVA18	Piping insulation (attached Tk 122301B)	Insulation	No Asbestos*
12)	BVA19	G622-BVA19	Tank 122301A insulation	Insulation	No Asbestos*
13)	BVA20	G622-BVA20	Piping insulation (attached Tk 122301A)	Insulation	No Asbestos*
14)	BVA21	G622-BVA21	Tank P122301B insulation	Insulation	No Asbestos*
15)	BVA22	G622-BVA22	Piping insulation (attached Tk P122301B)	Insulation	No Asbestos*
16)	BVA23	G622-BVA23	Tank P122301A insulation	Insulation	No Asbestos*
17)	BVA24	G622-BVA24	Piping insulation (attached Tk P122301A)	Insulation	No Asbestos*
18)	BVA25	G622-BVA25	Tank P122302A insulation	Insulation	No Asbestos*
19)	BVA26	G622-BVA26	Piping insulation (btw MB122304B / MB122304A	Insulation	No Asbestos*
20)	BVA27	G622-BVA27	Manhole packing - Furnance F512501A	Packing	No Asbestos*
21)	BVA29	G622-BVA29	Piping insulation (close to Tk 122301A)	Insulation	No Asbestos*
22)	BVA30	G622-BVA30	Piping insulation	Insulation	No Asbestos*
23)	BVA31	G622-BVA31	Piping insulation	Insulation	No Asbestos*
24)	BVA32	G622-BVA32	Piping insulation	Insulation	No Asbestos*
25)	BVA33	G622-BVA33	Piping insulation	Insulation	No Asbestos*
26)	BVA34	G622-BVA34	Piping insulation	Insulation	No Asbestos*
27)	BVA35	G622-BVA35	Tk P.UC.122301A-03	Insulation	No Asbestos*
28)	BVA36	G622-BVA36	Tk P.UC.122301A-01 insulation	Insulation	No Asbestos*
29)	BVA37	G622-BVA37	Tk P.UC.122301A-02 insulation	Insulation	No Asbestos*
30)	BVA38	G622-BVA38	Piping insulation	Insulation	No Asbestos*

GLOBAL ASBEST

RAPORLAMA HİZ. TİC. LTD. ŞTİ.

www.globalasbest.com
Çamlık Mah. Ikbal Cad. No:166/4 Ümraniye/ISTANBUL
Tel:+90 216 999 93 38 info@globalasbest.com

AB-1408-T
25-01-G622
01-25

ASBESTOS TYPE DETERMINATION IN SOLID MATERIALS REPORT

Order No	Sample No.	Lab-Code	Equipment	Object to Check	Result
31)	BVA39	G622-BVA39	Tk V-UC-122302 (Booster) insulation	Insulation	No Asbestos*
32)	BVA40	G622-BVA40	Tk V133301 insulation	Insulation	No Asbestos*
33)	BVA41	G622-BVA41	Tk P123302A insulation	Insulation	No Asbestos*
34)	BVA42	G622-BVA42	Tk SG123302 insulation	Insulation	No Asbestos*
35)	BVA43	G622-BVA43	Tk SG123301-A insulation	Insulation	No Asbestos*
36)	BVA44	G622-BVA44	Tk SG123301-B insulation	Insulation	No Asbestos*
37)	BVA45	G622-BVA45	Piping insulation (attached Tk SG122302)	Insulation	No Asbestos*
38)	BVA46	G622-BVA46	Piping insulation (attached Tk SG122301-B)	Insulation	No Asbestos*
39)	BVA47	G622-BVA47	Piping insulation (attached discharge Turbo Compressor "C")	Insulation	No Asbestos*
40)	BVA48	G622-BVA48	Tk V512501 insulation	Insulation	No Asbestos*
41)	BVA49	G622-BVA49	Tk V533601 insulation	Insulation	No Asbestos*
42)	BVA50	G622-BVA50	Piping insulation (attached Tk V533601)	Insulation	No Asbestos*
43)	BVA51	G622-BVA51	Piping insulation (attached Tk V541203)	Lagging	No Asbestos*
44)	BVA52	G622-BVA52	Piping insulation (attached Tk V541203)	Insulation	No Asbestos*
45)	BVA54	G622-BVA54	Tk V541203 insulation	Insulation	No Asbestos*
46)	BVA55	G622-BVA55	TkV533602 insulation	Insulation	No Asbestos*
47)	BVA56	G622-BVA56	Piping insulation (attached Tk V533602)	Insulation	No Asbestos*
48)	BVA59	G622-BVA59	Bulkhead insulation	Insulation	No Asbestos*
49)	BVA62	G622-BVA62	Piping insulation (close to pump "B 122302A"	Insulation	No Asbestos*
50)	BVA63	G622-BVA63	Tk V123302 insulation	Insulation	No Asbestos*
51)	BVA64	G622-BVA64	Piping insulation close to pump "B122301D"	Insulation	No Asbestos*
52)	BVA65	G622-BVA65	Piping insulation - Pump MB 5125001-B	Lagging	No Asbestos*
53)	BVA66	G622-BVA66	Piping insulation - Pump MB 5125001-B	Insulation	No Asbestos*
54)	BVA67	G622-BVA67	Hydrocyclone Cl 5336501B insulation	Insulation	No Asbestos*
55)	BVA68	G622-BVA68	Piping insulation attached to hydrocyclone Cl 533601A	Insulation	No Asbestos*
56)	BVA69	G622-BVA69	Electrical cable insulation	Insulation	No Asbestos*
57)	BVA72	G622-BVA72	Bulkhead insulation	Insulation	No Asbestos*
58)	BVA74	G622-BVA74	Piping insulation	Insulation	No Asbestos*
59)	BVA75	G622-BVA75	Piping insulation	Insulation	No Asbestos*
60)	BVA76	G622-BVA76	Piping insulation (attached Pump B122301B)	Insulation	No Asbestos*
61)	BVA77	G622-BVA77	Piping insulation (attached MB5125001C)	Insulation	No Asbestos*

** No Asbestos** defined as: Materials proved to have </= 0,1 % of asbestos fibre in the sample.*

SELECTION 3.3: Measurement Results and Evaluation

NIOSH-NMAM 9002 and HSG 248-A2 in solid samples examined by asbestos Guide to asbestos fibers,The results together with the other solid samples are reported in Table3.3.1.* *No Asbestos** defined as: Materials proved to have </= 0,1 % of asbestos fibre in the sample.*

Table 3.3.1: Asbestos Samples

Sample No	Lab. Code	OBJECT TO CHECK	ASBESTOS TYPE	ASBESTOS GROUP	ASBESTOS COLOR	ANALYSIS RESULT	Semi-quantitative Asbestos % rate
BVA03	G622-BVA03	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA05	G622-BVA05	Lagging	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA06	G622-BVA06	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA07	G622-BVA07	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA08	G622-BVA08	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA13	G622-BVA13	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA14	G622-BVA14	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*

GLOBAL ASBEST

RAPORLAMA HİZ. TİC. LTD. ŞTİ.

www.globalasbest.com
Çamlık Mah. Ikbal Cad. No:166/4 Ümraniye/ISTANBUL
Tel:+90 216 999 93 38 info@globalasbest.com

AB-1408-T
25-01-G622
01-25

ASBESTOS TYPE DETERMINATION IN SOLID MATERIALS REPORT

Sample No	Lab. Code	OBJECT TO CHECK	ASBESTOS TYPE	ASBESTOS GROUP	ASBESTOS COLOR	ANALYSIS RESULT	Semi-quantitative Asbestos % rate
BVA15	G622-BVA15	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA16	G622-BVA16	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA17	G622-BVA17	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA18	G622-BVA18	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA19	G622-BVA19	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA20	G622-BVA20	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA21	G622-BVA21	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA22	G622-BVA22	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*

GLOBAL ASBEST

RAPORLAMA HİZ. TİC. LTD. ŞTİ.

www.globalasbest.com
Çamlık Mah. Ikbal Cad. No:166/4 Ümraniye/ISTANBUL
Tel:+90 216 999 93 38 info@globalasbest.com

AB-1408-T
25-01-G622
01-25

ASBESTOS TYPE DETERMINATION IN SOLID MATERIALS REPORT

Sample No	Lab. Code	OBJECT TO CHECK	ASBESTOS TYPE	ASBESTOS GROUP	ASBESTOS COLOR	ANALYSIS RESULT	Semi-quantitative Asbestos % rate
BVA23	G622-BVA23	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA24	G622-BVA24	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA25	G622-BVA25	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA26	G622-BVA26	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA27	G622-BVA27	Packing	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA29	G622-BVA29	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA30	G622-BVA30	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA31	G622-BVA31	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*

GLOBAL ASBEST

RAPORLAMA HİZ. TİC. LTD. ŞTİ.

www.globalasbest.com
Çamlık Mah. Ikbal Cad. No:166/4 Ümraniye/ISTANBUL
Tel:+90 216 999 93 38 info@globalasbest.com

AB-1408-T
25-01-G622
01-25

ASBESTOS TYPE DETERMINATION IN SOLID MATERIALS REPORT

Sample No	Lab. Code	OBJECT TO CHECK	ASBESTOS TYPE	ASBESTOS GROUP	ASBESTOS COLOR	ANALYSIS RESULT	Semi-quantitative Asbestos % rate
BVA32	G622-BVA32	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA33	G622-BVA33	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA34	G622-BVA34	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA35	G622-BVA35	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA36	G622-BVA36	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA37	G622-BVA37	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA38	G622-BVA38	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA39	G622-BVA39	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*

GLOBAL ASBEST

RAPORLAMA HİZ. TİC. LTD. ŞTİ.

www.globalasbest.com
Çamlık Mah. Ikbal Cad. No:166/4 Ümraniye/ISTANBUL
Tel:+90 216 999 93 38 info@globalasbest.com

AB-1408-T
25-01-G622
01-25

ASBESTOS TYPE DETERMINATION IN SOLID MATERIALS REPORT

Sample No	Lab. Code	OBJECT TO CHECK	ASBESTOS TYPE	ASBESTOS GROUP	ASBESTOS COLOR	ANALYSIS RESULT	Semi-quantitative Asbestos % rate
BVA40	G622-BVA40	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA41	G622-BVA41	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA42	G622-BVA42	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA43	G622-BVA43	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA44	G622-BVA44	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA45	G622-BVA45	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA46	G622-BVA46	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA47	G622-BVA47	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*

GLOBAL ASBEST

RAPORLAMA HİZ. TİC. LTD. ŞTİ.

www.globalasbest.com
Çamlık Mah. Ikbal Cad. No:166/4 Ümraniye/ISTANBUL
Tel:+90 216 999 93 38 info@globalasbest.com

AB-1408-T
25-01-G622
01-25

ASBESTOS TYPE DETERMINATION IN SOLID MATERIALS REPORT

Sample No	Lab. Code	OBJECT TO CHECK	ASBESTOS TYPE	ASBESTOS GROUP	ASBESTOS COLOR	ANALYSIS RESULT	Semi-quantitative Asbestos % rate
BVA48	G622-BVA48	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA49	G622-BVA49	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA50	G622-BVA50	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA51	G622-BVA51	Lagging	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA52	G622-BVA52	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA54	G622-BVA54	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA55	G622-BVA55	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA56	G622-BVA56	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*

GLOBAL ASBEST

RAPORLAMA HİZ. TİC. LTD. ŞTİ.

www.globalasbest.com
Çamlık Mah. Ikbal Cad. No:166/4 Ümraniye/ISTANBUL
Tel:+90 216 999 93 38 info@globalasbest.com

AB-1408-T
25-01-G622
01-25

ASBESTOS TYPE DETERMINATION IN SOLID MATERIALS REPORT

Sample No	Lab. Code	OBJECT TO CHECK	ASBESTOS TYPE	ASBESTOS GROUP	ASBESTOS COLOR	ANALYSIS RESULT	Semi-quantitative Asbestos % rate
BVA59	G622-BVA59	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA62	G622-BVA62	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA63	G622-BVA63	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA64	G622-BVA64	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA65	G622-BVA65	Lagging	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA66	G622-BVA66	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA67	G622-BVA67	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA68	G622-BVA68	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*

GLOBAL ASBEST

RAPORLAMA HİZ. TİC. LTD. ŞTİ.

www.globalasbest.com
Çamlık Mah. Ikbal Cad. No:166/4 Ümraniye/ISTANBUL
Tel:+90 216 999 93 38 info@globalasbest.com

AB-1408-T
25-01-G622
01-25

ASBESTOS TYPE DETERMINATION IN SOLID MATERIALS REPORT

Sample No	Lab. Code	OBJECT TO CHECK	ASBESTOS TYPE	ASBESTOS GROUP	ASBESTOS COLOR	ANALYSIS RESULT	Semi-quantitative Asbestos % rate
BVA69	G622-BVA69	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA72	G622-BVA72	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA74	G622-BVA74	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA75	G622-BVA75	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA76	G622-BVA76	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*
BVA77	G622-BVA77	Insulation	Chrysotile	Serpentine	White	Negative	No Asbestos*
			Amosite	Amphibole	Brown	Negative	No Asbestos*
			Crocidolite	Amphibole	Blue	Negative	No Asbestos*
			Tremolite	Amphibole	White - Grey	Negative	No Asbestos*
			Anthophyllite	Amphibole	Grey - Brown	Negative	No Asbestos*
			Actinolite	Amphibole	White- Gr. -Br.	Negative	No Asbestos*

ANNEX 1 ; LABORATORY ACCREDITATION CERTIFICATE

ANNEX 2 ; SCOPE OF ACCREDITATION

ANNEX 3 ; SAMPLE PHOTOS

TURKISH ACCREDITATION AGENCY

ACCREDITATION CERTIFICATE

As a Testing Laboratory

GLOBAL ASBEST RAPORLAMA HİZMETLERİ TİCARET LİMİTED ŞİRKETİ

Central Address: ÇAMLIK MAH. İKBAL CAD. ÇEVİK İŞ MERKEZI NO:166/6 ÜMRANİYE İstanbul / Türkiye

is accredited in accordance with TS EN ISO/IEC 17025:2017 standard within the scope given in Annex following the assessment conducted by TURKAK.

Accreditation Number : AB-1408-T

Accreditation Date : 20.02.2019

Revision Date / Number : 17.02.2023 / 03

This certificate shall remain in force until **18.02.2027**, subject to continuing compliance with the standard **TS EN ISO/IEC 17025:2017**, related regulations and requirements.

Gülden Banu Müderrisoğlu
Secretary General

Turkish Accreditation Agency (TURKAK) is a signatory to the European co-operation for Accreditation (EA) Multilateral Agreement (MLA) and International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Agreement (MRA) in the scope of ISO/IEC 17025.

This document has been signed by Gülden Banu Müderrisoğlu on (1) with a secure electronic signature in accordance with the electronic signature law numbered 5070. Use the QR code to verify the e-signed document.

F701-040 +90 312 410 82 00 - www.turkak.org.tr

ASBESTOS TYPE DETERMINATION IN SOLID MATERIALS REPORT

Annex of the Certificate (Page 1/1)
Accreditation Scope

GLOBAL ASBEST RAPORLAMA HİZMETLERİ TİCARET LİMİTED ŞİRKETİ

Accreditation No: AB-1408-T
Revision No: 03 Date: 17.02.2023

Testing Laboratory

Address : ÇAMLIK MAH. İKBAL CAD. ÇEVİK İŞ MERKEZİ NO:166/E ÜMRANİYE İstanbul / Türkiye
Phone : +90 216 999 9338
Fax : -
Email : info@globalasbest.com
Website : www.globalasbest.com

Occupational Hygiene Analyses

Tested Materials / Products	Name of Test	Testing Method (National, International Standards, In-house Methods)
Occupational Hygiene Asbestos in Solid Materials and Products	Determination of Asbestos Species in Solid Materials and Semi-Quantitative Analysis (Chrysotile, Amosite, Chrosidolit, Actinolite, Anthophyllite, Tremolite) Sampling: Sampling Representative Track from Solid Material (Manual Sampling) Pretreatment: Homogeneous Subsample Preparation Pretreatment: Pre-Analysis with Stereo Microscope and Mounting Fibers in RI Liquid Analysis: Polarized Light Microscope (PLM)	• NIOSH NMAM 9002 ## Please select the accreditation requested standards. If you are applying from the standard non-list, you can add it with the Add button. If you are using the in-house method, in the in-operating method of the operating method - "Instruction No / SOP No.Rev. NO" (It is modified from the standard / publications) Write in accordance with format. ##
Occupational Hygiene Asbestos in Solid Materials and Products	Determination of Asbestos Species in Solid Materials and Semi-Quantitative Analysis (Chrysotile, Amosite, Chrosidolit, Actinolite, Anthophyllite, Tremolite) Sampling: Sampling Representative Track from Solid Material (Manual Sampling) Pretreatment: Homogeneous Subsample Preparation Pretreatment: Pre-Analysis with Stereo Microscope and Mounting Fibers in RI Liquid Analysis: Polarized Light Microscope (PLM)	• HSG 248-A2 ## Please select the accreditation requested standards. If you are applying from the standard non-list, you can add it with the Add button. If you are using the in-house method, in the in-operating method of the operating method - "Instruction No / SOP No.Rev. NO" (It is modified from the standard / publications) Write in accordance with format. ##

This document has been signed by Gülden Banu Müderrisoğlu on {1} with a secure electronic signature in accordance with the electronic signature law numbered 5070. Use the QR code to verify the e-signed document.

Certificate of Approval

Approving a Service Supplier engaged in
Visual and/or Sampling Checks and preparation of Inventory of Hazardous Materials

No. ITB0/I.SN/20231207131519

Issued within the scope of the Bureau Veritas Marine & Offshore Division General Conditions
Délivrée dans le cadre des Conditions Générales de la Division Marine & Offshore du Bureau Veritas

Company: **GLOBAL ASBEST RAPORLAMA HIZMETLERI TIC. LTD. STI.**

Company address*: CAMLIK MAH. IKBAL CAD.
NO:166/6
UMRANIYE
34774 ISTANBUL
Türkiye

Scope of the approval:
Visual and/or Sampling Checks on board ships, development of IHM.

This is to certify that:

The undersigned Surveyor of the Society, acting within the Bureau Veritas Marine & Offshore General Conditions, has performed, at the Company's request, an assessment of the facilities, organisational structure and procedures of the said Service Supplier, in compliance with the relevant requirements of the Society Rule Note NR 533.

The facilities, organisational structure and procedures were found satisfactory for the servicing of the equipment described in the attached Schedule of Approval.

The Certificate is valid until**: 06 December 2026

Completion date of the assessment on which this certificate based: 07 December 2023

At: ISTANBUL on 07 December 2023

BUREAU VERITAS
MARINE & OFFSHORE

Bureau Veritas Surveyor's signature :

L.SEN

By Order of the Secretary

* *Refer to the appendix for the list of subsidiaries covered by this certificate*
** *Not later than 3 years after the date of evaluation*

The latest published Rules of the Bureau Veritas Marine & Offshore and the General Conditions therein are applicable
La dernière édition des Règlements de Bureau Veritas Marine & Offshore ainsi que les conditions Générales qui y figurent sont applicables

Any person not a party to the contract pursuant to which this certificate is delivered may not assert a claim against Bureau Veritas for any liability arising out of errors or omissions which may be contained in said certificate, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in the establishment or issuance of this certificate, and in connection with any activities for which it may provide.

Toute personne qui n'est pas partie au contrat aux termes duquel ce document est délivré ne pourra engager la responsabilité du Bureau Veritas pour les inexactitudes ou omissions qui pourraient y être relevées ainsi que pour les erreurs de jugement, fautes ou négligences commises par le personnel de la Société ou par ses agents dans l'établissement de ce document et dans l'exécution des interventions qu'il comporte.

ITB0/I.SN/20231207131519 - Page 1/2

ANNEX 3 ; SAMPLE PHOTOS

TEST REPORT

CheckCode:759475
Report No.:C202501231629-1E

Company Name: GLOBAL ASBEST RP.HIZM.LTD.STI
Address: CAMLIK MAH.IKBAL CAD.CEVIK IS MERKEZI NO:166/4 UMRANIYE-ISTANBUL-TURKEY

The following sample information is provided by the client and responsible for its authenticity

Vessel Name: PETROBRAS 19
IMO: 8753720

Date of Receipt: Feb.5, 2025 Test Period: Feb.5, 2025 – Feb.11, 2025

Test Request: Based on the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009 (the Hong Kong Convention) by International Maritime Organization (IMO), and EU Regulation 1257/2013 on ship recycling,EMSA's Best Practice Guidance on the Inventory of Hazardous Materials and according to the customer's request, to determine the content of Polychlorinated Biphenyls(PCBs), Ozone Depleting Substances (ODS), Organotin compounds,Perfluorooctane sulfonates (PFOS) and its derivatives,Hexabromocyclododecane (HBCDD) in the submitted sample(s).

Test Result: Please refer to following page(s).

Edited by Zhu Yun Reviewed by Shi Ling Ling Approved by Wang Sheng

扫一扫 验真伪

Issue date:Feb.11,2025

GRG METROLOGY & TEST (WUXI) CO., LTD.
Address: No.8, Ningyun Road, Xinwu District, Wuxi, Jiangsu, China
Tel: 4006020999 Fax: +86-0510-68002628 Website: http://www.grgtest.com

TEST REPORT

CheckCode:759475
Report No.:C202501231629-1E

Sample description

No.	Sample No.	Location /Zone / Deck	Details	Sample description
1	BV Solutions A01	Upper Deck	External area	Grey solid block
2	BV Solutions A02	Upper Deck	External area	Brown solid block
3	BV Solutions A04	Main Deck	External area	Black solid block
4	BV Solutions A09	Main Deck	Battery charger room	Black solid block
5	BV Solutions A10	Main Deck	TGs battery room	Black solid block
6	BV Solutions A11	Main Deck	Corridor	Brown solid block
7	BV Solutions A12	Upper Deck	Essential panel room	Grey solid block
8	BV Solutions A28	Main Deck	External area	Grey solid block
9	BV Solutions A53	Lower Deck	External area	White gray solid block
10	BV Solutions A57	Spider Deck	External area	Brown solid block
11	BV Solutions A58	Spider Deck	External area	Yellow solid block
12	BV Solutions A60	Lower Deck	TGs control room	Black solid block
13	BV Solutions A61	Lower Deck	PS AFT column	Yellow solid block
14	BV Solutions A70	Twin deck	Corridor	Brown solid block
15	BV Solutions A71	Lower Deck	Access to column 5 (FWdD-PS)	Black solid block
16	BV Solutions A73	Lower Deck	Changing room	Yellow rock wool
17	BV Solutions A78	Spider Deck	External area	Grey solid block
18	BV Solutions A79	Upper Deck	External area	Green/red solid block
19	BV Solutions A80	Lower Deck	Exportation pumps room	Grey solid block

Test Method(s)

Test Item(s)	Test Method	Instrument	MDL	Threshold Value
Polychlorinated Biphenyls(PCBs)	EPA 3550C:2007& EPA 8082A:2007	GC-MS	5 mg/kg	50 mg/kg
Ozone Depleting Substances (ODS)	EPA 5021A:2014 & EPA 8260C:2006	HS-GC/MS	0.1 mg/kg	No threshold value
Organotin compounds	In house method (GRGJL.WI-HX-09-128, reference to ISO 17353:2004)	GC-MS	2 mg/kg	2500 mg total tin/kg
Perfluorooctane sulfonates (PFOS) and its derivatives	EPA 3550C:2007 & EPA8321B:2007	LC-MS	10 mg/kg(substance and preparation)	10 mg/kg
Hexabromocyclododecane (HBCDD)	EPA 3540C:1996 & EPA 8270E:2018	GC-MS	50 mg/kg	100 mg/kg

Remark: 1) mg/kg = ppm
2) MDL = Method Detection Limit
3) “N.D.” = Not Detected (Below method detection limit)
4) “/”= Not Conducted

TEST REPORT

CheckCode:759475
Report No.:C202501231629-1E

Test results

1. Polychlorinated Biphenyls (PCBs)

Tested Item	Polychlorinated Biphenyls (PCBs)(mg/kg)						
Material / Test Results / Sample No.	2.4.4'-Trichlorobiphenyl (PCB 28)	2.2'.5.5'-Tetrachloro-biphenyl (PCB 52)	2.2'.4.5.5'-Pentachloro-biphenyl (PCB 101)	2.3'.4.4'.5-Pentachloro biphenyl (PCB 118)	2.2'3.4.4'.5'-Hexachloro-biphenyl (PCB 138)	2.2'.4.4'.5.5'-Hexachloro-biphenyl (PCB 153)	2.2'.3.4.4'.5.5'-Heptachloro biphenyl (PCB 180)
2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
3	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
4	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
7	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
11	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
12	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
13	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
15	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
17	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

2. Ozone Depleting Substances (ODS)

Tested Item			Ozone Depleting Substances (ODS)(mg/kg)	
Material / Test Results / Sample No.			1	16
CFCs	/	/	N.D.	N.D.
Halons	/	/	N.D.	N.D.
Other Fully Halogenated CFCs	/	/	N.D.	N.D.
Carbon tetrachloride	/	/	N.D.	N.D.
1,1,1- trichloroethane	/	/	N.D.	N.D.
Hydrochlorofluorocarbons	/	/	N.D.	N.D.
Hydrobromofluorocarbons	/	/	N.D.	N.D.
Methyl bromide	/	/	N.D.	N.D.
Bromochloromethane	/	/	N.D.	N.D.

Remark: 1) MDL are 0.1 mg/kg.

2) All types of ODS classified by MEPC 269(68) was analysed, if there was any specific ODS detected positive, the specific substance、 CAS Number and concentration to be recorded in above table.

3. Organotin compounds

Tested Item / Test / Sample No. / Results	Tributyltin (TBT) (calculated as tin) (mg/kg)	Triphenyltin (TPT) (calculated as tin) (mg/kg)	Bis(tributyltin) oxide (TBTO) (calculated as tin) (mg/kg)	TBT+TPT+ TBTO (calculated as tin) (mg/kg)
10	N.D.	N.D.	N.D.	N.D.
19	N.D.	N.D.	N.D.	N.D.

4. Perfluorooctane sulfonates (PFOS) and its derivatives

Tested Item / Test / Sample No. / Results	Perfluorooctane sulfonates (PFOS) and its derivatives * (mg/kg)
6	N.D.
14	N.D.

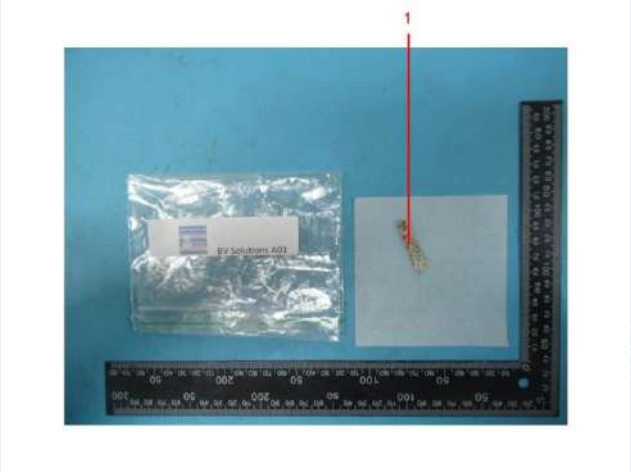
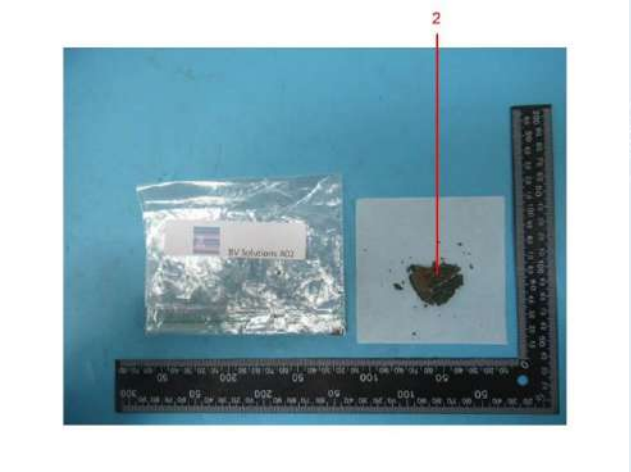
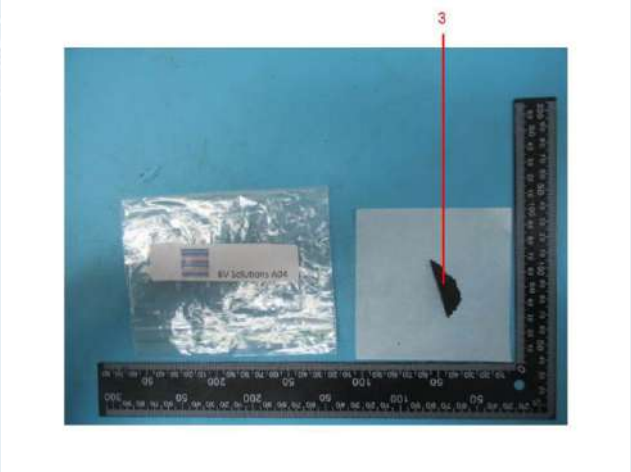
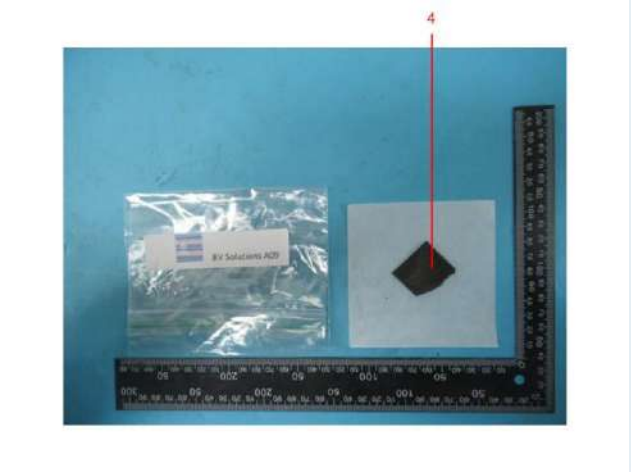
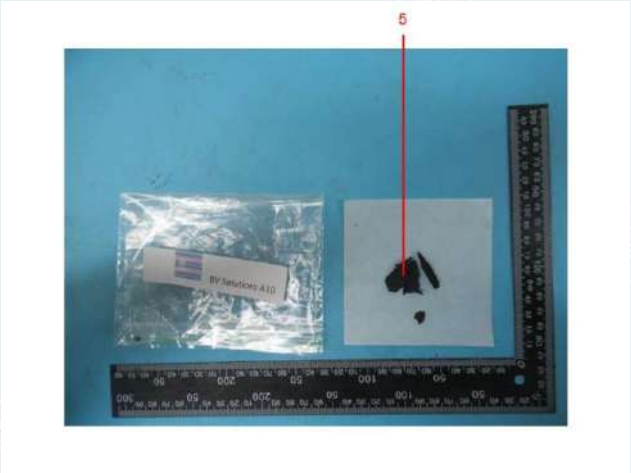
Remark: * Perfluorooctane sulfonates (PFOS) and its derivatives including PFOS, its salts (CAS No.: 1763-23-1), N-EtFOSA (CAS No.: 4151-50-2), N-MeFOSA (CAS No.: 31506-32-8), N-EtFOSE (CAS No.: 1691-99-2), N-MeFOSE (CAS No.: 24448-09-7), PFOSA, its salts (CAS No.: 754-91-6), FOSAA, its salts (CAS No.: 2806-24-8), N-MeFOSAA, its salts (CAS No.: 2355-31-9), N-EtFOSAA, its salts (CAS No.: 2991-50-6).

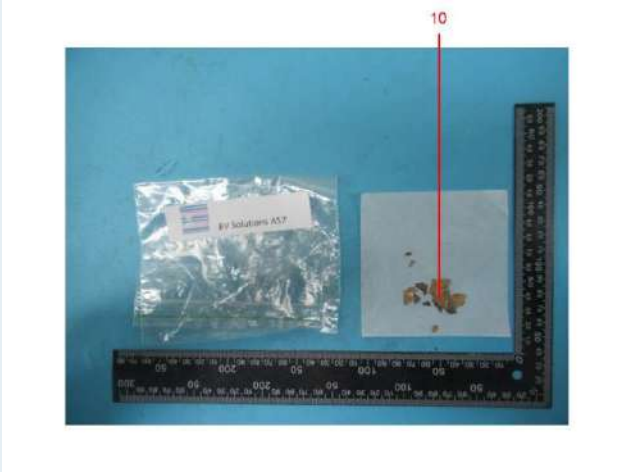
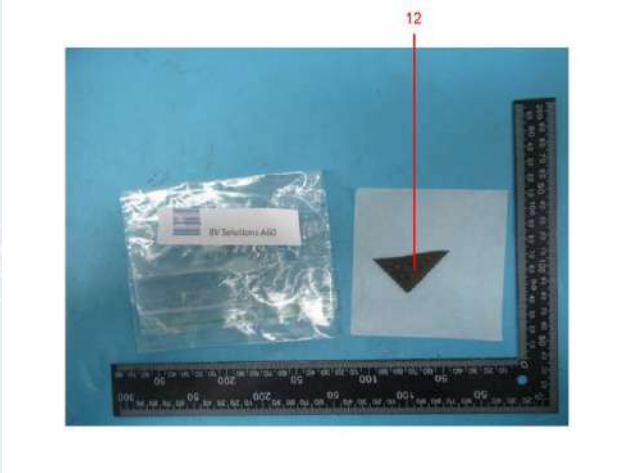
5. Hexabromocyclododecane (HBCDD)

Tested Item / Test / Sample No. / Results	Hexabromocyclododecane (HBCDD) (mg/kg)
8	N.D.
9	N.D.
18	N.D.

TEST REPORT

CheckCode:759475
Report No.:C202501231629-1E

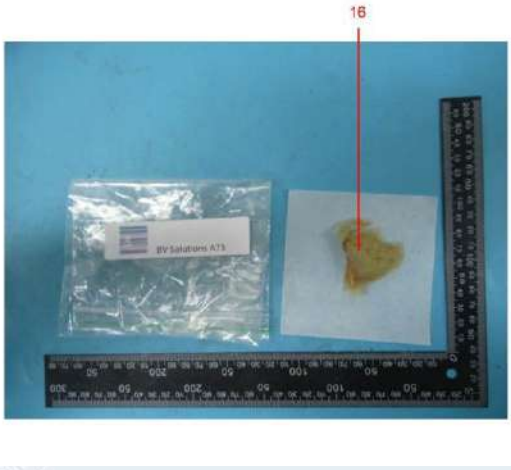
Photo of Sample	
	
	
	

 7	 8
 9	 10
 11	 12


13


14


15


16


17


18

----------End of Report----------

Certificate of Approval

Approving a Service Supplier engaged in
Visual and/or Sampling Checks and preparation of Inventory of Hazardous Materials

No. ITB0/LSN/20231207131519

Issued within the scope of the Bureau Veritas Marine & Offshore Division General Conditions
Délivrée dans le cadre des Conditions Générales de la Division Marine & Offshore du Bureau Veritas

Company: **GLOBAL ASBEST RAPORLAMA HIZMETLERI TIC. LTD. STI.**

Company address*: CAMLIK MAH. IKBAL CAD.
NO:166/6
UMRANIYE
34774 ISTANBUL
Türkiye

Scope of the approval:
Visual and/or Sampling Checks on board ships, development of IHM.

This is to certify that:

The undersigned Surveyor of the Society, acting within the Bureau Veritas Marine & Offshore General Conditions, has performed, at the Company's request, an assessment of the facilities, organisational structure and procedures of the said Service Supplier, in compliance with the relevant requirements of the Society Rule Note NR 533.

The facilities, organisational structure and procedures were found satisfactory for the servicing of the equipment described in the attached Schedule of Approval.

The Certificate is valid until**: 06 December 2026

Completion date of the assessment on which this certificate based: 07 December 2023

At: ISTANBUL on 07 December 2023

BUREAU VERITAS
MARINE & OFFSHORE

Bureau Veritas Surveyor's signature :

L.SEN

By Order of the Secretary

* *Refer to the appendix for the list of subsidiaries covered by this certificate*
** *Not later than 3 years after the date of evaluation*

The latest published Rules of the Bureau Veritas Marine & Offshore and the General Conditions therein are applicable
La dernière édition des Règlements de Bureau Veritas Marine & Offshore ainsi que les conditions Générales qui y figurent sont applicables

Bureau Veritas Marine & Offshore

IHM EXPERT CERTIFICATE

This is to certify that

Last Name : **OSSAMU YAMAKI** First Name : **Roberto**
Office : **MACAE (MEA0)** Country : **BRAZIL**

is authorized to carry out IHM development in accordance with EU Ship Recycling Regulation (1257/2013) and Hong-Kong Convention(2009).

Certificate validated on July 19, 2022

Printed on July 19, 2022

Data in Qualif application take precedence over this certificate.

	Bureau Veritas **Marine & Offshore** **Consulting & Outsourcing** **IHM**	**Last name :** **OSSAMU YAMAKI** **First name :** **Roberto** **Office :** **MACAE (MEA0)** **Country :** **BRAZIL**

IHM EXPERT QUALIFICATION

TECHNICAL	
Certification	
IHM Expert	X

Printed on July 19, 2022

Data in Qualif application take precedence over this certificate.

VeriSTAR Info Survey Status

PETROBRAS XIX

Reg. Owner: BRASPETRO OIL SERVICES CO.
BV Reg. Nr: 12P916
IMO Number: 8753720
Vessel Type: Floating storage unit
Gross Tonnage: 22589
Date of build: 01 Jan 1983

Ship name: PETROBRAS XIX BV Nr: 12P916

Table of Contents

Ship name: PETROBRAS XIX BV Nr: 12P916

Ship Particulars

Identification

Ship Type:	Floating storage unit	*Flag:*	Panama
IMO Number:	8753720	*Port of Registry:*	PANAMA
		Call Sign:	3FHI5

Classification

Class Symbols:	I ✠Hull ✠Mach
Service Notations:	Offshore semi-submersible unit Production
Navigation Not.:	Unrestricted navigation; CAMPOS BASIN
Add. Class Not.:	POSA
Machinery:	✠MACH

Hull

Gross Tonnage 69:	22589	*Builder:*	HITACHI
Net Tonnage 69:	6776	*Date of build:*	01 Jan 1983
LPP:	102 m	*Hull Material:*	Steel
Breadth:	70.2 m	*Hull Info:*	3 continuous deck(s)
Depth:	42.94 m	*Survey Type:*	Normal (Hull)
Draught:	22 m		
Freeboard:	20885 mm		

Machinery

Propelling type:	Non-propelled	*Elec. installation:*	2 Steam generators
Auxiliary Engine(s):	5 Diesel (4123 kW / 5602 HP)		5 Generators
	2 Steam turbine ()		2237 kVA (1790 kW)
Emergency Engine(s):		*Survey Type:*	Normal

Ship name: PETROBRAS XIX BV Nr: 12P916

Owner / Manager Information

Registered Owner

Name: BRASPETRO OIL SERVICES CO.
Company Number: 20000
IMO Number: 1971996
Address: AV.REPUBLICA DO CHILE 65 SALA 1106
RIO DE JANEIRO, RJ BRESIL
Rio de Janeiro - RJ
BRAZIL

Manager

Name: BRASPETRO OIL SERVICES CO.
Company Number: 20000
IMO Number: 1971996
Address: AV.REPUBLICA DO CHILE 65 SALA 1106
RIO DE JANEIRO, RJ BRESIL
Rio de Janeiro - RJ
BRAZIL

Ship name: PETROBRAS XIX BV Nr: 12P916

Cargo & Ballast Capacities

Ballast Tanks

Tank/Hold Identification	Initial Frame	Final Frame	Position	Last survey	Job Number	Protection	Coating Cond.	Annual Exam.
Ballast tank nr. 01 SB	51	55	Starboard wing	27 Oct 2023	MEA0/2023/J5105	Hard coated & Anodes	Good	No
Ballast tank nr. 01 PS	51	55	Portside wing	02 Mar 2023	MEA0/2023/J5018	Hard coated & Anodes	Good	No
Ballast tank nr. 03 PS	45	50	Portside wing	16 Feb 2023	MEA0/2023/J5010	Hard coated	Good	No
Ballast tank nr. 03 SB	45	50	Starboard wing	20 Mar 2023	MEA0/2023/J5022	Hard coated & Anodes	Good	No
Ballast tank nr. 02 SB	45	50	Starboard wing	20 Mar 2023	MEA0/2023/J5022	Hard coated & Anodes	Good	No
Ballast tank nr. 02 PS	45	50	Portside wing	16 Feb 2023	MEA0/2023/J5010	Hard coated	Good	No
Ballast tank nr. 05 PS	40	45	Portside wing	16 Feb 2023	MEA0/2023/J5010	Hard coated	Good	No
Ballast tank nr. 04 SB	40	45	Starboard wing	20 Mar 2023	MEA0/2023/J5022	Hard coated & Anodes	Good	No
Ballast tank nr. 04 PS	40	45	Portside wing	26 Jan 2023	MEA0/2023/J5006	Hard coated & Anodes	Good	No
Ballast tank nr. 05 SB	40	45	Starboard wing	20 Mar 2023	MEA0/2023/J5022	Hard coated & Anodes	Good	No
Ballast tank nr. 07 SB	35	40	Starboard wing	15 Dec 2020	MEA0/2020/J5064	Hard coated & Anodes	Good	No
Ballast tank nr. 07 PS	35	40	Portside wing	02 Mar 2023	MEA0/2023/J5018	Hard coated & Anodes	Good	No
Ballast tank nr. 06 SB	35	40	Starboard wing	04 Apr 2023	MEA0/2023/J5027	Hard coated & Anodes	Good	No
Ballast tank nr. 06 PS	35	40	Portside wing	16 Feb 2023	MEA0/2023/J5010	Hard coated	Good	No
Ballast tank nr. 13 SB	14	19	Starboard wing	26 Dec 2022	MEA0/2022/J5092	Hard coated	Good	No
Ballast tank nr. 13 PS	14	19	Portside wing	28 Jul 2022	MEA0/2022/J5051	Hard coated	Good	No
Ballast tank nr. 12 SB	14	19	Starboard wing	26 Dec 2022	MEA0/2022/J5092	Hard coated	Good	No
Ballast tank nr. 12 PS	14	19	Portside wing	18 Sep 2022	MEA0/2022/J5066	Hard coated & Anodes	Good	No
Ballast tank nr. 15 SB	9	14	Starboard wing	21 Oct 2022	MEA0/2022/J5068	Hard coated	Good	No
Ballast tank nr. 15 PS	9	14	Portside wing	28 Jul 2022	MEA0/2022/J5051	Hard coated	Good	No
Ballast tank nr. 14 SB	9	14	Starboard wing	12 Jan 2023	MEA0/2023/J5000	Hard coated	Good	No
Ballast tank nr. 14 PS	9	14	Portside wing	28 Jul 2022	MEA0/2022/J5051	Hard coated	Good	No
Ballast tank nr. 17 SB	3	9	Starboard wing	20 Mar 2023	MEA0/2023/J5022	Hard coated & Anodes	Good	No
Ballast tank nr. 17 PS	3	9	Portside wing	28 Jul 2022	MEA0/2022/J5051	Hard coated	Good	No
Ballast tank nr. 16 SB	3	9	Starboard wing	20 Mar 2023	MEA0/2023/J5022	Hard coated & Anodes	Good	No
Ballast tank nr. 16 PS	3	9	Portside wing	28 Jul 2022	MEA0/2022/J5051	Hard coated	Good	No
Ballast tank nr. 18 SB	0	3	Starboard wing	20 Mar 2023	MEA0/2023/J5022	Hard coated & Anodes	Good	No
Ballast tank nr. 18 PS	0	3	Centre	21 Oct 2022	MEA0/2022/J5068	Hard coated	Good	No

Ship name: PETROBRAS XIX BV Nr: 12P916

Conditions of Class / Statutory Status

The Conditions of Class / Statutory Status below shows the information available in VeriSTAR Info database at the time the report is printed. This may not indicate certificates issued, surveys carried out or conditions of class / recommendations issued but not yet reported to BV Head Office.

Classification

Status: Active

Attendance requested or in progress:

Date of Request:	Survey Centre:	Job Number:	Attendance Type:
18 Aug 2024	BV MACAE	MEA0/2024/J5074	In-service surveys

Certificates

Certificate name	Issued	Expiry	Extended	Type	Status
Classification					
Class Certificate	11 Jan 2024	18 Nov 2027		Definitive	
Load line					
Load Line Certificate	11 Jan 2024	18 Nov 2027		Definitive	
MARPOL					
Oil Pollution Prevention Certif	11 Jan 2024	18 Nov 2027		Definitive	
Sewage Pollution Prevention Certif	11 Jan 2024	18 Nov 2027		Definitive	
Air Pollution Prevention Certif	11 Jan 2024	18 Nov 2027		Definitive	
IMO Codes					
MODU Safety Certificate	11 Jan 2024	18 Nov 2027		Definitive	

Legend:

C Expired C Expires in less than 1 month C Expires in less than 3 months

Surveys / Audits / Inspections

Classification Surveys

Survey name	Last	Due Date	Range (from, to)	Postponed	Status
Hull - Renewal	11 Jan 2024	18 Nov 2027	18 Aug 2026 - 18 Nov 2027		
Hull - Annual for Renewal	11 Jan 2024	18 Nov 2027	18 Aug 2027 - 18 Nov 2027		
Hull - Annual S		18 Nov 2024	18 Aug 2024 - 18 Feb 2025		Within window
Annual survey of structure S		18 Nov 2024	18 Aug 2024 - 18 Feb 2025		Within window
Hull - Intermediate S		18 May 2025	18 Aug 2024 - 18 Feb 2026		Within window
Underwater Bottom Survey	11 Jan 2024				
Bottom Survey in Dry Dock or afloat	26 Jun 2018	11 Jan 2027	11 Jan 2027		
Machinery - Renewal	11 Jan 2024	18 Nov 2027	18 Aug 2026 - 18 Nov 2027		
Machinery - Annual for Renewal	11 Jan 2024	18 Nov 2027	18 Aug 2027 - 18 Nov 2027		
Machinery - Annual S		18 Nov 2024	18 Aug 2024 - 18 Feb 2025		Within window

Statutory Surveys

Survey name	Last	Due Date	Range (from, to)	Postponed	Status
Load Line - Renewal	11 Jan 2024	18 Nov 2027	18 Aug 2027 - 18 Nov 2027		
Load Line - Annual S		18 Nov 2024	18 Aug 2024 - 18 Feb 2025		Within window
Oil Pollution - Renewal	21 Oct 2022	18 Nov 2027	18 Aug 2027 - 18 Nov 2027		
Oil Pollution - Annual		18 Nov 2025	18 Aug 2025 - 18 Feb 2026		

Legend:

S Overdue S Overdue in less than 1 month S Within the range

Ship name: PETROBRAS XIX BV Nr: 12P916

Surveys / Audits / Inspections

Statutory Surveys

Survey name		Last	Due Date	Range (from, to)	Postponed	Status
Oil Pollution - Intermediate	S		18 Nov 2024	18 Aug 2024 - 18 Feb 2025		Within window
Sewage Pol - Renewal		21 Oct 2022	18 Nov 2027	18 Aug 2027 - 18 Nov 2027		
Air Pollution - Renewal		21 Oct 2022	18 Nov 2027	18 Aug 2027 - 18 Nov 2027		
Air Pollution - Annual			18 Nov 2025	18 Aug 2025 - 18 Feb 2026		
Air Pollution - Intermediate	S		18 Nov 2024	18 Aug 2024 - 18 Feb 2025		Within window
MODU - Renewal		11 Jan 2024	18 Nov 2027	18 Aug 2027 - 18 Nov 2027		
MODU - Annual	S		18 Nov 2024	18 Aug 2024 - 18 Feb 2025		Within window
MODU - Intermediate	S		18 Nov 2024	18 May 2024 - 18 May 2025		Within window

Legend:

S Overdue S Overdue in less than 1 month S Within the range

Tests done by Service Suppliers

Test name	Last recorded
LSA annual test	25/09/2023
LSA renewal test	30/01/2023

Conditions of Class / Statutory Recommendations

Conditions of Class - Hull

Coc. Nr		Description of Condition of Class	Due Date	Status
MEA0/2024/J5083-H1C	C	The study, with the analysis of the cause of the ruptures of broken mooring lines #5, #6 and #7, shall be presented to the BV.	05 Dec 2024	Limit Date in less than 3 m.
MEA0/2024/J5051-H1C	C	Low thickness found on main deck plating aft portside below frame 10 3/8 between L4 and L6 (3700 x 2600 mm), shall be renewed.	30 Aug 2024	Overdue
MEA0/2024/J5051-H2C	C	Low thickness and holes found on main deck plating aft portside btw frames 19 3/5 and 22 4/5 between L9 and side shell (2400 x 5900 mm), shall be renewed.	30 Oct 2024	Limit Date in less than 2 m.
MEA0/2024/J5051-H3C		All 61 small automatic air pipes head, of void spaces and other compartments, other than tanks, located on main deck, shall be renewed.	30 Dec 2024	Limit Date in less than 4 m.
MEA0/2024/J5051-H4C	C	The mooring winches of columns 2 (B) and 6 (D) shall be repaired and tested.	30 Oct 2024	Limit Date in less than 2 m.
MEA0/2024/J5051-H5C	C	In column 2S, the external plating of the column was found with low thickness and holes, on the stern side, above level 27825. It shall be renewed according to Mistras report.	30 Aug 2024	Overdue
MEA0/2024/J5051-H6C	C	On main deck, the guard-rails, found corroded and with provisional repair by scaffolding, in PS (from lifeboat 1 to aft mooring winches) shall be repaired.	30 Aug 2024	Overdue
MEA0/2024/J5051-H8C		Inside Blister 6 a low thickness was found on shell plating and shall be renewed as following: btw stifferners [H10 x H11 - V17 x V22]; btw stiffeners [H10 x H11 - V24 x V25]; btw stiffeners [H10 x H11 - V26 x V33]; btw stiffeners [H11 x H12 - V26 x V27] and btw stiffeners [H09 x H10 - V29 x V32].	30 Dec 2024	Limit Date in less than 4 m.
MEA0/2024/J5051-H9C	C	The low thickness on the deck plate of the Hydrocyclone compartment, inside the warehouse; between corrugated Bulkhead FR#16 2/3 and FR# 15 2/3. Shall be repaired	30 Aug 2024	Overdue
MEA0/2024/J5051-H10C	C	The PIPES from the air-vents of the following compartments: Ballast Tk 01; Ballast Tk 02; Ballast Tk 03; Ballast Tk 04; Ballast Tk 05 on STBD FWD, have a very advanced degree of corrosion and shall be replace.	30 Oct 2024	Limit Date in less than 2 m.

Legend:

R Overdue R Overdue in less than 1 month R Limit date in less than 3 months

C Overdue C Overdue in less than 1 month C Limit date in less than 3 months

Ship name: PETROBRAS XIX BV Nr: 12P916

Conditions of Class / Statutory Recommendations

Conditions of Class - Hull

Coc. Nr		Description of Condition of Class	Due Date	Status
MEA0/2024/J5051-H11C	C	In column 2-SB, the deck plating of elevation 17775 was found partially corroded, above acceptable limits, and shall be renewed.	30 Aug 2024	Overdue
MEA0/2024/J5051-H12C	c	The low thickness on the Stbd main deck plate; btw L#4 - L#6 and FR# 28 - FR#30, shall be repaired.	30 Oct 2024	Limit Date in less than 2 m.
MEA0/2024/J5051-H13C	C	On main deck, the guard-rails, found corroded and with provisional repair by scaffolding, in SB (from lifeboat 4 to aft mooring winches) shall be repaired.	30 Aug 2024	Overdue
MEA0/2024/J5051-H14C	c	In column 4S, deck level 17775, the plating with a low thickness and with a hole, located in Fwd-SB, must be renewed according to Mistras report.	30 Oct 2024	Limit Date in less than 2 m.
MEA0/2024/J5051-H15C		Inside blister 2 low thickness and hole were found, according to the Mistras report. The temporary repair shall be replaced by a definitive one. Until then, the compartment must be continuously monitored for flooding.	30 Dec 2024	Limit Date in less than 4 m.
MEA0/2024/J5051-H16C	c	The complete UWILD report shall be presented.	30 Oct 2024	Limit Date in less than 2 m.
MEA0/2024/J5051-H17C		The valve XV 531 is leaking, and shall be repaired.	30 Dec 2024	Limit Date in less than 4 m.
MEA0/2024/J5051-H18C		According the Tech Insp report, it was found low thickness and hole in the blister 1, this itens shall be repaired. Until then, the compartment must be continuously monitored.	30 Dec 2024	Limit Date in less than 4 m.
MEA0/2024/J5051-H19C		The low thickness found in the Lift Pump Room PS, according Tech Insp report, shall be renewed.	30 Dec 2024	Limit Date in less than 4 m.

Conditions of Class - Machinery

Coc. Nr		Description of Condition of Class	Due Date	Status
MEA0/2024/J5051-M1C	c	The emergency motogenerator is with a leak at the radiator, and shall be repaired. Until there the rented generator should remain installed on the main network.	30 Oct 2024	Limit Date in less than 2 m.

Statutory Recommendations - Mobile Offshore Drilling unit

Rec. Nr		Description of Recommendation	Due Date	Status
MEA0/2024/J5051-MD1R	R	On lifeboats #2 and 4, the link used to connect the cable with the lifeboats? hooks, with MBL inferior than is specified by the manufacturer shall be renewed accordingly, meanwhile the following lifeboats shall have its POB reduced (lifeboat # 1 and 3? from 44 to 36; lifeboat #2 and 4 ? from 58 to 36).	18 Sep 2024	Limit Date in less than 1 m.

Legend:

R Overdue | R Overdue in less than 1 month | R Limit date in less than 3 months

C Overdue | C Overdue in less than 1 month | C Limit date in less than 3 months

Class Memoranda

Issued	Description of Memoranda
05 Apr 2013	In Column 4, the deck plating of elevation 17.775 (part of SB-fwd), found with superficial corrosion close to some piping and ellipse, shall be Thickness measured during next intermediate Hull Survey.
05 Apr 2013	In PS and STBD Pontooms, the structures close to all horizontal transverse bulkhead stiffener L-19 and L-20 shall be inspected (close-up) for presence of cracks on scallops and welds during Intermediate and Renewal surveys.
02 Feb 2015	The Hydrociclone compartment between Corrugated Bulkhead (Fr.16 2/3) and first welding seam inside warehouse 2 were inspected by thickness measurement annually
23 Jan 2016	The STB Main Deck btw Fr. 31 3/5 - 32 2/3 and L5 - L7 in substantial corrosion condition shall be reinspected annually
23 Jan 2016	The STB Cargo Crane due reduction to four parts on the main hoist, the maximum rating was reduced to 27.3 tons.
23 May 2016	The helideck was approved for 12.8 tons (model Sikorsky S092).
12 Jul 2016	The PS Cargo Crane due reduction to four parts on the main hoist, the maximum rating was reduced to 27.3 tons. For the auxiliary hoist the same capacity of 9,07 tones was maintained.
18 Sep 2017	A slight indentation was detected on the deck plating of STB cofferdam between Frames 22/23 and Longitudinal bulkhead / L#4 on PS Pump Room within the acceptable limits by BV Rules
20 Jul 2018	Mooring line #8 renewed on July 2018 with chain links presenting corrosion close to the acceptable limit (0,95D) and lack on material traceability. This mooring line shall be monitored at each bottom survey by ROV.
26 Feb 2019	New definitive accommodation module (MDA), located on Fwd-SB, inspected and approved.

Class Memoranda

Issued	Description of Memoranda
13 Feb 2020	A definitive load cell shall be installed on STB cargo crane and presented to Surveyor. Meanwhile the cargo manifest shall be used on main hoist as weight reference and the rating table was reduced in 20% until the load control were reestablished.
14 Feb 2020	A definitive load cell shall be installed on PS cargo crane and presented to Surveyor. Meanwhile the cargo manifest shall be used on main hoist as weight reference and the rating table was reduced in 20% until the load control were reestablished.
13 Sep 2021	The diesel engine EMD-D - MC-GE-514003-D is out of class and decommissioned. Load balance study reviewed (ref: LPO1119589).
20 Apr 2023	Buckling found on main deck plating aft portside next to column 1 btw L9 and side shell inside acceptable limits.
04 Sep 2023	In the AFT damage protection compartment from column 2 SB, the temporary repairs and the area with substantial corrosion(H8 to H9, V32 to V35) side shell shall be re-inspected on periodical surveys.
30 May 2024	The diesel engine EMD-A - MC-GE-514003-A is out of class and decommissioned. Load balance study reviewed (ref: RPO/2024/000430/RCZ).

Statutory Memoranda

None

Ship name: PETROBRAS XIX BV Nr: 12P916

Planned Inspection Items

Class Items

Hull

Item Nr	Date	Type	VS*	Inspection Item	Due Date	Action Date
MEA0/2024/J5083-H1C	04 Sep 2024	Coc	1	The study, with the analysis of the cause of the ruptures of broken mooring lines #5, #6 and #7, shall be presented to the BV.	05 Dec 2024	
MEA0/2024/J5051-H1C	24 Jun 2024	Coc	2	Low thickness found on main deck plating aft portside below frame 10 3/8 between L4 and L6 (3700 x 2600 mm), shall be renewed.	30 Aug 2024	
MEA0/2024/J5051-H2C	24 Jun 2024	Coc	2	Low thickness and holes found on main deck plating aft portside btw frames 19 3/5 and 22 4/5 between L9 and side shell (2400 x 5900 mm), shall be renewed.	30 Oct 2024	
MEA0/2024/J5051-H3C	24 Jun 2024	Coc	2	All 61 small automatic air pipes head, of void spaces and other compartments, other than tanks, located on main deck, shall be renewed.	30 Dec 2024	
MEA0/2024/J5051-H4C	24 Jun 2024	Coc	2	The mooring winches of columns 2 (B) and 6 (D) shall be repaired and tested.	30 Oct 2024	
MEA0/2024/J5051-H5C	24 Jun 2024	Coc	2	In column 2S, the external plating of the column was found with low thickness and holes, on the stern side, above level 27825. It shall be renewed according to Mistras report.	30 Aug 2024	
MEA0/2024/J5051-H6C	24 Jun 2024	Coc	2	On main deck, the guard-rails, found corroded and with provisional repair by scaffolding, in PS (from lifeboat 1 to aft mooring winches) shall be repaired.	30 Aug 2024	
MEA0/2024/J5051-H8C	24 Jun 2024	Coc	2	Inside Blister 6 a low thickness was found on shell plating and shall be renewed as following: btw stifferners [H10 x H11 - V17 x V22]; btw stiffeners [H10 x H11 - V24 x V25]; btw stiffeners [H10 x H11 - V26 x V33]; btw stiffeners [H11 x H12 - V26 x V27] and btw stiffeners [H09 x H10 - V29 x V32].	30 Dec 2024	
MEA0/2024/J5051-H9C	24 Jun 2024	Coc	2	The low thickness on the deck plate of the Hydrocyclone compartment, inside the warehouse; between corrugated Bulkhead FR#16 2/3 and FR# 15 2/3. Shall be repaired	30 Aug 2024	

* Verification Scheme:

1 Inspection/test/report by authorized person and confirmation of action taken through www.veristar.com by the indicated due date. Documentary evidence to be kept on board. Verification/confirmation by BV Surveyor during next attendance onboard

2 Inspection by BV Surveyor by due date

Legend:

- Recommendation overdue
- Recommendation overdue in less than 1 month
- Recommendation with limit date in less than 3 months
- Recommendation with action taken – To be confirmed
- Conditions of Class overdue
- Conditions of Class overdue in less than 1 month
- Conditions of Class with limit date in less than 3 months
- Conditions of Class with action taken – To be confirmed
- Observation overdue
- Observation overdue in less than 1 month
- Observation with limit date in less than 3 months
- Observation with action taken – To be confirmed

Class Items

Hull

Item Nr	Date	Type	VS*	Inspection Item		Due Date	Action Date
MEA0/2024/J5051-H10C	24 Jun 2024	Coc	2	The PIPES from the air-vents of the following compartments: Ballast Tk 01; Ballast Tk 02; Ballast Tk 03; Ballast Tk 04; Ballast Tk 05 on STBD FWD, have a very advanced degree of corrosion and shall be replace.	C	30 Oct 2024	
MEA0/2024/J5051-H11C	24 Jun 2024	Coc	2	In column 2-SB, the deck plating of elevation 17775 was found partially corroded, above acceptable limits, and shall be renewed.	C	30 Aug 2024	
MEA0/2024/J5051-H12C	24 Jun 2024	Coc	2	The low thickness on the Stbd main deck plate; btw L#4 - L#6 and FR# 28 - FR#30, shall be repaired.	C	30 Oct 2024	
MEA0/2024/J5051-H13C	24 Jun 2024	Coc	2	On main deck, the guard-rails, found corroded and with provisional repair by scaffolding, in SB (from lifeboat 4 to aft mooring winches) shall be repaired.	C	30 Aug 2024	
MEA0/2024/J5051-H14C	24 Jun 2024	Coc	2	In column 4S, deck level 17775, the plating with a low thickness and with a hole, located in Fwd-SB, must be renewed according to Mistras report.	C	30 Oct 2024	
MEA0/2024/J5051-H15C	24 Jun 2024	Coc	2	Inside blister 2 low thickness and hole were found, according to the Mistras report. The temporary repair shall be replaced by a definitive one. Until then, the compartment must be continuously monitored for flooding.		30 Dec 2024	
MEA0/2024/J5051-H16C	24 Jun 2024	Coc	2	The complete UWILD report shall be presented.	C	30 Oct 2024	
MEA0/2024/J5051-H17C	24 Jun 2024	Coc	2	The valve XV 531 is leaking, and shall be repaired.		30 Dec 2024	
MEA0/2024/J5051-H18C	24 Jun 2024	Coc	2	According the Tech Insp report, it was found low thickness and hole in the blister 1, this itens shall be repaired. Until then, the compartment must be continuously monitored.		30 Dec 2024	
MEA0/2024/J5051-H19C	24 Jun 2024	Coc	2	The low thickness found in the Lift Pump Room PS, according Tech Insp report, shall be renewed.		30 Dec 2024	

Machinery

Item Nr	Date	Type	VS*	Inspection Item		Due Date	Action Date
MEA0/2024/J5051-M1C	24 Jun 2024	Coc	2	The emergency motogenerator is with a leak at the radiator, and shall be repaired. Until there the rented generator should remain installed on the main network.	C	30 Oct 2024	

* Verification Scheme:

1 Inspection/test/report by authorized person and confirmation of action taken through www.veristar.com by the indicated due date. Documentary evidence to be kept on board. Verification/confirmation by BV Surveyor during next attendance onboard

2 Inspection by BV Surveyor by due date

Legend:

- Recommendation overdue
- Recommendation overdue in less than 1 month
- Recommendation with limit date in less than 3 months
- Recommendation with action taken – To be confirmed
- Conditions of Class overdue
- Conditions of Class overdue in less than 1 month
- Conditions of Class with limit date in less than 3 months
- Conditions of Class with action taken – To be confirmed
- Observation overdue
- Observation overdue in less than 1 month
- Observation with limit date in less than 3 months
- Observation with action taken – To be confirmed

Ship name: PETROBRAS XIX BV Nr: 12P916

Statutory Items

Mobile Offshore Drilling unit

Item Nr	Date	Type	VS*	Inspection Item	Due Date	Action Date
MEA0/2024/J5051-MD1R	24 Jun 2024	Rec	2	On lifeboats #2 and 4, the link used to connect the cable with the lifeboats? hooks, with MBL inferior than is specified by the manufacturer shall be renewed accordingly, meanwhile the following lifeboats shall have its POB reduced (lifeboat # 1 and 3? from 44 to 36; lifeboat #2 and 4 ? from 58 to 36).	18 Sep 2024	

* Verification Scheme:

1 Inspection/test/report by authorized person and confirmation of action taken through www.veristar.com by the indicated due date. Documentary evidence to be kept on board. Verification/confirmation by BV Surveyor during next attendance onboard

2 Inspection by BV Surveyor by due date

Legend:

- Recommendation overdue
- Recommendation overdue in less than 1 month
- Recommendation with limit date in less than 3 months
- Recommendation with action taken – To be confirmed
- Conditions of Class overdue
- Conditions of Class overdue in less than 1 month
- Conditions of Class with limit date in less than 3 months
- Conditions of Class with action taken – To be confirmed
- Observation overdue
- Observation overdue in less than 1 month
- Observation with limit date in less than 3 months
- Observation with action taken – To be confirmed

Ship name: PETROBRAS XIX BV Nr: 12P916

1-Year Survey Planner

Class Surveys

Survey name	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Hull - Annual (S)															
Annual survey of structure (S)															
Hull - Intermediate (S)															
Machinery - Annual (S)															

Statutory Surveys

Survey name	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Load Line - Annual (S)															
Oil Pollution - Annual															
Oil Pollution - Intermediate (S)															
Air Pollution - Annual															
Air Pollution - Intermediate (S)															
MODU - Annual (S)															
MODU - Intermediate (S)															

Conditions of Class / Statutory Recommendations

Condition of Class / Recommendation desc.	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Conditions of Class - Hull															
MEA0/2024/J5083-H1R - The study, with the analysis of the cause of the ruptures of broken mooring li (...) (R)															
MEA0/2024/J5051-H1R - Low thickness found on main deck plating aft portside below frame 10 3/8 betw (...) (R)															
MEA0/2024/J5051-H2R - Low thickness and holes found on main deck plating aft portside btw frames 19 (...) (R)															
MEA0/2024/J5051-H3R - All 61 small automatic air pipes head, of void spaces and other compartments, (...)															
MEA0/2024/J5051-H4R - The mooring winches of columns 2 (B) and 6 (D) shall be repaired and tested. (R)															
MEA0/2024/J5051-H5R - In column 2S, the external plating of the column was found with low thickness (...) (R)															
MEA0/2024/J5051-H6R - On main deck, the guard-rails, found corroded and with provisional repair by s (...) (R)															

Ship name: PETROBRAS XIX BV Nr: 12P916

Conditions of Class / Statutory Recommendations

Condition of Class / Recommendation desc.	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
MEA0/2024/J5051-H8R - Inside Blister 6 a low thickness was found on shell plating and shall be renew (...)						⚓									
MEA0/2024/J5051-H9R - The low thickness on the deck plate of the Hydrocyclone compartment, inside th (...)		⚓													
MEA0/2024/J5051-H10R - The PIPES from the air-vents of the following compartments: Ballast Tk 01; Ba (...)				⚓											
MEA0/2024/J5051-H11R - In column 2-SB, the deck plating of elevation 17775 was found partially corro (...)		⚓													
MEA0/2024/J5051-H12R - The low thickness on the Stbd main deck plate; btw L#4 - L#6 and FR# 28 - FR (...)				⚓											
MEA0/2024/J5051-H13R - On main deck, the guard-rails, found corroded and with provisional repair by (...)		⚓													
MEA0/2024/J5051-H14R - In column 4S, deck level 17775, the plating with a low thickness and with a h (...)				⚓											
MEA0/2024/J5051-H15R - Inside blister 2 low thickness and hole were found, according to the Mistras (...)						⚓									
MEA0/2024/J5051-H16R - The complete UWILD report shall be presented.				⚓											
MEA0/2024/J5051-H17R - The valve XV 531 is leaking, and shall be repaired.						⚓									
MEA0/2024/J5051-H18R - According the Tech Insp report, it was found low thickness and hole in the bl (...)						⚓									
MEA0/2024/J5051-H19R - The low thickness found in the Lift Pump Room PS, according Tech Insp report, (...)						⚓									
Conditions of Class - Machinery															
MEA0/2024/J5051-M1R - The emergency motogenerator is with a leak at the radiator, and shall be repai (...)				⚓											
Statutory Recommendations - Mobile Offshore Drilling unit															

Ship name: PETROBRAS XIX BV Nr: 12P916

Conditions of Class / Statutory Recommendations

Condition of Class / Recommendation desc.	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
MEA0/2024/J5051-MD1R - On lifeboats #2 and 4, the link used to connect the cable with the lifeboats? (...)															

Ship name: PETROBRAS XIX BV Nr: 12P916

Regulatory Information

Ship name: PETROBRAS XIX BV Nr: 12P916

Bureau Veritas Contacts

Connecting Office

Office:	BV MACAE
Address:	Avenida Rui Barbosa, 698 - Sala 501 RIO DE JANEIRO MACAE 27910-360 BRAZIL
Phone:	+ 55 22 2791 4950
Fax:	+ 55 22 2791 4963
Email:	rjn_ns@bureauveritas.com

Website:

URL:	www.veristar.com
Contents:	Ship status (complete or "to-do" list) Ship status dashboard and graphic survey planner Fleet status Survey reports Conditions of Class & Statutory Certificates issued by BV Other certificates (uploaded by the owner/manager) Register of Ships Full text of BV Rules On-line request for attendance On-line request for survey check-list On-line request for class attestation Conditions of Class & Statutory news

Move Forward with Confidence

Bureau Veritas Marine & Offshore
Tour Alto, 4 Place des Saisons, 92400 Courbevoie, France
Tel.: 33 (0) 1 55 24 70 00 / 33 (0) 1 55 24 72 66 - Fax: 33 (0) 1 55 24 70 51
Corporate website: http://www.bureauveritas.com
Marine website: http://www.veristar.com
Email: veristarinfo@bureauveritas.com

INTERNATIONAL AIR POLLUTION PREVENTION CERTIFICATE

No RJN0/LOI/20240108141414

Issued under the provisions of the Protocol of 1997, as amended
to amend the International Convention for the Prevention of
Pollution from Ships, 1973 as modified by the Protocol of 1978 relating thereto,
(hereinafter referred to as "the Convention")
under the authority of the Government of

REPUBLICA DE PANAMA

By BUREAU VERITAS MARINE & OFFSHORE

Name of Ship BV No : **12P916**	Distinctive Number or Letters	Port of Registry	Gross Tonnage
PETROBRAS XIX	3FHI5	PANAMA	22589

IMO number : 8753720

THIS IS TO CERTIFY

1. That the ship has been surveyed in accordance with Regulation 5 of Annex VI of the Convention; and
2. That the survey shows that the equipment, systems, fittings, arrangements and materials fully comply with the applicable requirements of Annex VI of the Convention.

Completion date of the survey on which this Certificate is based: 21 October 2022

This Certificate is valid until * **18 November 2027**
subject to surveys in accordance with Regulation 5 of Annex VI of the Convention.

Issued at Campos Basin - BRAZIL, on the 11 January 2024

Valid only when the Supplement No. RJN0/LOI/20240108141414/SUPP is available for inspection.

BUREAU VERITAS
MARINE & OFFSHORE
Leonardo Monteiro

This document is electronically signed and does not require a manual signature as defined in IMO guideline FAL.5-Circ.39.
Click here for the verification website

By Order of the Secretary

* Insert date of expiry as specified by the Administration in accordance with regulation 9.1 of Annex VI of the Convention. The day and the month of this date correspond to the anniversary date as defined in regulation 2.1.3 of Annex VI of the Convention, unless amended with regulation 9.8 of Annex VI of the Convention.

IAPP CERTIFICATE No : RJN0/LOI/20240108141414
NAME OF SHIP : PETROBRAS XIX
BV REGISTER : 12P916

ENDORSEMENT FOR ANNUAL AND INTERMEDIATE SURVEYS

THIS IS TO CERTIFY that at a survey required by Regulation 5 of Annex VI of the Convention the ship was found to comply with the relevant provisions of that Annex :

Annual survey

Signed : Leonardo Monteiro
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place : Campos Basin - BRAZIL

Date : 19 December 2023

☐ Annual survey
☐ Intermediate survey

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

☐ Annual survey
☐ Intermediate survey

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

Annual survey

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

ANNUAL/INTERMEDIATE SURVEY IN ACCORDANCE WITH REGULATION 9.8.3

THIS IS TO CERTIFY that, at an survey in accordance with regulation 9.8.3 of Annex VI of the Convention, the ship was found to comply with the relevant provisions of that Annex:

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

ENDORSEMENT TO EXTEND THE CERTIFICATE IFVALID FOR LESS THAN 5 YEARS WHERE REGULATION 9.3 APPLIES

The ship complies with the relevant provisions of the Annex, and this Certificate shall, in accordance with regulation 9.3 of Annex VI of the Convention, be accepted as valid until

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

ENDORSEMENT WHERE THE RENEWAL SURVEY HAS BEEN COMPLETED AND REGULATION 9.4 APPLIES

The ship complies with the relevant provisions of the Annex, and this Certificate shall, in accordance with regulation 9.4 of Annex VI of the Convention, be accepted as valid until

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

ENDORSEMENT TO EXTEND THE VALIDITY OF THE CERTIFICATE UNTIL REACHING THE PORT OF SURVEY OR FOR A PERIOD OF GRACE WHERE REGULATION 9.5 OR 9.6 APPLIES

This Certificate shall, in accordance with regulation of Annex VI of the Convention, be accepted as valid until

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

ENDORSEMENT FOR ADVANCEMENT OF ANNIVERSARY DATE WHERE REGULATION 9.8 APPLIES

In accordance with regulation 9.8 of Annex VI of the Convention, the new anniversary date is

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

In accordance with regulation 9.8 of Annex VI of the Convention, the new anniversary date is

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

SUPPLEMENT TO THE INTERNATIONAL AIR POLLUTION PREVENTION CERTIFICATE (IAPP CERTIFICATE)

RECORD OF CONSTRUCTION AND EQUIPMENT

Notes :

1. This Record shall be permanently attached to the IAPP Certificate. The IAPP Certificate shall be available on board the ship at all times.
2. The Record shall be at least in English, French or Spanish. If an official language of the issuing country is also used, this shall prevail in case of a dispute or discrepancy.
3. Entries in boxes shall be made by inserting either a cross (X) for the answers "yes" and "applicable" or a dash (-) for the answers "no" and "not applicable" as appropriate.
4. Unless otherwise stated, regulations mentioned in this Record refer to regulations of Annex VI of the Convention and resolutions or circulars refer to those adopted by the International Maritime Organization.

1. PARTICULARS OF SHIP

1.1. Name of ship: **PETROBRAS XIX**

BV Register: **12P916**

1.2. IMO Number: **8753720**

1.3. Date on which keel was laid or ship was at a similar stage of construction: **23 April 1982**

1.4. Length (metres)*:

** completed only in respect of ships constructed on or after 1 January 2016, that are specially designed, and used solely for recreational purposes and to which, in accordance with regulation 13.5.2.1 or regulation 13.5.2.3, the NOx emission limit as given by regulation 13.5.1.1 will not apply.*

2. CONTROL OF EMISSIONS FROM SHIPS

2.1 Ozone-depleting substances (regulation 12)

2.1.1 The following fire-extinguishing systems, other systems and equipment containing ozone depleting substances, other than hydro-chlorofluorocarbons, installed before 19 May 2005 may continue in service

System or equipment	Location on board	Substance
Fire Fighting fixed system - Auxilliary Generator Room	Main deck - Port side - foward - near entrance to superstructure.	CO2
Fire Fighting fixed system - Control RoomTurbo Compressors	Main deck - Amidship, Port side - plant area.	CO2
Fire Fighting fixed system - Emergency Generator Room	Main deck - Starboard sidefoward.	CO2
Fire Fighting fixed system - Central Control Room	Main deck - superstructure - foward.	CO2

2.1.2 The following systems containing hydro-chlorofluorocarbons (HCFCs) installed before 1 January 2020 may continue in service

System or equipment	Location on board	Substance

2.2 *Nitrogen oxides (NOx) (regulation 13)*

2.2.1 The following marine diesel engines installed on this ship are in accordance with the requirements of regulation 13, as indicated:

Applicable regulation of MARPOL Annex VI (NTC = NOx Technical Code 2008) (AM = Approved method)			**Engine #**
1	Manufacturer and model		
2	Serial number		
3	Use (applicable application cycle(s) – NTC 3.2)		
4	Rated power (kW) (NTC 1.3.11)		
5	Rated speed (RPM) (NTC 1.3.12)		
6	Identical engine installed on or after 1/1/2000 exempted by 13.1.1.2		
7	Identical engine installation date (dd/mm/yyyy) as per 13.1.1.2		-
8a	Major conversion (dd/mm/yyyy)	13.2.1.1 & 13.2.2	-
8b		13.2.1.2 & 13.2.3	-
8c		13.2.1.3 & 13.2.3	-
9a	Tier I	13.3	
9b		13.2.2	
9c		13.2.3.1	
9d		13.2.3.2	
9e		13.7.1.2	
10a	Tier II	13.4	
10b		13.2.2	
10c		13.2.2 (Tier III not possible)	
10d		13.2.3.2	
10e		13.5.2 (Exemptions)	
10f		13.7.1.2	
11a	Tier III (ECA-NOx only)	13.5.1.1	
11b		13.2.2	
11c		13.2.3.2	
11d		13.7.1.2	
12	AM*	Installed	
13		Not commercially available at this survey	
14		Not applicable	

** Refer to the 2014 Guidelines on the approved method process (resolution MEPC.243(66)).*

2.3 Sulphur oxides (SOx) and particulate matter (regulation 14)

2.3.1 When the ship operates outside of an Emission Control Area specified in regulation 14.3, the ship uses:

[X].1 fuel oil with a sulphur content as documented by bunker delivery notes that does not exceed the limit value of 0,50% m/m and/or

[-].2 an equivalent arrangement approved in accordance with regulation 4.1 as listed in 2.6 that is at least as effective in term of SOx emission reductions as compared to using a fuel oil with a sulphur content limit value of 0,50% m/m

2.3.2 When the ship operates inside an Emission Control Area specified in regulation 14.3, the ship uses:

[-].1 fuel oil with a sulphur content as documented by bunker delivery notes that does not exceed the limit value of 0,10% m/m and/or

[-].2 an equivalent arrangement approved in accordance with regulation 4.1 as listed in 2.6 that is at least as effective in terms of SOx emission reductions as compared to using a fuel oil with a sulphur content limit value of 0,10% m/m

[X] 2.3.3 For a ship without an equivalent arrangement approved in accordance with regulation 4.1 as listed in paragraph 2.6, the sulphur content of fuel oil carried for use on board the ship shall not exceed 0.50% m/m as documented by bunker delivery notes

[] 2.3.4 The ship is fitted with designated sampling point(s) in accordance with regulation 14.10 or 14.11

[] 2.3.5 In accordance with regulation 14.12, the requirement for fitting or designating sampling point(s) in accordance with regulation 14.10 or 14.11 is not applicable for a fuel oil service system for a low-flashpoint fuel for combustion purposes for propulsion or operation on board the ship

2.4 *Volatile organic compounds (VOCs) (regulation 15)*

[-] 2.4.1 The tanker has a vapour collection system installed and approved in accordance with MSC/Circ.585
[-] 2.4.2.1 For a tanker carrying crude oil, there is an approved VOC Management Plan.
2.4.2.2 VOC Management Plan approval reference:

2.5 *Shipboard incineration (regulation 16):*

The ship has an incinerator:

.1 installed on or after 1 January 2000 that complies with:
[-] .1 resolution MEPC.76(40) as amended by resolution MEPC.93(45).
[-] .2 resolution MEPC.244(66).

.2 installed before 1 January 2000 that complies with:
[-] .1 resolution MEPC.59(33), as amended by resolution MEPC.92(45).
[-] .2 resolution MEPC.76(40) as amended by resolution MEPC.93(45).

SUPPLEMENT TO IAPP CERTIFICATE No : RJN0/LOI/20240108141414/SUPP
NAME OF SHIP : PETROBRAS XIX
BV REGISTER : 12P916

2.6 Equivalents (regulation 4):

The ship has been allowed to use the following fitting, material, appliance or apparatus to be fitted in a ship or other procedures, alternative fuel oils, or compliance methods used as an alternative to that required by this Annex:

System or equipment	Equivalent used	Approval reference

THIS IS TO CERTIFY that this Record is correct in all respects.

Issued at Campos Basin - BRAZIL, on the 11 January 2024

BUREAU VERITAS
MARINE & OFFSHORE
Leonardo Monteiro

This document is electronically signed and does not require a manual signature as defined in IMO guideline FAL.5-Circ.39.
Click here for the verification website

By Order of the Secretary

NP-2

Sistema de Gerenciamento de Segurança Operacional SGSO

Descrição da Unidade Marítima DUM

Petrobras 19 (P-19)

E&P

Revisão 06
JUN/2020

PETROBRAS

Sistema de Gerenciamento de Segurança Operacional - SGSO

Descrição da Unidade Marítima - DUM

SGSO-DUM-Petrobras 19 06/2020

Processo Administrativo na ANP
48610.201263/2019-09

Revisão 06
JUN/2020

PETROBRAS

E & P

NP-2

CONTROLE DE REVISÕES

REV	DESCRIÇÃO	DATA
00	Documento original	05/02/2010
01	Atualização e correção dos itens 1.1, 2.1.2 e 2.6.3.2 e atualização do Diagrama Unifilar de Interligação	28/12/2011
02	Atualização do documento e correção dos itens 1.1, 2.1, 2.1.2, 2.2.1, 2.3.1, 2.3.2, 2.4, 2.6.1, 2.6.2, 2.6.3, 2.7.2, 2.8, 3, 3.1, 3.1.2, 3.1.3, 3.2, 3.3, 3.4, 3.5, 4 e 5, conforme solicitação feita pela ANP no Ofício no 260/SSM/2014	29/05/2014
03	Revisados os itens 1.1, 1.2, 1.3, 2.1.2, 2.2.1.1, 2.2.1.6, 2.4, 2.5, 3.1, 4, Anexo 1 e Anexo 2.	26/10/2016
04	Revisados os itens 2.1.2, 2.2.1.6, 2.4, 2.7.1, 2.7.2, 3.1, 3.4, 4, Anexo 2	17/05/2018
05	Revisados os itens 2.1.2, 2.2.1.7, 2.2.1.9, 2.2.1.10, 2.2.2, 2.3.2, 2.4 e 2.6.1.	31/01/2020
06	Revisada(s) a(s) seção(ões): 1.1 e 2.6.1.	19/06/2020

	Original	Rev. 01	Rev. 02	Rev. 03	Rev. 04	Rev. 05	Rev. 06	Rev. 07
Data	05/02/2010	28/12/2011	29/05/2014	26/10/2016	17/05/2018	31/01/2020	19/06/2020	
Elaboração	Hébert	Marcelo	Eduardo	João	Rodrigo	Luigi	Luigi Andreatta	
Verificação	Marcelo Fernandes	Luana	Sulamita	Sulamita	Sulamita	Valdilea	Leonardo Chevallier Cosenza	
Aprovação	Di Leone	Guilherme	João Lang	Cunha	Cunha	Monnerat	Aureliano Celso de Freitas	

ÍNDICE GERAL

1 - Identificação da Atividade

1.1 - IDENTIFICAÇAO DO OPERADOR CONCESSIONARIO

Identificação do concessionário e operador da instalação

a) Nome: Petróleo Brasileiro S.A. - Petrobras - Unidade de Negócios de Exploração e Produção da Bacia de Campos - UN-BC

b) Endereço: Av. Elias Agostinho, 665 - Macaé/RJ - CEP 27.913-350

c) Telefone: (22) 3377-3892

1.2 - IDENTIFICAÇAO DA INSTALAÇAO DE PRODUÇAO

a) Nome da Instalação :

Petrobras P-19

b) Proprietário :

Petróleo Brasileiro S/A

c) Número IMO :

8753720

d) Bandeira :

Panamá

e) Sociedade Classificadora :

Bureau Veritas (BV)

f) Classificação :

Semi-Submersível - SS

g) Ano de construção :

1982

h) Ano de conversão :

1997

i) Ano de último upgrade :

1997

1.3 - LOCALIZAÇAO DA INSTALAÇAO DE PRODUÇAO

A P-19 está localizada a 179 km da costa de Macaé em lâmina d'água de 770 m de profundidade.

As informações da localização são:

a) Bacia :

Bacia de Campos

b) Campo :

Marlim

c) Coordenadas :

Datum SIRGAS2000				
ID_FEICAO	**TIPO_FEICAO**	**NUM_VERTICE**	**LATITUDE**	**LONGITUDE**
P-19	Ponto	1	-22:23:33,716	-40:03:17,090

2 - Descrição da Instalação

2.1 - CARACTERISTICAS PRINCIPAIS DA UNIDADE

A P-19 é uma unidade flutuante de produção, processamento e transferência de óleo e gás, tipo semi-submersível, com as seguintes características:

2.1.1 - Características Físicas

a) Comprimento total :

102,90 m

b) Largura total :

65 m

c) Boca :

70,20 m

d) Calado de operação :

22,00 m

e) Calado de trânsito :

7,4m

f) Deslocamento no calado de operação :

35.656,60 t

g) Deslocamento no calado de trânsito :

22.925,80 t

h) Deslocamento leve :

(peso leve): 21.332,27 t

i) Capacidade de Alojamento :

Acomodações: 204 pessoas. Este número poderá variar de acordo coma fase do ciclo de vida da instalação, ou necessidade de realização de atividades que requeiram acréscimo de mão de obra, e será determinado pelo número máximo admissível de vagas disponíveis para salvatagem descrito no item 2.4. Sistema de Salvatagem e condicionadas às regras estabelecidas por regulamentações específicas do Ministério do Trabalho e Emprego e Marinha do Brasil.

2.1.2 - Características Operacionais

Abaixo informamos algumas características da instalação que têm valores variáveis em função das condições operacionais, população embarcada, etc.

Destacamos que, durante auditorias ou inspeções na plataforma, poderão ser encontrados valores diferentes dos informados neste momento, não caracterizando não conformidades.

Os valores informados são médios, referentes ao ano de 2019:

a) Capacidade de Produção :

- Óleo: 16.000 m³/d (100.526 bbl/d)
- Gás: 3.000.000 Nm³/d

b) Produção Atual :

- Óleo: 3.677 m³/d (23.127 bbl/d)
- Gás: 287.367 Nm³/d

c) Capacidade de Processamento :

- Petróleo: 16.000 m³/d (100,526 bbl/d)
- Gás Natural: 3.000.000 Nm³/d
- Gás Combustível: 370.000 Nm³/d

d) Capacidade de Armazenamento de Petróleo :

Não aplicável

e) Capacidade de Compressão de Gás Natural :

3.000.000 Nm³/d

f) Demanda de combustível :

- Gás Natural: 230.000 Nm³/d
- Diesel: 100 m³/mês

g) Capacidade de armazenamento de combustíveis líquidos :

- Diesel: 2515 m³

h) Demanda e Capacidade de Armazenamento de Água :

Os volumes abaixo indicados são estimados e já contemplam a água dessalinizada e água recebida de terra:

- Água Salgada: Vazão = 2.400 m³/h (Circuito Aberto)
- Industrial: A água utilizada é a água potável
- Potável: 2.100 m³/mês (inclui utilização industrial)
- Capacidade de Armazenamento de Água Industrial: Vide água potável
- Capacidade de Armazenamento de Água Potável: 800 m³ (tancagem + volume total do processo)

i) Demanda de Energia Elétrica :

- Demanda Total: 9.216 KW
- Demanda do Sistema de Potência: 6.700 kW
- Demanda do Sistema de Iluminação: 2.300 kW
- Demanda do Sistema de Emergência e Sinalização Marítima: 216 kW

j) Quantidade de Efluentes Gerados :

- Água Produzida: 7.887 m³/d
- Água Oleosa: 100 m³/d

k) Capacidade de Tratamento de Água e Efluentes :

- Água Salgada: 25.000 m³/dia
- Água Produzida: 10.080 m³/dia
- Água Oleosa: 600 m³/dia

l) Monobóia :

Em função de suas características, a instalação não possui monobóia.

2.2 - SISTEMA DE UTILIDADES E LASTRO

2.2.1 - Sistemas de Utilidades

A instalação é dotada dos seguintes sistemas:

2.2.1.1 - Sistema de Geração de Vapor

A P-19 não possui Sistema de Geração de Vapor.

2.2.1.2 - Sistema de Aquecimento e Refrigeração

a) Sistema de Aquecimento :

O sistema de água quente tem como objetivo transferir a energia térmica da água quente para as correntes de processo da planta, usando o calor residual dos gases de exaustão dos turbogeradores para gerar água quente. A água quente é necessária para: aquecer a corrente de óleo produzida pelos poços até 90°C e, com isso, facilitar a separação de óleo/água/gás; aquecer a corrente de gás combustível para obter uma corrente de gás combustível com ponto de orvalho de -4°C e utilidades para os sistemas navais.

Esse sistema é basicamente constituído de um circuito fechado de água quente. Para a circulação da água quente existem três bombas centrífugas similares que operam em paralelo. Normalmente somente duas bombas operam e a terceira bomba é deixada na reserva com partida automática (stand-by).

A pressão da sucção é de 990 kPag a 130ºC e aumenta para aproximadamente 1700kPag. As descargas das bombas se juntam em um coletor de descarga de onde a água flui para as Unidades de Recuperação de Calor (WHRU). O calor residual da exaustão da turbina é usado para aumentar a temperatura da água de 130ºC para 180ºC antes de fluir para o coletor de distribuição e depois para os consumidores individuais.

Essa água circula entre os trocadores de calor do processo de tratamento de óleo e água produzida, onde perde carga térmica, e as Unidades de Recuperação de Calor dos turbogeradores e turbocompressores e os fornos, onde recupera o calor cedido para o processo de tratamento. A temperatura da água quente de saída é controlada em 175ºC através de reguladores de chaminé sobre o gás de exaustão de cada turbogerador e turbocompressor.

O sistema é formado pelos principais equipamentos abaixo:

Equipamento	Quant	Capacidade	Potência	Pressão (kgf/cm²)	Temp (°C)
Vaso de expansão de água quente V-512501	1	9,7 m³	-	11,0	130
Bomba de circulação B-512501 A/C	3	250 m³/h	110 kW	17,3	130
Filtro da bomba	3	250 m³/h	-	10,1	130

Recuperador de calor P-UC-122301 A/C-04 P-GE-514001 A/B	5	178000 kg/h	10,8 MW	15,0	175
Fornos F-512501 A/B	2	170500 kg/h	10,3 MW	15,0	175

b) Sistema de Refrigeração :

O sistema de água de resfriamento tem o objetivo de receber a energia térmica em excesso das correntes de processo. O sistema é fechado utilizando água doce. A água de resfriamento aquecida que retorna do processo é resfriada nos trocadores de placas. A água captada do mar é usada como fluído refrigerante.

A principal demanda de água de resfriamento ocorre em turbogeradores e turbocompressores; os demais usuários são o compressor de ar de instrumento, a unidade de glicol, as bombas de injeção de água, as bombas de água quente, ar condicionado das salas de MGCP, Painéis 03, carregadores de baterias e ar condicionado de emergência da sala de controle.

Para evitar a presença de hidrocarbonetos, a água que circula na área classificada é proveniente de um tanque de expansão atmosférico que abastece todos os sistemas de resfriamento.

O sistema é formado pelos principais equipamentos abaixo:

Equipamento	Quant	Capacidade	Potência	Pressão (kgf/cm²)	Temp (°C)
Bomba de circulação B-512401 A/D	4	657 m³/h	90 kW	5,2	45
Trocador de placas P-512401 A/C	3	19,6 m³/h	20 MW	4,8	32

A capacidade dos tanques deste sistema encontra-se descrita no item 2.3.1.

c) Sistema de Ar Condicionado e Ventilação :

A P-19 possui equipamentos de ar condicionado do tipo de sistema split (ar condicionado central) que garante a climatização das áreas internas de escritórios, dormitórios, cozinha, refeitórios, salas de estar, banheiros e sala de controle. A sala de painéis elétricos 3, as salas de painéis e controle das

turbomáquinas e a sala de baterias e outros ambientes possuem sistemas de ar condicionado independentes também do tipo de sistema split. As salas de painéis elétricos e sala de baterias possuem sistemas de ventilação que garantem a sua pressurização.

Os principais equipamentos que compõem o sistema são:

Equipamento	Quant	Capacidade	Potência (KW)	Pressão / Temp	Localização
Unidade de ventilação e ar condicionado AC-525201 A/B/C	3	86,6 kW / 15050 Nm³/h	92,6	0,15 kgf/cm² 20 °C	Acomodações
Unidade de ar condicionado AC-525202 A/B	2	16,6 kW	18,7	0,04 kgf/cm² 20 °C	Sala de painéis 3
Unidade de ar condicionado AC-525203	1	29,8 kW	35	0,01 kgf/cm² 20 °C	Sala de controle (emergência)
Unidade de ar condicionado AC-525204 A/B	2	18,6 kW	21	0,02 kgf/cm² 20 °C	Sala controle turbocompressores
Unidade de ar condicionado AC-525205	1	18,6 kW	21	0,01 kgf/cm² 20 °C	Sala controle turbogeradores
Unidade de ar condicionado AC-525206	1	8,9 kW	10	0,04 kgf/cm² 20 °C	Sala de carregadores das baterias
Ventilador VE-525158	1	6800 Nm³/h	0,5	0,04 kgf/cm² 20 °C	Sala de painéis 3
Exaustor VE-525114	1	6800 Nm³/h	1,9	0,04 kgf/cm² 20 °C	Sala de painéis 3
Ventilador VE-525145	1	6800 Nm³/h	2,3	0,01 kgf/cm² 20 °C	Sala de controle (emergência)
Ventilador VE-525160	1	6400 Nm³/h	1,8	0,02 kgf/cm² 20 °C	Sala controle turbocompressores
Ventilador VE-525117	1	3400 Nm³/h	0,5	0,01 kgf/cm² 20 °C	Sala controle turbogeradores
Ventilador VE-525147	1	7800 Nm³/h	3,0	0,04 kgf/cm² 20 °C	Sala de carregadores das baterias

2.2.1.3 - Sistema de Fornecimento e Armazenamento de Água

a) Água Doce :

A água produzida pelos geradores de água doce é enviada para o tanque de água doce. O armazenamento é feito em dois tanques estruturais de água doce, situados nos pontoons de BB e BE.

Para o recebimento de água doce de embarcações de apoio, existe uma tomada com conexão universal para mangueiras nas estações de recebimento em bombordo e outra em boreste, localizadas no convés principal, junto das tomadas de óleo diesel.

O sistema é formado pelos principais equipamentos abaixo:

Equipamento	Quant	Cap	Potência (kW)	Pressão (kgf/cm²)	Temp (°C)
Gerador de água doce UD-512201 A/C	3	25 m³/h	160	2,0	35
Unidade de cloração de água doce	1	5 m³/h	0,8	0,5	30
Bomba de água doce distribuição B-512201 A/B	2	14 m³/h	5,5	4,5	30
Bomba de água doce transferência B-512202 A/B	2	14 m³/h	5,5	4,5	30
Bombas de água quente B-512203	1	3 m³/h	0,5	0,5	70
Aquecedores de água AQ-512201 A/D	4	3 m³/h	36	0,5	70

A capacidade dos tanques deste sistema encontra-se descrita no item 2.3.1.

b) Água Salgada :

A sucção da água do mar é feita através de duas caixas de mar por meio de bombas elétricas de captação do tipo centrífuga vertical.

O propósito do Sistema de Captação e Distribuição de Água Salgada é fornecer água do mar para refrigeração da água do sistema de resfriamento dos tubos geradores e turbo-compressores (Água doce) e para o sistema de injeção de água, para os sistemas de utilidades (Unidade de Eletrocloracão, Unidade de Tratamento de Esgoto e Unidade de Dessalinização, interligação com o sistema de refrigeração dos motores EMD´s, compressores de ar condicionado, frigorífica, etc).

Depois atender aos sistemas acima, a água retorna aquecida a 40ºC para o Sistema de Desaeração. A água não utilizada pelos sistemas retorna então ao mar.

A água doce gerada no sistema de dessalinização ou recebida por rebocadores é utilizada para consumo humano ou industrial.

O sistema é formado pelos principais equipamentos a seguir:

Equipamento	Quant	Capacidade	Potência	Pressão	Temp
Unidade de Eletrocloração UE-512101	1	1,6 m³/h	25 kW	3,0 kgf/cm²	23 - 28 ºC
Bombas de Captação B-511101 A/F	6	550 m³/h	130 kW	7,0 kgf/cm²	23 - 28 ºC
Bomba de emergência B-511103	1	195 m³/h	55 kW	7,0 kgf/cm²	23 - 28 ºC

2.2.1.4 - Sistema de Fornecimento e Armazenamento de Combustíveis Líquidos e Gasosos

a) Óleo Diesel :

O sistema de armazenamento e distribuição de óleo diesel recebe óleo de embarcações através de um mangote, com uma pressão máxima de trabalho de 15 PSI, conectado em uma das 02 estações de recebimento situada BE à vante, BE à ré ou BB à ré.

Na plataforma, o óleo diesel passa por uma rede e por um filtro provido de transmissor indicador de pressão diferencial, um transmissor indicador de pressão e um transmissor indicador de vazão, seguindo para os tanques de armazenamento de óleo diesel.

A limpeza de óleo diesel é obtida através das centrífugas do tipo limpeza automática programada. As centrifugas são alimentadas por bombas rotativas que aspiram o diesel dos tanques de armazenamento, passando pelos filtros e seguindo para os tanques de distribuição.

A bomba de distribuição de óleo diesel é alimentada pelos tanques de distribuição e abastecem os seguintes consumidores principais: geradores elétricos de emergência (EMD) e bombas de combate a incêndio.

A capacidade dos tanques de diesel na tabela a seguir encontra-se descrita no item 2.3.1.

Consumidores	Sistema	Quantidade
Tanque de armazenamento TQ-08 BB / BE	Armazenamento de óleo diesel	2
Tanque de armazenamento TQ-10 BB / BE	Armazenamento de óleo diesel	2
Tanque de sedimentação TQ-513301	Tratamento de óleo diesel	1
Tanque de distribuição TQ-513302 A/B	Distribuição de óleo diesel	2
Tanque diário dos geradores de emergência GE-514003 A/D (EMD)	Geradores elétricos de emergência (EMD)	1
Tanque diário da unidade da bomba de incêndio B-542001 A/B	Bombas combate a incêndio a diesel	2

Os principais equipamentos do sistema de óleo diesel são:

Equipamento	Quant	Capacidade	Potência	Pressão	Temp
Bomba de distribuição B-513302 A/B	2	3 m³/h	1,5 kW	2,5 kgf/cm²	30 °C
Centrifuga SC-513301 A/B	2	6,7 m³/h	9 kW	1,5 kgf/cm²	30 °C
Bomba de transferência e centrifuga B-513301 A/D	4	30 m³/h	23,2 kW	4,5 kgf/cm²	30 °C

Em função das suas características, a instalação não possui sistema de recebimento de gás, tendo toda sua demanda suprida pelo sistema descrito no item 3.5.

2.2.1.5 - Sistema de Ar Comprimido

O ar comprimido requerido pelos instrumentos e outros serviços é provido por 2 unidades de ar comprimido de instrumentos / serviço, sendo uma reserva. No caso de alto consumo do ar de serviço, a pressão do sistema cai e o compressor de reserva começa a operar. As unidades de ar comprimido de instrumentos / serviço e dois compressores de ar de partida e dois compressores de emergência diesel que entram em operação toda a vez que ocorre shutdown ou falha dos compressores elétricos.

O ar comprimido é secado nas Unidades Secadoras de Ar. O ponto de orvalho para o ar seco é de 02 ºC a 10 kPa. Este ar seco é usado para instrumentos e serviço.

Antes de ser distribuído aos consumidores, o ar seco é armazenado no vaso de Ar de Serviço, vaso de Ar de Instrumentos e os reservatórios de Ar de

Instrumentos Essenciais.

O ar de serviço é distribuído através da válvula de saída do vaso de Ar de Serviço para distribuição no convés principal, no casario e aos consumidores das utilidades.

O ar de instrumentos é enviado através da válvula de saída do vaso de Ar de Instrumentos para o anel de ar de distribuição no compartimento de utilidades, convés principal, compartimento de distribuição geral e painéis.

Os compressores são unidades do tipo rotativo, livres de óleo, de dois estágios de compressão, acionados por um motor elétrico com sistema de resfriamento do ar com água doce.

O sistema é formado pelos principais equipamentos abaixo:

Equipamento	Quant	Capacidade	Potência	Pressão (kgf/cm²)	Temp (°C)
Unidade de ar comprimido C-513401 A/B	2	1341 Nm³/h	220 kW	11,5	40
Unidade secadora de ar UA-513401 A/B	2	1049 Nm³/h	13,2 kW	11,5	40
Vaso de ar de serviços V-513401	1	19 m³	-	11,5	40
Vaso de ar de instrumentos V-513403	1	22 m³	-	11,5	40
Vaso reservatórios de ar de partida V-513402	1	4 m³	-	11,5	40
Compressor de partida C-513402/03	2	50 Nm³/h	11 kW	18,0	40
Compressor de emergência diesel	2	1530 Nm³/h	240 kW	11,5	40

2.2.1.6 - Sistema de Tratamento de Água e Efluentes

A P-19 dispõe de um sistema de drenos e tubulações que recebe as águas pluviais ou efluentes de manutenção, os quais são coletadas e tratadas no vaso Caisson. Esta parte do sistema de água oleosa é conhecida como drenagem aberta, pois o fluido composto majoritariamente de água é colhido em contato com a atmosfera, ou seja, despressurizado. Após o tratamento no Caisson, a água é descarregada para o mar, enquanto o óleo residual separado é bombeado para o vaso de Slop e, em seguida, enviado para o processo. O Slop é o vaso do sistema de água oleosa que coleta fluidos de vasos pressurizados. Portanto, esta parte do sistema é conhecida como drenagem fechada. Este vaso também recebe rejeito oleoso do tratamento de água produzida. A

quantidade de águas e efluentes tratados por este sistema é variável.

As características dos principais equipamentos estão descritas na tabela abaixo:

a) Água Oleosa :

Equipamento	Quantidade	Capacidade	Potência	Pressão	Temp
Vaso de drenagem aberta Caisson TD-533601	1	17,5 m³	-	0,0 kgf/cm²	30 °C
Vaso drenagem pneumática do Caisson - blow case V-533603	1	0,7 m³	-	2,0 kgf/cm²	30 °C
Bomba de borras do Caisson B-533602	1	10 m³/h	7,5 kW	2,0 kgf/cm²	30 °C

O sistema de tratamento de água produzida encontra-se descrito no item 2.2.1.6 deste documento.

b) Água Produzida :

Este sistema tem a finalidade de tratar a água oleosa produzida, em torno de 7.204 m³/dia (média de 2017), antes de ser descartada para o mar.

O tratamento da água oleosa proveniente dos separadores de produção e desidratadores eletrostáticos têm por finalidade recuperar parte do óleo nela presente em emulsão e condicioná-la para descarte. O sistema de tratamento desta água produzida consiste no processamento por meio de hidrociclones e vaso Degasser. O óleo recuperado nestes equipamentos é encaminhado para o vaso de Slop e rebombeado para os coletores dos trens de produção.

Os principais equipamentos que compõem este sistema são:

Equipamento	Quant	Capacidade	Potência	Pressão (kgf/cm²)	Temp (°C)
Hidrociclone do separador de produção CI-533601 A/B	2	210 m³/h	-	1,0	75
Hidrociclone do tratador de óleo CI-5336501 A/B	2	210 m³/h	-	1,0	75
Vaso degaseificador (degasser) V-533601	1	53 m³	-	0,1	70

Vaso de slop V-533602	1	20 m³	-	0,3	70
Bomba de óleo do vaso de slop B-533601 A/B / 03	3	20 m³/h	75 kW	12,7	70

2.2.1.7 - Sistema de Flare

Os equipamentos da planta de processamento possuem sistemas de despressurizacão automáticos para proteção. Os gases oriundos desses sistemas são coletados por uma rede de tubulações que os direciona para o coletor de alta ou de baixa pressão.

Os coletores de alta e baixa pressão encaminham o gás para os vasos do "flare", onde é realizada a separação de líquidos carreados pelo gás. O gás isento de líquido é encaminhado para o "manifold" do "flare", de onde escoa para os queimadores de alta ou baixa pressão. O líquido coletado na base desses vasos é enviado através de bombas para a rede de drenagem fechada ou bombeado para o vaso "slop" (óleo fora de especificação).

O sistema do "flare" de alta pressão é composto por dois estágios, constituídos por um queimador sônico. O sistema de baixa pressão é composto de dois estágios constituídos por queimadores multiflare. A queima mínima por segurança no flare é 35 Nm³/d por piloto.

Os principais equipamentos deste sistema são:

Equipamentos	Quantidade	Capacidade	Potência	Pressão de Projeto	Set PSV	Temp
Vasos do flare de Alta Pressão	1	15.000 Nm³/d	N/A	0,3 kgf/cm²	N/A	30 °C
Vasos do flare de Baixa Pressão	1	12.000 Nm³/d	N/A	0,2 kgf/cm²	N/A	30 ºC
Bomba do vaso do flare de Alta Pressão	1	15 m³/h	11 kW	12 kgf/cm²²	13,6 kgf/cm²	30 ºC
Bomba do vaso do flare de Baixa Pressão	1	5 m³/h	3,7 kW	12 kgf/cm²	N/A	30 ºC
Queimador para o flare de Alta Pressão	2	15.000 Nm³/d	N/A	0,24 kgf/cm²	N/A	-35 a 40 ºC
Queimador para o flare de Baixa Pressão	4	12.000 Nm³/d	N/A	0,09 kgf/cm²	N/A	30 a 36 ºC

Alguns tanques e equipamentos da planta de processo, são dotados de

"vent" atmosférico para manutenção da pressão atmosférica no seu interior. O coletor do "vent" atmosférico é provido de um abafador de chamas, localizado no seu final, em uma posição segura da torre de "flare".

O sistema de abafamento do "vent" atmosférico é constituído de duas baterias de cilindros de CO_2, com 2 cilindros de 45 kg cada, sendo um conjunto reserva do outro, para abafamento das chamas no caso de ocorrência acidental.

2.2.1.8 - Sistema de Geração de Gases Inertes

A P-19 não possui Sistema de Geração de Gases Inertes.

2.2.1.9 - Sistema de Coleta, Manuseio e Disposição Final de Resíduos

Resíduos são segregados e depositados em coletores adequados e enviados a terra para o seu destino final.

A gestão de efluentes 2.2.1.6 e a gestão de resíduos 2.2.1.9 são objeto de verificação do IBAMA - Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais e tratados conforme procedimentos aprovados pelo referido órgão.

2.2.1.10 - Sistema de Gerenciamento de Substâncias Perigosas

A plataforma possui áreas especificas para armazenamento de produtos químicos perigosos.

Os produtos químicos são armazenados segundo as regras de compatibilidade química, promovendo assim a segurança no armazenamento.

Os produtos químicos para injeção no processo são recebidos em tanques (refis) e transferidos para os tanques fixos.

Os produtos químicos perigosos são controlados através da disponibilização das informações de segurança para a força de trabalho por um sistema de gerenciamento de informações onde todos os produtos químicos perigosos são mapeados e suas informações são atualizadas.

O descarte de resíduos é feito conforme item 2.2.1.9.

2.2.2 - Sistema de Lastro

A P-19 possui 32 tanques de lastro para manutenção da estabilidade da plataforma. A capacidade dos tanques, a movimentação entre eles e os equipamentos relacionados ao sistema são apresentados nos itens 2.3.1 e 2.3.2

(Lastro).

2.3 - SISTEMA DE TANCAGEM

2.3.1 - Sistema de Tancagem

A P-19 possui 47 tanques, no total, utilizados para armazenamento de água de lastro, rejeitos, diesel e facilidades com os seguintes volumes (cada tanque):

FLUIDO	TANQUE	VOLUME (m³)	VOLUME TOTAL (m³)
Lastro	TQ-01BB	405,8	17087,3
	TQ-02BB	621,9	
	TQ-03BB	573,4	
	TQ-04BB	534,1	
	TQ-05BB	524,4	
	TQ-06BB	560,5	
	TQ-07BB	522,7	
	TQ-12BB	522,7	
	TQ-13BB	560,5	
	TQ-14BB	524,5	
	TQ-15BB	534,2	
	TQ-16BB	558,8	
	TQ-17BB	607,4	
	TQ-18BB	429,9	
	TQ-01BE	405,5	
	TQ-02BE	621,9	
	TQ-03BE	573,4	
	TQ-04BE	534,1	
	TQ-05BE	524,4	
	TQ-06BE	560,5	
	TQ-07BE	522,7	
	TQ-12BE	522,7	
	TQ-13BE	560,5	
	TQ-14BE	524,5	
	TQ-15BE	534,2	
	TQ-16BE	558,8	
	TQ-17BE	607,4	
	TQ--18BE	429,9	
	TQ- 1C/BB	531,5	
	TQ- 3C/BB	531,5	
	TQ- 1C/BE	531,5	
	TQ-3C/BE	531,5	
Óleo Diesel	TQ- 08BB	857,3	2.515,8
	TQ-10BB	327,8	
	TQ-08BE	825,4	
	TQ-10BE	327,8	
	TQ-513302 A	43	
	TQ-513302 B	47	
	Tanque diário GE-514003 A/D	1,5	
	Tanque diário B-542001 A	43	
	Tanque diário B-542001 B	43	

Óleo Diesel / Sedimentação	TQ-513301	86,6	86,6
Água Potável	TQ-11BB	336,3	704
	TQ-11BE	336,3	
	TQ-512201 (tanque diário)	31,4	
Água de Resfriamento	TQ-512401	5,6	5,6
Óleo Lubrificante	TQ-513303	6,4	6,4

2.3.2 - Fluxo de Movimentação de Fluídos entre Tanques

O controle de todos os fluidos armazenados nos tanques de carga, óleo diesel, lastro, água e rejeitos da P-19 são automatizados, monitorados, supervisionados e operados da Sala de Controle Central - CCR.

O volume dos tanques é monitorado pelo Sistema de Monitoramento de Cargas - CMS, que é integrado aos painéis do PLC de Controle e Intertravamento Seguro da Unidade e a ECOS. O CMS recebe sinais de chaves de nível alto e os envia para o Sistema de Controle e Intertravamento - CIS.

Por sua vez, o CIS é responsável pelas manobras das válvulas dos tanques, partida/parada remota de bombas, ventiladores e outros equipamentos, abertura/fechamento remoto das válvulas de lastro, esgoto, carga e limpeza, abertura/fechamento remoto dos dampers, sequências automáticas de carregamento e descarregamento, intertravamento dos sistemas de gás inerte, hidráulicos e auxiliares.

A movimentação de fluidos entre tanques é feita através de bombas e redes específicas, conforme descrição a seguir:

a) Óleo :

Após o processo de tratamento para separação, o óleo produzido e enquadrado pela P-19 é exportado para a P-32 e/ou P-47. A exportação do óleo é feita a uma pressão de operação de 60 kgf/cm2 (pressão de projeto 100 kgf/cm2) através de dois dutos rígidos de 11" e do PLEM-1 até a P-47 (com extensão de 20,4 km) e até a P-32 (com extensão de 23,4 km).

b) Lastro :

A plataforma contém 32 tanques de lastro e quatro bombas de lastro, duas em cada sala de bombas.

Os principais equipamentos que compõem o sistema são:

Equipamento	Quant	Vazão	Potência	Pressão	Temp
Bomba de lastro do pontoon de bombordo: Proa e Popa B-665201 A/B	2	400 m³/h	110 kW	5,0 kgf/ cm2	28 ºC
Bomba de lastro do pontoon de boreste: Proa e Popa B-665201 C/D	2	400 m³/h	110 kW	5,0 kgf/ cm2	28 ºC

c) Óleo Diesel :

Existem duas estações de recebimento: uma em boreste da plataforma, outra em bombordo. O rebocador ativa o modo de navegação em posicionamento dinâmico e efetua a transferência do óleo através de bombas para os 04 tanques de recebimento. A transferência do diesel entre os tanques de recebimento e os 04 tanques de diesel limpo, passando pelas centrifugas, e a sua distribuição é feita por 02 bombas.

As bombas de transferência são utilizadas para movimentar o diesel entre os tanques de armazenamento e os dois tanques de distribuição, enquanto que as bombas de distribuição movimentam o diesel entre os tanques de distribuição e os consumidores. As características dos equipamentos estão descritas no item 2.2.1.4.

d) Água Doce :

A água doce produzida ou recebida é armazenada em 2 tanques localizados nos pontoons (TQ-11 BB e TQ-11 BE) ou armazenada diretamente no tanque diário TQ-512201.

A distribuição de água doce é feita através de duas bombas que aspiram dos tanques de água doce.

O detalhamento do sistema e as características dos principais equipamentos estão descritas no item 2.2.1.3.

e) Rejeitos :

As drenagens provenientes das águas pluviais e da sala de utilidades são transferidas para o vaso Caisson através de conjunto de drenos e tubulações denominado drenagem aberta. Após processo de decantação por gravidade, a

água é descartada no mar e o resíduo oleoso é transferido para o vaso de Slop.

O detalhamento do sistema e as características dos principais equipamentos estão descritas no item 2.2.1.6.

2.4 - SISTEMA DE SALVATAGEM

O Sistema de Salvatagem da P-19 é dimensionado de acordo com a NORMAM 01 sendo objeto de verificação da Marinha do Brasil.

Pontos de Reunião e de Abandono:

a. Os Pontos de Reunião são localizados em um ambiente seguro fechado, distante da área de processo, com capacidade para reunir as pessoas não envolvidas no controle e transmissão de instruções para evacuação ou abandono da plataforma. Sua localização pode ser alterada para manter a segurança do local em função de necessidades operacionais;

b. Os Pontos de Abandono são sempre localizados próximo às baleeiras conforme especificações da NORMAM 01.

Tanto a localização dos Pontos de Reunião quanto a localização das baleeiras são sempre informadas nos briefings de segurança por ocasião dos embarques.

A instalação é dotada atualmente dos seguintes equipamentos de salvatagem:

Item	Quant.	Características
Embarcação salva-vidas	04	Com capacidade para 204 pessoas no total. Autonomia de 24h conforme NORMAM-05, Cap.3.
Bote de resgate	01	Com capacidade para 06 Pessoas Fabricante NORSAFE modelo 5,0m midget MKII
Balsa salva-vidas inflável	15	Capacidade total para 450 pessoas
Colete salva-vidas	401	- Quantitativo conforme NORMAM-01, Cap. 9, Anexo 9ª - Tipo Classe I conforme NORMAM-05, Cap. 3, Seção III
Boia salva-vidas	09	Com luz sinalizadora

Boia salva-vidas	02	Com luz sinalizadora e fumaça
Boia salva-vidas	09	Com cabo de flutuação
Boia salva-vidas	08	Singela
Lançador de linha	04	
Foguete para-quedas	32	
EPIRB	01	
Radar Transponder	06	
Radio portatil para embarcação salva vidas	07	Baleeira, Balsa e Bote

2.5 - SISTEMA DE ANCORAGEM / POSICIONAMENTO

O sistema de ancoragem da P-19 é do tipo teut leg com 16 linhas de amarração e composição mista de amarras com cabos de poliéster e 16 ancoras torpedo "T98". Cada âncora constitui-se numa estrutura cilíndrica, pesando em torno de 93 toneladas.

O sistema é composto por dezesseis (16) linhas de amarração tensionadas e dispersas. Ele consiste em quatro conjuntos de linhas de amarração, dois conjuntos na proa cada um com 4 linhas espaçadas de 20° e dois na popa cada um com 4 linhas espaçadas de 20°. Todos os componentes são projetados para uma MBL de no mínimo 60 t. Os comprimentos lançados são de 1.310 m para as linhas de 1 a 16. O pré-tensionamento das linhas varia de 1177 kN (120 t) a 1470 kN (150 t) no calado carregado assumindo todos os risers conectados.

A SS é formada por seis colunas e cada coluna possui:

Uma guia de amarração e um mordente secundário que estão localizados no nível do convés da SS para as operações de instalação e tensionamento. O molinete horizontal singelo está localizado no Main Deck para a instalação e o tensionamento do sistema, enquanto a unidade de força hidráulica localizada no Lower Deck é usada para as operações de manuseio e tensionamento na proa da SS.

Cada linha multi-segmentada é composta de uma amarra com malhetes grau R4, dois segmentos de cabo de poliéster separados por um segmento de

amarra com malhetes grau RQ4, e segmento de amarra com malhetes grau RQ3 e RQ4 no solo terminando em uma estaca de sucção. Um conector submerso com 50 m desde a estaca de sucção divide o segmento da amarra no solo.

Os elementos do sistema de amarração são:

Elementos	Quantidade	Capacidade (MBL)
Linhas de amarração	16	100 t
Estacas de sucção	16	93 t
Guias de amarração submersas	16	160 t
Guias de amarração no convés	16	160 t
Sistemas de guinchos	4	330 t
Conectores submersos	16	160 t

Os sistemas de ancoragem e de posicionamento com linhas fixas são dimensionados de acordo com normas da Sociedade Classificadora BV. De um modo geral, estas normas recomendam que os sistemas de ancoragem sejam dimensionados para suportar esforços associados a condições ambientais para as oito direções principais (sul, sudeste, leste, nordeste, norte, noroeste, oeste e sudoeste) com períodos de retorno entre 10 e 100 anos. A tabela abaixo resume as máximas condições ambientais para o projeto da P-19.

Condição Ambiental	Decenária	Centenária
Onda - altura significativa (H1/3m)	6,3	7,6
Vento - (m/s)	29,23	37,22
Corrente - (m/s)	1,76	2,06

As coordenadas das âncoras do sistema de amarração são apresentadas a seguir:

Datum SIRGAS 2000

ID_FEICAO	TIPO_FEICAO	NUM_VERTICE	LATITUDE	LONGITUDE
Ancora 1	Ponto	1	-22:23:04,095	-40:03:31,379
Ancora 2	Ponto	1	-22: 23:06,896	-22: 23:06,896
Ancora 3	Ponto	1	-22:23:10,962	-40:03:40,452
Ancora 4	Ponto	1	-22:23:15,000	-40:03:44,644
Ancora 5	Ponto	1	-22:23:50,466	-40:03:46,382
Ancora 6	Ponto	1	-22:23:54,489	-40:03:42,986
Ancora 7	Ponto	1	-22:23:58,621	-40:03:37,632
Ancora 8	Ponto	1	-22:24:01,868	-40:03:33,495
Ancora 9	Ponto	1	-22:24:02,444	-40:03:00,031
Ancora 10	Ponto	1	-22:23:59,257	-40:02:55,041
Ancora 11	Ponto	1	-22:23:54,766	-40:02:50,426
Ancora 12	Ponto	1	-22:23:50,235	-40:02:47,175
Ancora 13	Ponto	1	-22:23:15,366	-40:02:48,418
Ancora 14	Ponto	1	-22:23:11,048	-40:02:52,372
Ancora 15	Ponto	1	-22:23:07,049	-40:02:57,307
Ancora 16	Ponto	1	-22:23:04,154	-40:03:02,496

O anexo 1 apresenta o Diagrama de Ancoragem da instalação P-19.

2.6 - SISTEMA DE SEGURANÇA, DETECÇÃO E COMBATE A INCÊNDIO

O Sistema de Segurança, Detecção e Combate a Incêndio é composto atualmente pelos seguintes recursos:

2.6.1 - Sistema de Detecção de Fogo e Gás

a) Detectores de fogo :

Têm o objetivo de identificar focos iniciais de incêndio e desta forma evitar que estes adquiram proporções maiores. Os detectores de fogo estão instalados na planta, baseados em uma variedade de princípios ativos, dependendo das características do local que eles protegem. O acionamento de qualquer um deles alarmara na sala controle e iniciara as ações descritas no item 3.6. Os

tipos de detectores utilizados são:

Plug Fusível (ADV): Instalados nas áreas externas de processo, onde há dilúvio, em uma rede pressurizada com ar de instrumento. A uma temperatura entre 70 e 77ºC o calor produzido pelo incêndio fundirá os fusíveis, despressurizando o circuito entre o plug e a ADV e abrindo automaticamente as válvulas de dilúvio;

Detectores de Calor de temperatura fixa: Instalados em ambientes fechados, onde os mesmos alarmam quando a temperatura no ambiente atingir um determinado valor;

Termovelocimétricos: Instalados em ambientes fechados, onde os mesmos alarmam quando a variação da temperatura no ambiente (em ºC/seg) atingir um determinado valor (60 ºC);

Detectores de fumaça - instalados em zonas onde os primeiros indícios de fogo são provenientes da emanação de fumaça, como em salas de painéis, baterias, camarotes, salas com equipamentos de processo;

Detectores de chama - utilizados para identificar um incêndio baseado na existência de chamas (emissão de raios ultravioleta, e infravermelhos). Na planta este tipo de detector pode ser encontrado no interior dos invólucros dos turbogeradores, turbocompressores, compressor booster e na sala de bombas de exportação.

Descrição de zonas protegidas por detectores de chama	Possui mais de um detector
Zona 601 - Área de processo - Bombas de transferência	Sim
Zona 802 - Casulo (hood) dos turbocompressores	Sim
Zona 804 - Casulo (hood) dos turbogeradores	Sim
Zona 821 - Casulo (hood) da unidade recuperadora de vapor (URV)	Sim

b) Detectores de Gás :

Têm a função de acionar um alarme ou iniciar a ação de shut-down baseada nos níveis do alarme. Estes sensores são utilizados também, para analisar a concentração de CH4, H2S,H2 ou CO2 no ar que é ventilado para as zonas.

Descrição de zonas protegidas por detectores de chama	CH4	H2S	H2	CO2
Zonas 101A, 101B, 301, 401, 402A, 402B, 403, 404, 405,406, 407,501, 601,603,604, 606, 608, 609, 610, 613, 614, 615, 708, 803, 803B, 818, 801A, 801B, 801C, 801D,812A, 813A, 814A, 820, 822A,822B	x			-
Zonas 402A, 602 e 813A*			x	-

c) Detectores de H2 :

Os detectores de H2 na planta de processo estão instalados nos dutos de saída de ar do sistema de ventilação da sala de baterias. Estes detectores são do tipo catalítico. A ativação de um destes detectores (10% LIL) gera um alarme na Sala de Controle Central. A ativação de dois detectores (15% LIL) inibe o carregamento das baterias.

d) Detectores de CH4 :

Os detectores de CH4 estão instalados na planta de processamento com atuação baseada nos níveis de concentração de hidrocarbonetos gasosos presentes no ambiente. A ativação de um destes detectores (20% LII) gera um alarme na Sala de Controle. Adicionalmente, a ativação de dois detectores (60% LII) em uma mesma área alarme na sala de controle central e parada de emergência de nível 3 (ESD-3).

2.6.2 - Sistema de Alarme de Emergência

O sistema de alarme de emergência na plataforma é sonoro e luminoso. O sistema sonoro possui som intermitente para indicação de emergência e

sinal contínuo para indicação de "preparação para abandono". A zona onde ocorreu o sinistro é indicada na sala de controle pelas estações de operação.

Em locais ruidosos ou em compartimentos onde existe sistema de dilúvio com CO2, existe sistema de alarme luminoso com lâmpadas estroboscópicas.

2.6.3 - Sistema de Combate a Incêndio

O sistema de combate a incêndio é composto pelos seguintes sub-sistemas:

2.6.3.1 - Sistema de Combate a Incêndio por Água

As bombas de pressurização de água salgada jockey com vazão de 40 m³/h mantêm o Sistema de Combate a Incêndio por Água Salgada constantemente pressurizado a uma pressão de 10 kg/cm². A abertura de qualquer ponto de consumo (ADV, Hidrante, Canhão) causa uma queda de pressão no sistema principal ativando os pressostatos de baixa pressão que monitoram a pressão/fluxo no sistema principal. A queda de pressão/fluxo no sistema principal automaticamente aciona as bombas de incêndio elétricas e as bombas diesel do Sistema de Combate a Incêndio por Água Salgada. As bombas também podem ser acionadas manualmente.

As bombas de captação de água de incêndio captam água de duas caixas de mar e descarregam-na para as bombas booster de água de incêndio, as quais enviam a água na pressão de operação para o manifold principal (anel de incêndio) que distribui para o convés principal, convés das acomodações, praça de máquinas, casa de bombas.

Este sistema é formado por três unidades de bombeamento: dois conjuntos de bombas (captação e booster) movidas a motor diesel e uma bomba acionamento elétrico, cujos dados estão apresentados na tabela a seguir.

Cada unidade movida a diesel possui um tanque deste combustível com capacidade para 43 m3.

As principais características dos equipamentos do sistema estão listadas abaixo:

Equipamento	Quant.	Pressão	Capacidade	Potência	Temp

Motor diesel MC-UB-542001 A/B	2	-	-	626 kW	28°C
Bomba de incêndio diesel (captação) B-UB-542001 A/B-01	2	7,7 kgf/cm²	1100 m³/h	315 kW	28°C
Bomba booster de incêndio B-UB-542001 A/B-02	2	12,5 kgf/cm²	1100 m³/h	255 kW	28°C
Bomba de incêndio elétrica B-542002	1	XXX kgf/cm²	1100 m³/h	410 kW	28°C
Bombas jockey de incêndio B-542003 A/B	2	XXX kgf/cm²	40 m³/h	14,7 kW	28°C

O Sistema de Combate a Incêndio por Água Salgada alimenta os hidrantes, dilúvio e rede de espuma.

a) Rede de Hidrantes:

Os hidrantes são do tipo vertical providos de duas saídas do tipo storz instalados em locais estratégicos. Ao lado de cada hidrante existe um armário, contendo equipamentos de combate a incêndio, como: mangueiras, chaves, esguicho.

A localização e o tipo de hidrante são apresentados na tabela abaixo:

Localização de hidrantes	2 x 2 ½"
Main Deck	14
Tween Deck	3
Lower Deck	14
Spider Deck	3
Colunas	7
Pontoons	6
Upper Deck	4
Main Deck	14

b) Sistema de Combate a Incêndio por Dilúvio:

A finalidade desse sistema é resfriar os equipamentos adjacentes a alguma área onde esteja ocorrendo um incêndio, mantendo a integridade dos equipamentos e impedindo que o fogo se propague e se torne incontrolável.

Áreas cobertas pelo Sistema de Combate a Incêndio por Dilúvio:

Descrição
Zona 501 - Spider deck - Manifolds de produção, gas lift, injeção de água, vaso de slop
Zona 601 - Sala das bombas de transferência de óleo e tanques de produtos químicos
Zona 615 - Área dos vasos da tocha, vent e degasser ? Extensão de popa
Zona 801 A - Planta de gás dos turbocompressores e área de abastecimento no pipe rack
Zona 801 B - Compressor booster, unidade de gás combustível e unidade de TEG
Zona 801 C - Tratadores eletrostáticos e separador atmosférico
Zona 801 D - Separadores de produção, permutadores, vasos elevados de ar e tanques de água
Zona 822 A - Bomba de incêndio diesel (Bombordo)
Zona 822 B - Bomba de incêndio diesel (Boreste)

c) Sistema Fixo de Combate a Incêndio por Espuma:

A P-19 é equipada com quatro canhões fixos de espuma de acionamento manual no local, que cobrem a área de carga, convés principal, área dos turbocompressores e heliponto. Além destes, existem dois canhões portáteis para uso em locais não cobertos pelos canhões fixos, de acordo com a necessidade.

Áreas cobertas pelo Sistema de Combate a Incêndio por Espuma:

Descrição
Zona 800 - Convés principal
Zona 801 A - Planta de gás dos turbocompressores e área de abastecimento no pipe rack
Zona 803 - Área de carga
Zona 900 - Heliponto

As bombas do anel de incêndio fornecem a vazão e pressão necessárias para a atuação destes canhões.

Este sistema é formado pelos equipamentos listados abaixo:

Equipamento	Quantidade	Pressão	Capacidade	Temp
Tanque de Armazenamento de Concentrado de Espuma (LGE)	3	Atmosférica	750 L	30 °C
Monitor Fixo (Canhão)	4	12,5 kgf/cm²	134 m³/h	30 °C
Monitor Portátil (Canhão)	2	12,5 kgf/cm²	134 m³/h	30 °C

2.6.3.2 - Sistema Fixo de Combate a Incêndio por Gás Inerte

a) Sistema com CO_2

Sistema fixo de combate a incêndio por CO2 tem como objetivo detectar e extinguir o fogo através de inundação total por gás na área efetiva de risco. Isto ocorre, pois o CO2 diminui a concentração de oxigênio do ambiente fazendo com que o fogo não possa mais realizar o trabalho de combustão.

Sistema fixo de acionamento manual de extinção de incêndio por CO2 é composto por dois grupos de 60 cilindros totalizando 120 cilindros de armazenamento, tubos coletores, válvulas de cabeça de cilindro, válvulas direcionais, lâmpadas de sinalização, sirenes, bicos nebulizadores e botoeiras de disparo (instaladas nas proximidades da área a proteger). Existem outras baterias que totalizam 14 cilindros que atendem a compartimentos específicos, a saber: Coifa da Cozinha, Casulo dos Turbocompressores (4), casulo dos Turbogeradores (4) e Casulo do Compressor Booster (2).

Este sistema cobre as seguintes áreas:

Área de Cobertura
XV 01 - Sala de rádio
XV 03 - Sala de telecomunicações
XV 05 - Sala de Controle de lastro
XV 07 - Sala do Gerador Diesel de emergência
XV 09 - Sala de Equipamentos
XV 11 - Sala dos carregadores de Baterias
XV 13 - Sala de Controle central
XV 15 - Sala de Painéis essenciais
XV 17 - Sala de controle dos TC's
XV 19 - Sala da Desaeradora (fundo)
XV 21 - Sala de Painéis nº 3
XV 23 - Sala da Desaeradora (Teto)
XV 25 - Sala de Painéis nº 2
XV 27 - Sala de Painéis nº 1
XV 29 - Sala dos Geradores Diesel auxiliares

b) Sistema com Halon

Em função de suas características, a plataforma P-19 não possui sistema de combate a incêndio com gás HALON.

2.6.3.3 - Sistema Fixo de Combate a Incêndio por Agente Químico Úmido

Na unidade não há sistema de combante à incêndio por Agente Químico Úmido.

2.6.3.4 - Equipamentos Portáteis de Extinção de Incêndio

A plataforma conta ainda com equipamentos portáteis de extinção de incêndio composto pelos seguintes equipamentos:

Descrição	Quant.	Capacidade
Extintor de incêndio portátil de água	13	10L
Extintor de incêndio ABC	18	1kg
Extintor de incêndio de pó químico seco	51	12kg
Extintor de incêndio de pó químico seco	12	50kg
Extintor de incêndio portátil de CO_2	89	6kg

2.7 - SISTEMA DE MOVIMENTAÇAO DE CARGA E PESSOAL

2.7.1 - Movimentação de Carga

A movimentação de cargas é feita através de 2 guindastes que têm as seguintes características:

Localização	Capacidade	Tipo
Convés Principal à meia-nau bombordo	Principal 40 t	Diesel-hidráulico com lança treliçada
Convés Principal à meia-nau boreste	Principal 40 t	Diesel-hidráulico com lança treliçada

2.7.2 - Movimentação de Pessoal

A movimentação de pessoal é feita preferencialmente por via aérea. A P-19 possui um heliponto localizado na proa e projetado para receber aeronaves do porte do Sykorski S-76.

Atualmente, a capacidade máxima de peso das aeronaves no heliponto é de 12,8 toneladas.

2.8 - SISTEMA DE COMUNICAÇAO

O sistema é composto de:

2.8.1 - Sistema de Telefonia

Uma unidade PBX instalada no Compartimento de Telecomunicações e unidades de telefones automáticos distribuídos por todas as salas da plataforma.

O número de telefone para contato com a plataforma está descrito no item 1.1 deste documento.

2.8.2 - Sistema de Endereçamento Público

Sistema de comunicação interna à Unidade Marítima que utiliza intercomunicadores distribuídos pela plataforma para veicular anúncios públicos, chamadas, mensagens de advertências e programas audíveis a todas as pessoas a bordo. É composto de um rack instalado no Compartimento de Telecomunicações. As informações públicas e as chamadas podem ser feitas através de estações de chamadas ou telefones automáticos (sistema de telefonia).

2.8.3 - Sistema de Comunicação de Rádio

Composto de um transceptor com canais de freqüência de rádio para assessorar as atividades operacionais, movimentação de carga, segurança, salvamento e comunicações entre as estações costeiras, embarcações e aeronaves. O sistema é subdividido em dois outros sistemas e é composto de um GMDSS/console de rádio e outro transceptor.

Em casos de emergência, os grupos de ação utilizam rádios portáteis para comunicação, em freqüências diferentes, pré-definidas pelo Coordenador da emergência, de acordo com a função de cada grupo.

a) Sistema GMDSS:

Todos os equipamentos listados na tabela a seguir são instalados no console que fica na sala de rádios. Os equipamentos de MF/HF/SSB-SMM controle remoto estão instalados na Sala de Recepção e na Sala de Controle.

Item	Quantidade

INMARSAT B (SISTEMA DE COMUNICAÇÃO SATÉLITE) DA ESTAÇÃO PROA	01
Navtex	01
VHF FM	01
VHF DSC	01
MF/HF SSB	01
MF/HF DSC	01
Inmarsat	01
Radar Transponder	01
VHF FM portátil (para botes de resgate)	01
EPIRB	01

b) Sistema de rádio:

Item	Quantidade	Localização
VHF FM	2	Sala de Rádio
VHF FM	2	Sala de Controle
UHF FM	3	Sala de Controle
UHF FM de Uso pessoal	Variável	portátil
VHF FM de Uso pessoal	Variável	portátil
VHF AM de Uso pessoal	Variável	portátil
VHF FM SMM controle remoto	1	Sala de Recepção Sala de Controle

2.9 - SISTEMA DE GERAÇAO E DISTRIBUIÇAO DE ENERGIA ELETRICA

O sistema de geração principal compreende 2 (dois) Turbogeradores (TG) de 7,2 MW e 4 (quatro) Motogeradores a Diesel de 2,1 MW que totalizam 14,4 e 8,4 MW de capacidade de geração de energia elétrica respectivamente, suprindo todas as cargas da P-19. O sistema de geração de emergência compreende 1 (um) Gerador Diesel de Emergência (DGE) de 550 kW que entra em operação automaticamente nos casos de falta da geração principal.

A distribuição é feita através do barramento principal de 4,16 kV que alimenta 4 barramentos secundários de 480 V.

Características dos principais equipamentos que compõem o sistema:

Equipamento	Qde	Potencia (KVA / KW)	Tensão (V)	Frequencia (Hz)	Fases	Consumo Combustível	Eficiência
Turbogerador GE-514001 A/B	2	9000/7200	4160	60	3	72.000 Nm³/d (gás combustível)	98%
Moto Gerador GE-514003 A/D	4	2625/2100	4160	60	3	5000 L/d (óleo diesel)	98%
Moto Gerador Emergência	1	687/550	480	60	3	250 L/d (óleo diesel)	98%

A unidade ainda é provida de conjuntos de UPS's (Sistema Ininterrupto de Energia), que é composto de Baterias e no breaks que garantem o funcionamento de alguns sistemas vitais para segurança da plataforma que não podem sofrer interrupção em sua alimentação quando da queda da geração principal e posterior entrada ou falta da geração de emergência, tais como:

- Detecção de gás e incêndio;
- Combate a incêndio por água e CO2;
- Parada de emergência;
- Iluminação de emergência;
- Luzes de auxilio a navegação;
- Luzes de obstáculo aéreo;
- Telecomunicações e intercomunicadores;
- Alarme manual e automático visual e sonoro;
- Painel de controle do gerador de emergência;
- Painel de controle da bomba de incêndio;
- Equipamentos que compõem o sistema de controle e intertravamento;
- Equipamentos que compõem a ECOS.

O sistema de baterias é composto pelos seguintes equipamentos:

Equipamento	Quantidade	Capacidade	Tensão
Carregador de baterias	4	900 A	24 VCC
	2	900 A	120 VCC
	2	160 A	125 VCC
	2	180 A	125 VCC
Banco de baterias (autonomia 10 h)	4	750 Ah	24 VCC
	2	625 Ah	120 VCC
	2	150 Ah	125 VCC
	2	450 Ah	125 VCC

Painel de Distribuição	2	630 A	24 VCC
	2	400 A	120 VCA
	2	100 A	125 VCC
	2	200 A	125 VCC

3 - Descrição do Processo de Produção

3.1 - SISTEMA DE PRODUÇAO

O sistema de produção da P-19 envolve uma estrutura submarina composta por poços produtores e injetores, linhas de fluxo do processo (produção, injeção de gás, injeção de água e umbilicais de controle), por equipamentos submarinos (ANM - Árvores de Natal Molhadas dos poços).

Atualmente, existem 14 poços produtores e 8 poços injetores interligados à plataforma. A tabela a seguir apresenta características dos poços produtores de P-19. Os teores de H2S foram obtidos em testes de produção, com injeção de sequestrante de H2S.

Poço produtor	Teor de H2S (ppm)	HTHP	Pré-sal	DHSV
MRL-09	7,8	Não	Não	Não
MRL-40	3,5	Não	Não	Sim
MRL-42	15,9	Não	Não	Sim
MRL-43	20	Não	Não	Sim
MRL-53	12,7	Não	Não	Sim
MRL-54	12,9	Não	Não	Sim
MRL-84	19,0	Não	Não	Sim
MRL-112	19,5	Não	Não	Não
MRL-169	16,8	Não	Não	Sim
MRL-183	8,0	Não	Não	Não
MRL-188	12,9	Não	Não	Não
MRL-212	5,9	Não	Não	Sim
MRL-218	1,0	Não	Não	Sim
MRL-224	15,0	Não	Não	Sim

No que se refere ao método de elevação, os poços produtores da unidade operam por surgência natural ou por gás lift.

Cada poço está provido da sua árvore de natal molhada (ANM), operada da Plataforma através da Unidade Hidráulica.

As linhas de produção entre as árvores de natal molhadas (ANM) e a plataforma são independentes e conectadas na mesma através de risers fixados na sua estrutura.

Em cada linha de produção, próximas aos risers, estão instaladas duas (02) SDV's (válvulas de shutdown) para isolar a Plataforma dos poços quando houver condições anormais de processo ou por comando manual através de

botoeira situada na ECOS.

Após os risers, as linhas de produção são interligadas aos três manifolds (Produção "A", Produção "B" ou de Teste) instalados no convés. Neste trecho, a montante dos manifolds, está instalada em cada linha, uma válvula choke com o intuito de controlar a vazão de produção de cada poço.

3.2 - SISTEMA DE PROCESSAMENTO DE ÓLEO

A partir de cada manifold de produção, o óleo escoa através de dois coletores de produção e um coletor de teste para seu respectivo trem de produção "A", "B" ou Separador de Teste.

O alinhamento para os manifolds de produção "A" e "B" é feito de forma a distribuir eqüitativamente as vazões, buscando manter 50% da produção em cada trem, os quais foram dimensionados para manter a performance de separação.

A planta de processo da P-19 é baseada em separadores horizontais (produção e atmosférico) e desidratadores (tratadores) eletrostáticos. A planta possui dois trens de produção, cada um contendo sequencialmente os aquecedores, separador de produção, tratador de óleo e separador atmosférico (surge tank). A desestabilização de emulsões pela ação do calor é realizada pelos aquecedores de produção. Produto químico do tipo desemulsificante é injetado a montante dos permutadores (aquecedores) a fim de auxiliar na desestabilização da emulsão.

O óleo separado segue para os desidratadores eletrostáticos onde é realizada a máxima separação de salinidade e conteúdo de água (BSW) presentes no mesmo. O óleo é estabilizado (expandido) nos separadores atmosféricos (onde são removidos traços de gás) sendo bombeado na sequência pelo sistema de exportação.

A planta de produção possui ainda um separador de teste (start-up well) precedido também por um aquecedor. Este separador bifásico é utilizado nas operações de abertura ou verificação de vazão de um poço específico.

EQUIPAMENTO	Quant.	TIPO	CAPACIDADE

Aquecedor de Produção P-122301 A/B	2	Casco e tubo	16 MW (cada)
Aquecedor de Teste P-122302	1	Casco e tubo	5 MW
Separador de Produção SG-122301 A/B	2	Horizontal	9500 m³/dia (cada)
Separador de Teste SG-122302	1	Horizontal	3000 m³/d
Tratador de Óleo TO-122301 A/B	2	Desidratador Elestrostático	9500 m³/d (cada)
Separador Atmosférico SG-122303	1	Horizontal	16.000 m³/dia

As pressões de operação do sistema de processamento são ajustadas em função do melhor desempenho dos equipamentos de acordo com a produção no momento. Por isso, sofrem variações. Elas são balizadas pela pressão de projeto que, por sua vez, são referência para a pressão de abertura das válvulas de segurança (vide tabela abaixo).

Equipamento	Quant.	Temp. (ºC)	Volume (m³)	Pressão (kgf/cm²)		
				Projeto	Operação	Abertura das válvulas de segurança
Aquecedor de Produção P-122301 A/B	2	90	7,7	15,0	13,0	15,0
Aquecedor de Teste P-122302	1	90	2,2	15,0	13,0	15,0
Separador de Produção SG-122301 A/B	2	90	88,9	13,9	9,5	13,9
Separador de Teste SG-122302	1	90	24,3	13,9	9,5	13,9
Tratador de Óleo TO-122301 A/B	2	90	253,4	14,0	10,0	14,0
Separador Atmosférico SG-122303	1	80	180,3	3,5	0,16	3,5

3.3 - SISTEMA DE PROCESSAMENTO DE GAS

O processamento do gás consiste na compressão e desidratação. O processamento do gás de alta pressão consiste no direcionamento para unidades de compressão (três instaladas) sendo que cada uma é baseada em três compressores (cada compressor correspondendo a um estágio de compressão). Duas unidades são capazes de processar juntamente uma vazão total máxima de 2.500.000 m3 de gás por dia (a 20ºC e 101,3 kPa). Uma unidade de compressão sempre se encontra em reserva automática ou em

manutenção.

Em cada unidade de compressão, trocadores de calor resfriam o gás entre os estágios de compressão do gás para condensar a fração de pesados e dois vasos de coleta tem a finalidade de retirar as partículas de líquido arrastadas na saída de gás dos Separadores de Produção e de Teste, a fim de evitar a presença de líquido no sistema de compressão. Entre o segundo e terceiro estágio de compressão, o gás é enviado à unidade de desidratação para remoção de água. Esta unidade consiste de três torres de absorção à base de TEG (trietileno glicol substância com caráter hidrófilo) além de um sistema de regeneração de TEG. A remoção de água visa evitar corrosão das paredes dos gasodutos e demais equipamentos, além de evitar a formação de hidratos nestes gasodutos.

Após o terceiro estágio de compressão, o gás é enviado para o sistema de gás combustível, para o sistema de injeção de gas lift ou exportado para P-18. No sistema de gás combustível, o gás é fornecido em duas especificações: alta pressão (3.530 kPa abs) e baixa pressão (445 kPa abs). Os consumidores de gás combustível de alta pressão são as turbomáquinas. O gás de baixa pressão é fornecido para os fornos, pilotos das tochas, torre desaeradora e vasos da unidade de desidratação.

O gás proveniente do Separador Atmosférico é dirigido a um resfriador e em seguida ao Compressor Booster para atingir a pressão de sucção do sistema principal de compressão que é de 9,0 bar. O Compressor Booster é do tipo parafuso acionado por motor elétrico. As pressões de operação do sistema de processamento de gás são ajustadas em função do melhor desempenho dos equipamentos de acordo com a produção no momento. Por isso, sofrem variações. Elas são balizadas pela pressão de projeto que, por sua vez, são referência para a pressão de abertura das válvulas de segurança. O quadro abaixo resume os tipos e capacidades dos principais equipamentos da planta de processamento de gás da P-19 (sistema principal).

Equipamento	Qtde	Volume (Nm³/d)	Pressão (Kgf/cm²)		
			Projeto	Operação	Abertura das válvulas de segurança
Resfriador de Gás Separado	2		14,0 (casco)	10,0 (casco)	14,0 (casco)

			7,0 (tubo)	2,0 (tubo)	5,0 (tubo)
Vaso de Separação de Gás V-122301 A/B	2	2.000.000	10,0	9,0	10,0
Vaso Separador de Entrada do 1º Estágio V-UC-122301 A/C - 01	3	1.250.000	9,0	8,0	9,0
Compressor Booster (URV) C-UC-122302	1	-	11,0	2,0 (sucção) 10,0 (descarga)	3,5 (sucção) 11,0 (descarga)
Resfriador de descarga do Compressor Booster P-UC-122302	1	-	26,0 (casco) 7,0 k (tubo)	24,0 (casco) 2,0 (tubo)	26,0 (casco) 5,0 (tubo)

Os equipamentos da planta de processos possuem sistemas de despressurização automáticos para proteção. Os gases oriundos desses sistemas são coletados por uma rede de tubulações que os direciona para o coletor de alta ou de baixa pressão.

Os coletores de alta e baixa pressão encaminham o gás para os vasos de tocha (flare), onde é realizada a separação das gotículas de líquido arrastadas pelo gás. O gás isento de líquido é encaminhado para o manifold da tocha, de onde escoa para os queimadores de alta ou baixa pressão. O líquido coletado na base desses vasos é enviado através de bombas para a rede de drenagem fechada até o vaso de Slop.

O sistema de tocha de Alta Pressão é composto por dois estágios, ambos constituídos por um queimador sônico, e o sistema de Baixa Pressão é composto de dois estágios constituídos por queimadores multiflare.

Equipamentos	Quantidade	Vazão	Potência	Pressão (kgf/cm2)	Temperatura (ºC)
Vaso de tocha de Alta Pressão (V-541201)	1	15000 Nm³/dia	-	0,3	30
Vaso de tocha de Baixa Pressão (V-541202)	1	12000 Nm³/dia	-	0,2	30
Bomba do vaso de tocha de Alta Pressão (B-541201)	1	15 m³/h	11 kW	12	30
Bomba do vaso de tocha de Baixa Pressão (B-541202)	1	5 m³/h	3,7 kW	12	30
Queimador sônico para a tocha de Alta Pressão (TA-541201)	2	15000 Nm³/dia	-	0,24	- 35 a 40
Queimador multiflare para a tocha de Baixa Pressão (TA-541201)	4	12000 Nm³/dia	-	0,09	30 a 36

Alguns tanques e equipamentos da planta de processo são dotados de vent atmosférico para manutenção da pressão atmosférica no seu interior. O coletor do vent atmosférico é provido de um abafador de chamas, localizado no

seu final, em uma posição segura da torre das tochas (flare).

O sistema de abafamento do vent atmosférico é constituído de duas baterias de cilindros de CO2, dotadas de 2 cilindros de 45 kg cada, sendo um conjunto reserva do outro, para abafamento das chamas no caso de ocorrência acidental.

3.4 - SISTEMA DE EXPORTAÇÃO DO ÓLEO E GÁS

O gás separado pela P-19 é exportado a uma pressão de operação de 150 kgf/cm2 (pressão de projeto de 170 kgf/cm2) através de gasoduto flexível de aproximadamente 9,5" de diâmetro e com extensão de 8,2 km até a plataforma P-18. O gás pode, alternativamente, ser exportado para a plataforma P-33. O escoamento para P-33 é realizado através de um gasoduto flexível com diâmetro de 9,1" e com extensão de 5,5 km.

O escoamento do óleo produzido pela P-19 é feito a uma pressão de operação de 60 kgf/cm2 (pressão de projeto 100 kgf/cm2) através de dois dutos rígidos de 11" e do PLEM-1 até a P-47 (com extensão de 20,4 km) e até a P-32 (com extensão de 23,4 km).

Os principais equipamentos que compõem o sistema estão descritos na tabela abaixo:

Equipamento	Quant.	Capacidade	Potência (KW)	Pressão (kgf/cm2)		Temp (ºC)
				Projeto	Operação	
Turbocompressor (UC-122301 A/C)	03	1.250.000 Nm³/d	-	196,8	170,0	45
Bomba Principal Exportação (B-122302 A/D)	04	250 m³/h	900	100,0	60,0	70
Bomba Booster Exportação (B-122301 A/D)	04	250 m³/h	130	20,0	15,0	70

3.5 - SISTEMA DE GAS COMBUSTIVEL

Parte do gás natural proveniente da separação, posteriormente comprimido e desidratado é submetido a um condicionamento visando especificá-lo de acordo com os requisitos do combustível para as turbinas quanto ao ponto de orvalho de hidrocarbonetos: 25 °C abaixo da temperatura normal de utilização.

É necessário ajustar o seu ponto de orvalho, de forma que não ocorra condensação nas linhas de alimentação das turbomáquinas, o que prejudicaria a performance destes equipamentos.

O processo de especificação do ponto de orvalho consiste na condensação da fração mais pesada do gás, pelo resfriamento devido à expansão em uma válvula redutora de pressão.

O sistema de gás combustível tem capacidade de processamento de 13018 kg/h a 46 ºC e 30 kgf/cm², com temperatura do ponto de orvalho do gás combustível de 12,1ºC, e com temperatura adotada para distribuição de gás a alta pressão de 46 ºC.

O gás é fornecido em duas especificações: alta pressão (30 kgf/cm² a 36 ºC) e baixa pressão (3 kgf/cm² a 32 ºC).

Os principais consumidores de gás combustível de alta pressão são basicamente as turbomáquinas (turbogeradores e turbocompressores). O gás de baixa pressão é fornecido para a torre desaeradora (tratamento de água para injeção), para os fornos, para vasos da unidade de desidratação de gás e para a chama dos pilotos das tochas.

As pressões de operação do sistema de gás combustível são ajustadas em função do melhor desempenho dos equipamentos de acordo com a produção no momento. Por isso, sofrem variações. Elas são balizadas pela pressão de projeto que, por sua vez, são referência para a pressão de abertura das válvulas de segurança (vide tabela abaixo).

Equipamento	Qtde	Volume (m³)	Pressão (kgf/cm²)		
			Projeto	Operação	Abertura das válvulas segurança
Permutador do GC (P-513501)	1	-	40,5 (casco) 78,1 (tubo)	34,1 (casco) 67,9 (tubo)	40,5 (casco) 78,1 (tubo)
Pré-aquecedor GC do Gasoduto (P-513502)	1	-	20,0 (casco) 196,0 (tubo)	12,0 (casco) 178,2 (tubo)	19,9 (casco) 196,0 (tubo)
Pré-aquecedor do GC dos TC (P-513503)	1	-	20,0 (casco) 78,1 (tubo)	12,0 (casco) 68,6 (tubo)	19,9 (casco) 78,0 (tubo)
Vaso de Separação GC (V-513501)	1	1,0	39,2	34,1	39,2
Vaso Acúmulo de GC dos TG (V-513502)	1	8,3	39,2	33,4	39,2

Observação: O pré-aquecedor de gás combustível dos turbocompressores é do tipo bitubular de pequeno porte (capacidade térmica de 0,73 MW). A

tubulação de água quente tem diâmetro de 2" e válvula de controle de 1". O equipamento possui volume pouco significativo para a necessidade de instalação de PSVs na linha de água. Considerando-se todas as 16 PSV principais do sistema de água quente, o pré-aquecedor está totalmente protegido contra fogo. Para evento de não-fogo, considera-se que o pequeno volume e a impossibilidade de gerar pressões superiores a de projeto definiram como desnecessária a presença de PSV no lado da água quente.

3.6 - SISTEMA DE AUTOMAÇAO, CONTROLE E PARADA DE EMERGÊNCIA

3.6.1 - Sistema de Automação e Controle

A automação e controle da planta de processo e embarcação é feita pela Estação Central de Operação e Supervisão - ECOS. A ECOS permite o monitoramento e inspeção da produção offshore na Sala de Controle Central. Isso é realizado através de uma tela/janela, que mostra gráficos de alta resolução, "flow sheets" e outras estruturas fixas de desenho. Os componentes principais destas estruturas fixas (equipamento e instrumentos) são animados, exibindo-se a troca de estado como a abertura e o fechamento de válvulas, partida e parada de bombas. As telas/janelas descrevem as Plantas de Processo e Utilidades Navais. O Programa Supervisório da ECOS fornece uma Interface de Homem-Máquina (MMI) para processos/utilidades, sistemas elétricos, de lastro e de segurança de toda a instalação.

Os sistemas principais desta arquitetura para aquisição e controle de dados e funções de intertravamento estão listados a seguir:

· **ECOS - Estação Central de Operação e Supervisão:** é um recurso de hardware/software especializado no processo e visualização de dados de campo em um formato satisfatório, deixando para outros sistemas a obrigação de coletar os dados. Estes sistemas em geral têm grande capacidade de interface com o campo, não só para dados recebidos, mas também para comandos que atuam dispositivos finais. Assim, é possível de uma estação de trabalho ECOS, enviar comandos para o campo atuando os dispositivos.

· **CIS - Sistema de Controle e Intertravamento:** Baseia-se na utilização de Controladores Lógicos Programáveis (PLCs) para execução de funções de controle e intertravamento. É constituído pelo Painel de Controle e Intertravamento de Segurança, localizado na Sala de Controle Central e Unidades Terminais Remotas (RTUs), localizadas em pontos ao longo da plataforma.

· **PAS - Sistema de Automação de Pacotes:** O PAS refere-se às unidades autônomas do processo/embarcação que dispõem de Painéis Locais e são interligadas ao Sistema de Automação via rede de comunicação de dados.

3.6.2 - Parada de Emergência da Unidade de Produção

A função da Parada de emergências da Unidade de produção é de garantir uma proteção segura, ao efetuar a parada de emergência controlada da unidade de produção offshore, incluindo todos os sistemas relacionados, isto é, Planta (processo e utilidades) e Vessel/Marine.

Esta função é iniciada automaticamente através de sensores de processo (interruptores e transmissores) que detectam a anormalidade proveniente de variáveis de processo e parâmetros do equipamento e atuam elementos finais de campo (também chamados de dispositivos protetores) como válvulas de parada de emergências (SDVs), válvulas de blowdown (BDVs), válvulas de shutoff (XVs), painéis de controle locais (através de válvulas solenóide e relés), isolando, aliviando e parando o equipamento ou o sistema operacional que causa ou está sujeito a perigo.

O sistema de bloqueio permitirá, em situações de emergência, a interrupção automática do funcionamento dos diversos equipamentos e máquinas da P-19, a fim de restringir os riscos causados por eventuais efeitos indesejáveis.

Os sistemas de bloqueio são:

- Nível 2 (ESD2): Parada total do processo de produção;
- Nível 3 (ESD3P): Parada total do processo de produção e parcial do processo de facilidades (exceto geração principal);
- Nível 3 (ESD3T): Parada total do processo de produção e facilidades (Neste

caso, funcionarão somente o Gerador de emergência e Compressor de emergência, que são a diesel).

- Nível 4 (ESD4): Despressurização automática e preparação para abandono se necessário.

O sistema de bloqueio emergencial para níveis 2 e 3 pode ser acionado manualmente (por botoeiras ou estações de trabalho) ou automaticamente. O acionamento do nível 4 só poderá ser manual.

As botoeiras de acionamento manual desses bloqueios encontram-se na sala de controle e na sala de rádio.

O acionamento automático do bloqueio ESD2 ocorre através dos seguintes eventos:

- Nível muito alto nos vasos das tochas;
- Nível ou pressão alta no vaso do separador atmosférico;
- Falha total na ventilação de zonas críticas.

O acionamento automático do bloqueio ESD3P ocorre através do seguinte evento:

- Fogo ou Gás confirmado nas zonas.

O acionamento automático do bloqueio ESD3T ocorre através do seguinte evento:

- Falha de tensão no barramento "A" e "B" do PN-514001.

Todos os dispositivos de detecção, em todos os níveis de bloqueio, estão ligados à sala de controle, onde a tomada de decisão sobre os procedimentos passam pela matriz de causa e efeito que vai disparar as ações de respostas para os equipamentos da planta, em todos os níveis.

O Sistema de Intertravamento e Controle é baseado em Controladores Lógicos Programáveis, montados em painéis e implementado com duplicidade completa de racks (incluindo fontes, cartões de comunicação e CPU) em arquitetura hot stand-by. Cada CLP e/ou suas remotas são dedicados às seguintes funções:

a) 01 subsistema de ESD: Responsável por todas as funções de Shutdown (ESD-2/ ESD3P/ ESD3T/ ESD4), além dos alarmes de emergência da unidade.

b) 01 subsistema de FOGO&GAS: Responsável pelo monitoramento de Fogo & Gás, ventilação, ar-condicionado e combate a incêndio de toda a

unidade de produção.

c) 01 subsistema de LASTRO: Responsável por todas as funções relacionadas à embarcação (estabilidade da unidade e supervisão/controle de alagamento dos Poontons).

d) 01 subsistema ELÉTRICA: Responsável pelo intertravamento, alarme, monitoração de variáveis analógicas/digitais e descarte das cargas elétricas. Toda a interface com CCMs da planta de processo e suas utilidades é feita por este subsistema e suas remotas.

e) 01 subsistema PROCESSO: Dedicado à implementação das malhas de controle da planta de processo e tratamento de variáveis analógicas (indicações, alarmes, etc.) da planta de processo, das utilidades não-elétricas, poços e manifolds.

4 - Descrição da Malha de Coleta e Interligação Com Outras Instalações

A malha de coleta da P-19 constitui-se de 14 poços de produção e 8 poços de injeção. A malha de exportação de óleo e exportação / importação de gás constitui-se em um gasoduto P-19/P-18 (exportação de gás), um gasoduto P-19/P-33 (importação/exportação de gás), dois oleodutos P-19/MIS-MRL-1(PLEM-1). A unidade não recebe a produção de nenhuma outra unidade.

Cada poço de produção possui um conjunto (bundle) de três linhas de fluxo de processo, sendo uma de produção, uma de injeção de gas lift (acesso ao anular da coluna de produção) e a última do umbilical de controle. Cada poço de injeção de água possui um conjunto com duas linhas flexíveis, sendo uma de injeção e outra do umbilical de controle.

Os teores máximos de CO2 dos fluxos que chegam à unidade são, respectivamente 0 e 0,06%. Através da injeção de sequestrante, evita-se concentrações de H2S superiores a 50 ppm na unidade.

Os valores médios de RGO e BSW que chegam a instalação, considerando o ano de 2017 foram, respectivamente, 73,5 m3/m3 e 55,7%.

Existe um total de 40 risers, sendo 14 linhas de produção, 14 linhas de injeção de gás lift, 08 linhas de injeção de água, 1 linha de exportação de gás, 1 linha de importação de gás, 2 linhas de exportação de óleo. Também estão instalados 23 umbilicais de controle.

O MIS-MRL-1(PLEM-1) tem como função principal disponibilizar uma derivação reserva de contingência.

Tanto as linhas dos poços que chegam à plataforma quanto às linhas de exportação são equipadas com válvulas de bloqueio automático do tipo SDV. Em casos de anormalidades essas válvulas fecham conforme procedimento de parada de emergência descrito no item 3.6.

O Anexo 2 mostra o Diagrama Unifilar de Interligação da P-19 com outras instalações.

5 - Descrição do Processo de Perfuração

A unidade não possui sistema de perfuração de poço, por se tratar de uma plataforma de produção de petróleo.

5.1 - SISTEMA DE PERFURAÇAO

5.2 - SISTEMA DE CONTROLE DE POÇO

5.3 - SISTEMA DE CONTROLE, AUTOMAÇÃO E PARADA DE EMERGÊNCIA

6 - Glossário

ANP	Agência Nacional do Petróleo, Gás Natural e Biocombustíveis
Árvore de Natal	Conjunto de válvulas utilizadas para permitir a produção de petróleo de um poço, de forma controlada.
ANM - Árvore de Natal Molhada	Equipamento instalado na cabeça do poço de produção, constituído basicamente por um conjunto de válvulas tipo gaveta, um conjunto de linhas de fluxo e um sistema de controle interligado a um painel na plataforma de produção. Controla a vazão e pressão dos poços.
Calado	Altura de uma embarcação que fica abaixo da linha d'água, durante a operação ou em trânsito.
CIS - Sistema de Controle e Intertravamento	Baseia-se na utilização de Controladores Lógicos Programáveis (PLCs) para execução de funções de controle e intertravamento.
Decks	Diferentes níveis de uma unidade (main deck, lower deck, spider deck, etc.).
ECOS - Estação de Central de Operação e Supervisão.	Recurso de hardware/software especializado no processo e visualização de dados de campo em um formato satisfatório, deixando para outros sistemas a obrigação de coletar os dados.
Heliponto	Área da unidade destinada ao trânsito de aeronaves (helicópteros).
Lâmina d´água	Distância que vai do fundo do mar até a superfície da água.
Mangote	Tubulação flexível de transferência (off-loading) de óleo para o navio aliviador ou para um FSO.
Manifold	Equipamento localizado no leito oceânico cujo objetivo é a equalização das diferentes pressões dos fluxos de cada um dos poços, antes de enviálos às linhas de produção. Da mesma forma esse equipamento controla a vazão dos poços.
MBL	Valor Mínimo da Carga de Ruptura do material.
Modem	Sistema de comunicação que envolve modulação e demodulação de sinais.
Off shore	Relativo a atividades genuinamente oceânicas.
Planta de desidratação	Equipamento destinado a separar a água de outra substância; desumidificador; equipamento utilizado para remover hidrogênio e oxigênio de

	um composto para evitar a formação de água; equipamento utilizado para remoção de água quimicamente combinada ou água de hidratação; equipamento desumidificador de gases.
PLEM - Pipeline end manifold	Manifold submarino constituído de conectores com função principal de disponibilizar interligações entre dutos para manobras entre instalações submersas e de superfície, além de fornecer derivações reservas de contingência.
PLET - Pipeline end termination	O PLET é um equipamento constituído de uma estrutura de assentamento no leito marinho, sistema de conexão vertical, válvula hidráulica e válvula de retenção. A principal função do PLET é fazer a interligação trecho rígido com o trecho flexível das linhas de fluxo.
Riser	Tubulação que liga, através do turret, o FPSO ao sistema submarino. Os risers podem ser de produção ou de injeção. Os risers de produção escoam os fluidos da formação para a FPSO, já os risers de injeção são utilizados para inserir gás ou água de forma a otimizar a produção.
SDV - Shut Down Valve	Elemento final de controle automático acionado pelo sistema de parada de emergência cuja função é bloquear determinado circuito de processo e equipamento que contenha hidrocarboneto sob pressão.
Separador primário bifásico	Vaso localizado no início do processo, promovendo a separação das fases gás / líquido (água + óleo).
Sistema Submarino	Sistema composto pelas linhas de fluxo e estruturas submarinas, dentre as quais destacam-se as árvores de natal
Válvula multivias	Válvula automatizada que pode direcionar fluxo simultaneamente para linha de produção e/ou linha de teste. A válvula tem múltiplas entradas (entre 7 e 8) e apenas 2 saídas. Uma saída direciona o fluxo de um poço individualmente para teste no vaso separador e a outra saída da válvula coleta a produção dos demais poços e direciona para o oleoduto.

ANEXO 1 - DIAGRAMA DE ANCORAGEM

ANEXO 2 - DIAGRAMA DE INTERLIGAÇÃO

ANEXO 3 - FLUXOGRAMA DE PROCESSO 1

ANEXO 4 - FLUXOGRAMA DE PROCESSO 2

ANEXO 5 - FLUXOGRAMA DE PROCESSO 3

IHM Inventory

Ship / Vessel name	PETROBRAS XIX
Flag	Panama
Distinctive No. / Letters	3FHI5
Port of Registry	PANAMA
Type of vessel	Floating storage unit
Gross Tonnage	22589
IMO Number	8753720
Name of Shipbuilder	
Name of Shipowner	BRASPETRO OIL SERVICES CO.
Date of delivery	31/12/1982
IHM Inventory Number	RJN0/2024/8753720/ssf
Revision Number	3.0

This inventory was developed in accordance with the IMO Guidelines for the Development of the Inventory of Hazardous Materials.

The IHM has been developed to cover additional requirements of the EU Ship Recycling Regulation (EU) 1257/2013.

Inventory of Hazardous Materials

IHM Inventory

I-1 Paints and Coating Systems containing materials listed in Annex I and Annex II of Regulation (EU) No 1257/2013 on Ship Recycling.

None detected

No.	Name of equipment or compartment to which the coating is applied	Color of paint	Location	Deck	Additional description	Sample No.	Hazardous Materials	Approxi-mative quantity	Remarks

I-2 Equipment and Machinery containing materials listed in Annex I and Annex II of Regulation (EU) No 1257/2013 on Ship Recycling.

No.	Name of equipment and machinery	Location	Deck	Additional description	Sample No.	Hazardous Materials	Parts where used	Approxi-mative quantity	Remarks
1	Battery	Main Deck	Main Deck	Emergency generator room (DGE 514002) / Fr. 39 - STB	A103	Lead	Battery plates	5 PCS	Confirmed by visual check
2	Battery	Main Deck	Main Deck	Battery room / Fr. 44 - STB	A104	Lead	Battery plates	313 PCS	Confirmed by visual check
3	Mooring winches	Miscellaneous	Lower Deck	Anchorage winch UH GN665101A UH GN665101B UH GN665101C UH GN665101D / Columns FWD (P/S) AFT (P/S) / Fr. 6 - P/S Fr.45 - P/S	A108	PFOS	Hydraulic oil	3.600 m3	Confirmed by visual check
4	Fire protection/fighting system	Cargo Area	Upper Deck	Foam tank (Tk 5424500B) / Fr. 35 - PS	A112	PFOS	Extinguishing agent	0.75 m3	Confirmed by visual check
5	Battery	Main Deck	Main Deck	Diesel Fire Pump MB-UB-542001B / Fr. 44 - STB	A102	Lead	Battery plates	4 PCS	Confirmed by visual check
6	Miscellaneous	Cargo Area	Lower Deck	Hydraulic Oil Tank (Tk UH-121001) / Transfer pump room / Fr. 11 - PS	A110	PFOS	Hydraulic oil	7.6 m3	Confirmed by visual check
7	Fire protection/fighting system	Cargo Area	Upper Deck	Foam tank (Tk 542500A) / Fr. 18 - PS	A113	PFOS	Extinguishing agent	0.75 m3	Confirmed by visual check
8	Fire protection/fighting system	Miscellaneous	Helideck	Foam tank (Tk 542401) / Fr.45 - PS	A111	PFOS	Extinguishing agent	0.935 m3	Confirmed by visual check
9	Battery	Cargo Area	Lower Deck	Battery / Exportation pump room / Fr. 10 - PS	A109	Lead	Battery plates	300 PCS	Confirmed by visual check
10	Battery	Main Deck	Main Deck	Diesel Fire Pump MB-UB-542001A / Fr. 44 - PS	A101	Lead	Battery plates	4 PCS	Confirmed by visual check

I-3 Structure and Hull containing materials listed in Annex I and Annex II of Regulation (EU) No 1257/2013 on Ship Recycling.

None detected

No.	Name of structural element	Location	Deck	Additional description	Sample No.	Hazardous Materials	Parts where used	Approxi-mative quantity	Remarks

Report of visual checks and sampling locations – Contained and PCHM

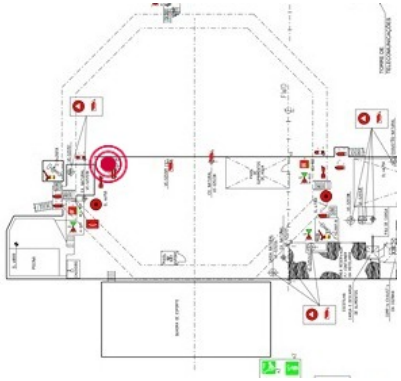
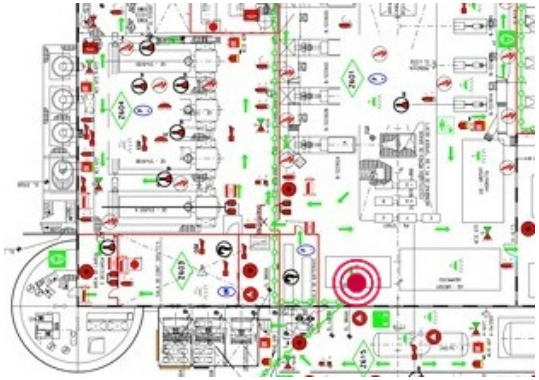
General Interpretation of Risk Assessment Level

Risk Assessment Level	Interpretation of the Recommended Control Action
High	Control measures and suitable safety precautions to be implemented immediately. Flag consultation recommended.
Medium	Safety precautions to be considered as soon as practicable. Flag instructions followed. In interim period, materials re-examined regularly.
Low	No immediate control action considered necessary. Material condition to be maintained. Flag to be informed and instructions followed.

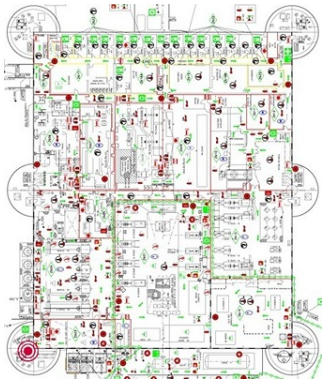
Asbestos Management - No data

Report of visual checks and sampling locations – Contained and PCHM

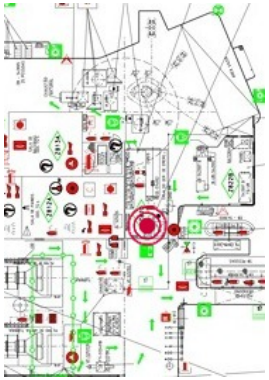
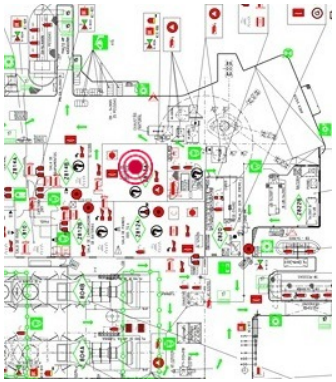
All other HazMats (non Asbestos) Management

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Recommended Action
Helideck Miscellaneous	PFOS	Visual	A111	Contained	0.935 m3	No immediate action required
Fire protection/fighting system-Extinguishing agent-Foam tank (Tk 542401) / Fr.45 - PS						
Lower Deck Cargo Area	PFOS	Visual	A110	Contained	7.6 m3	No immediate action required
Miscellaneous-Hydraulic oil-Hydraulic Oil Tank (Tk UH-121001) / Transfer pump room / Fr. 11 - PS						

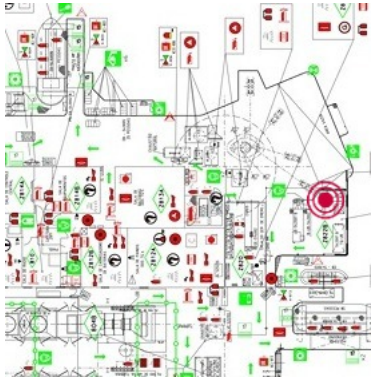
Report of visual checks and sampling locations – Contained and PCHM

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Recommended Action
Lower Deck Cargo Area	Lead	Visual	A109	Contained	300 PCS	No immediate action required
Battery-Battery plates-Battery / Exportation pump room / Fr. 10 - PS						
Lower Deck Miscellaneous	PFOS	Visual	A108	Contained	3.600 m3	No immediate action required
Mooring winches-Hydraulic oil-Anchorage winch UH GN665101A UH GN665101B UH GN665101C UH GN665101D / Columns FWD (P/S) AFT (P/S) / Fr. 6 - P/S Fr.45 - P/S						

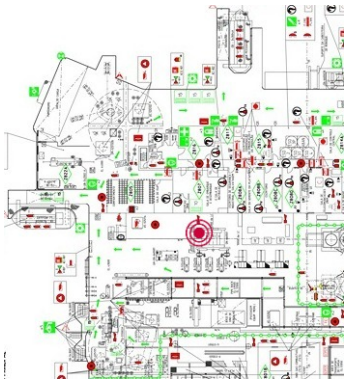
Report of visual checks and sampling locations – Contained and PCHM

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Recommended Action
Main Deck Main Deck	Lead	Visual	A103	Contained	5 PCS	No immediate action required
Battery-Battery plates-Emergency generator room (DGE 514002) / Fr. 39 - STB						
Main Deck Main Deck	Lead	Visual	A104	Contained	313 PCS	No immediate action required
Battery-Battery plates-Battery room / Fr. 44 - STB						

Report of visual checks and sampling locations – Contained and PCHM

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Recommended Action
Main Deck Main Deck	Lead	Visual	A102	Contained	4 PCS	No immediate action required
Battery-Battery plates-Diesel Fire Pump MB-UB-542001B / Fr. 44 - STB						
Main Deck Main Deck	Lead	Visual	A101	Contained	4 PCS	No immediate action required
Battery-Battery plates-Diesel Fire Pump MB-UB-542001A / Fr. 44 - PS						

Report of visual checks and sampling locations – Contained and PCHM

Location / Zone / Deck	Expected Hazardous Materials	Check procedure	Sample No.	Sample result	Quantity	Recommended Action
Upper Deck Cargo Area	PFOS	Visual	A112	Contained	0.75 m3	No immediate action required
Fire protection/fighting system-Extinguishing agent-Foam tank (Tk 5424500B) / Fr. 35 - PS						
Upper Deck Cargo Area	PFOS	Visual	A113	Contained	0.75 m3	No immediate action required
Fire protection/fighting system-Extinguishing agent-Foam tank (Tk 542500A) / Fr. 18 - PS						

Inventory of Hazardous Materials

Hazardous materials per location - Contained and PCHM

		Hazardous materials															
Location / Zone	**Sub-section**	**Asbestos**	**ODS**	**PCB**	**TBT**	**Cybutryne**	**PFOS**	**Cadmium**	**Chromium**	**Mercury**	**Lead**	**PBB**	**PBDE**	**PCN**	**Radioactive Substances**	**SCCP**	**HBCDD**
Main Deck	Electric equipment										4						
Miscellaneous	Mooring equipment						1										
	Miscellaneous						1										
Cargo Area	Miscellaneous						3										
	Electric equipment										1						