	TECHNICAL SPECIFICATION		Nº I-ET-XXXX.XX-1310-969-P4X-001							
	CLIENT:		MASTER DOCUMENT					SHEET:		1 de 28
	JOB:		PLATFORMS DECOMMISSIONING							
	AREA:		FIELD PLATFORM							
SRGE	TITLE:		DECOMMISSIONING OF FIELD PLATFORM					INTERNAL		
								ESUP		
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INDEX OF REVISIONS										
REV.	DESCRIPTION AND/OR REVISED SHEETS									
0	ORIGINAL <u><i>NOTE: The items in this document and its attachments are related to information that may change from project to project. Insert text where highlighted in yellow.</i></u>									
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SUMMARY

1. EXECUTIVE SUMMARY	4
1.1. OBJECTIVE	4
1.2. INTRODUCTION	4
1.3. SCOPE	4
2. REFERENCES	6
2.1. DOCUMENTS	6
2.2. RULES AND STANDARDS	6
3. GENERAL INFORMATION	7
3.1. OVERVIEW OF INSTALLATION BEING DECOMMISSIONING	7
3.2. FIELD LOCATION AND FIELD LAYOUT	8
3.3. PIPELINES AND ADJACENT STRUCTURES	9
3.4. UNDERWATER SCRAP	10
3.5. SEABED SURVEY AND SUPERFICIAL SOIL DATA	10
3.6. MINIMUM REQUIREMENTS AND SPECIAL FEATURES	11
3.7. ENVIRONMENTAL TOPICS	12
3.8. ENVIRONMENTAL CONDITIONS	12
4. DOCUMENTS AND DESIGN CRITERIA	12
4.1. GENERAL DOCUMENTS	12
4.2. STRUCTURAL ANALYSIS	13
4.3. STABILITY ANALYSIS	13
4.4. MOTION ANALYSIS	14
4.5. STATION KEEPING ANALYSIS	14
4.6. LIFTING OPERATIONS	15
4.7. SEAFASTENING	15
5. PREPARATIONS PRIOR TO OPERATION	16
5.1. HSE AND RISK ASSESSMENT	16
5.2. MARINE WARRANT SURVEYOR (MWS)	16
5.3. EQUIPMENT AND PIPELINES CLEANING	16
5.4. REMOVAL OF REMAINING EQUIPMENT AND MATERIALS	16
5.5. MATERIAL IDENTIFIED AS NORM	17
5.6. UNDERWATER CUTTING SERVICE	17
5.7. DREDGING SERVICE	18
5.8. DIVING SERVICE	18
5.9. WELDING AND NDT INSPECTION	18
5.10. STRUCTURE SURVEY	19
5.11. UNDERWATER SCRAPS	19
6. NAVIGATION	19
6.1. NAVIGATION ROUTE AND SHELTERED PORT	19
6.2. COMMUNICATION	19
6.3. POSITIONING AT INSTALATION AREA	20
6.3.1. WRECKS	20
6.3.2. MILITARY ACTIVITIES	20
6.3.3. SUBMARINE CABLES	20
7. DECOMMISSIONING ACTIVITIES	20
7.1. TOPSIDE	21
7.2. JACKET	21
7.3. RISERS	22
7.4. SUMP AND CASING	23
8. TRANSPORT AND FINAL DISPOSAL	24



TECHNICAL SPECIFICATION	Nº I-ET-XXXX.XX-1310-969-P4X-001	REV.: 0
AREA:	FIELD PLATFORM	SHEET: 3 / 28
TITLE:	DECOMMISSIONING OF FIELD PLATFORM	INTERNAL
		ESUP

8.1.	GENERAL MATERIAL	24
8.2.	MATERIAL IDENTIFIED AS NORM	24
8.3.	MARINE GROWTH	24
9.	POST-DECOMMISSIONING	25
9.1.	POST-DECOMMISSIONING DEBRIS CLEARANCE AND VERIFICATION	25
9.2.	FINAL DECOMMISSIONING REPORT	25
	ANNEX I – UNDERWATER SCRAPS	26
	ANNEX II – LIST OF MATERIALS AND EQUIPMENT FROM PLATFORMS.....	27
	ANNEX III – SOIL DATA.....	28

DRAFT

TECHNICAL SPECIFICATION	Nº I-ET-XXXX.XX-1310-969-P4X-001	REV.: 0
AREA:	FIELD PLATFORM	SHEET: 4 / 28
TITLE:	DECOMMISSIONING OF FIELD PLATFORM	INTERNAL
		ESUP

1. EXECUTIVE SUMMARY

1.1. OBJECTIVE

The purpose of this specification is to provide technical information for the Decommissioning of the fixed platform.

1.2. INTRODUCTION

The platform is installed in field, located 6km north east of the state coast, in water depth of approximately 19m. The coordinates of the platform are:

Latitude , Longitude or UTM (SIRGAS 2000).

The platform is located in front of a Biological Reserve.

The field was discovered in 1977. The platform was installed in 1979 and production ceased in 2010. The platform exported oil and gas to the station, on the coast, through three 19 km pipelines (a 6" oil pipeline and two 4" and 10" gas pipelines).

The platform consists of a jacket and two deck levels. In addition, it has an extension, on the second deck, installed to relocate the helideck. Topside was installed in two sections and connected at elevation 16.000 by welding.



Figure – Picture of the platform

1.3. SCOPE

The development of the platform Decommissioning, including all Project, Engineering, Procurement and offshore execution, covers:

- Execution of surveys including platform, pipelines and structures, and environmental surveys to support the development of the Decommissioning.
- Removal of topside.
- Removal of substructure including seabed debris.
- Transportation, dismantlement and disposal.

The scope of services is detailed throughout this technical specification. Summary presented below.

Structure	Type	Category	Proposed Decommissioning Scope
Topside	One module	Surface installation	Complete removal, dismantlement and disposal.
Jacket	Fixed steel jacket	Substructure	Complete removal (3m below seabed), dismantlement and disposal. The jacket footings and the drilling template will be left in place.
Pipelines	See item 3.3	Subsea	The pipelines have been flushed clear of hydrocarbons and shall be left in situ. Pipeline spools, umbilicals, SSIVs and structures associated with platform removal activity shall be removed and returned to shore for disposal.
Conductor	30" conductor with 20" inner production column.	Substructure	Conductors will be completely removed by a drilling rig prior to the decommissioning activities.
Piles	34" pipe, with 28" inner pipe and annular cement layer	Substructure	The cuttings pile shall be left in situ to degrade and to allow the seabed to recover naturally.
Wells		Subsea Installation	The wells are plugged and abandoned. Removed items have been returned to shore for reuse, recycling or disposal.
Underwater scraps	See item 3.4	Subsea	Underwater scraps shall be completely removed and returned to shore for disposal. Seabed survey shall be undertaken to identify the scraps.
Remaining Equipment and materials	See item 5.4	Surface installation	All remaining equipment and materials shall be removed, segregated and discarded as scrap and be transported to the disposal area.
Seabed debris	See item 9.1	Subsea	Seabed survey shall be undertaken to identified and catalogued. Seabed debris shall be completely removed and returned to shore for disposal.
Other			

Table **FIELD PLATFORM** – Summary of Proposed Decommissioning

The removal methodology of the platform is part of CONTRACTOR strategy. The removal method shall be issued for PETROBRAS approval.

TECHNICAL SPECIFICATION	I-ET-XXXX.XX-1310-969-P4X-001	Nº	REV.: 0		
		AREA:	FIELD PLATFORM	SHEET:	6 / 28
		TITLE:	DECOMMISSIONING OF FIELD PLATFORM	INTERNAL	
		ESUP			

2. REFERENCES

2.1. DOCUMENTS

- [01] I-ET-XXXX.XX-XXXX-931-XXX-001 Metocean Data
- [02] DE-XXXX.XX-XXXX-942-XXX-001 Platform General Arrangement
- [03] DE-XXXX.XX-XXXX-942-XXX-002 Platform Sections
- [04] DE-XXXX.XX-XXXX-942-XXX-003 Platform Field Layout

2.2. RULES AND STANDARDS

Rules, codes and standards from the list below shall be employed for decommissioning design. Latest edition of each one shall be used, excepted were indicated. Rules, codes and standards other than those listed shall be submitted to PETROBRAS for approval. In case of conflict with requirements, rules, regulations and specifications contained in this technical specification, PETROBRAS shall be consulted to define requirements to be followed.

- [05] AISC 335-89 Specification for Structural Steel Buildings - Allowable Stress Design and Plastic Design - 9th Edition
- [06] API RP 2A Planning, Designing, and Constructing Fixed Offshore Platforms - Working Stress Design
- [07] DNVGL-OS-C201 Structural design of offshore units – WSD method
- [08] DNVGL-RP-N102 Marine operations during removal of offshore installations
- [09] DNVGL-ST-N001 Marine operations and marine warranty
- [10] ISO 19901-5 Specific requirements for offshore structures - Part 5 Weight control during engineering and construction
- [11] DNVGL-RP-N201 – Lifting appliances used in subsea operations
- [12] AWS D1.1 - Structural Welding – Steel
- [13] N-1710 – Coding of technical engineering documents (Petrobras Standard)
- [14] CNEN NN-3.01 – Diretrizes Básicas de Proteção Radiológica (Basic Guidelines for Radiological Protection)
- [15] CNEN NN-5.01 – Transporte de Materiais Radioativos (Transport of Radioactive Materials)
- [16] NORSOK N-003 – Actions and action effects
- [17] CONAMA- RESOLUÇÃO 275/2001
- [18] NOTA TÉCNICA – CGPEG / DILIC / IBAMA / Nº 01/11
- [19] NOTA TÉCNICA – CGPEG / DILIC / IBAMA / Nº 08/12
- [20] INTERNATIONAL CONVENTION ON THE CONTROL OF HARMFUL ANTI FOULING SYSTEMS ON SHIPS, 2001
- [21] RESOLUTION MEPC.207(62), IMO
- [22] NORMAM-15/DPC – Normas da Autoridade Marítima para Atividades Subaquáticas
- [23] NORMAM-17/DHN – Normas da Autoridade Marítima para Auxílios à Navegação
- [24] NR-15 – Atividades e Operações Insalubres
- [25] IMCA D 014 – International Code of Practice for Offshore Diving
- [26] RESOLUÇÃO ANP 817/2020

3. GENERAL INFORMATION

3.1. OVERVIEW OF INSTALLATION BEING DECOMMISSIONING

The estimated main data of platform components are listed on Table [redacted].

Field:		Distance from nearest coastline (km)				
Structure	Location	Larger external dimensions (m)			Weight (ton)	Reference
		Length	Width	Height		
Fuel Tank						
Casing						
Sump						
Upper deck						
Lower deck						
Jacket *						

Table [redacted] – Platform Items Size and Weight

(1) Weight are indicated without safety factors or contingency.

(*) The jacket weight excludes the weight of conductors and jacket piles

Weight and dimensions shown on table [redacted] were estimated. It cannot be used for design. CONTRACTOR shall verify and confirm it for validation.

CONTRACTOR shall calculate both total weight and final COG (center of gravity), taking into account the current state of the platform structures and the remaining extra weight (equipment, piping, marine growth, trapped water, plugged soil, etc.).

Marine growth shall be in accordance with NORSOK N-003 [16] or by local measurements attested by a report submitted for PETROBRAS comments and approval. The removal of marine growth at offshore location is not permitted.

As reference, platform layout can be seen in Figure [redacted] and [redacted].

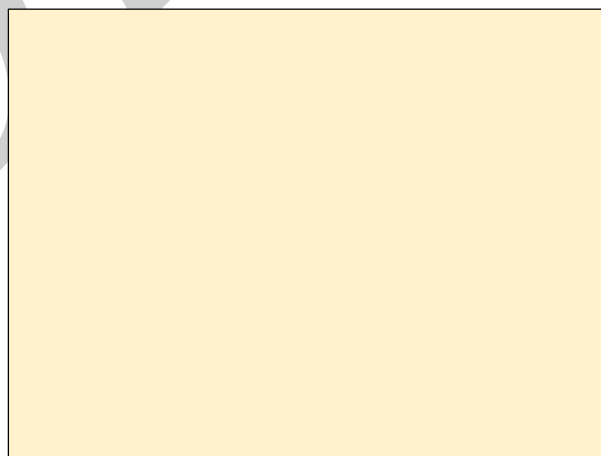


Figure [redacted] – Platform layout (side view)

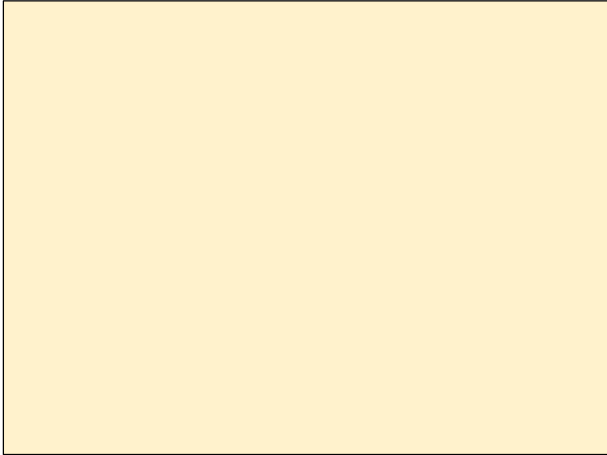


Figure [] – Platform layout (top view)

3.2. FIELD LOCATION AND FIELD LAYOUT

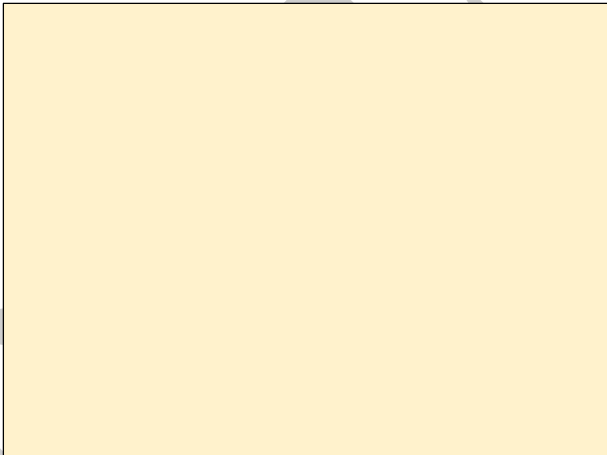


Figure [] – Field Location

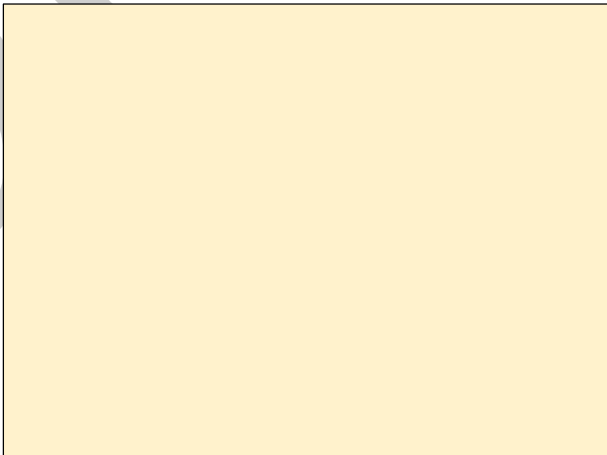


Figure [] – Field Layout

3.3. PIPELINES AND ADJACENT STRUCTURES

The pipelines, flowlines and umbilicals adjacent of the platform are shown in Table [redacted].

Description	Name	Diameter (in)	Length (km)	Description of Component Parts ¹	Product Conveyed ²	From – To End Points	Burial Status ³	Pipeline Status ⁴	Current content ⁵

Table [redacted] – List of Adjacent Facilities

- 1 e.g. Concrete; Steel; Umbilical; Flexible; Bundle*
- 2 e.g. Oil; Gas; Water; Chemicals*
- 3 e.g. Laid on seabed; Trenched; Trenched and Buried; Spanning*
- 4 e.g. Operational; Out-of-use*
- 5 e.g. Cleaned; Flushed; Hydrocarbons and/or Chemicals in line*

CONTRACTOR's scope for pipeline decommissioning is indicated in item 7.

The Figures below illustrate the location of the risers on the emerged part of the jacket.

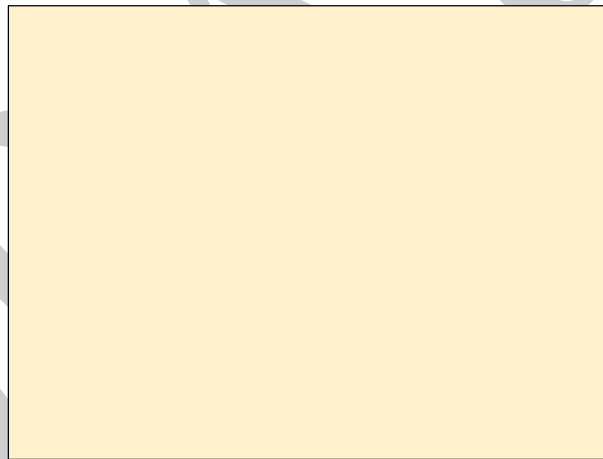


Figure [redacted] – Risers location on emerged part of jacket



Figure [redacted] – Risers hang-off location

3.4. UNDERWATER SCRAP

Over the life of the platform some items (underwater scrap) may have accumulated around the platform.

Registered underwater scraps found around Field area are presented in ANNEX . It consists of scraps found during a geodetic survey, pipeline sections and two containers that fell down into seabed.

CONTRACTOR's scope for underwater scrap removal is indicated in item 5.11.

3.5. SEABED SURVEY AND SUPERFICIAL SOIL DATA

During the life of the platform some drilling rigs have been utilized to perform well interventions and well abandonment.

Figure presents the available drilling rig spudcan footprints and Table presents the spudcan penetration depth.

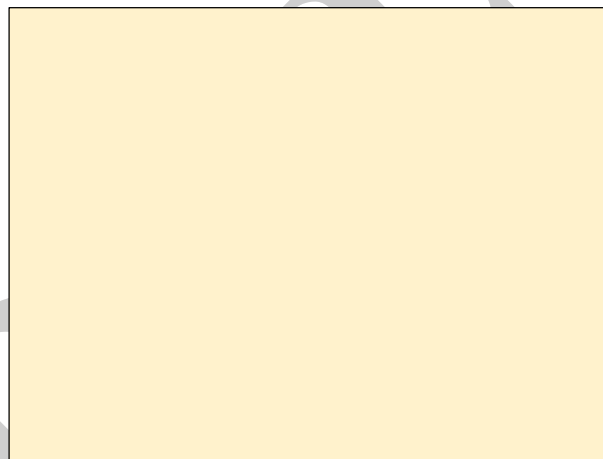


Figure – Drilling rig spudcan footprint

Platform	Spud can penetration (m)		
	FWD	PS	SB

Table – Drilling rig penetration depth

If the rigs spudcan footprints can interfere in any of the decommissioning activities, CONTRACTOR shall assess the need to provide a visual seabed survey in order to check the current seabed configuration and a report shall be submitted to PETROBRAS.

Field soil data can be found in ANNEX as reference.

PETROBRAS will provide information about soil data and bathymetry around the platform. It is important to mention that soil data provided may have been acquired in original configuration of seabed, but during the life of the platform the seabed could have been disturbed in some locations due to the rigs spudcan penetration or due to possible presence of sand waves and scour effects.

TECHNICAL SPECIFICATION	Nº I-ET-XXXX.XX-1310-969-P4X-001	REV.: 0
AREA:	FIELD PLATFORM	SHEET: 11 / 28
TITLE:	DECOMMISSIONING OF FIELD PLATFORM	INTERNAL
		ESUP

The soil parameters interpretation for design purposes is CONTRACTOR responsibility. If CONTRACTOR strategy foresees any structure to be positioned on seabed, CONTRACTOR shall assess the need to provide a new soil data acquisition in order to check the current seabed soil strength. CONTRACTOR shall issue a report and submit to PETROBRAS comments and approval.

3.6. MINIMUM REQUIREMENTS AND SPECIAL FEATURES

The minimum requirements and special features showed below shall be complied by CONTRACTOR/BIDDER and related evidence shall be presented afterward bidding and before contract signature.

CONTRACTOR/BIDDER shall attest property or availability of at least one derrick barge fitted to undertake the contracted services, or a jack-up barge or DP installation vessel.

CONTRACTOR / BIDDER shall provide resumes for each of the Key Personnel onboard (Offshore Installation Manager, Field Engineer, Deck and Welding Foreman and Crane Operators) attesting at least ten years' experience of background duties on marine installation.

CONTRACTOR/BIDDER shall provide engineering support on its own to manage with technical procedures and analysis on demand by this Technical Specification.

Main CONTRACTOR/BIDDER vessels (main vessel, cargo barge and tug boats), deck equipment, outfits and ancillary systems (cranes, winches, cutting system, diving system) shall be dimensioned in order to comply with decommissioning tasks.

Main vessel (derrick barge, jack-up barge or DP vessel) shall be able to operate in full capacity for at least 70% of offshore scheduled time regarding available environmental. See Metocean Data, Reference [01]. Motion analysis shall be provided for warrant information.

Main vessel shall be rigged with MRU (motion reference unit) like device and data processing software to display and record in real time crane boom tip vertical acceleration and displacement as well main hull motions (roll, pitch, and heave).

In case of the main vessel is an anchored unit, the mooring system (winches, wire cables, anchors) shall be suitable to 50 m water depth barge mooring. Mooring calculation software shall be available on bridge.

Main installation vessel shall have a helideck rated for minimum 8000 lbs take-off.

An office room and two cabins with bathroom (2x2 persons) shall be reserved for PETROBRAS onboard staff.

The office room shall be furnished with free internet and telephone (long distance call) ready to use. Two maritime VHF hand-talkies (spare batteries and charger) on the same CONTRACTOR operational frequencies shall be provide to PETROBRAS staff use.

PETROBRAS will provide air transportation of its own workers on board of the main vessel.

CONTRACTOR crew shift change shall be done by his own means and options. Personnel transfers by crane is only allowed at daylight conditions and by certified baskets.

Eventual MEDEVAC (medical evacuation) during decommissioning shall be under CONTRACTOR responsibility.

TECHNICAL SPECIFICATION	Nº I-ET-XXXX.XX-1310-969-P4X-001	REV.: 0
AREA:	FIELD PLATFORM	SHEET: 12 / 28
TITLE:	DECOMMISSIONING OF FIELD PLATFORM	INTERNAL
		ESUP

3.7. ENVIRONMENTAL TOPICS

The platform is located in front of a Biological Reserve. The platform decommissioning schedule is restricted from beginning of March to end of September due to mandatory constraints issued by Brazilian national environmental agency (Reference [REDACTED]) due to maritime turtle nesting season at location.

CONTRACTOR shall follow and comply with all Brazilian environmental laws and rules even though not mentioned herein.

CONTRACTOR must be aware of the presence of [REDACTED] Coral ([REDACTED]) and its management shall be according to Brazilian environmental laws and rules.

CONTRACTOR vessels and equipment may be submitted to environmental authority (IBAMA) surveys in order to verify legal compliance.

Lack of information about Brazilian environmental laws and rules shall not be accepted as fair vindication to not accomplishment of contractual duties.

In case of CONTRACTOR disregarding of environmental laws and rules and aftermath authority sanctions the CONTRACTOR shall be responsible for all contractual consequences.

No contractual claims will be allowed based on environmental shortcomings and malpractices done by CONTRACTOR.

3.8. ENVIRONMENTAL CONDITIONS

Ocean and meteorological forecasting service shall be contracted by CONTRACTOR to predict the weather conditions from established date, intensifying the analysis few days in advance from lifting planning dates. Such analysis will be primordial for operation viability decision.

The operational limits of the vessels that will be used for operations must be previously established.

As reference, ocean and meteorological statistical data from [REDACTED] Field are informed at Reference [REDACTED]. These data cannot be used for deterministic forecasting of future conditions.

4. DOCUMENTS AND DESIGN CRITERIA

4.1. GENERAL DOCUMENTS

CONTRACTOR shall issue a Project Document List that covers the subjects of Items 4 to 10.

CONTRACTOR shall issue a Guideline for Decommissioning in order to describe all activities that will be carried out along the entire preparation, removal and disposal tasks.

CONTRACTOR shall issue Technical Procedures detailing all activities steps that will be carried out along the entire decommissioning.

All issued documents shall comply with all requirements described in Item 2.2 and Item 4. Any change, regarding these requirements, shall be approved by PETROBRAS. The International System of Units (SI) shall be used in all issued documents.

TECHNICAL SPECIFICATION	Nº I-ET-XXXX.XX-1310-969-P4X-001	REV.: 0
AREA:	FIELD PLATFORM	SHEET: 13 / 28
TITLE:	DECOMMISSIONING OF FIELD PLATFORM	INTERNAL
		ESUP

All documents shall be issued for PETROBRAS and Marine Warranty Surveyor comments and approval. Any other document, which PETROBRAS judge necessary for execution of any activity of the entire decommissioning, shall be issued for PETROBRAS comments and approval.

4.2. STRUCTURAL ANALYSIS

A site survey and structural inspection (thickness measurement, visual, LPI, MPI, and UT) is necessary to update the actual conditions of all structures or any difference between the drawings and the actual structure. All areas with severe corrosion on structural member shall be assessed.

Trapped water, plugged soil and marine growth shall be taken into account in all analysis. Marine growth shall be in accordance with NORSOK N-003 [18] or by local measurements attested by a report submitted for PETROBRAS comments and approval.

CONTRACTOR shall provide, but not restricted to, the documents listed below:

- Design premises.
- Drawings.
- Reports.
- Weight control report.
- Survey reports.
- Inspection and thickness measurement plan.
- Structural stability and stress check analysis after any member cut.
- Barges bumpers and guides verifications.
- Structures lifting analysis.
- Lifting points local analysis.
- Barge hull analysis and reinforcements.
- Structure foundations on barge deck design.
- Bumpers design.
- Tubular joints and connections check.
- Welding verification.

Reference documents AISC 335-89 [07] and API RP 2A [08] shall be used for structural analysis. Adequate contingency factors shall be applied to all weights, according with the confidence in each weight value and references DNVGL-RP-N102 [10] and ISO 19901-5 [12]. Adequate lifting factors shall be applied for all lift analysis according to DNVGL-ST-N001 [11]. Structural members must be classified as special, primary and secondary for lift and transportation load cases, according with DNVGL-OS-C201 [09], special and primary members important for mating in the transport barge shall not be considered as scrap. If necessary, structural reinforcement shall be installed on structures and on barge hull.

In case CONTRACTOR strategy foresees any structure to be positioned on seabed, in any operation step, surface soil investigation shall be provided as per Item 3.4. The structure settlement and soil friction, adhesion and plugged soil etc. shall be assessed for lifting forces evaluation. The crane shall have capacity to lift the partially buried structure, taking into account its force increased effects.

4.3. STABILITY ANALYSIS

CONTRACTOR shall guarantee sufficient positive stability and reserve buoyancy for the floating units directly involved in operation during all stages. Intact and damage stability analysis shall be submitted for PETROBRAS comments and approval.

TECHNICAL SPECIFICATION	Nº I-ET-XXXX.XX-1310-969-P4X-001	REV.: 0
AREA:	FIELD PLATFORM	SHEET: 14 / 28
TITLE:	DECOMMISSIONING OF FIELD PLATFORM	INTERNAL
		ESUP

CONTRACTOR shall submit Stability analysis for the floating structures directly involved in operation (such as floating crane and unit in which decommissioning items will be placed) for PETROBRAS comments and approval. The analysis shall present at least the following loading conditions:

- Transit to location (Field).
- Decommissioning Loading Conditions*.
- Transit to Quay.

*Decommissioning loading conditions shall be as many as it is necessary to describe in detail the stability behavior of the floating unit throughout the operation.

Each loading condition shall contain at least the following information:

- Draft (aft, midship and forward).
- Inclination of the unit (heel and trim).
- Weight detailed description and distribution (lightweight and deadweight).
- Shear forces and bending moments of the floating unit.
- Center of gravity position including free surface correction.

4.4. MOTION ANALYSIS

CONTRACTOR shall submit motion analysis of all floating units directly involved in operation for PETROBRAS comments and approval.

As a minimum, CONTRACTOR shall consider the following loading conditions in the analysis:

- Beginning of the decommissioning operation.
- Intermediate phase of the decommissioning operation.
- End of the decommissioning operation.
- Transit to quay.

For each loading condition, CONTRACTOR shall present at least the following data:

- Inertia matrix.
- Motions natural periods (heave, roll and pitch).
- Linear equivalent viscous damping considered.
- RAO (Response Amplitude Operator) curves and tables with their corresponding phase, for the Unit's 6 (six) degrees of freedom.
- Motions at center of gravity of the floating structure.
- Accelerations at center of gravity for the floating structure.
- Accelerations at key points for foundations and fastenings design.
- Short term response curves for motions and accelerations at center of gravity.

Design environmental condition for Weather Unrestricted Operations, as per reference DNVGL-ST-N001 [11]. Marine Warranty Survey Approval of Marine Operations shall be considered. As reference, metocean wind, wave and current data are presented at reference [redacted].

4.5. STATION KEEPING ANALYSIS

CONTRACTOR shall submit station keeping analysis of all floating units directly involved in operation for PETROBRAS comments and approval.

TECHNICAL SPECIFICATION	Nº I-ET-XXXX.XX-1310-969-P4X-001	REV.: 0
AREA: FIELD PLATFORM	SHEET: 15 / 28	
TITLE: DECOMMISSIONING OF FIELD PLATFORM	INTERNAL	
	ESUP	

It is CONTRACTOR scope of work to guarantee that floating units directly involved in analysis will keep its position properly in operation and survival conditions.

Design environmental condition for Weather Unrestricted Operations, as per reference DNVGL-ST-N001. Marine Warranty Survey Approval of Marine Operations shall be considered. As reference, metocean wind, wave and current data are presented at Reference **_____**.

If any DP positioning vessel is chartered in decommissioning, CONTRACTOR shall guarantee its station keeping capabilities to proper operation and survival conditions.

Anchor patterns shall be issued in the case of moored units.

4.6. LIFTING OPERATIONS

Regarding lifting activities, CONTRACTOR shall present all related documentation for PETROBRAS and MWS approval, such as:

- Calculations report (crane capacity, lifting accessories, auxiliary winches etc.).
- Structural Lifting Analysis (as indicated in item 4.2).
- Operational Sequence.
- Barges positioning plan.
- Barges position and mooring arrangements.
- Barge ballast control.
- Rigging arrangement.
- Lifting procedure.
- Drawing showing lifting clearances.
- Operation limits.
- Lifting accessories certificates (slings, shackles, spreader bars, synthetic ropes etc.).
- Certificates (crane, vessels, winches etc.).
- Guides and bumpers.
- Drawings.
- NDT certificates (padeyes, new structures, lifting accessories etc.).

4.7. SEAFASTENING

CONTRACTOR shall present all seafastening activities related documentation for PETROBRAS and MWS approval, such as:

- Calculations.
- Barges positioning arrangement.
- Seafastening accessories certificates (structural pipes, slings, shackles, synthetic ropes etc.).
- Barge certificate;
- Drawings;
- Seafastening NDT inspection plan;
- Structural design: seafastening members, barge reinforcements, grillage, guides and bumpers.
- Safety Assessment.

TECHNICAL SPECIFICATION ^{Nº} I-ET-XXXX.XX-1310-969-P4X-001	REV.: 0
	AREA: FIELD PLATFORM
	SHEET: 16 / 28
TITLE: DECOMMISSIONING OF FIELD PLATFORM	INTERNAL
	ESUP

5. PREPARATIONS PRIOR TO OPERATION

Before platform removal, some preliminary activities shall be performed by the CONTRACTOR. These activities are listed below.

5.1. HSE AND RISK ASSESSMENT

CONTRACTOR shall comply with Rules and Standards (Item 2.2) and mainly, but not restricted to DNVGL-RP-N201 [13], chapter 5.11 – HSE management system.

Risk Analysis shall be issued in compliance with Item 5.1 - Appendix A.1 of reference document DNVGL-RP-N201 [13], which shall be done by CONTRACTOR and presented to PETROBRAS evaluation prior to initiate each operation.

Risk management shall be applied to whole decommissioning project to reduce the effects of hazards and limit overall risks.

HAZOP / HAZID techniques shall be established to identify, prevent and mitigate hazards from early navigation step to final scrap disposal.

On site risk evaluation is mandatory prior to critical operations.

5.2. MARINE WARRANT SURVEYOR (MWS)

CONTRACTOR shall hire a worldwide Marine Warranty Surveyor (MWS) company in order to provide certification of all decommissioning procedures, calculations and site operations.

The MWS company shall have previous experience on decommissioning activities.

MWS main features are, but not restricted to:

- Issue Statements of Acceptability (SoA) to documents reviews of engineering calculations, drawings, analysis and operational procedures.
- Attendance to witness of critical operations and issuance of Certificate of Approval (CoA) of lifting activities.

CONTRACTOR shall consider any of the following class societies to undertake certification duties: ABS (American Bureau of Shipping); DNVGL (Det Norske Veritas), BV (Bureau Veritas) or LR (Lloyd's Register).

Others class societies may be proposed by CONTRACTOR but shall be submitted to prior PETROBRAS approval.

5.3. EQUIPMENT AND PIPELINES CLEANING

PETROBRAS performed an initial cleaning on the pipelines. CONTRACTOR shall carry out the cleaning and inertization of these lines and issue a gas free certificate before the start of cutting activities.

Processing Plant piping and fittings were cleaned and dismantled. Platform do not have a production storage tank.

Fuel tank, scrubber, diesel tank and sump have all been drained but may contain hydrocarbon residues. Contractor must evaluate the appropriate safety procedures for its removal.

5.4. REMOVAL OF REMAINING EQUIPMENT AND MATERIALS

CONTRACTOR shall assess the need to remove equipment and any materials separately from the platform structures.

All equipment and materials shall be segregated and discarded as scrap and be transported to the disposal area.

A list of remaining equipment is presented in ANNEX . This list shall be used just as reference. Any other remaining equipment and materials shall be removed.

5.5. MATERIAL IDENTIFIED AS NORM

According to reference , materials were identified with the presence of NORM (Natural Occurring Radioactive Material).

These materials are segregated at production deck nº and identified, as indicated in figures of ANNEX . The estimated weight and volume are .

Any other remaining materials with presence of NORM shall be removed by CONTRACTOR.

Handling, load unitization and transportation of these materials shall be carried out in accordance with appropriated standards by CONTRACTOR, as described in Item 8.2.

These materials shall be conditioned in specific containers, segregated from other materials.

According with reference , these materials identified with NORM do not present any handling restriction since dose rate levels emitted by them do not present values above individual dose limit (for Member of the Public) established by reference CNEN NN-3.01 [16]. Any radiation protection requirements such as, the use of thermoluminescent dosimeters (TLD), shielding, or working time restriction, are dispensed.

5.6. UNDERWATER CUTTING SERVICE

CONTRACTOR shall provide underwater cutting service.

All jacket piles shall be cutted 3.0 m (three meters) below seabed level, according to reference document "Resolução ANP nº 817/2020" [28].

Steel risers shall be cutted at seabed level after pipe bend on horizontal section of pipelines.

Umbilicals and flowlines terminal heads shall be disconnect from hang-off points and safely placed on the seabed, nearby platform base.

Table shows the required underwater cutting activities.

Item	Location	Quantity	Specification	Place of Cutting
Main leg piles				3.0 below seabed
Steel Pipeline				Seabed level
Conductors				3.0 below seabed
Others				

Table – Underwater cutting activities

TECHNICAL SPECIFICATION	Nº I-ET-XXXX.XX-1310-969-P4X-001	REV.: 0
AREA:	FIELD PLATFORM	SHEET: 18 / 28
TITLE:	DECOMMISSIONING OF FIELD PLATFORM	INTERNAL
		ESUP

CONTRACTOR shall define the strategy and methodology for underwater cutting and shall submit to PETROBRAS approval.

5.7. DREDGING SERVICE

Unless the adoption of internal pile cutting appliance, dredging service may be necessary to reach pile cutting section 3.0 m below seabed level and enable fair cutting device assembling and operation.

CONTRACTOR shall provide dredging service in order to dredged adequate area around platforms allowing cut at the depth of 3.0 m below seabed for main piles and risers. A study analyzing slope stability due to dredging service shall be performed and be issued. If necessary, soil investigation shall be carried out.

Dredging volume and soil slope stability around piles due to dredging shall be considered and checked by CONTRACTOR. A report shall be issued.

Soil data is shown in item 3.4 of this document. Surface changes or disturbances may be observed possible by sand waves or rigs spudcan penetration in soil.

The soil parameters analysis for design purposes is CONTRACTOR responsibility for any decommissioning duty.

Dredging service can be suppressed if CONTRACTOR presents any other strategy for pile and conductor cutting. It shall be submitted for PETROBRAS comments and approval.

All underwater works shall be monitored and recorded by online TV system. A monitoring plan shall be issued.

5.8. DIVING SERVICE

CONTRACTOR shall provide diving service to assist underwater works such as inspections, dredging, cutting, seabed debris clean up, rigging installations and reports.

All diving systems and procedures shall be class certified and comply international standards issued by IMCA International Code of Practice for Offshore Diving and Brazilian rules NR-15 [26] and NORMAM-15 [24].

All underwater works shall be monitored and recorded by online TV system. A monitoring plan shall be issues.

5.9. WELDING AND NDT INSPECTION

All welding services (padeyes to be installed, reinforcement of structural members, seafastening etc.) shall be instructed by qualified welding procedures, as well as welders, inspectors, consumables etc. under the terms of reference AWS D1.1 [14].

CONTRACTOR shall provide NDT inspections for all lifting accessories, reinforcements and other structure during fabrication and installation. The welding inspection category shall be in accordance with DNVGL-ST-N001 [11]. Lifting points, spreader bars connections and seafastening connections shall be classified as special structures and are inspection category I. The bars of seafastening and spreader bars shall be classified as primary structures and are inspection category I.

TECHNICAL SPECIFICATION	Nº I-ET-XXXX.XX-1310-969-P4X-001	REV.: 0
AREA:	FIELD PLATFORM	SHEET: 19 / 28
TITLE:	DECOMMISSIONING OF FIELD PLATFORM	INTERNAL
		ESUP

Ultrasonic lamination testing of barge deck plating and transported structures should be carried out. The inspection category shall always be the most restrictive category when different category inspection members are connected.

5.10. STRUCTURE SURVEY

CONTRACTOR shall provide survey of platforms structure on a date prior to the operation to assess the actual condition of the platform and provide information for the development of the design as described in item 4.

CONTRACTOR shall issue a detailed inspection plan and procedure prior to the execution of the inspection for Petrobras approval.

Contractor shall issue an inspection report containing at least, but not restricted to, a detailed description and figures of the platform condition with focus on inspection traceability.

5.11. UNDERWATER SCRAPS

CONTRACTOR shall remove all underwater scraps located around the field platforms area and described at ANNEX and item 3.4.

A survey shall be carried out in a grid with m x m area, forming a quadrilateral with vertices in the coordinates .

As reference, ANNEX presents the previous results of underwater inspections around the platforms. Any additional underwater scrap (not stated in ANNEX) identified during the survey mentioned above shall be removed by CONTRACTOR.

6. NAVIGATION

This section describes the maritime operations required to all Field navigation routes.

CONTRACTOR shall issue a navigation plan of his main vessels, from departure point to the Brazilian port selected to proceed custom clearance, Port State Control and HSE inspections. And from the Brazilian arrival port to field site. All routes for scrap transporting shall also be informed.

Brazilian flag vessels do not demand custom clearance but shall comply all Flag State Control rules.

6.1. NAVIGATION ROUTE AND SHELTERED PORT

CONTRACTOR shall present, for all vessels involved in the operation, a plan indicating at minimum the route (main waypoints), the appropriated sheltered port, in case of adverse weather conditions and E.T.A (Estimated Time of Arrival).

6.2. COMMUNICATION

CONTRACTOR shall present daily report informing all relevant information about navigation, such as:

- Vessel geographic coordinates.

TECHNICAL SPECIFICATION	Nº I-ET-XXXX.XX-1310-969-P4X-001	REV.: 0
AREA:	FIELD PLATFORM	SHEET: 20 / 28
TITLE:	DECOMMISSIONING OF FIELD PLATFORM	INTERNAL
		ESUP

- Environmental conditions.
- Distance to travel.
- Actual course.
- Travelled distance.
- E.T.A.
- Average speed.
- Maximum speed.
- General observations.

6.3. POSITIONING AT INSTALATION AREA

After arriving at the Field, vessels shall perform standard tests on their navigation and positioning systems in order to guarantee a safe and precise operation. Main vessel shall approach and keep position to start basic decommissioning tasks based on previous Positioning Plan approved by PETROBRAS.

In case of more than one positioning option, CONTRACTOR, in agreement with PETROBRAS representative may decide on the safest positioning taking into account the environmental conditions on the day of the operation.

If for any reason the main vessel has to abandon location during decommissioning all remaining structures shall be keep navigations lights on during the period of vessel absence according to Brazilian nautical rule NORMAM-17.

6.3.1. WRECKS

There are no charted shipwrecks in the immediate vicinity (500m radius) of .

6.3.2. MILITARY ACTIVITIES

No routine military activities are known to occur in the vicinity of .

6.3.3. SUBMARINE CABLES

There are no known submarine telecommunications or power cables in the vicinity of .

7. DECOMMISSIONING ACTIVITIES

Before starting activities, the CONTRACTOR must ensure that all safety measures have been taken and all analyses and mitigation measures have been carried out.

The removal method must be in accordance with the criteria of the Brazilian environmental agency.

The method and sequence of activities planned to perform platform decommissioning is responsibility of CONTRACTOR and shall be issued for PETROBRAS approval.

PETROBRAS will provide all available information about platform structure that will be remove.

TECHNICAL SPECIFICATION	Nº I-ET-XXXX.XX-1310-969-P4X-001	REV.: 0	
		AREA: FIELD PLATFORM	SHEET: 21 / 28
		TITLE: DECOMMISSIONING OF FIELD PLATFORM	
		INTERNAL	
		ESUP	

7.1. TOPSIDE

Topsides Description: The Platform Topside Structure comprises levels and weighs tons. The lower level is the cellar deck with process, hydraulic pressure equipment and wells. The m x m main deck supports the control room, generation and temporary accommodation facilities with a pedestal crane and vent boom. The main deck is m above sea level. A helideck is located at the upper level.

The topsides must be completely removed and returned to shore for reuse, recycling or disposal.

The CONTRACTOR must describe the methods that will be used for topside decommissioning.

Figure and , Illustrate the topside overview.



Figure [redacted] – Figure topside

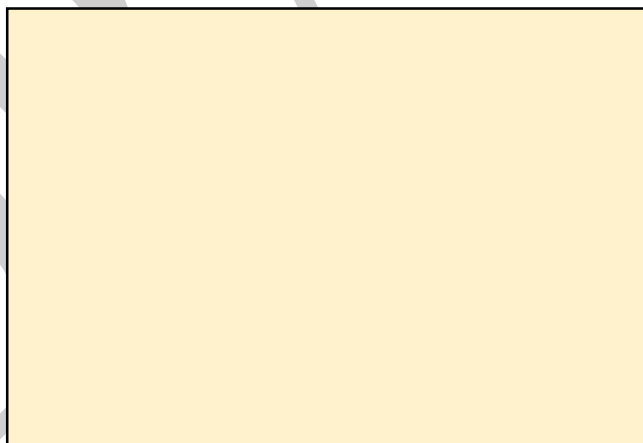


Figure [redacted] – Diagram of topside

7.2. JACKET

The Jacket shall be completely removed and returned to shore for reuse, recycling or disposal. All elements, including the foundation to the original seabed level. The drilling template and piles to 3.0 m below the seabed would also be removed.

The removal method must be in accordance with the criteria of the Brazilian environmental agency.

Figure [redacted], Illustrate the jacket overview.



Figure [redacted] – Figure jacket



Figure [redacted] – Diagram of jacket

7.3. RISERS

The platform has [redacted] production risers (oil and gas pipelines) for importation from the [redacted] Field and export to [redacted] Station, on the coast. Risers cleaning and inertization shall be confirmed prior to any cutting operation. Table [redacted], item 3.3 lists the risers that are part of the decommissioning program.

Steel risers shall be cut at seabed level after pipe bend on horizontal section of pipelines. Flexible risers and umbilicals shall be disconnected from hang off points, their ends shall be closed with a blind flange with a padeye and may/shall be placed on the seabed for future lifting after the [redacted] Jacket is removed from the location. Risers and umbilicals that remains at seabed is not scope of this contract.



Figure [redacted] – [redacted] risers



Figure [redacted] – Oil pipeline diagram

7.4. SUMP AND CASING

The platform has [redacted] Sump (24") and [redacted] Casings (20") connected to it. The Sump is connected to the Jacket at [redacted] m and [redacted] m elevations, as indicated in Figure [redacted].



Figure [redacted] – Sump to be removed

TECHNICAL SPECIFICATION	Nº I-ET-XXXX.XX-1310-969-P4X-001	REV.: 0
AREA: FIELD PLATFORM	SHEET: 24 / 28	
TITLE: DECOMMISSIONING OF FIELD PLATFORM	INTERNAL	
	ESUP	



Figure [redacted] – Water pump casings

8. TRANSPORT AND FINAL DISPOSAL

Before leaving the site, all the removed material must be prepared for navigation on the service barge.

Special attention to safety assessment. The seafastening activities requires personnel to be present on the barges. Personnel would be exposed to the potential for dropped loads.

8.1. GENERAL MATERIAL

The transport of structures, equipment and any other materials from [redacted] Field area shall be carried out by CONTRACTOR to a specific area to be defined by CONTRACTOR. The topside and jackets structures shall be dismantled and destined for metal scrap by CONTRACTOR. Third party certificate attesting that all material has been destined in accordance with good practice, applicable environmental laws and regulations shall be provided by CONTRACTOR.

CONTRACTOR is solely responsible to obtain all necessary environmental licenses and authorizations from competent Brazilian governmental bodies for transportation and final disposal of structures, equipment and other materials to be removed from [redacted] Field.

8.2. MATERIAL IDENTIFIED AS NORM

All material identified as NORM (ANNEX - [redacted]) shall be transported by CONTRACTOR to a specific area, which will be later defined by PETROBRAS. The transport of these materials shall comply with Reference [14], in terms of unitization, identification, classification, labeling, documentation and regulatory requirements for transport companies.

CONTRACTOR is solely responsible to obtain all necessary environmental licenses and authorizations from competent Brazilian governmental bodies for transportation of these materials identified as NORM. Final destination of this material is PETROBRAS responsibility.

8.3. MARINE GROWTH

The structures must be removed with all the existing marine growth, and its removal and management shall be done after unloading of the structure on shore, and must be compliance with the legislation required for an environmentally appropriate final disposition of tailings.

TECHNICAL SPECIFICATION	Nº I-ET-XXXX.XX-1310-969-P4X-001	REV.: 0
AREA:	FIELD PLATFORM	SHEET: 25 / 28
TITLE:	DECOMMISSIONING OF FIELD PLATFORM	INTERNAL
		ESUP

9. POST-DECOMMISSIONING

9.1. POST-DECOMMISSIONING DEBRIS CLEARANCE AND VERIFICATION

After decommissioning, CONTRACTOR shall remove all underwater debris located around the Field platform area for onshore disposal. A minimum 100 m radius circle survey from platform base center must be considered to clean up.

Onshore debris lifting shall be under the same engineering and safety guidance required on Item 4.6 e 5.1 regarding onshore works and debris weight and dimensions.

CONTRACTOR shall issue a seabed survey report to attest complete clearance of debris in the specified area above.

9.2. FINAL DECOMMISSIONING REPORT

CONTRACTOR shall issue a decommissioning final decommissioning report, including at least, but not restricted to, the following documents:

- Photo and video documentation of all decommissioning steps (lifting, sea-fastening, debris load-in).
- Subsea activity report: photos, videos and diver report.
- Onshore debris disposal and trade in documentation.
- Seabed survey report, according to item 9.1.

Report shall also contain information required according to reference document "Resolução ANP nº 817/2020" [28].



TECHNICAL SPECIFICATION	Nº I-ET-XXXX.XX-1310-969-P4X-001	REV.: 0
AREA:	FIELD PLATFORM	SHEET: 26 / 28
TITLE:	DECOMMISSIONING OF FIELD PLATFORM	INTERNAL
		ESUP

ANNEX I – UNDERWATER SCRAPS

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TECHNICAL SPECIFICATION	Nº I-ET-XXXX.XX-1310-969-P4X-001	REV.: 0
AREA:	FIELD PLATFORM	SHEET: 27 / 28
TITLE:	DECOMMISSIONING OF FIELD PLATFORM	INTERNAL
		ESUP

ANNEX II – LIST OF MATERIALS AND EQUIPMENT FROM PLATFORMS

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TECHNICAL SPECIFICATION	Nº I-ET-XXXX.XX-1310-969-P4X-001	REV.: 0
AREA:	FIELD PLATFORM	SHEET: 28 / 28
TITLE:	DECOMMISSIONING OF FIELD PLATFORM	INTERNAL
		ESUP

ANNEX III – SOIL DATA

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