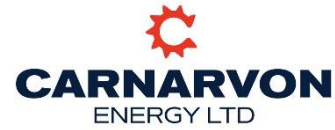


## Rig mobilised for Buffalo-10

22 December 2021



- Valaris JU-107 jack-up drilling rig is being mobilised to the Buffalo-10 location
- Buffalo-10 focused on confirming sufficient hydrocarbons to support an economic development
- The well is estimated to take around 35 days to complete

Carnarvon Energy Limited ("Carnarvon") (ASX:CVN) is pleased to announce that the Valaris JU-107 jack-up drilling rig is currently en-route to the Buffalo-10 location. Drilling is expected to commence within a week.

### Drilling Plan

Buffalo-10 is to be drilled offshore Timor-Leste within the TL-SO-T 19-14 Production Sharing Contract (PSC) in around 30 metre water depth (see Figure 1).

The well is being drilled to test for the presence of commercial quantities of hydrocarbons (oil) that could ultimately result in a re-development of the field.

The Valaris JU-107 jack-up mobile offshore drilling unit (MODU) has been contracted to undertake the Buffalo-10 drilling campaign.

The estimated time to drill and complete the well is around 35 days (success case, trouble free).

The base case well design is:

- drill 36" x 26" hole and set 30" x 20" Conductor at around 120 metres;
- drill 17 ½" hole and set 13 ⅝" Surface Casing at around 800 metres;
- drill 12 ¼" hole and set 9 ⅝" Intermediate Casing at around 2,800 metres; and
- drill 8 ½" hole and set 7" Production Liner to approximately 3,500 metres (success case).

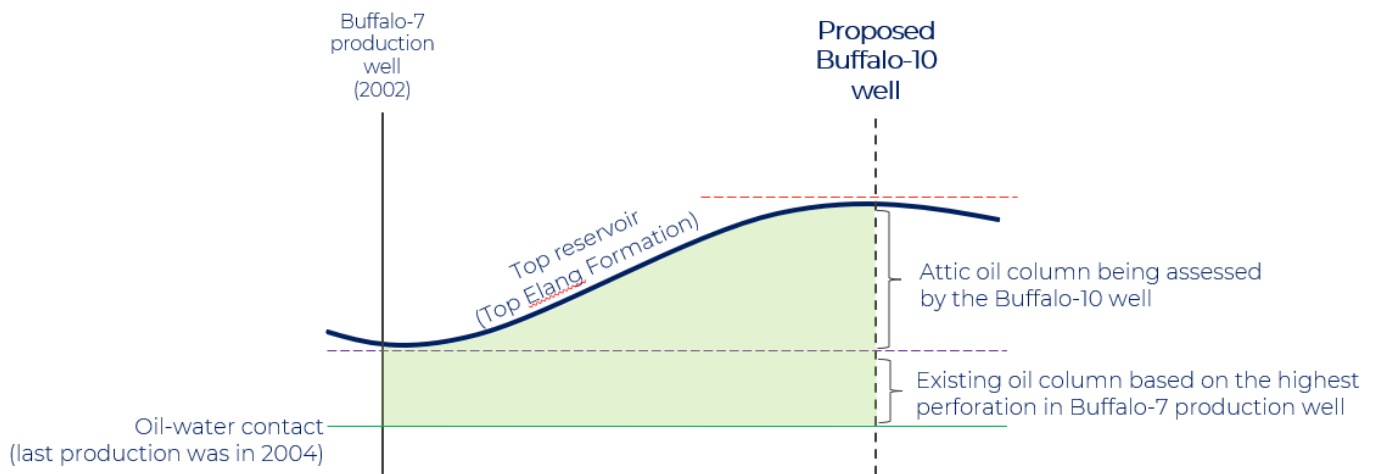
In the success case, the Buffalo-10 well will be suspended with an unperforated liner, cemented across the reservoir in order for the well to be re-entered and completed for production at a future date.

### Geological Plan

Carnarvon acquired the permit containing the Buffalo field in 2016, and immediately set about reviewing the potential in the Buffalo field using technology that was not available at the time of the previous development.

Reprocessing of the 3D seismic dataset using modern full waveform inversion (FWI) technology supports an interpretation of a significant attic oil accumulation remaining after the original development.

The extent of this attic accumulation will be tested when the well is drilling through the Elang reservoir in the 8 ½" hole section, where it is prognosed to penetrate both the existing oil column and assess the extent of the attic column, as illustrated in the figure below:



Reservoir modelling utilised the updated structural interpretation of the field which was based on modern reprocessed seismic data. The model then incorporated extensive history-matching, involving calibrating model / well performance to historical production rates and water-cut development (governed by strong aquifer drive) observed during the original production period. This work led Carnarvon to estimate contingent resources in the Buffalo oil field of 31.1 million barrels (2C), with low estimates of 15.3 million barrels (1C) and high estimates of 47.8 million barrels (3C).

Ascertaining the volume of oil remaining will require an assessment of both the height of the attic as well as reservoir and fluid properties. This information is expected to be acquired during the drilling of the Buffalo-10 well and be assessed once the drilling operations have been completed.

With the minimum economic field size estimated to be significantly lower than the mid case estimate, there is a strong likelihood the Buffalo-10 well will confirm an economic project. Accordingly, Carnarvon's drilling plans provide for the Buffalo-10 well to be retained as the first production well in the redevelopment program.

## Field History

The Buffalo field was discovered in 1996 by BHP and produced from 1999 to 2004, with the last well, Buffalo-9, being drilled in 2002. In 2005 the lease on the FPSO ended, and coupled with declining production rates, increasing water cut and decreasing gas availability for gas-lift, the field was abandoned. All wells were plugged and abandoned, and the infrastructure removed.

The Buffalo field resides in Timor-Leste in the TL-SO-T 19-14 PSC in which Carnarvon holds a 50% interest.

Approved by:



**Adrian Cook**  
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Carnarvon Energy

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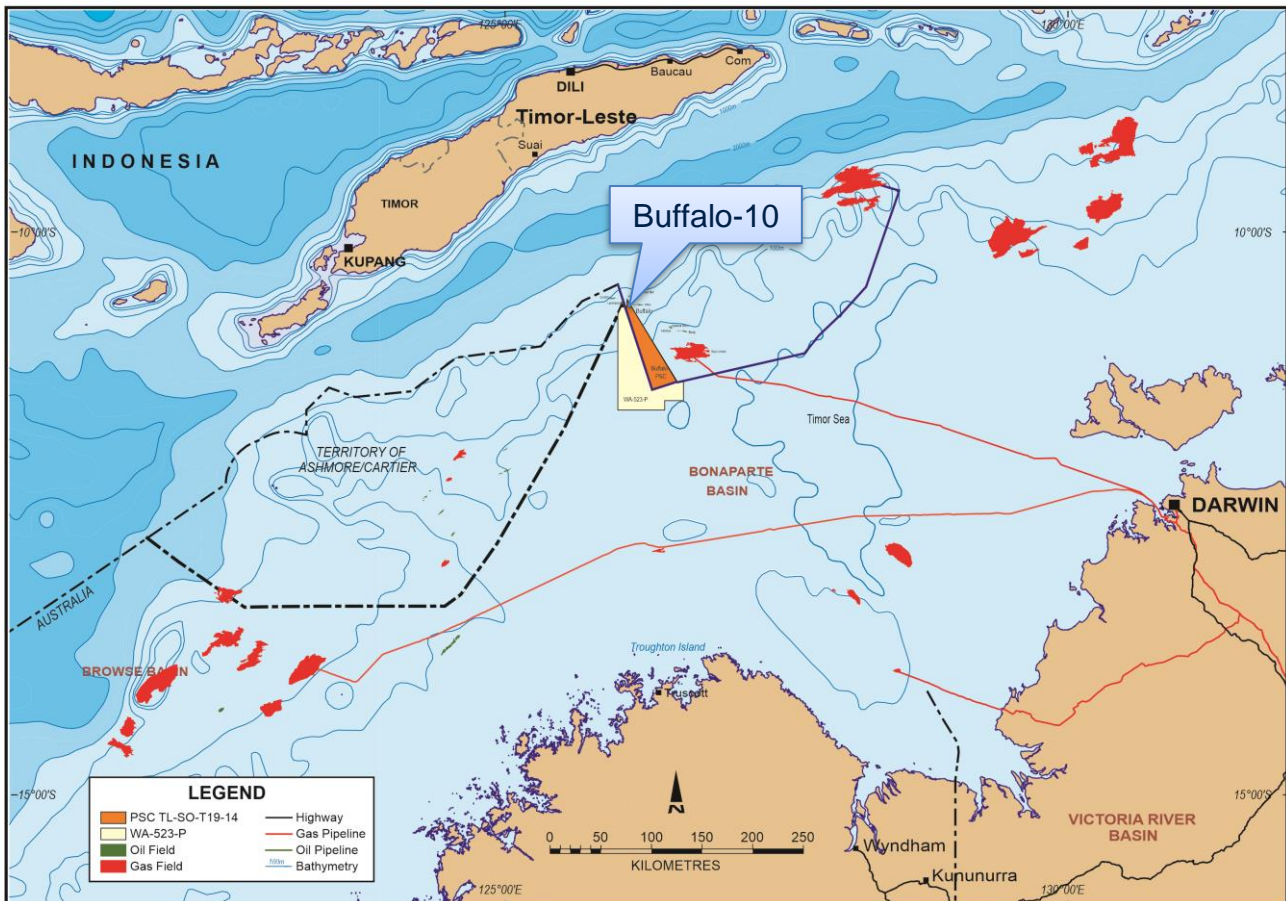


Figure 1: Buffalo-10 location

### **Resource Information**

The estimates of contingent resources included in this report have been prepared in accordance with the definitions and guidelines set forth in the SPE-PRMS. Refer to Carnarvon Energy's ASX announcement on 28 August 2017 for more information

A combination of deterministic and probabilistic methods were used to prepare the estimates of these contingent resources.

The resource estimates outlined in this report were compiled by the Company's Chief Operating Officer, Mr Philip Huizenga, who is a full-time employee of the Company. Mr Huizenga has over 25 years' experience in petroleum exploration and engineering. Mr Huizenga holds a Bachelor Degree in Engineering and a Masters Degree in Petroleum Engineering. Mr Huizenga is qualified in accordance with ASX Listing Rules and has consented to the form and context in which this statement appears.

Carnarvon is not aware of any new information or data that materially affects the information included in this announcement and that all material assumptions and technical parameters underpinning the estimates in this Presentation continue to apply and have not materially changed.

### **Cautionary Statement**

This document may contain forward-looking information. Forward-looking information is generally identifiable by the terminology used, such as "expect", "believe", "estimate", "should", "anticipate" and "potential" or other similar wording. Forward-looking information in this document includes, but is not limited to, references to: well drilling programs and drilling plans, estimates of reserves and potentially recoverable resources, and information on future production and project start-ups. By their very nature, the forward-looking statements contained in this news release require Carnarvon and its management to make assumptions that may not materialize or that may not be accurate. The forward-looking information contained in this news release is subject to known and unknown risks and uncertainties and other factors, which could cause actual results, expectations, achievements or performance to differ materially, including without limitation: imprecision of reserve estimates and estimates of recoverable quantities of oil, changes in project schedules, operating and reservoir performance, the effects of weather and climate change, the results of exploration and development drilling and related activities, demand for oil and gas, commercial negotiations, other technical and economic factors or revisions and other factors, many of which are beyond the control of Carnarvon. Although Carnarvon believes that the expectations reflected in its forward-looking statements are reasonable, it can give no assurances that the expectations of any forward-looking statements will prove to be correct.



# Rig on the Move: Carnarvon Energy Set to Spud Buffalo-10 Well in Timor Sea

OE Staff • December 22, 2021

After weeks of delays, Australian oil and gas company Carnarvon Energy has informed that the Valaris JU-107 jack-up drilling rig is now being mobilized to the Buffalo-10 location, in the Timor Sea, with the drilling operation expected to start "within a week."

Carnarvon had expected to spud the Buffalo-10 in November, but the rig had extended its stay with Jadestone, pushing the spud date to late December.

The Buffalo field was discovered in 1996 by BHP and produced from 1999 to 2004, with the last well, Buffalo 9, drilled in 2002. In 2005 the lease on the FPSO ended, and coupled with declining production rates, increasing water cut, and decreasing gas availability for gas-lift, the field was abandoned. All wells were plugged and abandoned, and the infrastructure removed. Carnarvon was awarded the WA-523-P permit, which included the previously developed Buffalo field, in May 2016 for an initial six-year term.

The Buffalo project was originally situated in Australian waters, but in 2018, the Australian and Timor-Leste governments signed a maritime boundary agreement that changed the maritime boundary between the two countries, affecting the WA-523-P permit that contains the Buffalo project.

The WA-523-P exploration permit was split in two with a portion containing the Buffalo oil field changing from its Australian jurisdiction to being exclusively in the East Timor jurisdiction. The Buffalo field resides in Timor-Leste in the TL-SO-T 19-14 PSC in which Carnarvon holds a 50% interest.

## Drilling

Now, the Buffalo-10 well will be drilled in around 30 meters of water depth. The well will test for the presence of commercial quantities of hydrocarbons (oil) that could ultimately result in a re-development of the field. The estimated time to drill and complete the well is around 35 days.

The base case well design is: • drill 36" x 26" hole and set 30" x 20" Conductor at around 120 meters; • drill 17 ½" hole and set 13 ¾" Surface Casing at around 800 meters; • drill 12 ¼" hole and set 9 ⅝" Intermediate Casing at around 2,800 meters; and • drill 8 ½" hole and set 7" Production Liner to approximately 3,500 meters (success case).

In the success case, the Buffalo-10 well will be suspended with an unperforated liner, cemented across the reservoir in order for the well to be re-entered and completed for production at a future date.

Seismic work conducted so far has led Carnarvon to estimate contingent resources in the Buffalo oil field of 31.1 million barrels (2C), with low estimates of 15.3 million barrels (1C) and high estimates of 47.8 million barrels (3C), and Carnarvon has said that there is a strong likelihood the Buffalo-10 well will confirm an economic project.

Carnarvon's drilling plans provide for the Buffalo-10 well to be retained as the first production well in the redevelopment program.

## Government launches oil and gas drilling of Buffalo-10 well



Minister of Petroleum and Minerals, Víctor da Conceição Soares (Image Tatoli/Francisco Sony)

**DILI, 23 december 2021 (TATOLI)** – The Government of Timor-Leste, through the Minister of Petroleum and Minerals (MPM), has launched the offshore oil and gas drilling of Buffalo-10 well in the Timor Sea.

The official launch of the drilling was accompanied by the National Petroleum and Minerals Authority (ANPM) and Australian oil and gas company Carnarvon Petroleum.

“Today, we are gathered here to launch the drilling of the Buffalo-10 well. It’s just the beginning and I wish the Carnarvon all the very best with the drilling. We hope that Carnarvon will execute its drilling successfully. Carnarvon’s success is our success,” said Minister of Petroleum and Minerals, Víctor da Conceição Soares at the celebration of the launching of the Buffalo-10 Drilling Campaign at Hotel Timor, in Dili, on wednesday.

Soares congratulated Carnarvon for picking up the courage to invest in the Buffalo-10 drilling: Let’s pray for Carnarvon and for all of us to succeed in this drilling. This is just the beginning and we will have a real celebration when Carnarvon successfully produces oil and gas from this well.”

“Carnarvon showed us a patriotic courage (...) I challenge this company to keep up this kind of courage and keep working until it achieves its goal to contribute to the development of the nation,” he said.

At the same place, the Country Manager of the Carnarvon, Angelo Lay revealed that the drilling of the Buffalo-10 is estimated to cost around US\$35 million.

Australian oil and gas company Carnarvon Petroleum had been expected to spud the Buffalo-10 well in the Timor Sea in late december.

“The drilling machines of oil and gas well will arrive in the Buffalo field (Timor Sea) on thursday (23/12) from Australia. The drilling has been set to begin on 26-27 december after the installation of the machines is completed. As you know, it’s just one well, so the drilling would be completed within 35 days,” Lay said.

He said Buffalo-10 well is not a new field to be explored as it was previously drilled by other companies from 1999 to 2004 with producing more than US\$20 million barrels of light oil: “You know the Buffalo field was abandoned in 2003-04 following the prices of oil and gas plummeted globally at that time. Carnarvon bought the field from another company in 2016.”

Lay recalled that Buffalo-10 well was under the sovereign jurisdiction of the government of Australia before the final delimitation of maritime boundaries, between TimorLeste and Australia.

“Once the Buffalo field was 100 percent belong to Timor-Leste, the Carnarvon was granted the license by the ANPM for the drilling of the well. So, on 30 august 2019, the Carnarvon and ANPM sign a Memorandum of Understanding for the drilling of the field,” said Lay

He assured that Carnarvon will 90 percent successfully execute the drilling of the well, saying by 2024, the company would produce its first production.

Previously, Australia’s Carnarvon stated that Timor-Leste could pocket just over US\$600 million if the Buffalo-10 exploration well is successfully drilled.

Australian-listed Carnarvon Petroleum and UK-listed Advance Energy, are hoping to develop more than 30 million barrels of oil that previous operators, including BHP and Nexen Petroleum, appear to have left behind offshore East Timor, also known as Timor Leste, said Carnarvon and Advance Energy, quoted by Energy Voice.

The Buffalo oil field was originally discovered in 1996 by BHP and produced 20.5 million barrels of light oil between 1999 and 2004. BHP operated the field for two years before selling out to Nexen. Both operators failed to unlock the oil sitting at the geological crest of the field, known as the attic.

If the drilling proves successful and they discover some 30 million barrels of oil then East Timor could pocket about \$450 million over five-year project life, calculates Peter Strachan, a Perth-based independent energy analyst. This is based on an oil price of \$75 per barrel with development costs pegged at \$450 million and operating costs at \$1,050 million. If development costs were less than \$450 million (\$15/barrel) then the East Timor government would receive more.

“Upside for the government could see it pocket \$610 million over a five-year project life,” said Strachan, quoted by Energy Voice.

The Vice President of ANPM, Jose Manuel Goncalves said ANPM is committed to cooperating with the Carnarvon to facilitate the drilling of the Buffalo-10 well.

In addition, Mateus da Costa, the Executive Director for Explorations and Promotions at National Petroleum and Mineral Authority (ANPM) informed that according to the study conducted by ANPM and Carnarvon indicated that there would be no environmental impacts of the deep-water oil and gas exploration in the Buffalo-10 well.

**Journalist: Filomeno Martins**

**Editor: Nelia Borges Rosario**

## Empreza CARNARVON hahú perfurasaun posu Buffalo iha fulan ne'e



Lansamentu perfurasaun posu Buffalo, iha salaun Hotel Timor, kuarta (22/12). Imajen TATOLI/Francisco Sony

**DILI, 22 dezembru 2021 (TATOLI)**—Governu liuhosi Ministériu Petróleu no Minerál (MPM) akompaña ho Autoridade Nasionál Petróleu no Minerál (ANPM) no empreza CARNARVON Petróleu Timor Unip Lda, halo lansamentu ba perfurasaun mina-matan tasi-laran iha posu Buffalo.

Tuir Representante empreza CARNARVON, Ângelo Lay, antes realiza inisiativa ne'e, empreza hamutuk ho entidade hosi parte Governu hahú ona estudu ba kampu ne'e atu garante sei hetan rezultadu di'ak.



Representante empreza CARNARVON, Ângelo Lay. Imajen TATOLI/Francisco Sony

“Tanba hanesan kampu tuan, entaun ami garante 90% hetan mina. Daudaun ne'e mákina perfurasaun hahú mobiliza hosi fatin perfurasaun iha Austrália, ne'ebé iha ona dalan mai tasi Timór no sei to'o aban (kinta). Presiza loron-tolu hodi halo instalasaun no sei hahú perfurasaun iha loron 26 to'o 28 dezembru. Ne'e posu ida de'it, ne'ebé durante loron-35 ami ramata no kompleta ona perfurasaun,” Representante empreza CARNARVON hateten iha âmbito lansamentu perfurasaun posu Buffalo, iha salaun Hotel Timor, kuarta ne'e.

Iha biban hanesan, Ministru Petróleu no Minerál, Víctor da Conceição, konsidera momentu ne'e importante tanba durante ne'e país iha dependénsia maka'as ba setór petróleu.



Ministru Petróleu no Minerál, Víctor da Conceição Soares. Imajen TATOLI/Francisco Sony

“Nu'udar membru Governu ha'u orgullu tanba povu no Estadu ninia esperansa ba futuro sei nafatin dependente ba setór petróleu, tanba ne'e inisiativa ne'e atu promove rekursu petrolíferu iha rai no tasi okos. Ema dehan ita riku mina-rai, maibé laiha sentidu kundu laiha esforsu transforma rekursu ne'e sai valór ekonómiku atubele dezenvolve ita-nia rain, maibé la'ós fasil,” Ministru Víctor dehan.



Nune'e, governante ne'e hato'o parabéns ba empresa CARNARVON no ANPM ne'ebé bele iha korajen inisia, maski hatene iha risku a'as maibé ho hanoin ida bele investe.

“Ohin la'ós atu selebra rezultadu maibé kompromisu atu hahú halo. Kuandu perfurasaun la'o di'ak mak ita foin selebra loloos, maibé daudaun mai husu tulun. Tanba ne'e korajen sira ita konsidera patriótiku no eroíku, tanba só ema ne'ebé iha korajen mak bele investe iha setór ida-ne'e,” nia tenik

Tanba ne'e, Ministru dezafia empresa sira ne'ebé sei iha faze estudu atu kontinua la'o nafatin to'o faze perfurasaun no dezvoltamentu.

### **ANPM estabese regulamentu operasaun atividade petrolífera**

Diretór Explorasaun no Promosaun ANPM, Mateus da Costa, informa, autoridade iha regulamentu estabesidu ba operasaun atividade petrolífera, tantu iha rai-maran no rai-okos, tanba ne'e molok halo aprovasaun tenke tuir regra no regulamentu.



Diretór Explorasun no Promosaun ANPM, Mateus da Costa. Imajen TATOLI/Francisco Sony

“ANPM tenki husu empresa hatama dokumentu ba ambiente no seguransa, tanba buat hirak ne'e hotu prezisa iha dokumentu rigorozu no estudu lubuk ida, ne'ebé tenki halo molok avansa ba perfurasaun. Ho nune'e, bazeia ba dokumentu, nota katak sira asegura risku hotu, tantu ambiente seguru no protesau, ne'ebé ita halo aprovasaun molok hakat ba aprovasaun ikus ba perfurasaun,” nia dehan.

Tuir Diretór Explorasaun no Promosaun, perfurasaun kampu Buffalo diferente ho posu Feto-Kmaus iha Suai, tanba posu ne'e foin dahuluk fura atu konfirma possibilidade mina iha ou lae, enkuantu posu Buffalo identifika katak iha mina no uluk halo ona operasaun.

“Agora mak abandona, maibé iha rekursu lubuk ida, entaun empresa CARNARVON foti fali bloku ne'e hodi halo peskiza kle'an, ne'ebé uza teknolojia avansadu no métodu avansadu hodi bele haree kle'an liu. Fiar katak bele hetan rekursu lubuk ida,” nia otimista.

Nune'e, kaer ba rezultadu antes ne'e maka empresa la'o nafatin maibé atu prova liután tenki halo perfurasaun atu haree estensaun rekursu atubele deklarado komersiál ou mina iha maibé labele to'o ba faze ida.

“Tanba deklarado kampu komersiál maka prezisa montante natón no bele kobre fali ba kustu operasaun no kustu seluk atubele hetan lukru. Agora posu lubuk ida mak prova katak mina iha, maibé atu haree tan ninia estensaun rekursu ne'e boot no natón atu konvense empresa bele deklarado katak kampu ne'e komersiál hodi dezvoltolve,” Diretór esplika.

Kampu Buffalo antes prodús maibé daudaun avandonadu, ne'ebé empresa ida halo estudu no haree katak rekursu ne'e iha maibé empresa seluk halo konkluzo seluk, tanba ne'e empresa CARNARVON halo filafali estudu no bazeia ba estudu tékniku empresa avansa halo perfurasaun.

“Modelu kontratu klaru, katak kapitál investimentu ba peskiza ne'e fundu mai hosi empresa no bainhira sira fura mina no hetan maka sei fahe lukru, maibé reembolsa uluk lai sira-nia osan, maibé bainhira la hetan, deside husik no hosi parte Governu sei la selu buat ida,” Diretór esklaresa.

Kampu Buffalo iha tinan-1999 konsege halo ona produsaun millaun 20/baril, maibé tanba presu mina monu iha tinan-2003 to'o 2004, maka kampu ne'e taka.

Empresa CARNARVON sosa fali kampu ne'e hosi empresa seluk iha tinan-2016, hafoin hetan notifikasaun hosi Governu Timor-Leste bainhira konklui ona tratadu fronteira marítima, ne'ebé tuir loloos kuandu fronteira laiha, mudansa kampu ne'e Austrália nian, maibé tanba liña fronteira iha mudansa maka kampu ne'e pertense ba Timor-Leste 100%.

Ho ida-ne'e maka empresa CARNARVON tenki komunika ANPM nu'udar autoridade ne'ebé mak regula kontratu fahe produsaun.

Orsamentu estimativa ba perfurasaun ne'e sei gasta millaun \$35, ho durasaun serbisu loron-35, nune'e molok ramata janeiru 2022 bele hetan ona rezultadu.