Project Summary

Environmental Authorization Application to the EPA for Offshore 3D Seismic Acquisition Survey

Offshore Guyana Block S4

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TOTALENERGIES GUYANA SHALLOW

PROJECT SUMMARY

Project Title: TotalEnergies Guyana Block S4 Offshore 3D Seismic Acquisition Survey

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1.0 Detailed Description of the proposed project

1.1 Executive Summary

TotalEnergies Guyana is planning to conduct a 3D Seismic Acquisition survey offshore Guyana in Block S4 in 2026. The purpose of this the project is to acquire new seismic data, process it with the latest Seismic Processing technology available today and use the seismic data for geophysical and geological studies to develop new prospects for drilling during the first exploration period.

During the acquisition, gravity and magnetic recordings will be undertaken as well on the 3D seismic vessel. A marine seismic survey is a method of determining geological features below the seafloor using a technical process which involves sending sound waves into the rock layers beneath the sea floor and then recording the time it takes for each wave to bounce back as well as measuring the strength of each returning wave. The sound waves are generated by an acoustic pulse at regular intervals, and the energy penetrates the subsurface geological layers and reflects back to the surface where the seismic signal is digitized and recorded on a seismic cable up to 12 km in length, which is towed behind a seismic vessel as shown in Figure 1.

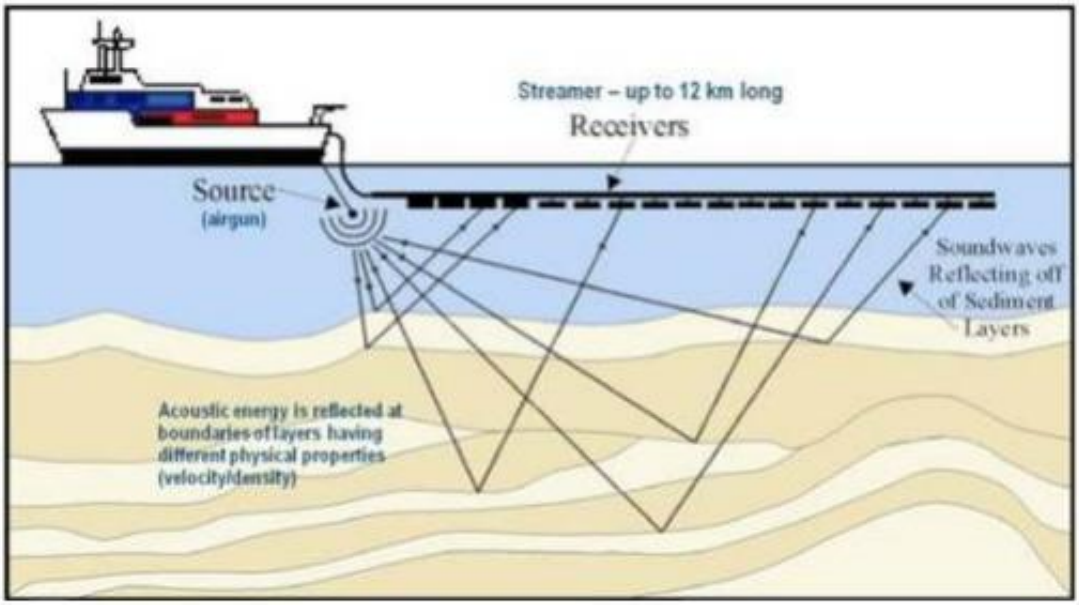


Figure 1: Seismic Survey Vessel Acquiring Data ; Source BOEM

1.2 Location

The location of the 3D survey is shallow waters offshore Guyana in in block S4 in about 20 to 30m of water depth. The survey will cover 2000 sq. km of 3D seismic and is shown in the map below. The location of the survey is about 40km from shore. Appendix A provides the coordinates of the acquisition survey.

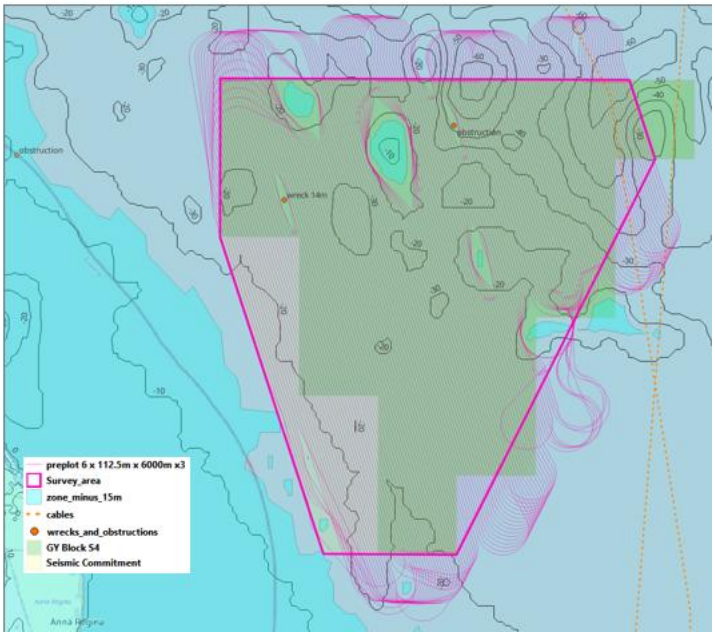


Figure 2: Location of the seismic survey in Block S4 , offshore Guyana

2.0 Project Design

2.1 Overview

The Project will be in 2 phases:

- Phase 1: Preparation
  - Feasibility Study of seismic acquisition
  - Develop the project Scope of Work and Reference
  - Discuss with relevant stakeholders and authorities on all steps needed to get permits and authorizations.
  - Involve procurement of seismic acquisition and processing services.
  - Conduct the Environmental Impact Assessment
- Phase 2: Operational Execution
  - Mobilization of seismic vessel and support vessels

- Deployment of seismic towing equipment, seismic data acquisition
- Demobilization after completion of survey
- Seismic data processing of the acquired data

2.2 Power and Water Resource Management

The Project will be conducted offshore in shallow waters with the main seismic vessels and support vessels coming to port only for resupply of provisions, crew changes, and fuel. It is anticipated that this project will not require services onshore like facilities and infrastructure. Fresh water is available offshore on the seismic vessels via a water treatment system and stored in a potable water storage tank. Bottled water will be provided for the crew.

2.3 Capital Investment

TotalEnergies intend to invest around USD $25,000,000 for the 3D seismic survey and will have final numbers after the call for tender is done.

2.4 Local Content and Employment

TotalEnergies anticipates that the seismic vessel will have onboard around 50-60 people workforce of highly skilled staff to manage the advanced technology of towing systems of the cables and source arrays. Positions like maritime positions can be filled with local workforce such as Marine Mammal Observers, Passive Acoustic Monitoring Operators, Galley Staff, and Able Bodied Seamen.

2.5 Duration of the Project

The seismic acquisition project is anticipated to last about 70 days including mobilization and demobilization. It is expected to start in August 2026 and last till October 2026, with a delay that could be a month due to vessel availability. Seismic data processing will commence after the data reaches the processing centre and take around 12 months to complete.

3.0 Potential Impacts

3.1 Air quality

Impacts on air quality are expected primarily from combustion and incinerator emissions; The main mitigation measures expected concern the maintenance of vessel engines and equipment according to manufacturers' specifications to optimize combustion efficiency, the use low sulphur diesel if available, the maintenance of incinerator and use in accordance with manufacturers' specifications to ensure efficient combustion.

3.2 Marine Sediment

The disposal of trash and debris in the ocean is prohibited under International Convention for the Prevention of Pollution from Ships (MARPOL) (Annex V). Occasionally, scrap debris such as welding rods and pieces of pipes may accidentally fall overboard from offshore vessels. Such non-hazardous waste, depending on its composition, can sink to the seafloor where it may eventually be colonized by epibiota. Any resulting impacts are expected to be localized to within a few hundred meters of the point of release. Although lost items could remain on the seafloor indefinitely, they are unlikely to be of sufficient quantities to have a significant impact on seabed topography. Leaching and oxidation of metal debris may also affect localized sediment quality

The probability of impacts to sediment quality is synonymous with the likelihood of occurrence of accidental loss, which is 'Occasional', when considered in the context of standard waste management practices.

The potential impacts will be managed via compliance with the vessels' waste management procedures and adherence to MARPOL restrictions, Incineration of hazardous waste on the survey vessel and/or send to shore for treatment and disposal at an approved disposal facility, implementation of waste management procedures on board to store properly any waste generated

3.3 Seawater Quality

Expected effluent discharges from vessels that may occur during the seismic surveys include the following:

- Sanitary and domestic wastewater
- Deck drainage; and
- Miscellaneous discharges

Sanitary waste, or black water, consists of human body wastes from toilets and urinals. Sanitary water will be treated in marine sanitation devices on survey, chase, and support vessels for compliance with the International Convention for the Prevention of Pollution from Ships (MARPOL).

Domestic waste, or grey water, includes water from showers, sinks, laundries, galleys, safety showers, and eye-wash stations and does not require treatment before discharge.

Deck drainage consists of rainfall, deck washings, and runoff. The volume of deck drainage varies with the amount of rainfall. All potentially oil-contaminated deck drainage which will be monitored and processed through an oil-water separator and discharges will comply with international guidelines for oil content of 15 parts per million or less.

Routine discharges from survey vessels are restricted to sewage and putrescible wastes (food scraps). Food scraps will be ground to less than or equal to 25 mm prior to discharge overboard in waters more than 12 nm from shore. Risks to the marine environmental resources in the survey area and adjacent areas from disposal of wastes are negligible given that wastes other than routine sewage and putrescible material discharge will be retained for waste treatment, recycling or disposal following the implementation of the Joint Notice to Lessees (NTL) No. 2012-G01 about Marine Trash and Debris Awareness and Elimination.

3.4 Marine wildlife - Mammals, Turtles , Birds

The main source of impact is represented by the underwater noise generated by seismic activity that will have an impact on zooplankton and marine fauna in general.

The impacts on zooplankton and fishes are expected to be limited. Sea turtles and marine mammals are expected to be impacted by underwater noise generated. These impacts will be evaluated via a

dedicated nose modelling study that will be developed as part of the ESIA to provides an indication of the likely resultant noise levels from the source with distance to identify the levels of residual noise to be below the temporary threshold levels where any impacts to marine mammals (whales and dolphins), sea turtles, and fishes has been scientifically shown to occur.
To mitigate noise-related impacts on marine resources during the seismic survey, TotalEnergies will implement the guidelines of the Joint Nature Conservation Committee (JNCC, 2017). Adherence to JNCC mitigation measures includes the presence of MMOs, PAM, pre-start visual observations, soft start procedures, start-up delay procedure and stop work procedure when animals are detected, establishment of mitigation zone, etc.). All cetacean sightings will be recorded.

Mitigation measures will include:

- Slow speed of the vessels during operations
- Use of a chase vessel usually positioned several kilometers ahead
- Use of Passive Acoustic Monitoring (PAM) systems during periods of poor visibility and/or darkness
- Soft start and ramp-up procedures
- Trained Marine Mammal Observers (MMO) on the vessel

Another source of potential impact is represented by the collision between vessels and marine mammals or sea turtles and the survey equipment such as lines and cables that can pose a risk of entanglement for animals. These impacts can be managed by the implementation of BOEM Guidelines for vessel strike avoidance and injured/Dead Protected Species and the use of sea turtle exclusion devices.

3.5 Benthic communities

There are no planned routine activities that could affect benthic communities.

3.6 Waste Management

During the project and offshore operations, there will be two types of waste being generated:

- Non-Hazardous solid waste which includes food waste and recyclable materials.
- Hazardous waste like thinner, solvent, hydraulic fluid, oily rags, batteries, containers that store oil and lubricants.

The seismic vessels and support vessels will comply with International Conventions MARPOL 73/78 which require waste management plan, implementation and disposal. All hazardous waste will be stored in the vessel and disposed of in authorized onshore facilities or incinerated on the survey vessel in accordance with MARPOL regulation. Tables that show estimates of waste volumes is in Appendix B.
A program-specific Waste Management Plan (WMP) will be prepared by the selected survey contractor, and validated by the Project, to specify arrangements for the use, storage, and handling and disposal of non-hazardous and hazardous substances. For vessel-related activities, the WMP will comply with MARPOL requirements at a minimum with the aim to prevent accidental loss of waste debris into the marine environment which can adversely affect marine fauna (e.g., marine mammals and sea turtles).

3.7 Impacts and main mitigation measures during non-routine/unplanned events

Potential accidents during the project could include a small volume spill due to collision or a fueling accident. The vessel will be initially fueled from the point of mobilization; further refueling will be offshore using vessel-to-vessel transfer ("bunkering"), if necessary.

Refueling at sea within the permit area may be required during the survey program. This process will involve the support vessel being used to refuel the survey vessel at sea. Refueling operations will be carried out in strict accordance with the survey vessel's procedures. The potential for a hydrocarbon spill resulting from the collision of the survey, chase, and support vessels with another ocean-going vessel is considered negligible for the following reasons:

- Radio communication will be maintained with any vessels observed approaching or transiting the area.
- Information on the location and timing of the survey program will be communicated to vessels via the Maritime Authority of Suriname Maritime through a Notice to Mariners.
- The chase and support vessels will assist with scouting/communicating with other vessels in the area; and
- Notification of the position of the seismic vessels and the area proposed to be working in will be communicated to fishing industry representatives and forwarded to respective members (vessel owners); this will provide that no fishing vessels are operating within the nominated daily run line of the survey.

All oils and chemicals used or stored on-board the survey vessels will be fully contained and located in designated areas away from deck operations to prevent damage to containers or leakage/spillage onto the deck or into the ocean. These materials will be stored in bunded areas such that any spills or leaks can be contained and recovered. Deck drains and bunds will be inspected to ensure their integrity prior to the commencement of operations. Sufficient absorbent materials will be held on board to mop up possible leaks. Should on-board spills or leaks occur, they should be cleaned up immediately using absorbent materials held on the vessel. Recovered oils or chemicals and used absorbent materials will be placed in appropriately marked drums for onshore treatment and disposal.

In the event of an accidental oil spill, an Emergency Response Plan, a Shipboard Oil Spill Response Plan for all vessels involved in the survey; and a Waste Management Plan will be developed before the start of the seismic acquisition.

3.8 Socioeconomics

Socioeconomic impacts that might result from offshore survey activities generally will be considered positive impacts by stimulating local economic development and increased use of services.

Local services could include supply of goods and services such as land, water, and air transportation; food, fuel, and water supply; solid waste handling, recycling, and disposal; water treatment; medical and emergency services; stevedoring and port operations; construction; warehousing; vehicle maintenance and repair; and security.

The extent of local hiring for direct support of offshore seismic survey activities will depend on the local availability of skilled labor and needs to be assessed, but may be limited due to specific technical, experience, and training requirements. The extent of local hiring may also be limited to the support base and local transportation.

Overall impact of onshore support base activity to onshore socioeconomic conditions is expected to be limited except in the case the port of Georgetown is utilized during the surveys, which could result in beneficial effects.

There are no negative impacts on coastal communities (including indigenous peoples) expected from the proposed seismic survey program.

A Social Investment Project is likely to be undertaken as part of the planning and execution of the 3D acquisition. The project is still within the conceptual phase and details of it will be supplied at a later date once fully defined ?

3.9 Fishing activities

The fisheries sector plays a vital role in the economy, food security and employment. Fishing activities are diverse encompassing both industrial and artisanal fishing.

Potential impacts on fisheries of seismic survey activities are:

- Disturbance and avoidance reactions by fish due to underwater noise from airgun arrays, potentially causing temporary displacement and reduced catches of fishes in the vicinity of the survey area. Disturbance to fish can be minimized by using the lowest practicable airgun source strength necessary to achieve the seismic survey objectives.

- Interferences with commercial fishing activities from the physical presence and movement of the survey vessel and its equipment, creating navigational challenges and temporary exclusion zones.

Potential mitigation measures to avoid or minimize these impacts:

- conduct early consultations with local authorities and fishing companies, provision of Notices to Mariners prior to the survey and clearly communicate the coordinates and dimensions of the exclusion zone in a timely manner.
- notify commercial license holders, fishing companies and fishing vessels in advance of the commencement of survey operations.
- Notify the Port Authority, Guyana Maritime Administration, issue Notices to Mariners, and broadcast the seismic vessel's activity and position on appropriate communication channels (e.g., AIS, VHF).
- Use radar and detection equipment on the seismic vessel to detect and monitor nearby fishing vessels.
- Deploy chase vessels to maintain the integrity of the safety exclusion zone and ensure operational safety.
- Assign a Fisheries Liaison Officer fluent local dialect on the chase/support vessels to ensure effective communication with fishermen.
- Implement a Grievance Procedure and engage negatively affected parties to mutually agree on fair reconciliation measures. These grievances shall be responded to and monitored in a timely manner to ensure all issues are proactively managed and resolved.

During the preparation phase, there will be engagement with the fishing community on the operations to ensure a constructive dialogue, foster positive relationships, and provide timely advance notification of planned operations.

3.10 Shipping and Maritime traffic

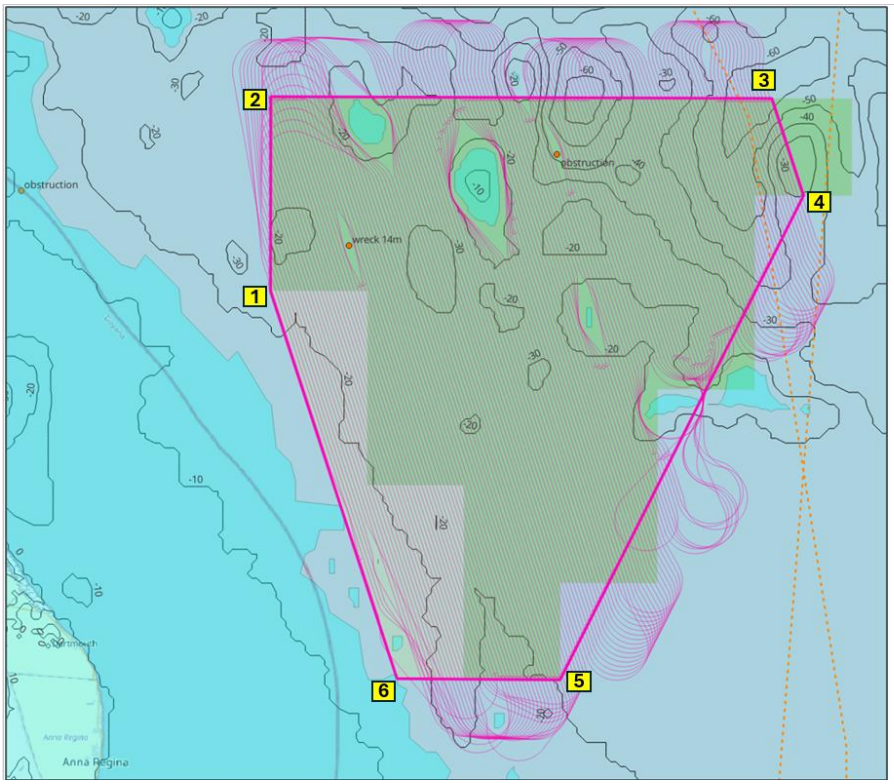
Potential impacts of the proposed seismic acquisition project on shipping and maritime operations may include:

- temporary disturbance and interferences with shipping routes due to the physical presence of the seismic survey vessel.
- Navigational hazards or restricted maneuvering space of shipping caused by deployed seismic survey equipment and streamers.
- Increased maritime traffic from support and chase vessels operating between the shore bases and the survey area.

Potential mitigation measures to avoid or minimize these impacts:

- Maintain continuous communication with Guyana Maritime Administration and Port Authority.
- Issue Notices to Mariners and broadcast vessel positions and operational zones via appropriate channels (e.g., VHF, AIS).
- Coordinate with regional maritime authorities (including Suriname if applicable) for cross-border awareness.
- Apply the same notification and safety measures established for fishing activities.

4.0 APPENDIX A - Project Coordinates



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3	400127.10	865977.12
4	403549.18	856755.69
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6	364948.42	810856.42

5.0 APPENDIX B

Bilge water disposal	Cleaning out of engine room. Bilge water generation varies depending on vessel characteristics; discharge volume varies. Estimated up to approx. 28 m^3/month.	Hydrocarbons, Increased Biochemical Oxygen Demand (BOD)	Bilge water will be processed via an oil-water separation system, ensuring hydrocarbons content is no more than 15 ppm in line with MARPOL.

Deck drainage	Run-off of rainwater. Deck drainage water generation varies depending on vessel characteristics and rainfall amounts, discharge volume varies. Estimated to be low.	Hydrocarbons, cleaning products	Rainwater run-off will depend on rainfall levels and wind levels. Deck drainage will be monitored and treated to remove oil and grease.

Sewage (Grey water)	Dishwasher, showers, laundry, bath and wash- basin drains. Estimated 220 L /person/ day. Estimated total volume of 22 m^3 per day (based on calculation of a total 100 people on all survey vessels).	Increased BOD, solids, detergents	Grey water will be processed via an on-board sewage treatment unit and discharged in compliance with MARPOL, including no floating solids or discoloration of surrounding water, no discharged within 3 nm of land, and residual chlorine content <1.0 mg/L.
Sewage (black water)	Water effluent from toilets. Estimated 100 L per person per day. Total volume of 10 m^3 per day (based on calculation of a total 100 people on all survey vessels).	Microorganisms, nutrients, suspended solids, organic material, pathogens, chlorine.	Black water will be processed via an on-board sewage treatment unit and discharged in compliance with MARPOL, including no floating solids or discoloration of surrounding water, no discharged within 3 nm of land, and residual chlorine content <1.0 mg/L.
Medical waste	An infirmary with a health care specialist on board will be present. Medical waste is managed as bio hazards.	Used medical equipment, organic material, pathogens.	Special/hazardous wastes should be contained independently in appropriate closed-containers.

Ballast water	Ballast water generation varies depending on vessel characteristics; discharge volume varies.	Oil and alien organisms.	Ballast water discharges are not planned during seismic acquisition.