

P E R E N C O



WORKERS  
ENVIRONMENTAL  
EDUCATION  
PROJECT





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## INTRODUCTION

*“If the navigation feeds trade and farming, there can be no navigation without river, there can be no rivers without fountains, there can be no fountains without rain, there is no humidity with no rain, there is no humidity with no forests, meadows and pastures. There can be no cattle without pastures, there is no agriculture without cattle, and everything is connected in the great chain of the Universe and the barbarians who cut off their shares and sin against God and nature are the authors of their own evils.”*

José Bonifácio de Andrade e Silva, 1815

### PEAT – Workers Environmental Education Project

The Workers Environmental Education Project (PEAT) is part of the Environmental Projects implemented by Perenco as a strategy for mitigation and prevention of environmental impacts related to the offshore drilling activities in blocks BM-ES-37, 39, 40, 41 in the region of Espírito Santo.

PEAT is part of IBAMA's requirements during the licensing process. Its goal is to inform workers involved in the project, from the drilling unit, vessels and shore base, about the potential pollution of the drilling activity and their role in reducing the environmental impacts of this activity.

### Environmental Policy of Perenco

In accordance with its environmental policy, Perenco aims to reduce the potential damage to the environment inherent to its activities. Hence Perenco's personnel must be committed on achieving these goals, being all workers responsible for the impact that the operations may cause to the environment, and for intervening in situations that do not comply with this policy of environmental protection.

### Summary

This book was prepared to instruct you, worker, about the environmental issues related to the drilling activities, your role in the pollution control, besides giving you tips on how to relate to your colleagues and to the environment in a healthy, constructive and responsible way.

Here you will find the following information:

#### Module 1: Offshore Activity

Discussion of the nature, impacts and risks associated to the drilling activity.

#### Module 2: Area of Influence

Description of the Area of Influence and the Environmental Diagnosis.

#### Module 3: Legal Responsibility

Description of the environmental legislation related to the drilling activity.

#### Module 4: Environmental Licensing and Mitigation Measures

Description of the activity's environmental licensing process and the conditions of the environmental permit. Explanation of the environmental projects.



## MODULE 1: OFFSHORE ACTIVITIES

### 1. CAMPAIGN AND ENTREPRENEUR

#### Campaign

The offshore drilling exploratory campaign will be held in the Geographical Area of BM-ES-37, 39, 40 and 41 Blocks, Espírito Santo Basin. This activity aims to detect the presence of oil and gas, in order to evaluate whether it is worthwhile produce in this site or not.

The drilling activities for the 2º campaign, to be performed in blocks BM-ES-39 and BM-ES-40, are estimated to begin in March 2013 and extend for over six months.

#### Entrepreneur

The company that will perform this project is PERENCO, an international Exploration and Production of Oil and Gas (E&P) Company. This is the second drilling campaign operated by the company in Brazil.

Company name:	Perenco Petróleo e Gás do Brasil Ltda.
Registration number:	CNPJ:09.309.027/0001-35
Adress:	Rua Lauro Muller nº116-Sala 1301 - Botafogo - Rio de Janeiro/RJ CEP:22290-160
Telephone:	(21) 3043-0100
Fax:	(21) 2543-6361
Legal Representative:	Bernardo Franco Nieto
Contact:	Tatiana Menezes Clemente
Technical Federal Register number for potentially	
Polutant activities that use	2690575
Environmental Resources:	

## 2. PHASES OF OFFSHORE CAMPAIGN

### Prospection

The purposes of petroleum prospection are: (1) to locate areas with geological conditions for oil accumulation, and (2) to check which of these areas have more chances to contain oil.

In a prospecting program geological and geophysical data of sedimentary basins are analyzed for the evaluation of the realization of drilling campaigns and well locations.

### STEPS

#### 1. Geological Study

Geological studies are held for the deduction of regions with potential for formation and accumulation of oil.

#### 2. Seismic

The seismic method consists in generating waves by artificial sources, which will propagate inside the Earth. These waves will return and their

reflections and refractions will then be captured by sophisticated equipment for further study. The behavior of the wave and how it spreads shows the rock types and different constitutions of the underground.

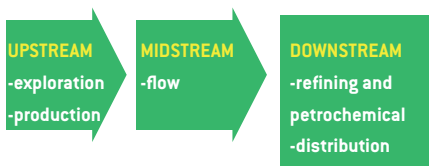
### 3. Drilling

Well drilling is performed by a rig, with the help of large drill bits, in different stages.

### Oil Production

This is the production phase of the discovered oil. It consists of primary processing of fluids, in which oil and gas are separated from the water and the impurities produced.

## 3. OIL AND GAS PRODUCTION CHAIN



### Flow

The transport of oil and gas often happens over great distances by land and sea, through places with easy and/or difficult access.

The oil is usually directed to refineries and the gas to power plants or natural gas distribution nets. Depending on the distance, oil and gas pipelines can be used.

### Refining and Petrochemical

Refining is the processing of oil into different products. A refinery facility includes physical and chemical processes, with ducts for transport and storage tanks.

The products that feed the petrochemical

industry include parts of liquids and gases produced during the refining process, LNG (Liquefied Natural Gas) and natural gas. The petrochemical industry makes these products in other base products from other industries, such as the plastic industry.

### Distribution

The distribution includes all the necessary logistics to carry the finished products from refineries and petrochemical industries to the final consumer.

## 4. DRILLING UNIT AND SUPPLY INFRASTRUCTURE

### Drilling Unit

The drilling unit of this project will be Ocean Star, a semi-submersible anchored platform, owned by Diamond Offshore Drilling. This platform is certified by ABS, was built in 1973 and modified in 1996, and can accommodate up to 100 people.



## Onshore Base

Located in Niterói, Rio de Janeiro, the Nitshore will be the primary onshore base for logistical support of the project and Vitória Offshore Logistics - VOL, located in Vila Velha, Espírito Santo, will be the secondary onshore base for logistical support.



## Supply Vessels

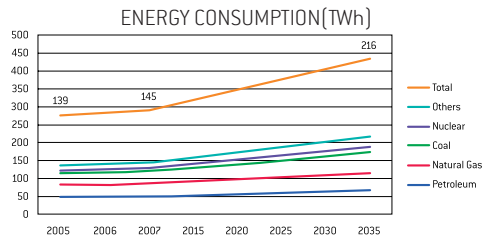
The supply vessels that will support the drilling activities will be the AHTS (Anchor Handling Tug Supply) Far Sagaris, owned by the company Farstad Supply AS and UOS Navigator, owned by the company ATL Offshore GmbH & Co. Isle of Fehmarn KG.

The purpose of these vessels is to transport resources, equipment, waste, and products between the platform and the shore base. They will also assist in potential emergency operations. They can also be used for towing, undocking, rig moving and anchoring operations of the platform.



## 5. GENERAL CONCEPTS OF GLOBAL ENERGY CONSUMPTION

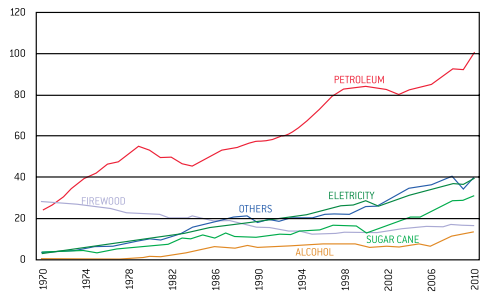
The forecast of the world's energy consumption points to a significant increase in energy demand through 2035. From 139TWh of consumed energy in 2005, it will be up to 216TWh in 2035, which means an increase of 55% in 30 years.



Source: U.S. Energy Information Administration (May/2010)

In Brazil, energy consumption has increased considerably since the 70s, mainly using oil based energy.

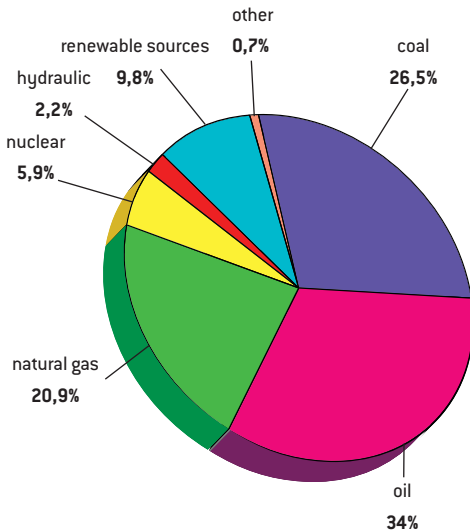
### ENERGY CONSUMPTION BY SOURCE(10 TEP)



Source: MME – Ministry of Mines and Energy

According to 2007 data from Energy Research Company (EPE), oil, natural gas and coal represent together more than 80% of global energy, in other words, 80% of the world's energy is produced from these sources. Only 12% of the energy matrix is represented by renewable sources (renewable sources + hydraulics).

WORLD ENERGY OFFER BY SOURCE(2007)



Source: EPE – Energy Research Company

### Energy Conservation

In nature nothing is created, everything is transformed. Matter and energy can be transformed into another type, but cannot be destroyed.

The fact that you cannot consume 100% of all matter makes generation of waste inevitable in all human activities.

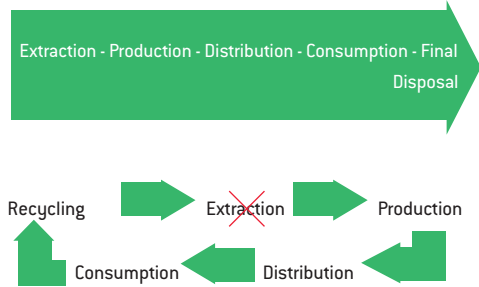
### Product Life Cycle: From the Cradle to the Grave

Everything that exists comes from pre-existing matter, only transformed. The resources are taken from the ground, air or water, transported, transformed into goods and later become waste to be disposed or recycled.

There will always be a need for new materials and non-recyclable waste will always be generated.

Adequate environmental management and wise use of natural resources are essential to mitigate this inevitable path.

PRODUCT LIFE CYCLE



### Global Warming

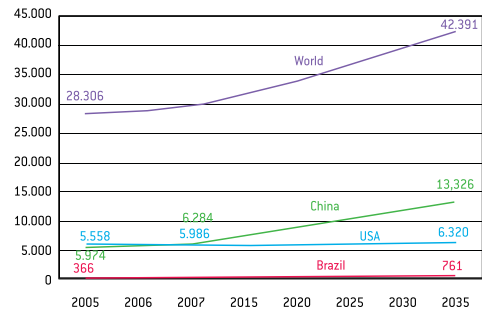
Global warming is a rise in the average temperature of the Earth, caused by an increased concentration of greenhouse gases GHG in the atmosphere.

It should be noted that the greenhouse effect is a natural mechanism of the Earth that preserves life on the planet. The greenhouse effect is responsible for maintaining the temperature of the Earth, trapping the heat reflected by the surface inside the atmosphere.

Projections of GHG emissions to the atmosphere for the year of 2035 are worrying. According to the graphic below, GHG emissions in Brazil and in the world will double from 2005 to 2035.

You can also see that China has already exceeded the USA in emissions and emission projections for China show the most significant increases.

CO<sub>2</sub> EMISSIONS(Mton CO<sub>2</sub> EQUIVALENT)



Source: U.S. Energy Information Administration (May/2010)





## Kyoto Protocol

Kyoto protocol is an international treaty, signed by several countries with the commitments to reduce GHG emissions.

## HOW CAN YOU REDUCE ENERGY CONSUMPTION AND FIGHT AGAINST GLOBAL WARMING?

### *Adjust the temperature of your air conditioner*

During summer, when you turn your air conditioner on, increase the temperature by two degrees above what you usually use. This action can reduce by up to one third of a ton of CO<sub>2</sub> emitted into the atmosphere per year.

### *Use energy saving lightbulbs*

If every house in Brazil used just one energy saving lightbulb, it would save as much energy as the generation capacity of a hydroelectric power plant.

### *Stop appliances from standing by*

Do not leave electronic devices on Stand-by (turned off by remote control, when a red light is lit), this mode consumes energy. Turn them off for real by unplugging them, and cut your home energy-related emissions by 10% or more.

### *Say no to plastic bags*

About 1 trillion of plastic bags are used per year! These plastic bags often end up in rivers and seas, polluting the environment and suffocating animals that confuse them with food.

### *Buy locally produced products*

Each item in your supermarket traveled around 16.000 km to arrive there. Buying locally produced products reduces the energy used in transportation.

### *Take your mug*

Take your mug to work and avoid using disposable cups.

### *Use public transportation*

A bus can carry as many people as 50 cars! Subways and trains can carry even more. For each 2 km traveled, public transportation uses half the fuel than a private car.

### *Ride a bike*

Bike or walk to school or work at least once a week. This will give the atmosphere a rest.

### *Take short showers*

Decreasing your shower by just 1 minute will save up to 1800 liters of water a year.

### *Plant a tree*

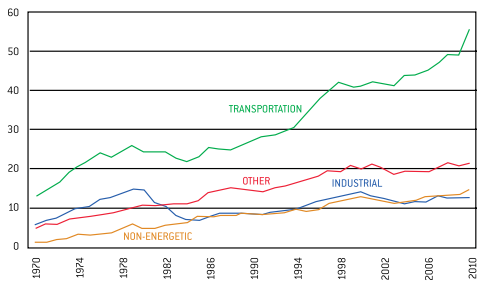
A single tree provides enough oxygen for two people to live their entire life.

## 6. USE OF PETROLEUM

Petroleum products are diverse and are present in our daily life. They are: gas, gasoline, aviation fuel, diesel, lubricating oils, solvents, asphalt, plastics, fertilizers, among others.

In Brazil, the use of petroleum products by sector is shown in a historical series since 1970 in the following graphic:

TOTAL CONSUMPTION OF PETROLEUM AND NATURAL GAS DERIVATIVES ( $10^6$  tep)



Source: MME - Ministry of Mines and Energy

## 7. FOSSIL FUELS: NON-RENEWABLE RESOURCE

There are some theories about how petroleum was created. The most common is the theory that it originated from the deposition of organic matter along with sediments millions of years ago. It can be concluded then that oil is a non-renewable resource, in other words, when current reservoirs run out, petroleum will be a resource no longer available to man.

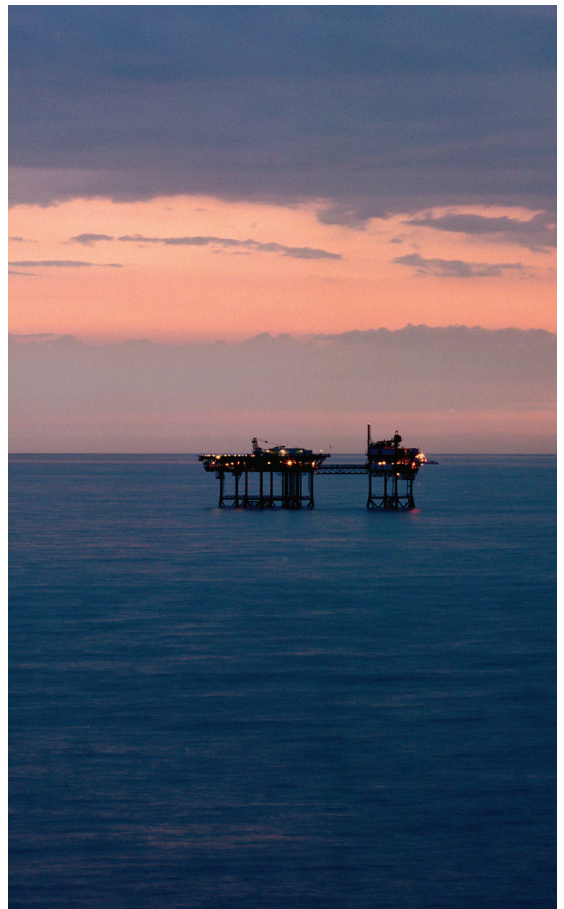
Therefore, it is important to invest in new energy sources and technologic development in order to promote the energy efficiency desired.

## 8. ENVIRONMENTAL IMPACTS AND RISKS

Any interference of the drilling activity over physical, biotic and socioeconomic status is considered an environmental impact. These impacts can be both positive and negative. The negative impacts must be managed so as to mitigate their effect.

The environmental impact assessment (EIA) conducted for this project foresaw effective impacts (which are expected to occur during the implementation of the activities) and potential impacts (due to possible spill of diesel, chemical products and crude oil).

**Risk is the combination of the probability of an event with its severity, in other words, what are the chances of the event occurring, and if it does, how severe can the consequences be?**



EFFECTIVE IMPACTS				
Environmental Factor	Environmental Aspect	Impact	Mitigating Measures	Qualification
<b>PHYSICAL ENVIRONMENT</b>				
Bottom Sediment	Dispose of cuttings and drilling fluid; Positioning and deactivation of the platform.	Revolving and modification of chemical characteristics and composition of the sediment.	Control the volume of cuttings and fluid discharged. Separation of the fluid for disposal of cuttings.	Negative
Water	Dispose of cuttings and drilling fluid; Positioning and deactivation of the platform. Discharge of grinded food, deck water and treated sewage.	Changing the chemical and physical characteristics of water. Revolving of sediments and consequent water turbidity.	Control the volume of cuttings and fluid discharged. Separation of the fluid for disposal of cuttings. Maintenance and monitoring of effluent treatment equipment.	Negative
Air	Combustion of fuel by power generators and diesel engines. Formation test emissions.	Emission of air pollutants.	Maintenance of power generators and diesel engines.	Negative
<b>BIOTA</b>				
Turtles/ Marine Mammals/ Fishes/ Plankton	Noise; Presence of the maritime unit; Disposal of grinded organic waste.	Disruption of organisms; attractive effect; collision with maritime units.	Guidance to workers about the presence and importance of these organisms. Monitoring the presence of animals. Grinding organic waste before disposal.	Negative

BIOTA				
Benthos	Dispose of cuttings and drilling fluid; Positioning and deactivation of the platform.	Burial and contamination of organisms.	Testing of metal concentration and toxicity in the drilling fluid.	Negative
SOCIOECONOMIC ENVIRONMENT				
Fishery	Use of maritime space.	Exclusion of fishing areas.	Dissemination of information and awareness. Project for Fishing Monitoring; Project of Environmental Education	Negative
Trade/ Services/ Workforce	Procurement of materials, equipments, supplies and services.	Generation of specialized job, income and tax revenue.	N/A	Positive

**Although these results are inherent to the activities, these risks have mostly low severity, with temporary and localized impacts.**

POTENTIAL IMPACTS		
Impact	Control Measures	Response Measures
SPILL OF DIESEL OIL; CHEMICAL PRODUCTS AND CRUDE OIL		
Change in water and air quality, contamination and death of marine organisms; Contamination of coasts and death of birds and animals; Changes in fishery and tourist activities.	Inspection and maintenance of equipments and security and emergency systems; execution of drills.	Oil Spill Resonse Plan - OSRP

**Spill of diesel oil, chemical products and crude oil have low probability of occurrence, however can be quite severe depending on the environment and the amount spilled into the sea.**



## 9. HEALTH AND SAFETY

In workplaces where there are high levels of risk, such as the oil industry, safety must be seen as a basic rule for maintaining the health of workers and the preservation of the environment.

To prevent accidents we must adopt a responsible position, always acting with respect and attention. To ensure the safety of everyone, it is very important to work as a team and to report unsafe situations. Report whenever you observe an unsafe condition or a near miss. Use the Risk Observation Card to report unsafe situations.

An accident does not happen overnight, requiring a series of situations that when combined together trigger the situation. This is why it is so important to stay alert and to report anything that may create an accident. For example, a simple tool stored in an inappropriate location can generate an accident: if it is in a high place, it could fall on someone; if it is in the ground, someone could trip over it.

The work environment of our industry has inherent risks. Attention is never enough. When in doubt, stop, look and ask.

### Communication

Your reports are very important so that any situation or factor that may lead to an incident is identified. It might be an unsafe act, a lack of protection, lack of PPE, lack of knowledge, disorganization of the workplace or even a management failure.

### Perception of Risk

We can only identify what we understand. So when you visit a new place or perform a new task, inquire beforehand. Not knowing what can cause an accident increases the risks at work. When in doubt, stop, look and ask.

### Use of PPE

You are also responsible for your safety. PPEs avoid or minimize the consequences of accidents. Do not take unnecessary risks. Always use the appropriate equipments.

### Participation

Participation in safety training, in drills and in emergency training is extremely important. This way you will know how to act at critical moments.

### BASIC TIPS FOR HEALTH AND SAFETY:

- eat healthy, maintaining a balanced diet;
- drink plenty of fluids;
- use sunscreen;
- watch your posture;
- take care of your personal hygiene;
- make regular check-ups and consult a doctor if you notice something wrong;

- use proper PPE;
- obey safety signs;
- keep the workplace organized and clean;
- find out about any chemicals that you will handle (FISPQ/MSDS);
- attention when operating machinery and equipment, especially to moving parts;
- obey the permit to work (PTW) for activities such as: confined space entry; working at height; hot work; working with electricity;
- when in doubt, stop, look and ask;
- when observing a risky situation immediately notify your supervisor and fill a risk observation card;
- always stay alert, pay attention, hurry or neglect.

## 10. POSITIVE SOCIAL RELATIONS

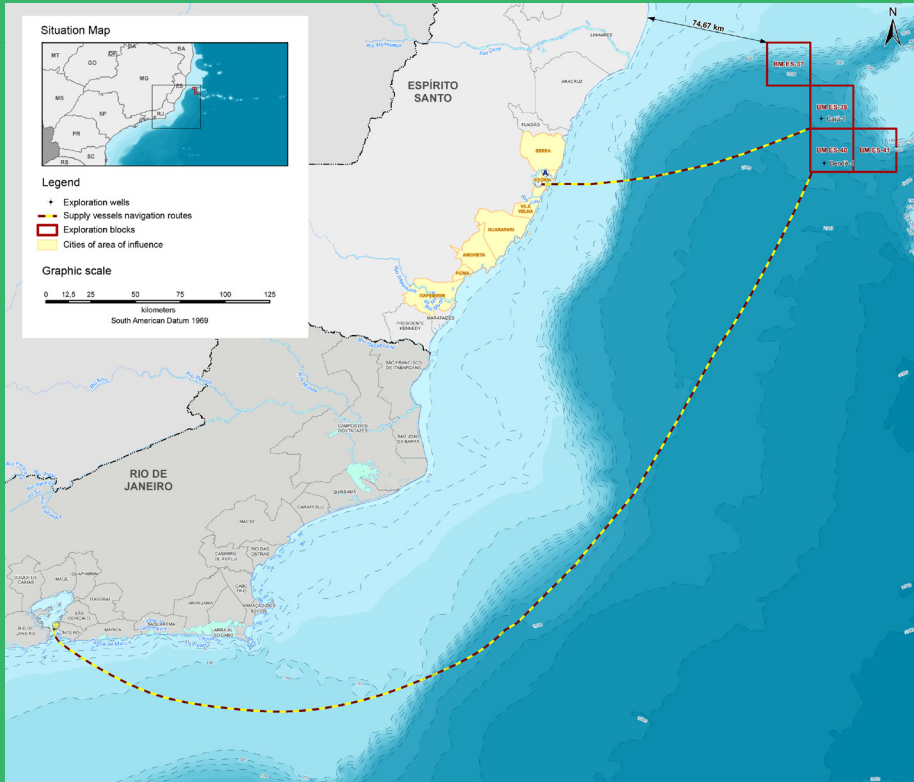
It is very important to maintain good relationships within offshore environments. The prolonged permanence, isolation, bad weather and hard work can be stressful. Be sympathetic with others, after all we are all far from our homes and families.

Remember that we are all different and we have free will to make our personal choices. Respect others and be respected.

Small acts can contribute positively for a healthy, peaceful and happy coexistence on board

## TIPS FOR A POSITIVE SOCIAL LIFE:

- try to communicate clearly and objectively;
- avoid making cruel jokes or pranks;
- avoid discussion about politics, religion and sports;
- avoid gossip;
- try not to make noise in the corridors of cabins. remember that people from the other shift are sleeping;
- keep the workplace and accommodations clean and organized;
- try to maintain a good relationship with everyone on board and with the crews of other units;
- respect the social, ethnic and cultural differences;
- be tolerant;
- be supportive.



## MODULE 2: AREA OF INFLUENCE

### 1. LOCATION MAP AND AREA OF INFLUENCE

The blocks BM-ES-37, 39, 40 and 41 are located in the Espírito Santo Basin. The shortest distance to the coast from these blocks is 75 km.

#### Area of Influence

The area of influence of the Project was defined considering the geographic reach of direct and indirect impacts that the activity of offshore drilling in BM-ES-37, 39, 40 and 41 blocks may lead to physical, biotical and socioeconomic status.

The area of influence was defined as:

- the total area of BM-ES-37, 39, 40 e 41 Blocks;

- the route of supply vessels on the path shore base – drilling unit;
- the cities Serra, Vitória, Vila Velha, Guarapari, Anchieta, Piúma and Itapemirim, in Espírito Santo;
- and the area of the seaports terminals of onshore base Nitshore, in Niterói, RJ and VOL - Vitória Offshore Logistics, in Vila Velha, ES.

### 2. ENVIRONMENTAL DIAGNOSIS

After defining the Area of Influence it is important to make a description of the physical, biotic and socioeconomic environment featuring the environmental situation of the area before the implementation of the activity.

## PHYSICAL ENVIRONMENT

### IMPORTANT GEOLOGICAL FORMATION:

- Arolhos Bank;
- Vitória Trindade Current.

### CLIMATE

The area has two well marked climate seasons: the rainy season, which runs from November to April, and the dry season, which runs from May to October. The rainy season has higher temperatures and the dry season, lower temperatures.

### WAVES

During autumn (April-May) and winter (June-August) east-southeast waves with heights around 1,5 m occur. During spring (September-November) and summer (December-February) north-northeast waves with heights of 1,0 m occur.

### IMPORTANT OCEAN CURRENTS

- Brazil's current;
- Vitória Vortex (50 km diameter; more intense activity in summer).



## BIOTA

### MARINE ORGANISMS

#### • Plankton Community

Microscopic algae, small crustaceans and fish larvae.

It is believed that these microscopic algae (also called Phytoplankton) are responsible for 98% of the atmosphere oxygen.

#### • Benthic Community

Organisms that live in and on the bottom of the ocean floor.

Algae, sea urchins, starfish, sea sponges and corals.

#### • Nektonic Community

Organisms that can swim freely.





### Fish

In the Area of Influence fish species of high economic value can be found, such as: *albacora*, *garoupa*, *cherne*, *peróá branco*, *cioba*, *atum* and *dourado*.

Among the endangered species there are: *mero*, *pargo*, *cioba*, *caranha*, *donzelinha*, *albacora*, *tubarão baleia* [shark] and *tubarão fidalgo* [shark].

### Marine Turtles

All five existing species of sea turtles in Brazil, can be found in the state of Espírito Santo. They are: *tartaruga-verde*, *tartaruga-cabeçuda*, *tartaruga-de-pente*, *tartaruga-oliva* and *tartaruga-de-couro*.

### Whales and dolphins

In the Area of Influence there are: *boto-cinza*, *toninha*, *baleia orca*, *golfinho-cabeça-de-melão*, *baleia cachalote*, *baleia jubarte*, among others.

#### • Birds

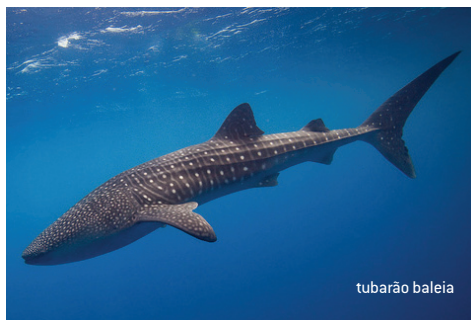
Birds that reproduce in the Abrolhos Archipelago include: *atobá-marrom*, *atobá-mascarado*, *fragata*, *rabo-de-palha-de-bico-amarelo*, *rabo-de-palha-de-bicovermelho*, *andorinha-do-mar-preta* and *trinta-réis-das-rocas*.

Seabirds include: *albatroz-de-nariz-amarelo-do-Atlântico*, *albatroz-de-sobrancelha-negra*, *pardela-de-sobre-branco*, *pardela-preta*, *pardela-de-óculos*, *petrel-das-tormentas-de-Wilson* and *gaivotas-rapineiras* [Catharacta spp].

## COASTAL ECOSYSTEMS

#### • Sandbanks

The sandbank is a sandy and saline area, near the sea and covered by diverse vegetation, consisting of trees, bush, vines, bromeliad and bracken.



- **Beaches**

The beaches are the most dynamic environment of all marine environments located in the area between the sea and the coast. The animals that occur on the beaches are the polychaetes, mollusks and the crustaceans. The plants that appear most frequently are the herbaceous and creepers.

- **Mangrove**

The mangroves are very important, because they are complex ecosystems and among the most fertile and diverse on the planet. Its biodiversity means these areas represent large natural "nurseries" for the typical species of these environments, such as birds, fishes, clam and crustaceans.

- **Estuaries**

Estuaries are the only aquatic system where the interaction between the freshwater, marine waters, terrestrial system and atmosphere occur. It has great importance for the reproductive cycle of many species.

- **Rocky Shores and Oceanic Islands**

Among the habitats of the coastal zone, the rocky shores are considered one of the most important. They have a wealth of species of great ecological and economic importance such as clam, oysters, crustaceans and a big variety of fish.

- **Coral formation and Reefs**

Systems formed by diverse organisms, as seaweed, sea sponge, clam, crustaceans, starfish, sea urchins and fishes.

Restinga na Praia Grande



Praia do Morro



Manguezal São Mateus



Ilhas de Trindade e Martim Vaz



## CONSERVATION UNITS

About 2,1% of Espírito Santo territory is covered by protected areas. 26 Conservation Units, 3 federal, 9 state and 14 municipalities, were identified in the coastal region of Espírito Santo.

CONSERVATION UNIT	SITE	ECOSYSTEMS
APA de Conceição da Barra	Conceição da Barra	Mongrove, Sandbank and Beach
Parque Estadual de Itaúnas	Itaúnas	Atlantic Rainforest
Reserva Biológica de Comboios	Linhares/ Aracruz	Sandbank
Reserva Ecológica dos Manguezais dos Rios Piraquê-Açú e Piraquê-Mirim	Aracruz	Mongrove
APA da Lagoa de Guanandy	Piúma/ Itapemirim	Sandbank , Lagoon
APA da Praia Mole	Serra	Beach, Sandbank e Lagoon
APA da Ilha do Frade	Vitória	Coastal
APA do Morro do Moreno	Vila Velha	Atlantic Rainforest and Beach
APA da Ilha de Depiá	Vila Velha	Coastal
APA de Sepetiba	Guarapari	Oceanic Coastal
Parque Nacional Marinho dos Abrolhos	Caravelas	Coral Reef, Coastal/Oceanic
APA Estadual Ponta da Baleia/ Abrolhos	Caravelas	Reefs and Coral Banks



## SOCIOECONOMICS

The use and occupation of the area of influence are characterized by the coexistence of urban areas, concentrated in the metropolitan region of Vitória, and ecosystems of great environmental significance.

In general, the natural attractions, especially the vast expanses of beaches and mangrove areas, ensure a strong calling for tourist activities.

In the last decade the new discoveries of oil and natural gas reservoirs in the State's coast triggered a process of intensifying imobiliary speculation in the cities of Vitória and Vila Velha.

### FISHING

Fishing is widely practiced in the cities in the area of influence.

Among the fish species of commercial interest in the region there are: vermelho, vermelho-dentão, pargo, pargo-boca-negra, cioba, catuá, guaiuba, ariacó, olho de boi and dourado.





## MODULE 3: LEGAL RESPONSABILITY

The offshore drilling activities are regulated by laws and national and international guidelines. Within the Brazilian law there are several that are relevant and applicable to this project, with emphasis on issues related to environmental licensing, control measures and environmental protection necessary for the proper performance of the operations.

Given the diversity of topics to be covered, this module aims to approach the legal aspects related to: the oil and gas sector, the environmental licensing process and other environmental issues relevant to the operations, in order to clarify in a simple and objective way possible queries related to these issues.

Next, some of the laws, resolution and norms applicable to this activity will be presented.

### BRAZILIAN LEGISLATION

#### Article N° 225 from the Brazilian Federal Constitution

In 1988, the Federal Constitution (CF/88) was reviewed and dedicated, for the first time, an entire chapter of its text to the environment, stating that: everyone is entitled an ecologically balanced environment, which is a public asset and which is essential to a healthy quality of life, and imposing upon the Government and collectivity the duty to defend and preserve it for present and future generations” (art, 225).

In addition to this chapter, references to the environment can also be found over the constitutional text, as in popular action (art. 5º, LXXIII) and the preservation of forest, fauna and flora (art. 23, VII).

CF/88 is also determined by article 225, the obligation of individuals or entities to repair environmental damage without consequence of criminal and administrative penalties. It also incubate the Government to “require, as provided by law, for installation of work or activity which may cause significant environmental degradation, a prior environmental impact study, which shall be made public” (§1º, IV).

#### Law N° 6.938 – National Environmental Policy (and Law N° 7.804, that modified the N° 6.938)

This Law established the National Environmental Policy, setting out principles, objectives and instruments. Besides, this law recognized the legitimacy of the Federal Public Prosecution to propose actions for criminal and civil responsibility for damages caused to the environment.

The environmental licensing was instituted by the National Environmental Policy as one of the necessary instruments to protect and improve the environment, as it verifies the possibility of negative environmental impacts and necessary measures for its prevention, repair and mitigation.

Besides, a number of principles have been established by this law, including one that declares that the environment is a public asset that should be secured and protected so it can be used collectively.

### CONAMA Resolution N° 237/1997 – Environmental Licensing

To regulate environmental licensing, which was established in the National Environmental Policy, CONAMA Resolution N° 237/1997 was issued.

According to this Resolution, environmental licensing is the administrative process by which the relevant environmental agency licenses the location, installation, expansion and the operation of projects and activities which use environmental resources and are considered effective or potentially pollutant or those which, in any form, can cause environmental degradation, considering the law and regulations and technical standards applicable to the case (art.1º, I).

Annex I of CONAMA Resolution N°237/1997 also defines that among the activities subject to environmental licensing, are the drilling of wells and production of oil and natural gas.

### Law N° 9.605 and Decree N° 6.514 – “Law for Environmental Crimes”

Crimes against the environment have very severe penalties and have no bail. Those responsible for the venture and/or operation of activities might face criminal charges in cases where there are harmful conduct and activities towards the environment.

Among the environmental crimes presented in this law, we can mention the disposal of effluent or material that results in the death of species of aquatic fauna in rivers, lakes, ponds, bays or Brazilian water (art.33) and cause pollution of any nature, in levels that result or may result in damages to human health, animals and significant destruction of flora (art. 54).

### Law N° 9.966 and Decree N° 4.136 – Prevention, Control and Monitoring of Pollution at Sea (“Oil Law”)

Law N° 9.966/00 established the basic principles to be followed in the handling of oil and other noxious or dangerous substances in organized ports, port facilities, platforms and vessels in waters under national jurisdiction (art. 1º).

The platforms and their supply vessels should have individual emergency plans to respond the pollution by dangerous or noxious substances, which will be submitted for approval by the competent environmental agency (art.7º).

Law N° 9.966/00 also determines that discharge, in waters under national jurisdiction, of noxious or dangerous substances, as well as ballast water, waste of tank washing or other mixtures containing such substances (arts. 15, 16 e 17) is prohibited. In exceptional cases discharge of oil, oily mixtures, noxious or dangerous substances of any categories and trash can be tolerated for the safeguarding of human life, research or ship safety (art. 19).

### CONAMA Resolution N° 275/2001 – Colors Standard

Considering that the recycling of waste should be encourage, facilitated and expanded in the country, this resolution provides a color code to be used as standard for the segregation of waste to reduce the consumption of raw material, non-renewable natural resources, energy and water; and avoid increasing dumps and landfills.

In order to spread this code, environmental education campaigns, provided with an identification system for easy viewing of national validity and inspired by forms of encoding already adopted internationally, are essential to effect the selective collection of waste, enabling the recycling of materials.

The color code established by this resolution is:

BLUE: paper/cardboard;  
RED: plastic;  
GREEN: glass;  
YELLOW: metal;  
BLACK: wood;  
ORANGE: dangerous waste;  
WHITE: ambulatory waste and waste of health services;  
PURPLE: radioactive waste;  
BROWN: organic waste;  
GREY: general non-recyclable waste or mixes, or contaminated not subject to separation.

### CONAMA Resolution N° 430/2011 – Standards for Effluent Discharge (Complements and modifies Resolution N°357/2005)

This resolution establishes standards for effluent discharge. This resolution also establishes that effluent can never be ruled out in worse conditions than when it was collected. For example, if an industry collects effluents from a river, the discharge after its use can never happen in conditions that are worse than those collected.

### CONAMA Resolution N° 398/2008 – Individual Emergency Plan;

This resolution creates guidelines for port facilities, terminals, ducts, rigs and supply vessels, refineries, shipyards and similar facilities to respond to an emergency involving oil pollution in Brazilian waters.

These emergency plans must be approved by the competent environmental agency and must have minimum content in accordance with the provisions of this resolution. In case of platforms or shore bases of the same project, the resource of the emergency plan can be shared.

The resources required are based on Risk Analysis of the facility, so that a possible oil spill can be tackled immediately.

### Technical Note CGPEG/DILIC/IBAMA N°01/11 – Pollution Control Project

The environmental licensing process for exploration and production of oil and gas involves a series of technical requirements to be accomplished. This technical Note provides guidelines for implementing the so-called Pollution Control Project (PCP), required in the licensing process.

PCP is an impact mitigation measure which is mandatory as conditioning of the environmental license for projects of this nature. PCP establishes a set of procedures, both on board vessels and maritime units part of this licensing process, in order to reduce the pollution, generation of waste on board, on shore disposal, discharge of waste in the sea and emissions to the atmosphere.

## INTERNATIONAL REGULATION

### MARPOL 73/78 – International Convention for the Prevention of Pollution at Sea

Promulgated by decree N° 2508/98 – deals with the prevention of oil pollution at sea; limits the type of waste that can be discharged and indicates sites for disposal; establishes limits for oily effluent discharge and treated sewage.

## ENVIRONMENTAL PRINCIPLES

In addition to the applicable legislation and regulations, there are 11 principles that guide the issue of environmental law of all citizens, which are:

1. Principle of Supremacy in the Public Interest in Protecting the Environment in relation to Private Interests.

As the environment is a common good of all, the interest of a company to conduct a project can never prevail over the interests of a community that will be affected by the project.



## 2. Principle of Unavailability of Public Interest in Protecting the Environment

This principle states that the environment is a common good of common use, which means that it must be preserved so that it is capable to meet the current and future generations.

## 3. Principle of Mandatory State Intervention in Defense of Environment

When it comes to protecting the environment, the state is obliged to intervene.

## 4. Principle of Public Participation in Environmental Protection

## 5. Principle of Ensuring Economic and Social Development Ecologically Sustainable.

This principle states that we must ensure that the development will not deplete the natural resources nor exclude the poor, what means that the development should always be SUSTAINABLE development.

## 6. Principle of Environmental and Social Function of Property

## 7. Principle of Appraisal of Environment Impacts of Activities of any Nature

The activities to be performed must always be planned in advance in order to consider all environmental impacts that could affect environmental quality. Therefore, this damage can be avoided or minimized.

## 8. Principle of Prevention Measures against Environmental Degradation

## 9. Principle of Accountability of Conduct and Activities Harmful to the Environment

## 10. Principle of Respect for the Identity, Culture and Interests of Traditional Communities and Groups that form the Society

## 11. Principle of International Cooperation in Environmental Matters

In terms of environmental legislation, it is important to remember that there are laws organizing all kinds of enterprise. All citizens have equal responsibility to preserve the environment, but also have a right to enjoy it as long as in a sustainable way. The laws exist in order to protect and defend people and their rights. It is important to know and apply then into our lives.





## MODULE 4: ENVIRONMENTAL LICENSING AND MITIGATION MEASURES

### 1. THE ENVIRONMENTAL LICENSING PROCESS

IBAMA (Brazilian Institute of Environment and Natural Resources) is responsible for monitoring and for issuing environmental licensing of drilling and production of oil and natural gas activities.

The CONAMA Resolution N° 237/1997 regulates aspects of environmental licensing established by the National Environmental Policy.

This Resolution contains the following definitions:

**Environmental Licensing** - Procedure whereby the applicable environmental agency licenses the location, installation, expansion and operation of projects and activities using environmental resources considered effective or potentially polluting or those which, in any form, can cause environment degradation.

**Environmental License** - Act by which the applicable environmental agency establishes the conditions, restrictions and environmental control measures that should be obeyed by the entrepreneur, to locate, install, expand and operate projects or activities that use environmental resources considered effective or potentially pollutant or those that in any form, may cause environment degradation.

**Environmental Studies** - Studies related to environmental aspects related to the location, operation and expansion of an activity or project, presented as the

basis for the analysis of the requested license, such as: environmental reports, environmental control projects and plans, preliminary environmental reports, environmental assessments, management plans, recovery plans of degraded area and preliminary risk analysis.

CONAMA Resolution N° 023/1994 regulates the special procedures for licensing of exploration, drilling activities and production of oil and natural gas.

For this exploratory drilling campaign to be conducted in BM-ES-37, 39, 40 and 41 Blocks, one Preliminary License (LP) and one Operating License (LO) were issued.

**Preliminary License (LP)** – is issued in the preliminary phase of the planning of the venture or activity, approving its locations and design, attesting the environmental feasibility. It also establishes the basic requirements of the conditionings to be in compliance with for the next phases of its implementation.

**Operating License (LO)** – authorizes the activity's operation, after the verification of the effective compliance of what was established by the previous licenses, including environmental control measures and conditionings determined for the operations.

For granting these licenses, IBAMA has demanded through the Term of Reference TR CGPEG/DILIC/IBAMA N° 02/09, the development of an Environmental Impact Assessment and its respective Environmental Impact Assessment Report - EIA/RIMA for the activities to be developed in the location, as well as holding public hearings. This study follows the provisions of CONAMA Resolution N° 23/1994 and TR N° 02/09 which defines the scope, procedures and guidelines for the development of the study.

IBAMA has required the EIA/RIMA over the RCA normally required due to environmental characteristics of the location of the blocks.

The environmental license validity depends on the performance of its conditionings based on previously defined deadlines.

It is IBAMA responsibility to check the implementation of the conditionings of the license inherent to the operations.

The appropriate penalties for violations to the environment are in accordance with Law N° 9.605/98 – Law for Environmental Crimes.

IBAMA can modify the conditionings, suspend or cancel a license issued, when there is:

- Violation or inadequacy of any conditioning or legal regulation;
- Omission or false description of important information which the license was based on;
- Generation of serious environmental and health risks.

The environmental projects presented next are part of the requirements of the licensing process of drilling activities, determined by IBAMA in TR CGPEG/DILIC/IBAMA N° 02/09.

## 2. ENVIRONMENTAL PROJECTS

Environmental Projects aim to contribute to the conservation of the environment of the Area of Influence. They propose mitigation measures and/or compensatory ones for possible negatives impacts of the activity.

### PROJECT FOR FISHING MONITORING

#### *Objective*

To provide tools to better understand the relationship between the drilling activities and the fishing productivity.

This Project consists in gathering information regarding the fishing communities in the area of influence.

### RISK MANAGMENT PLAN – PGR

#### *Objective*

Ensure a safety operation, keep the previously identified environmental risks at acceptable levels and perform permanent efforts for reducing these risks.

The PGR has spreadsheets of Preliminary Hazard Analysis, in which preventive measures are attributed to the hazards identified in the operation.

The main guidelines of PGR are:

- Definition of roles and responsibilities;
- Programs for maintenance of the rig and equipments;
- Periodic inspections in the unit;
- Competence, training and drills;
- Management of Contractors;
- Permit to Work System (PT);
- Registration and investigation of accidents, incidents and near misses;
- Management of Change.



## ENVIRONMENTAL MONITORING PROJECT – PMA

### *Objective*

Monitor and evaluate the physical, chemical and biological characteristics in Areas of Influence of the activity.

PMA will consist of five subprojects. They are:

### *Identification and Registration of Local Marine Life*

During the entire drilling period, there will be daily observations (performed by competent professionals), for verification and registration of any biota that may approach the rig.

The participation of all is necessary to succeed in this subproject.

**Report immediately to your supervisor if you see any animal in the water.**

### *Visual Inspection in the Location of the Wells*

This inspection aims to help the identification of structures and sensitive biological communities.

### *Monitoring of Drilling Fluids and Cuttings*

Drilling fluids are composed of different chemical substances that give them specific properties. These fluids are used in the drilling process, recycled and then disposed according to their specific characteristics. Depending on the location of the project, the disposal at sea of the water-based fluid is allowed.

To reduce the impact of its disposal, several procedures are adopted in order to control and adjust the discharged volume, its characteristics and ecotoxicological levels in the marine environment.

The monitoring Project of fluid and cuttings aims to evaluate these control procedures and adequacy, to ensure its proper disposal at sea.

### *Monitoring of Sediment*

This subproject will consist of campaigns of monitoring of sediment in order to evaluate the possible environmental changes resulting from drilling activities. This subproject will be conducted in two stages, one before and one after operations of drilling unit demobilization.

### *Reinforcement of Projects for Rehabilitation and Release of Seabirds*

This subproject will be a complement of monitoring actions already implemented in the municipalities of the project's area of influence (carried out by other E&P companies) regarding vet assistance, rehabilitation and release of seabirds that arrive at the beaches.

## POLLUTION CONTROL PROJECT - PCP

### *Objective*

Control, quantify and register the entire generation of treated and discharged wastewater, emission of pollutants to the atmosphere and solid wastes generated by the drilling unit, supply vessels, dedicated vessel and shore base.

The PCP follows the guidelines provided by the Technical Note CGPEG/DILIC/IBAMA N° 01/11.

Among the associated actions are:

- Treatment, quantification and disposal of wastewater:
  - Sewage;
  - Potentially contaminated water from the drainage system of the rig;
  - Water from the cooling system.
- Treatment, measurement and disposal of organic waste (food waste);
- Correct segregation of solid waste generated in all units for further temporary storage and final disposal on shore;
- Maintain inventory of emissions to the atmosphere;
- Safeguard the correct operation and efficiency of pollution control equipments and systems responsible for energy generation through the establishment of a preventive maintenance program.

## Waste Segregation

### **Metal**

Iron, Steel, or aluminum materials, such as: scrap, metal parts, soda cans and rusty material; but only if they are not contaminated by oil or chemical products.

### **Plastic**

Clean plastic bottles, yogurt packages, disposable plastic glasses and any other plastic, as long as if it is not contaminated by oil, organic waste or chemical product.

### **Wood**

Non used Pallets, wooden braces, sawdust and any clean, non contaminated wood.

### **Hazardous Waste**

Empty paint and solvent cans, contaminated absorbent material, used oil filters, gravels and contaminated sediments, PPE's and other material contaminated by oil and/or chemical products. Fluorescent lamps and batteries are also hazardous waste, but they have to be disposed separately, in specific collectors for each of them.

### **GLASS**

Glass which is not contaminated by oil, chemical products or organic waste.

### **Paper/Cardboard**

Draft and Office papers, cardboard boxes and any other non contaminated (food leftover, chemical products, or oil) paper. Used Napkins should **NOT** be disposed on this collector.

### **Organic Waste**

Fruit peels, or any other food leftover.

### **Non Recyclable Waste**

General mixed waste, contaminated, or non recyclable. On this collector you can dispose used napkins, candy and cookies packages, and any other material contaminated by organic waste.

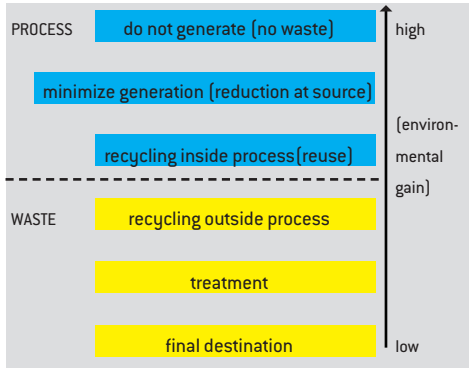
### **Medical Waste**

Waste from ambulatory and hospital care, such as: used cotton, bandages, gauzes, syringes and others...

The participation of all in this Project is essential to achieving success. The correct segregation of waste according to the color code is very important.

After the segregation in the waste bins, the waste will be stored in the offshore unit in bigger containers that are sent to shore. It is important to separate the temporary storage areas in: recyclable, non-recyclable and hazardous waste containers, to avoid cross contamination.

RRR – Reduce, Reuse, Recycle



**REDUCE THE NEED**

Consume only what is necessary;  
 Consume reusable products;  
 Consume more durable products.

**REUSE AS MUCH AS POSSIBLE**

Reuse materials;  
 Circulate material that still serve for other people;  
 Use returnable packing;  
 Develop and support recovery and conservation activities.

**ENCOURAGE RECYCLING**

Recycling is to give “new life” to materials starting from the reuse of its raw materials to manufacture new products;

**BENEFITS:**

Decreases the amount of waste to be disposed in landfills (increase its useful life);  
 Preserve natural resources;  
 Saves energy;  
 Reduces air, water and soil pollution;  
 Generates jobs (establishment of recycling industries, with recycling cooperatives' workers).

**DID YOU KNOW?**

- 1 ton. of recycled paper are 20 trees spared;
- 1 Kg of segregated glass produces 1Kg of recycled glass;
- 50 Kg of recycled aluminum avoids that 5.000 Kg of ore are extracted and saves 95% energy;
- 65 Aluminum Cans ~ 1 Kg;
- 64% of the national production of cans is recycled.

MATERIAL	DECOMPOSITION TIME
Paper	3 to 6 months
Styrofoam	8 years
Glass	4 thousand years
Plastic Cup	50 years
Pet Bottle	400 years
Aluminum Cans	undetermined
MATERIAL	VALUE (R\$/t)
Aluminum	950,00
PET	300,00
Batteries	200,00
Paperboard	130,00
Newspaper	100,00
White Paper	220,00
Hard Plastic	250,00
Steel	90,00
Fluorescent Lamps	30,00
Glass	35,00

The waste generated by the offshore units will be transported to the shore base for further appropriate treatment / final disposals.

TABLE OF FINAL DESTINATION/ WASTE MATRIX

TYPE/DESCRIPTION	Classification [NBR 10.004]	PRIMARY CONTAINER	SECONDARY CONTAINER	TREATMENT/ FINAL DISPOSAL
Oily Waste/ Lubricant and hydraulic used oils; oil and oily water from the separator.	Class I	Tanks or Metal drums	Tanks or metal skips	Oil/Water Separator
				Blending
				Energetic reuse
				Industrial Landfill
Waste contaminated by oil or chemicals / Solvent and paint cans, absorbent materials with oil, contaminated PPEs	Class I	Orange Container	Big bag	Blending
				Energetic reuse
				Industrial landfill
Contaminated Drums/ Empty metal or plastic drums contaminated by oil or chemicals	Class I	----	Metal skips	Decontamination
				Recycling
Fluorescent Lamps/ Old Lamps	Class I	Stored in their original Pack and stored in Wood boxes or plastic drums	Inside their own packages in wooden boxes or plastic drums	Temporary Storage
				Decontamination
				Recycling
Batteries/ Old batteries	Class I	Orange container	Drums	Recycling

TYPE/DESCRIPTION	Classification (NBR 10.004)	PRIMARY CONTAINER	SECONDARY CONTAINER	TREATMENT/ FINAL DISPOSAL
Medical Waste/ Medical waste from the ambulatory and old razor blades	Class I	White container	Plastic drums	Decontamination
				Specific landfill
Printer Cartridge/ Used/Empty Printer Cartridges	Class II B	In their original pack	In their original pack	Industrial landfill
Waste from the Sewage Treatment Unit/ ---	Class I	---	Tanks	Dehydrating
				Organic reuse
Organic Waste/ Leftover food	Class II A	Brown container	When disembarked: Big Bag	Sanitary landfill
			When disposed at sea: Grinded	---
Wood/ Any wood not contaminated by oil or organic wastes	Class II B	---	Bulk, big bags or skips	Blending
				Organic reuse
Glass/ Any glass material not contaminated by oil or organic wastes	Class II B	Green Container	Big bags	Recycling

TABLE OF FINAL DESTINATION/ WASTE MATRIX

TYPE/DESCRIPTION	Classification [NBR 10.004]	PRIMARY CONTAINER	SECONDARY CONTAINER	TREATMENT/ FINAL DISPOSAL
Plastic/ Any plastic material not contaminated by oil or organic wastes	Class II B	Red Container	Big bags	Recycling
Paper/ Any paper not contaminated by chemicals or organic wastes, such as: magazines, newspapers, cardboards, etc.	Class II B	Blue Container	Big bags	Recycling
Metal/ Metal scrap not contaminated by oil.	Class II B	Yellow Container	Big bags	Recycling
Drums/ Empty metal drums not contaminated by oil or other chemical product	Class II B	---	Skips or containers	Recycling
Aluminum Cans/ ---	Class II B	Yellow Container	Big bags	Recycling



TYPE/DESCRIPTION	Classification (NBR 10.004)	PRIMARY CONTAINER	SECONDARY CONTAINER	TREATMENT/ FINAL DISPOSAL
Non-Recyclable Waste/ Food/glass/plastic packs, napkins	Class II A	Gray container	Big bags	Sanitary Landfill
Rubber/ Old Rubber	Class II B	---	Bulk or ig bags	Sanitary landfill
Chemicals/ ---	Class I	---	Tanks, plastic or metal drums	Blending

## SOCIAL COMMUNICATION PROJECT - PCS

### *Objective*

Divulge the activity to the communities living in the Area of Influence, presenting the impacts related to the activity and the respective actions to be taken.

The Social Communication Project is responsible for maintaining a communication channel between Perenco and the coastal communities located inside the Area of Influence of the activity. This Project aims to present to the community the activities to be developed in the Blocks BM-ES-37, 39, 40 and 41 and inform the users of the maritime area about the activities in order to avoid possible accidents.

By disclosing information about the environmental projects to be developed, with emphasis on measures to protect the environment and emergency situations, we intend to identify the primary goals and concerns of the community regarding the activity.

### *Identification and Registration of Fishing Activities*

During the entire drilling period, there will be daily observations (performed by competent professionals), for verification and registration of fishing activities in the surroundings of the rig.

When possible, communication should be established with the crew of fishing vessels that

approach, in order to obtain more information about the activity and inform about the safety zone of 500 m around the rig.

**Report immediately to your supervisor if you see a fishing boat close to the rig.**

### PROJECT FOR ENVIRONMENTAL EDUCATION - PEA

#### *Objective*

Evaluate, in a participative way with the artisan fisherman communities of the Area of Influence, which educative and competence actions would increase the ability to manage local projects.

### PROGRAM FOR ENVIRONMENTAL EDUCATION OF WORKERS - PEAT

#### *Objective*

Inform the workers involved in the project, in the drilling unit, vessels and shore base, on the activity's pollution potential and their role in reducing the environmental impacts of this activity.

The Project aims to make workers aware about the possible environmental and social impacts associated with drilling activities, divulging ideas about waste management and environmental legislation. The Project also aims to promote a positive interaction between staff and users of maritime area

### PROJECT FOR CHARACTERIZATION OF MESOSCALE CIRCULATION

#### *Objective*

To characterize the behavior of the mesoscale circulation in the region of Vitória-Trindade current, considering the complex system of currents in the region.

This project aims to assist with understanding the pattern of local circulation, with special emphasis on the Vortex of Vitória, considered a major oceanographic phenomenon in the Espírito Santo Basin.

### OIL SPILL RESPONSE PLAN - OSRP

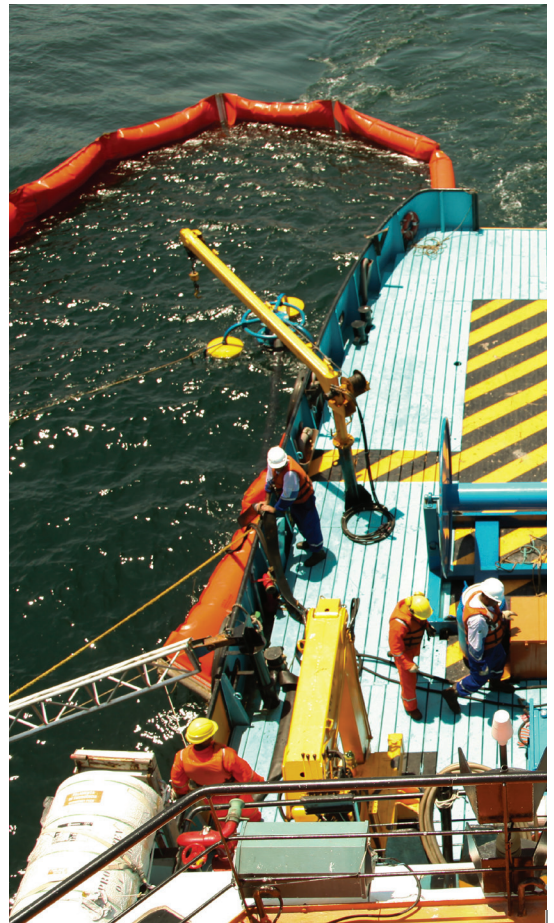
#### *Objective*

To minimize the damage caused by possible accidents of oil pollution at sea by establishing procedures for an effective response.

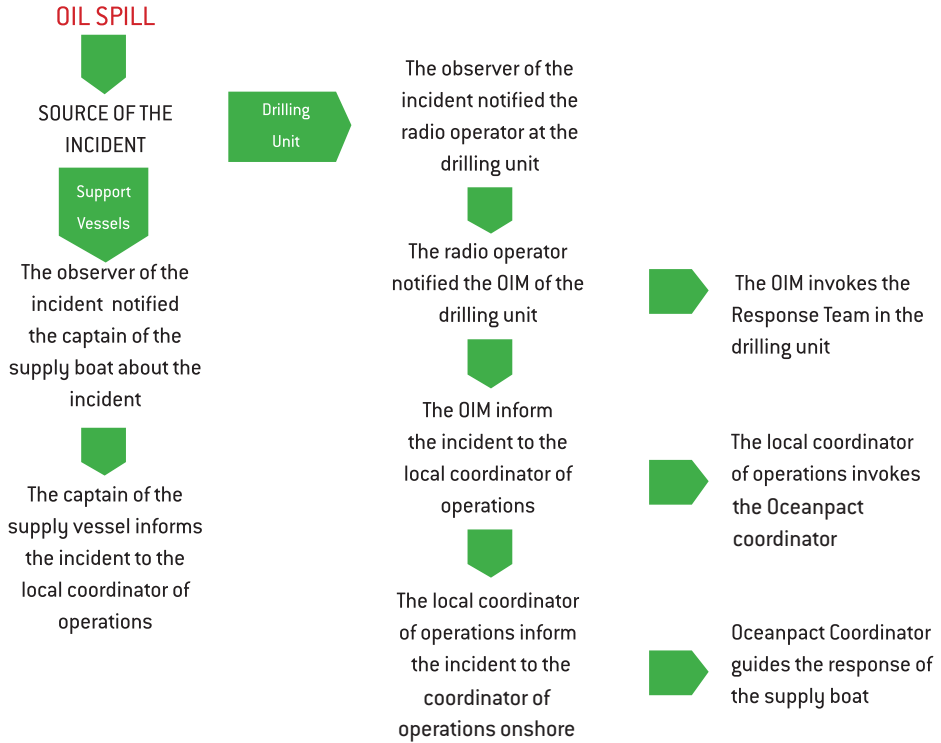
The Individual Emergency Plan meets the CONAMA Resolution N°398.

#### *Accidental Scenarios Predicted by the PEI*

- Spill from tanks of the supply boats;
- Spill during the transfer of oil from the supply boat to the drilling unit;
- Spill from tanks of the drilling unit;
- Spill due to the blowout of the well during the drilling or formation tests.



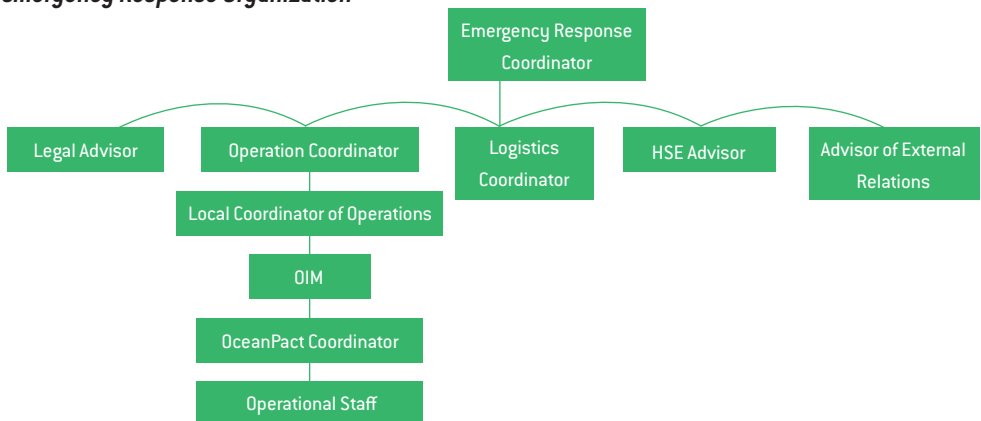
## Communication of Spill



Perenco will report any oil spill incident to IBAMA, the Port Authority of Jurisdiction and the ANP (National Petroleum Agency).

In case of oil spill, the first reaction will be to contact the control room.

## Emergency Response Organization





### *Response Equipment*

- Oil spill on board the Drilling Unit

Ocean Star drilling rig has 07 kits for containment and cleanup of oil spills on board (SOPEP). Each kit has the following equipments:

Absorbent pads  
Gloves  
Tyvek overall  
Long distance goggles  
Respirator  
Waste bags  
Shovels

- Oil Spill at sea

OceanPact will provide a dedicated vessel, M/V Celia, that will be next to the platform for the duration of the drilling activities to ensure a first response to events of oil pollution at sea.

The supply vessels and dedicated vessel to drilling operation will contain the following equipments and material to respond to an oil spill:

EQUIPMENT	DESCRIPTION	QUANTITY	LOCATION	RESTRICTIONS
Containment Barriers	Two aluminum arms for scanning 12 m, two reels of barrier with 40 m of inflatable barrier of 1500 mm height, hydraulic power unit and air blowers. (Tag Barriers n°:OCP-BC-INFL-0057 e OCP-BC-INFL-0058; Tag Sweeps OCP-AC-VARR-0005 e 0006)	80 m	Dedicated vessel (M/V Celia)	By sea conditions equivalent to No. 4 Beaufort Scale.
Reel with containment barriers	A hydraulic reel with 200 m inflatable barrier of 1500 mm height, hydraulic power unit and blower (Tag Reel OCP-AC-CARR-0011; Tag barriers OCP-BC-INFL-0043 to0049)	1 unit		
Oil Recovery	Skimmer type of spillway or philic oil with pumping capacity of 50 m <sup>3</sup> /h , more hydraulic power unit and hoses. (Tags n°:OCP-RO-VERT-0013 e OCP-RO-VERT-0014)	2 unit		
Applicator of chemical dispersant	System of dispersant applicator “wide spray” (Tag n°OCP-AC-APDI-0001)	1 unit		
Chemical dispersant	Chemical dispersant approved by IBAMA barrel from 200 liters	200 m		
Absorbing Barrier	Absorbing Barriers (oil absorber material)	10 unit		

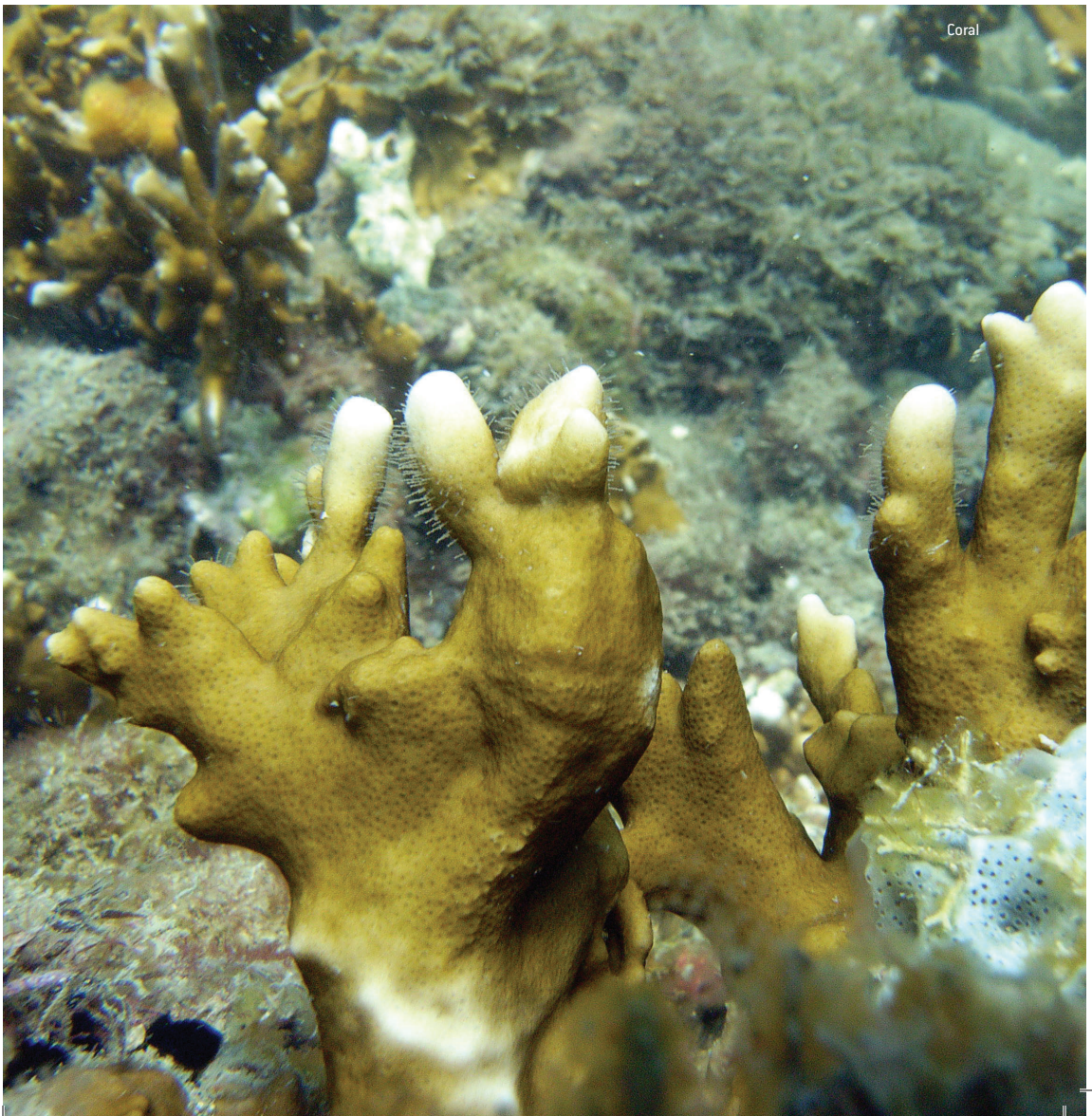
RESOURCES	DESCRIPTION	QUANTITY	LOCATION	RESTRICTIONS
Absorbent Pads	Absorbent (philic oil material)	200 unid.	Replacement vessel	By sea conditions equivalent to No. 4 Beaufort Scale.
Oil Recovery	Oil recovery type spillway or oil absorber with capacity of pumping 250 m <sup>3</sup> /h, more hydraulic unit and hoses. (Tag n°:OCP-RO-VERT-0015)	1 unit	Support Vessels FAR SAGARIS	
Oil Recovery	Oil recovery type spillway or oil absorber with capacity of pumping 165 m <sup>3</sup> /h, more hydraulic unit and hoses. (Tag n°:OCP-RO-VERT-0016)	1 unit	Support Vessels UOS NAVIGATOR	
Reel with containment barriers	A hydraulic reel with 200 m inflatable barrier of 1500 mm height, hydraulic power unit and blower ([ Tag Reel OCP-AC-CARR-0012; Tag barriers OCP-BC-INFL-0050 to 0056]	1 unit	Replacement vessel	
Absorbing Barrier	Absorbing Barriers (philic oil material)	200 m	Replacement vessel	

If necessary, additional resources can be activated. These resources are located at the Oceanpact's base at Codepe shipyard, Niterói, RJ.

### *Operational Response Procedures*

The response operational procedures were defined based on the different accident scenarios.

Perenco has an Individual Emergency Plan in which are described the response procedures. OceanPact, a Company specialized in emergency response services of this nature, was contracted by Perenco as responsible to implement and execute this plan.



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## KNOWLEDGE TEST

1- What is the length of the safety zone around the rig?

- a. 200 m
- b. 300 m
- c. 500 m

2- The existing environmental impact can be:

- a. Only positive
- b. Only negative
- c. Both positive and negative

3- The area of influence of the Project was defined considering:

- a. The geographic area of direct and indirect impacts of offshore drilling activity
- b. The area established by the Term of Reference sent by IBAMA
- c. Only the area with the possibility of the presence of whales

4- If you see a boat or an animal near the rig, you:

- a. Continue your normal activity
- b. Stop your activity to tell your supervisor or the Environmental Responsible of the rig
- c. Announce by VHF radio

5- If there is an oil spill, your first reaction is:

- a. Trying to figure out how to respond to the spill
- b. Continue to perform your normal activity
- c. Stop your activity to communicate the control room

6- Recyclable wastes are:

- a. Those that can be used as raw material for the production of new products
- b. Those that should be thrown out, because they have no more use
- c. Those that consist only of glass

7- According to the color standards, BLUE and GREEN represent respectively:

- a. Paper, paperboard / Dangerous Waste
- b. Paper, paperboard / Glass
- c. Metal / Wood

8- According to the color standards, ORANGE and GRAY represent respectively:

- a. Dangerous Waste / Non-Recyclable Waste
- b. Recycling Waste / Hazardous Waste
- c. Non-Recyclable Waste / Plastic

9- The objective of the environmental monitoring project is:

- a. Evaluate the drilling activity impacts in the environment
- b. Provide employment in fishing communities
- c. Respond to an oil spill

10- What measure was adopted by Perenco to ensure an immediate response to an oil spill at sea:

- a. Hired a shore base with response equipments for oil spill
- b. Maintains a dedicated vessel next to the rig at full time
- c. Developed an environmental impact study

## TRAINING EVALUATION

1- Did the course achieve its objectives?

- a. Yes
  - b. Partly
  - c. No
- Why? (Optional)

2- Was the workload of the course satisfactory?

- a. Yes
  - b. Partly
  - c. No
- Why? (Optional)

3- Was the language used was clear and objective?

- a. Yes
  - b. Partly
  - c. No
- Why? (Optional)

4- Were the facilities adequate?

- a. Yes
  - b. Partly
  - c. No
- Why? (Optional)

5- Was the presentation developed for the training satisfactory?

- a. Yes
  - b. Partly
  - c. No
- Why? (Optional)

6- Was the quality of the content presented by the handout satisfactory?

- a. Yes
  - b. Partly
  - c. No
- Why? (Optional)

7- Would you say that you took advantage of the course?

- a. Yes
  - b. Partly
  - c. No
- Why? (Optional)

8- Do you think that you can apply the knowledge gained in your work?

- a. Yes
  - b. Partly
  - c. No
- Why? (Optional)

9- What is your opinion about the technical content of the instructor and about the conduction of the training?

- a. Optimum
- b. Good
- c. Regular
- d. Bad.

10- Have you ever participated in similar training?

- a. Yes
- b. No

**Name:**

**Date:**

**Function:**

**Company:**

**IBAMA:**

*Linha Verde:* 0800-618080

For more information about the drilling activity, make a collect call to the following number:

**90 (xx) 21 2547-7541**

[faleconosco@perenco.com](mailto:faleconosco@perenco.com)



This program is a mitigation measure required by IBAMA during federal environmental licensing process.

prepared by:

