

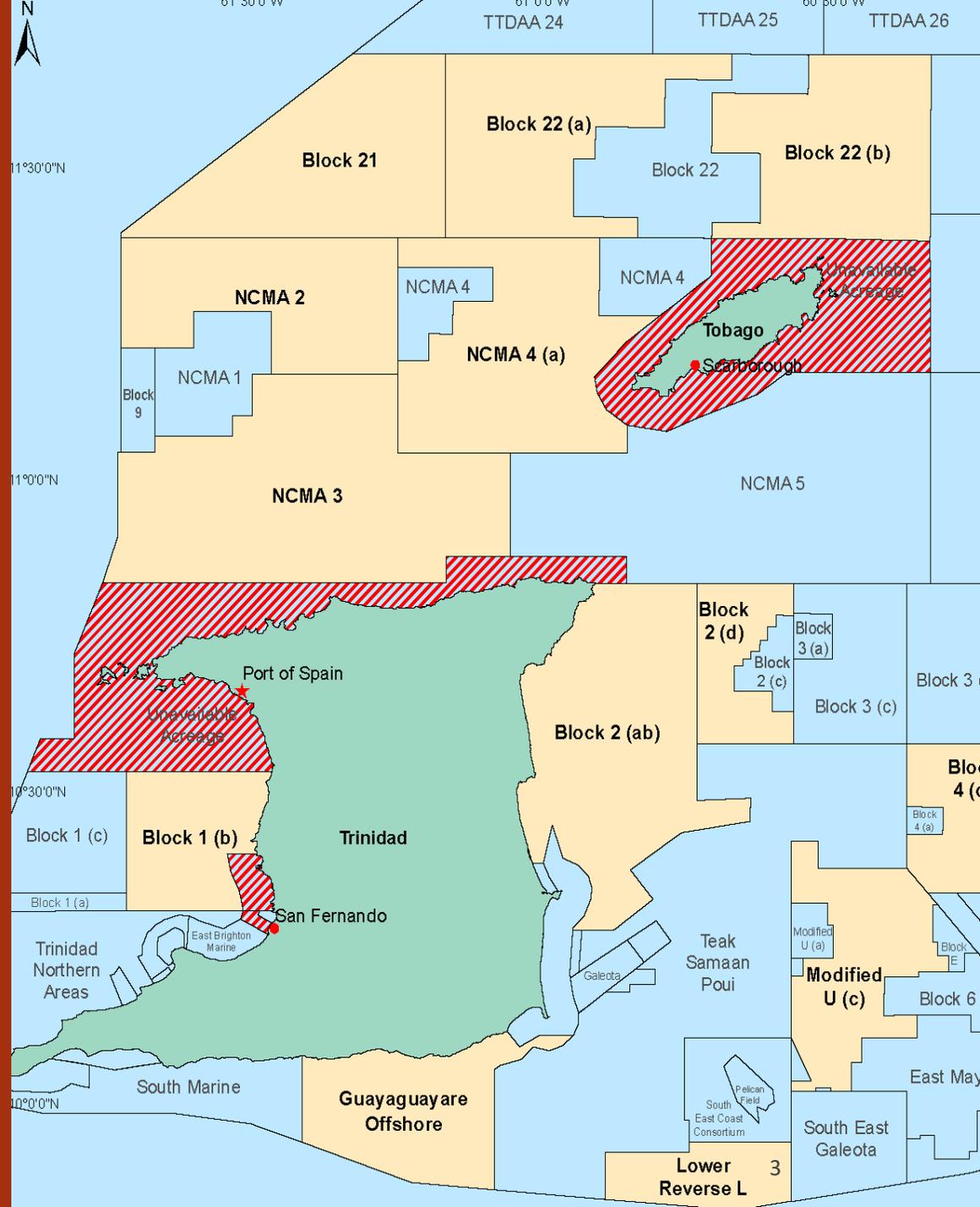




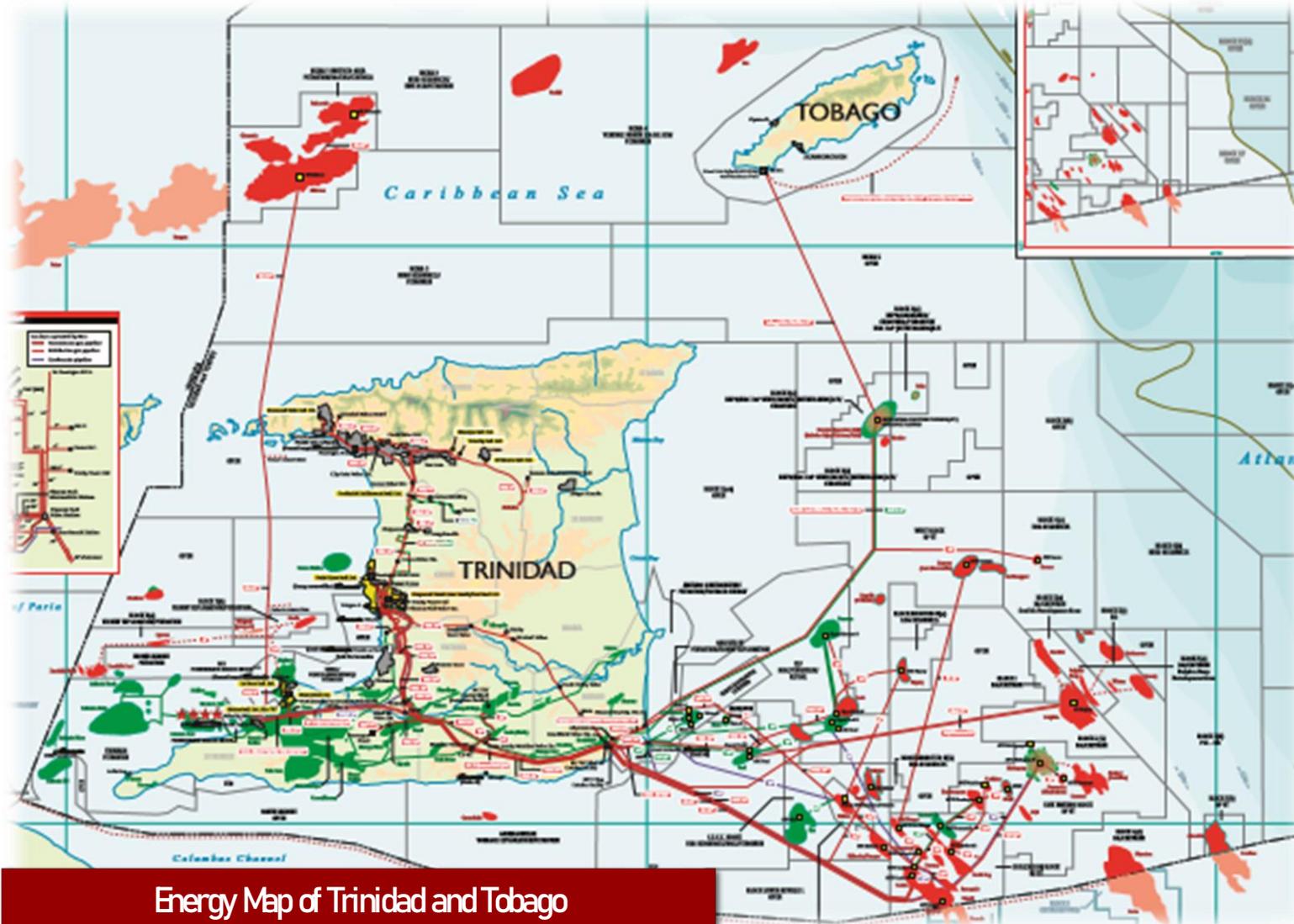


**Government of the Republic of Trinidad and Tobago**  
Ministry of Energy and Energy Industries

# Overview of T&T's Energy Sector



# Energy Sector Assets and Resources



Energy Map of Trinidad and Tobago

## Energy Sector Resources

**Crude Oil Production  
(average for 2022)** 58,427 bpd

**Natural Gas Production  
(average for 2022)** 2.69 Bcf/d

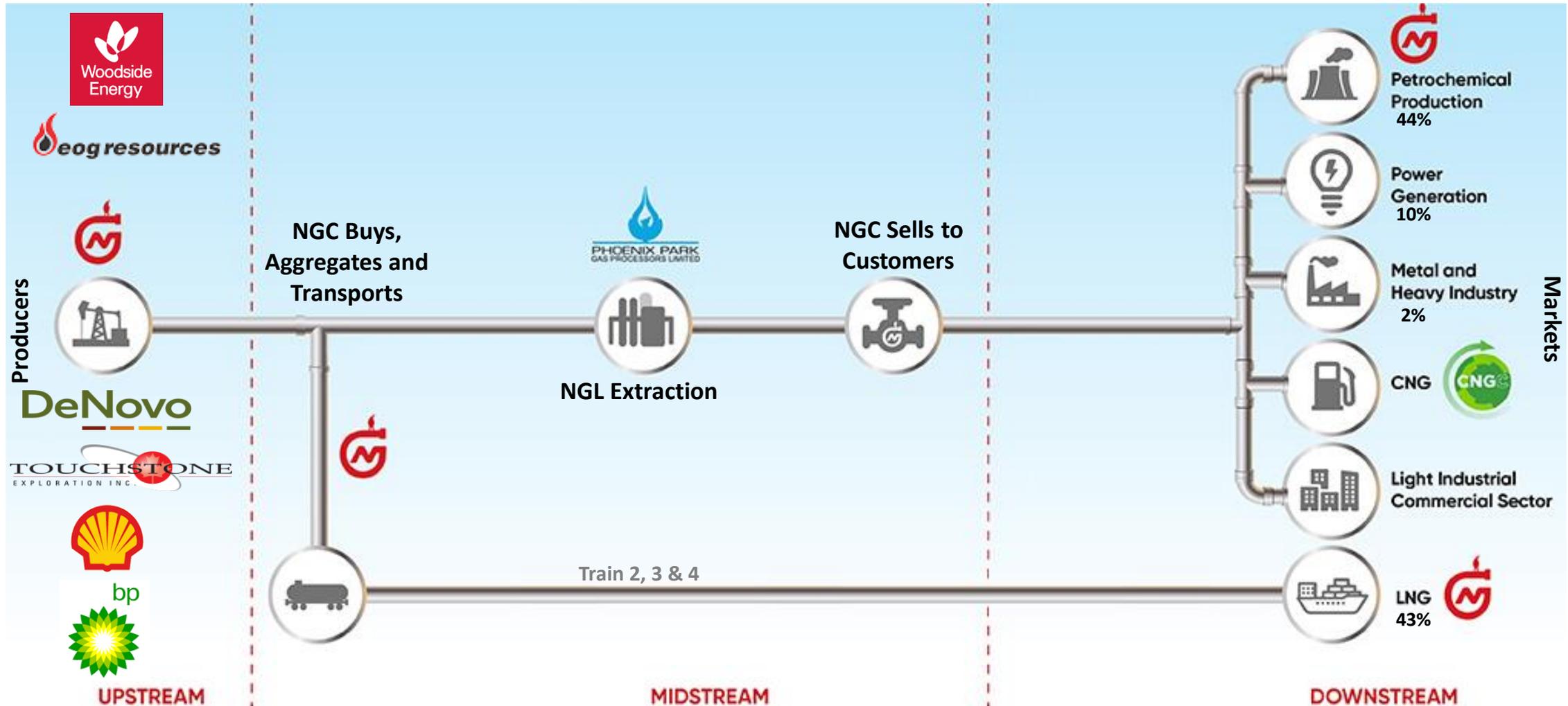
**Total LNG Production (2022)** 404,615,639 MMBtu

**NGL Production (capacity)** 70,000 bpd

**Unrisked Technically Recoverable Resources  
(formerly 3P reserves) of Natural Gas (December 2020)** 23.3 Tcf

**Unrisked Proved Reserves of Crude Oil and Condensate  
(as of December 2018)** 257 million bbls

# Natural Gas Value Chain



Adapted from Natural Gas Company of Trinidad and Tobago Limited



# T&T Petroleum Legislation



## Primary Legislation

1. Petroleum Act
2. Petroleum Production Levy and Subsidy Act
3. Petroleum Taxes Act

## Secondary Legislation

1. Corporation Tax Act, Chap. 75:02
2. Income Tax Act, Chap. 75:01
3. Income Tax (In Aid of Industry) Act, Chap. 85:04
4. Environmental Management Act, Chap. 35:05
5. Occupational Safety and Health Act, Chap. 55:08

# Licensing Regime: PSC's



**Signature Bonuses**  
Paid on the signing of the PSC

**Royalty Payments**  
12.5% Royalty & Petroleum Taxes  
paid by the Minister

## Production Sharing Contracts (PSC's)

A contractual relationship that grants the right to conduct petroleum operations in exchange for the opportunity to recover its costs and a specified profit

**Cost and Risk**  
The contractor bears all costs and risks related to the exploration, development and production

**Fiscal Regime**  
State pays most of the Contractor's taxes from its share of profit production

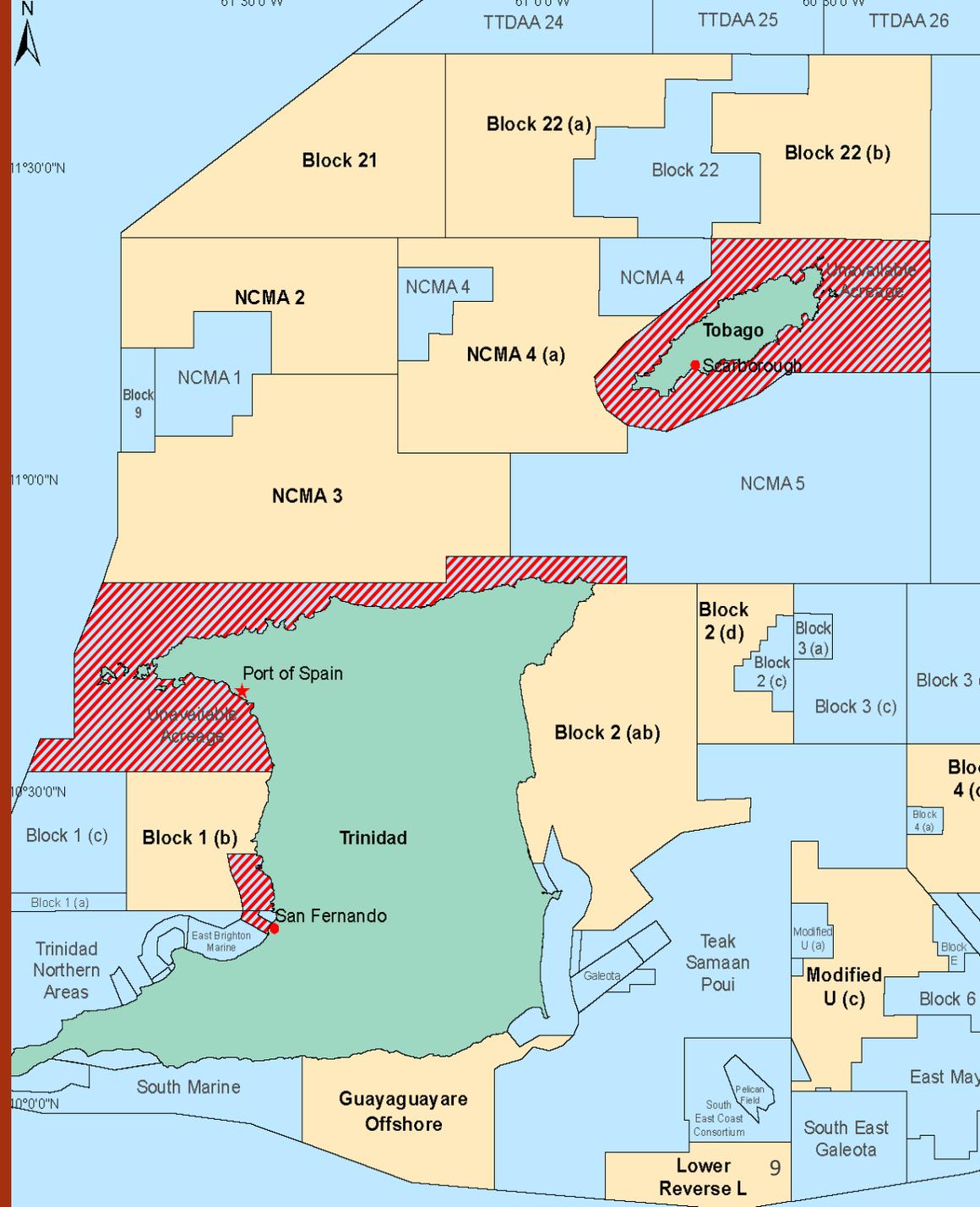
**Cost Recovery**  
The contractor is allowed to take an agreed percentage (up to 80%) of field production as a return on his capital investment

**Profit Share**  
After deducting cost, the remaining production, termed "Profit Petroleum" is shared between the State and the Contractor



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# 2023 Shallow Water Competitive Bidding Round

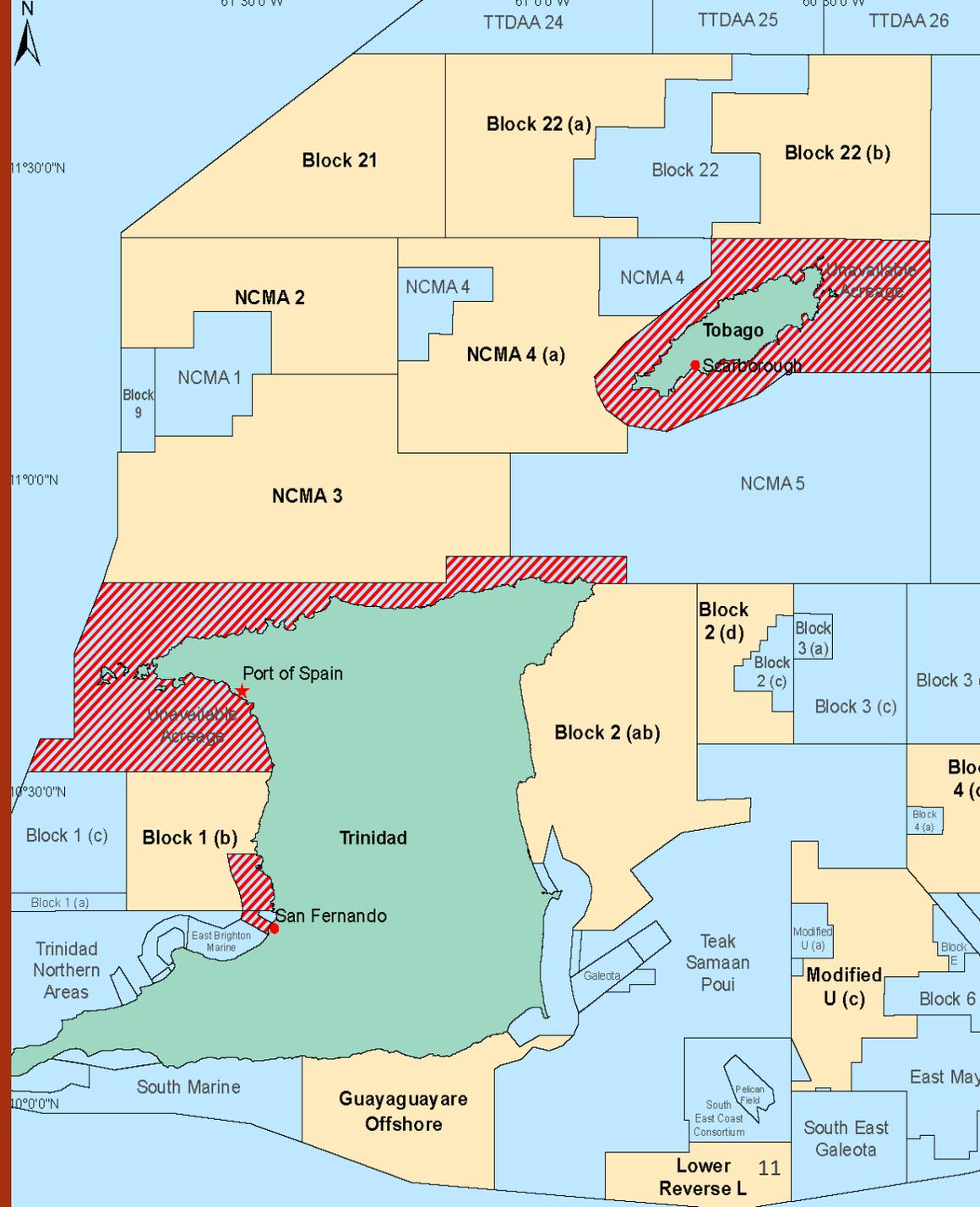






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# What's New?



# Changes to 2023 Shallow Water Bid Round



## Fiscal Incentives

- Royalty (12.5%) to be paid by Minister
- State Carried Participation removed
- Price classes and production tiers adjusted based on current economic climate
- Windfall reduced from 70% to 50%
- Cost Recovery of up to 60% will be allowed

## Legal Terms and Conditions

- Increase in exploration period from 6 to 8 years
- Introduction of an Infrastructure Sharing Policy

## Bid Round Process

- Removal of pre-bid fee
- Reduction of bid fee
- Biddable Signature Bonus
- Revision of evaluation method for bid submissions
- Provisions made to facilitate Multiclient acquisition and/or licensing to fulfil minimum work obligations

# Competitive Bidding Process



## Pre- Bid

- Free access to Data Package upon execution of DUA

## Bid

- \$30,000 USD Bid Fee Per Block
- Minimum Work Programme
- Minimum Expenditure Programme
- Production Sharing Proposals
- Biddable Signature Bonus

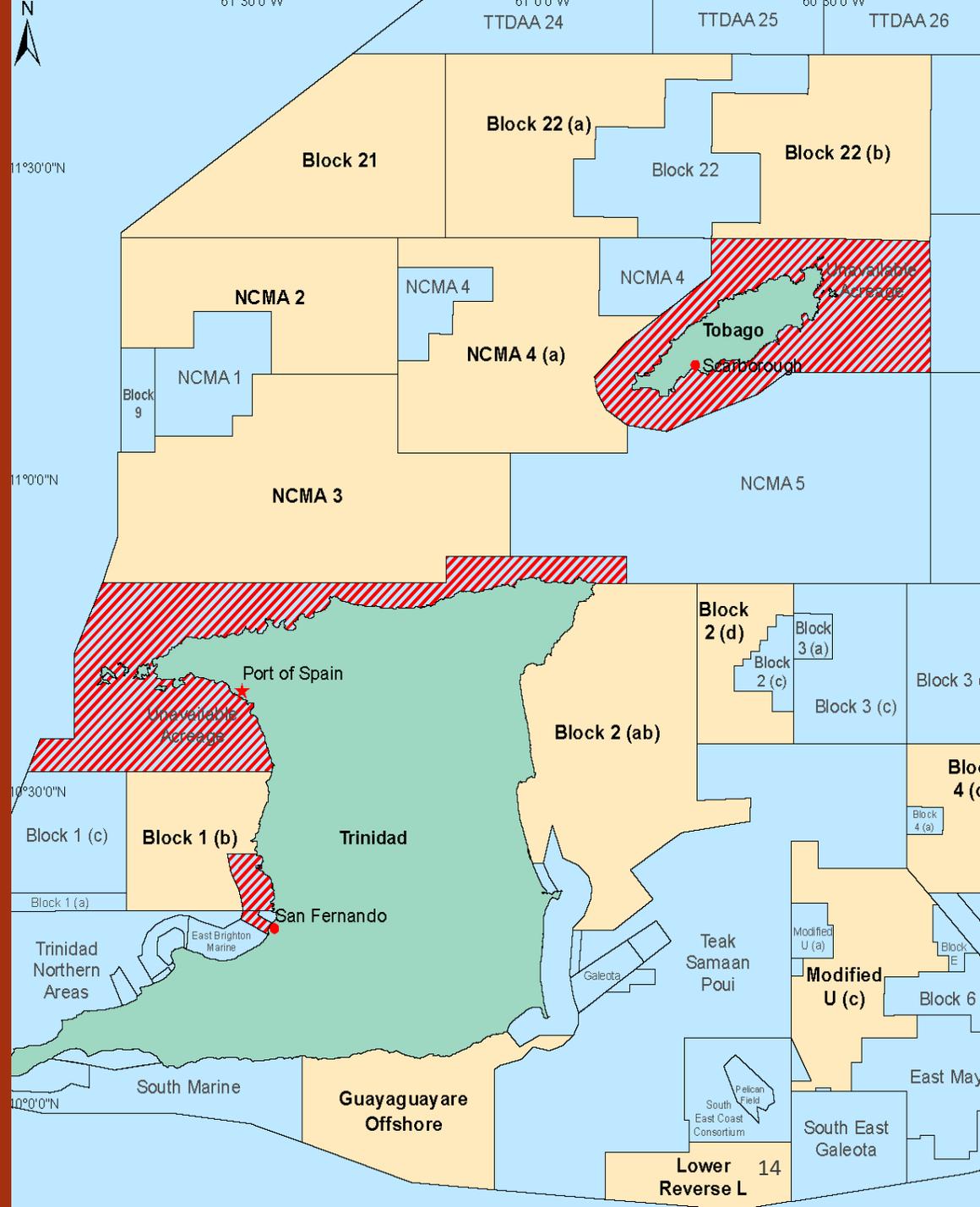
## Post-Bid

- Technical Presentation by Bidder
- Block Awarded to Successful Bidder and Production Sharing Contract Executed



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# Technical Overview



# Shallow Water Geological Setting



## North Coast Marine Area

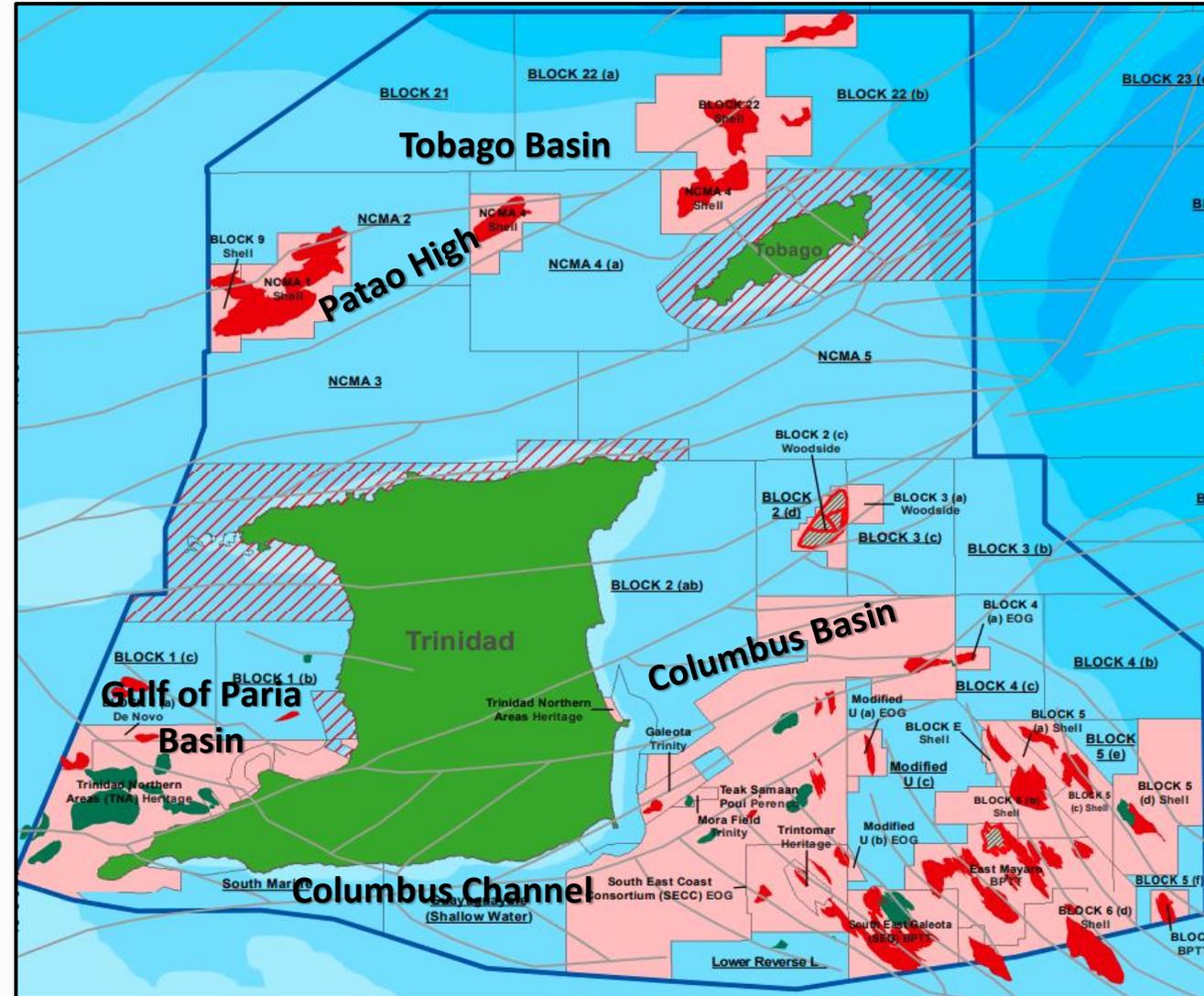
- Tobago Basin: Wedge shaped prism comprising Oligocene-Miocene to Pleistocene sediment which onlaps the basement to the south and thickens towards the north.
- Patao High: NE trending antiform, formed due oblique strain tectonics, and plunges to the east and is truncated by a series of NW-SE normal en-echelon faults.

## East Coast Marine Area

- Columbus Basin: structurally detached, transtensional, continuation of the Eastern Venezuela foreland basin.
- It formed during Miocene time as a foreland basin overlying a Cretaceous–Early Tertiary passive-margin, and evolved into a thin-skinned pull-apart basin during the Plio-Pleistocene.
- Shallow water deltaic and estuarine deposits from the prograding Orinoco River delta have accumulated in this area since Middle-Miocene time.

## Gulf of Paria

- Gulf of Paria Pull-Apart Basin: Compressional basin due to the NW verging thrusts associated with the CRTZ which formed in Late Miocene with the stepover of the El Pilar fault to the EW trending Warm Springs Fault and the NE trending CRFZ.



# NCMA 2



## Background

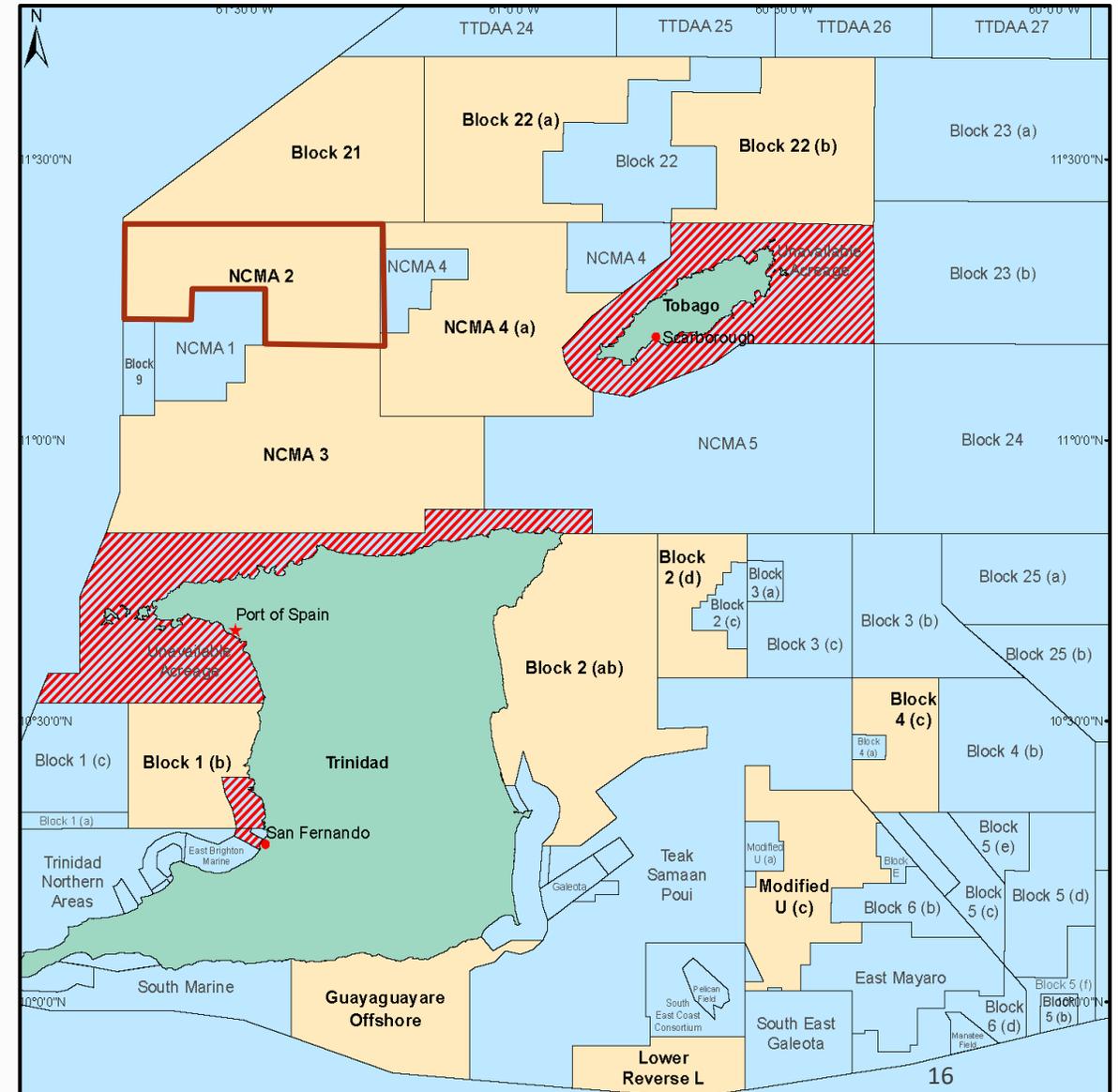
- Block size: 1028.44km<sup>2</sup>
- Water Depths: ~200m
- Block History: Previously licensed to Niko Resources from 2011 to 2017

## Petroleum System

- Source: Intraformational shales
- Reservoir: Plio-Pleistocene shoreface sands, Miocene fan deposits
- Reservoir Depths: 2000m to 3500m
- Reservoir Quality:  $\phi$  = 20% to 30%, N:G = 35% to 55%
- Trap Types: Stratigraphic or combination
- Seal: Intraformational shales

## Data

- Seismic: 1968 NCMA 2D, 1977 NCMA 2D, 1993 BGTT 2D, 2004 Petrotrin Chaconia 2D, 2012 Niko NCMA 3D
- Wells: Offset wells in adjacent licensed blocks



# NCMA 3



## Background

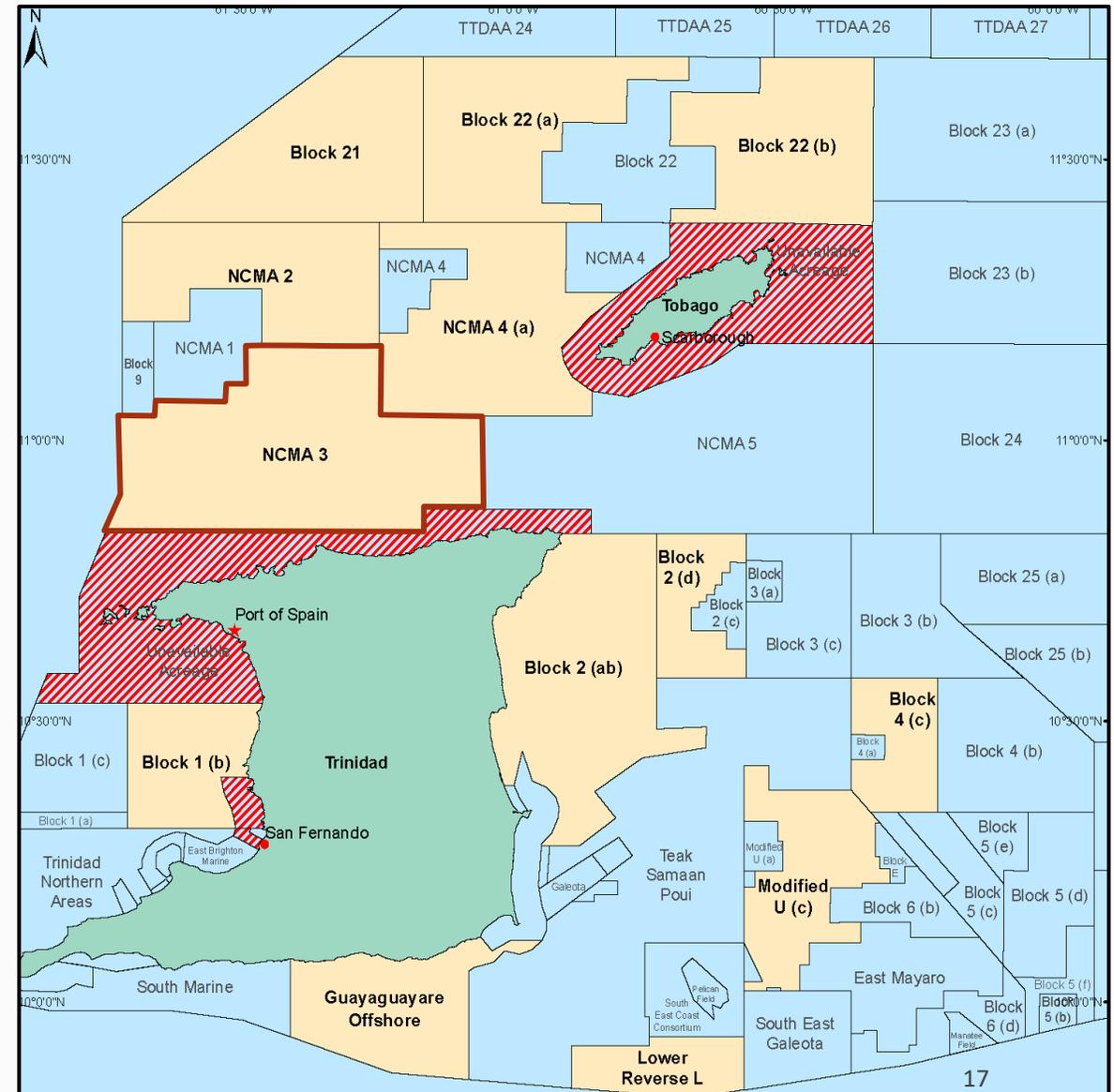
- Block size: 2105.02km<sup>2</sup>
- Water Depths: 30m to 100m
- Block History: Previously licensed to Niko Resources from 2011 to 2017

## Petroleum System

- Source: Intraformational shales
- Reservoir: Plio-Pleistocene shoreface sands
- Reservoir Depths: 2000m to 3500m
- Reservoir Quality:  $\phi$  = 20% to 30%, N:G = 35% to 55%
- Trap Types: Stratigraphic or combination
- Seal: Intraformational shales

## Data

- Seismic: 1977 NCMA 2D, 1980 Scanned NCMA 2D, 2012 Niko NCMA 3D
- Wells: HH6-1 and Alma-1 wells, offset wells in adjacent licensed blocks



# NCMA 4(a)



## Background

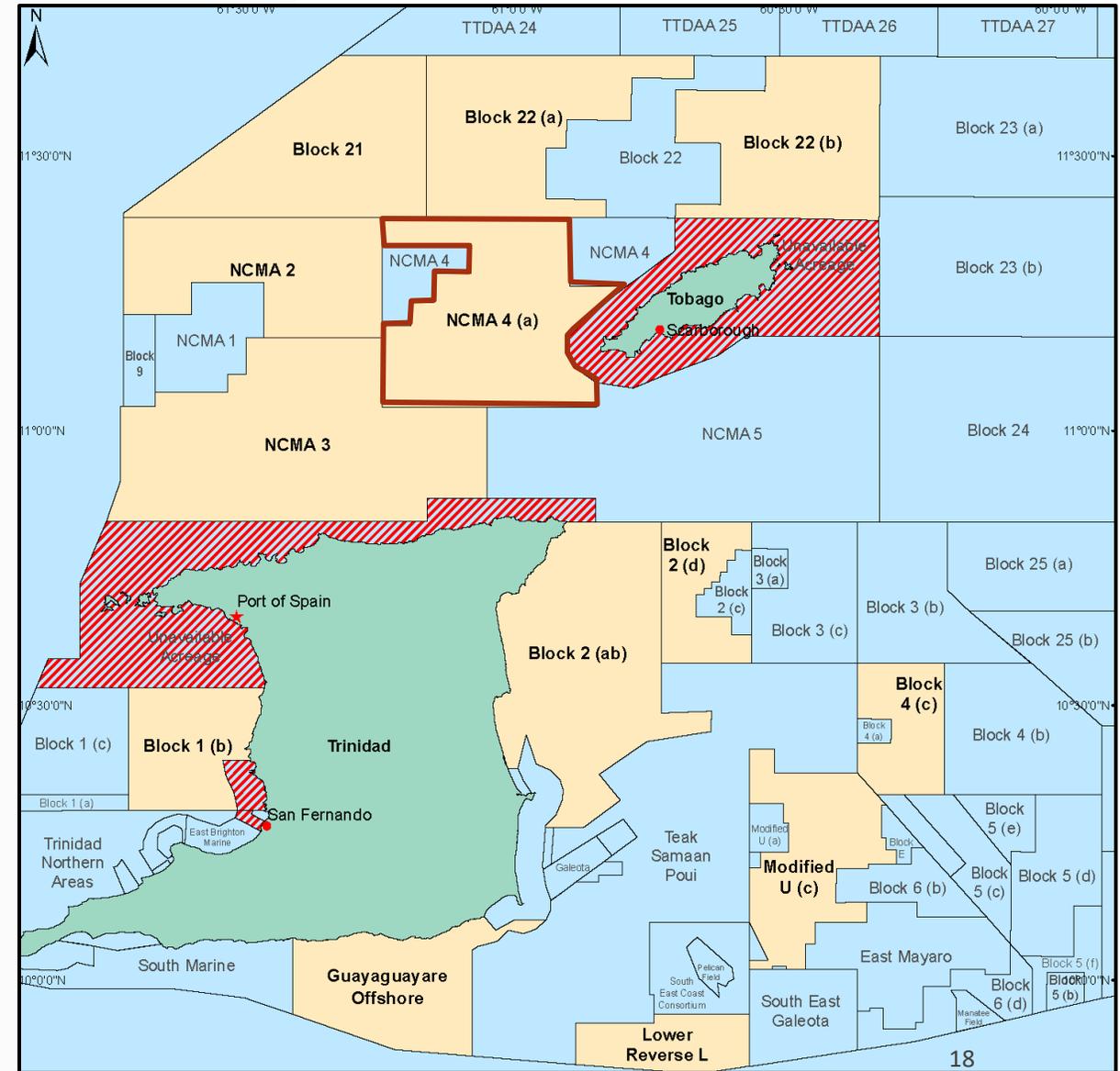
- Block size: 1338.47km<sup>2</sup>
- Water Depths: ~100 to 200m
- Block History: Relinquished portion of NCMA 4

## Petroleum System

- Source: Intraformational shales
- Reservoirs: Plio-Pleistocene shoreface sands
- Reservoir Depths: 800m to 1500m
- Reservoir Quality:  $\phi$  = 20% to 30%, N:G = 35% to 55%
- Trap Types: Stratigraphic or combination
- Seal: Intraformational shales

## Data

- Seismic: 2012 Centrica Merged NCMA 4 and Block 22 3D
- Wells: Maracas-1 well, offset wells in licensed portions of block





# Block 22(a)



## Background

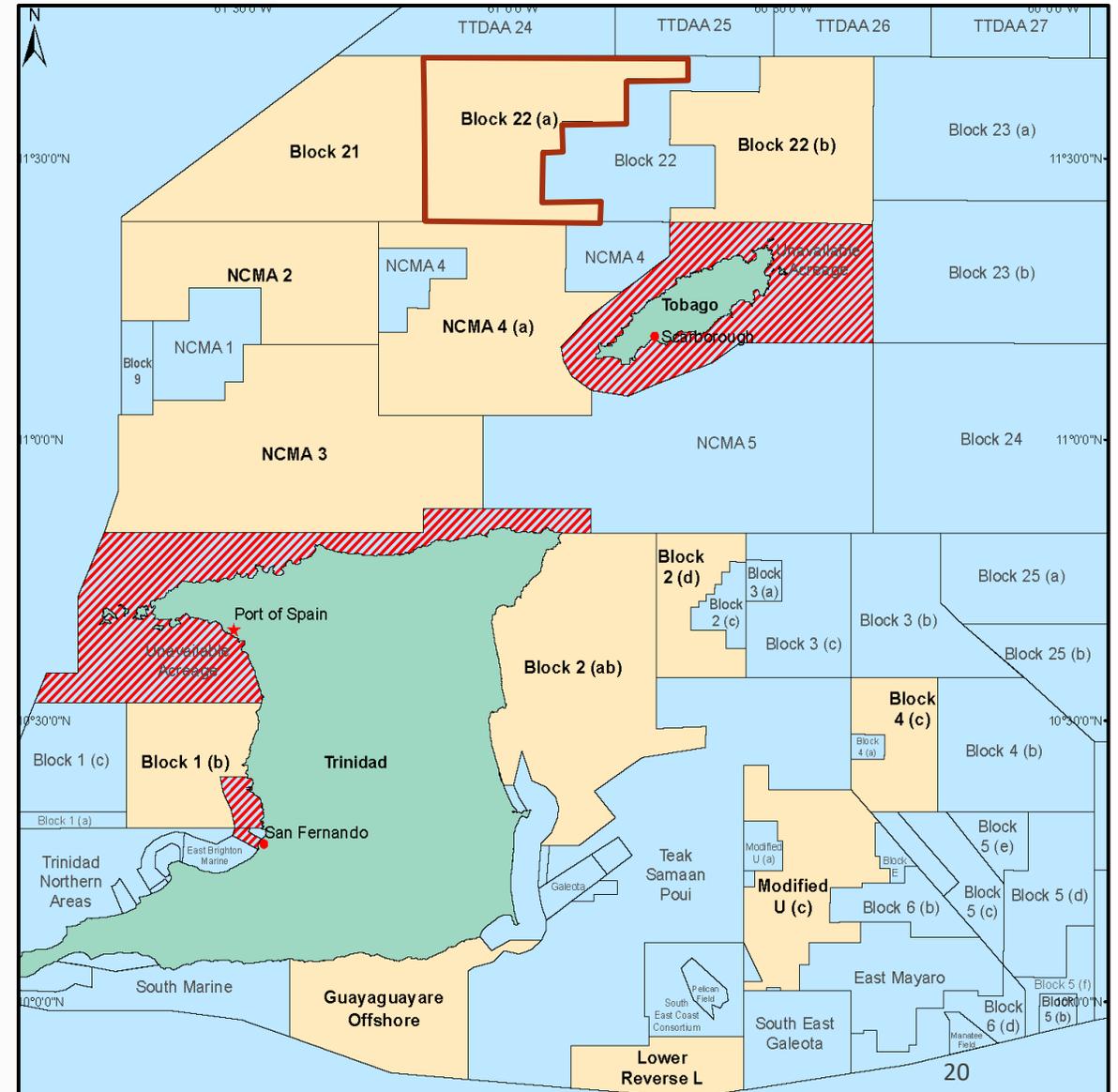
- Block size: 1129.55km<sup>2</sup>
- Water Depths: 100m to 1000m
- Block History: Relinquished portion of Block 22

## Petroleum System

- Source: Intraformational shales
- Reservoirs: Plio-Pleistocene shoreface sands
- Reservoir Depths: 500m to 2000m
- Reservoir Quality:  $\phi$  = 20% to 30%, N:G = 35% to 55%
- Trap Types: Stratigraphic or combination
- Seal: Intraformational shales

## Data

- Seismic: 2012 Centrica Merged NCMA 4 and Block 22 3D
- Wells: Bene-1 well, offset wells in licensed portions of block



# Block 22(b)



## Background

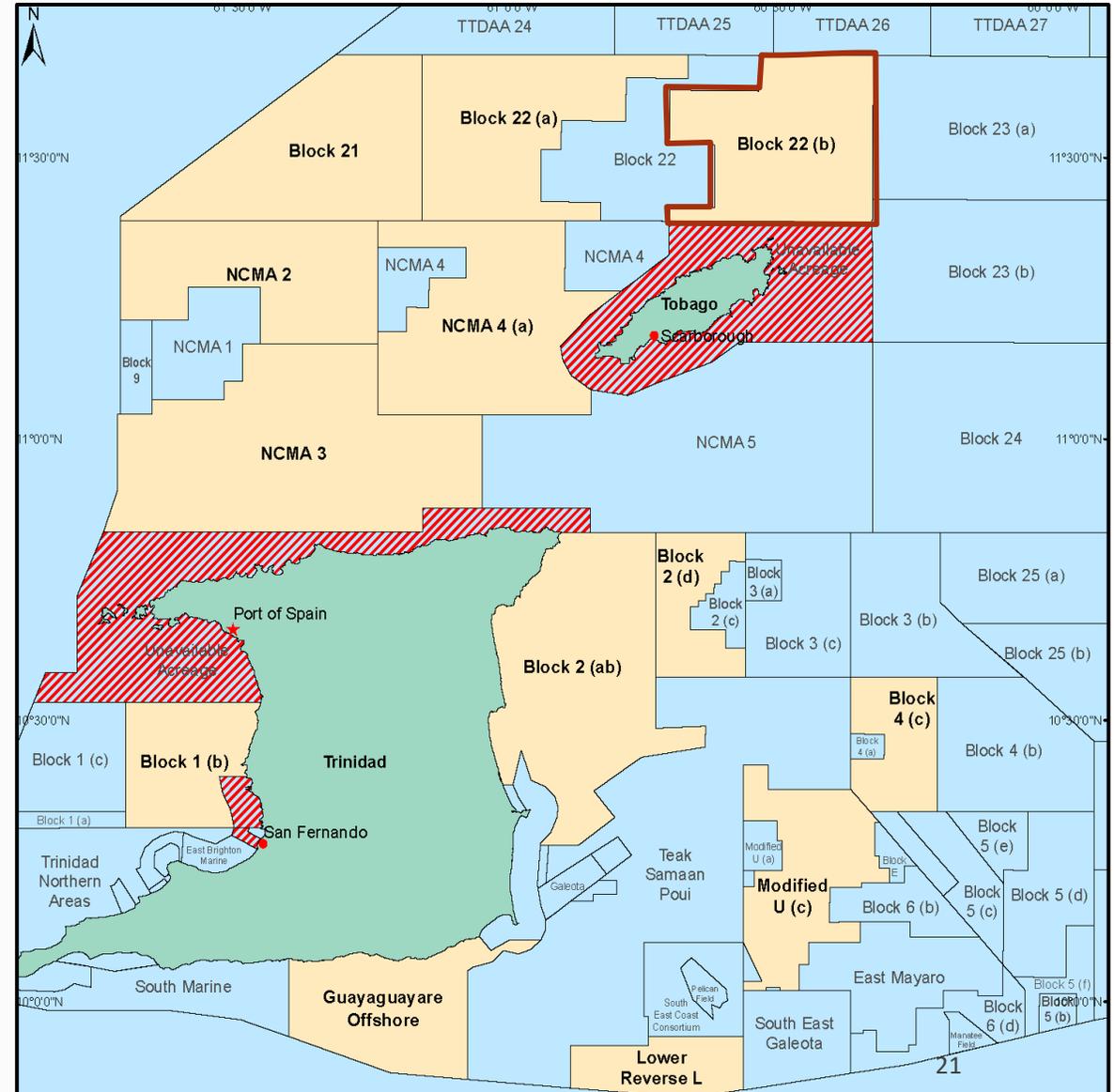
- Block size: 1104.48km<sup>2</sup>
- Water Depth: 100m to 1000m
- Block History: Relinquished portion of Block 22

## Petroleum System

- Source: Intraformational shales
- Reservoir: Plio-Pleistocene shoreface sands
- Reservoir Depths: 1700m to 2500m
- Reservoir Quality:  $\phi$  = 20% to 30%, N:G = 35% to 55%
- Trap Types: Stratigraphic or combination
- Seal: Intraformational shales

## Data

- Seismic: 2012 Centrica Merged NCMA 4 and Block 22 3D
- Wells: Offset wells in licensed portions of block



# Block 2(ab)



## Background

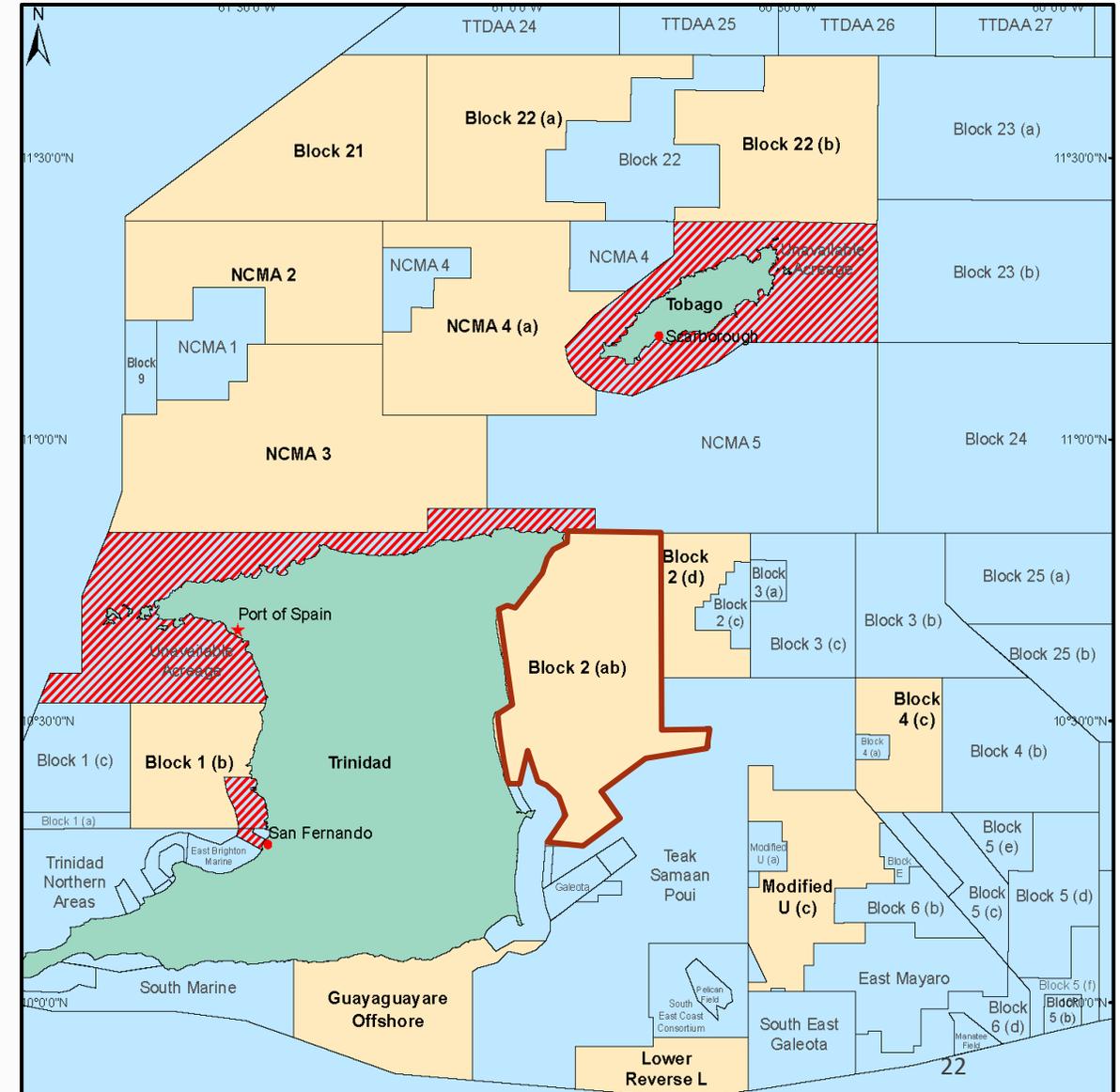
- Block size: 1599.12km<sup>2</sup>
- Water Depths: ~50m
- Block History: Previously licensed to Niko Resources and partners from 2009-2013

## Petroleum System

- Source: Cretaceous Naparima Hill Formation
- Reservoir: Cretaceous, Oligocene, Paleocene and Eocene sands
- Reservoir Depths: 900m to 1500m
- Reservoir Quality:  $\phi$  = ~20%
- Trap Types: Structural
- Seal: Intraformational shales

## Data

- Seismic: 2010 PSTM Streamer 3D
- Wells: Maestro-1, Shadow-1, Spitfire-1, Stalin-1, Crapud-1, Palmiste-1, Palmiste-2, SW Darien-1, Kitchener-1



# Block 2(d)



## Background

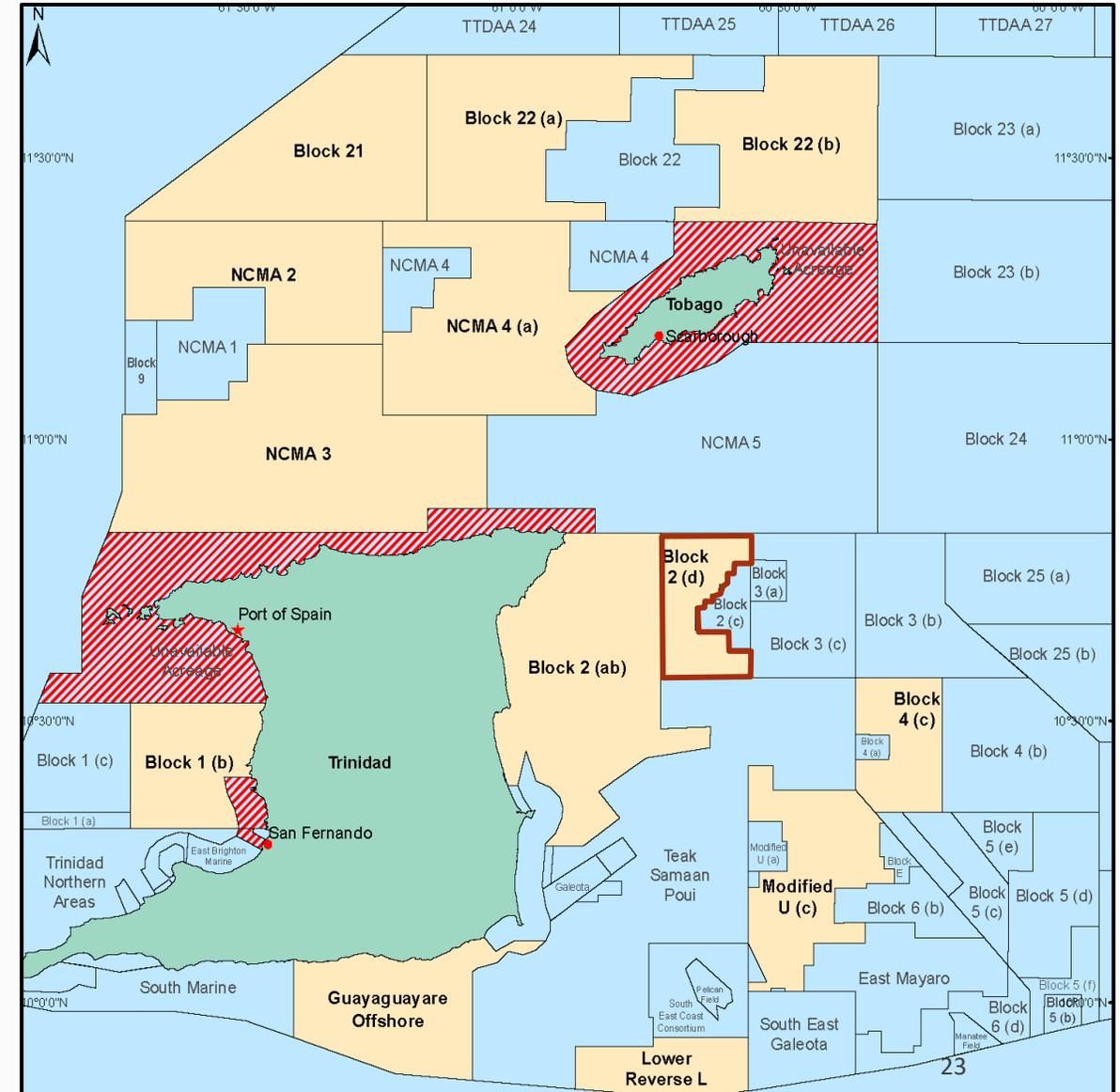
- Block size: 394.35 km<sup>2</sup>
- Water Depths: ~50m
- Block History: 1996-Block 2(c) was awarded to Woodside Energy (previously BHP)  
2003-Block 2(d) became the relinquished portion of Block 2(c)

## Petroleum System

- Source: Cretaceous Naparima Hill and Gautier Formations
- Reservoir: Middle to Late Miocene Sands
- Reservoir Depths: 760m to 1500m
- Reservoir Quality:  $\phi$  = 15% to 20%, N:G= 50% to 60%
- Trap Types: Structural
- Seal: Oligo-Miocene shale top seal

## Data

- Seismic: 1999 BHP OBC Reprocessed Survey, 2019 NAZ OBN Survey
- Wells: Mokatika- 1, Gypsy-1, NB-1, NB-2 and offset wells in adjacent licensed blocks



# Block 4(c)



## Background

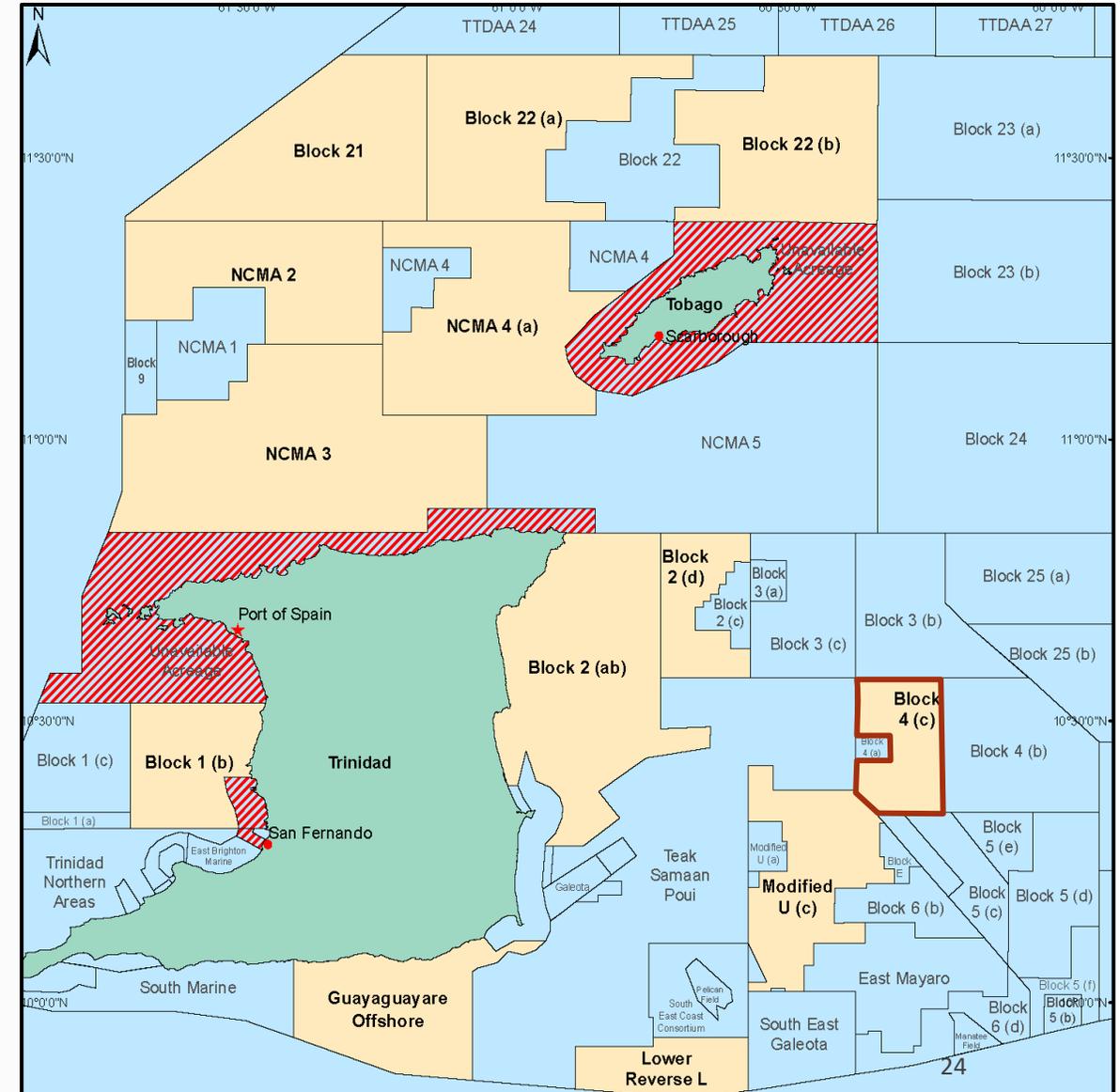
- Block size: 424.2 km<sup>2</sup>
- Water Depths: 200m to 400m
- Block History: 1977-Block 4 was first explored by Deminex  
2003-Block 4(a) was awarded to EOG Resources  
2008-Block 4(c) became the relinquished portion of Block 4(a)

## Petroleum System

- Source: Cretaceous Naparima Hill and Gautier Formations
- Reservoir: Late Pliocene to Early Pleistocene sands
- Reservoir Depths: 1000m to 2700m
- Reservoir Quality:  $\phi$  = 33% to 37%, N:G= 20% to 97%
- Trap Types: Structural
- Seal: Interbedded Pleistocene shales

## Data

- Seismic: 2006 EOG 4a 3D
- Wells: Kingfish- 1 and offset wells in licensed portions of block



# Block Modified U(c)



## Background

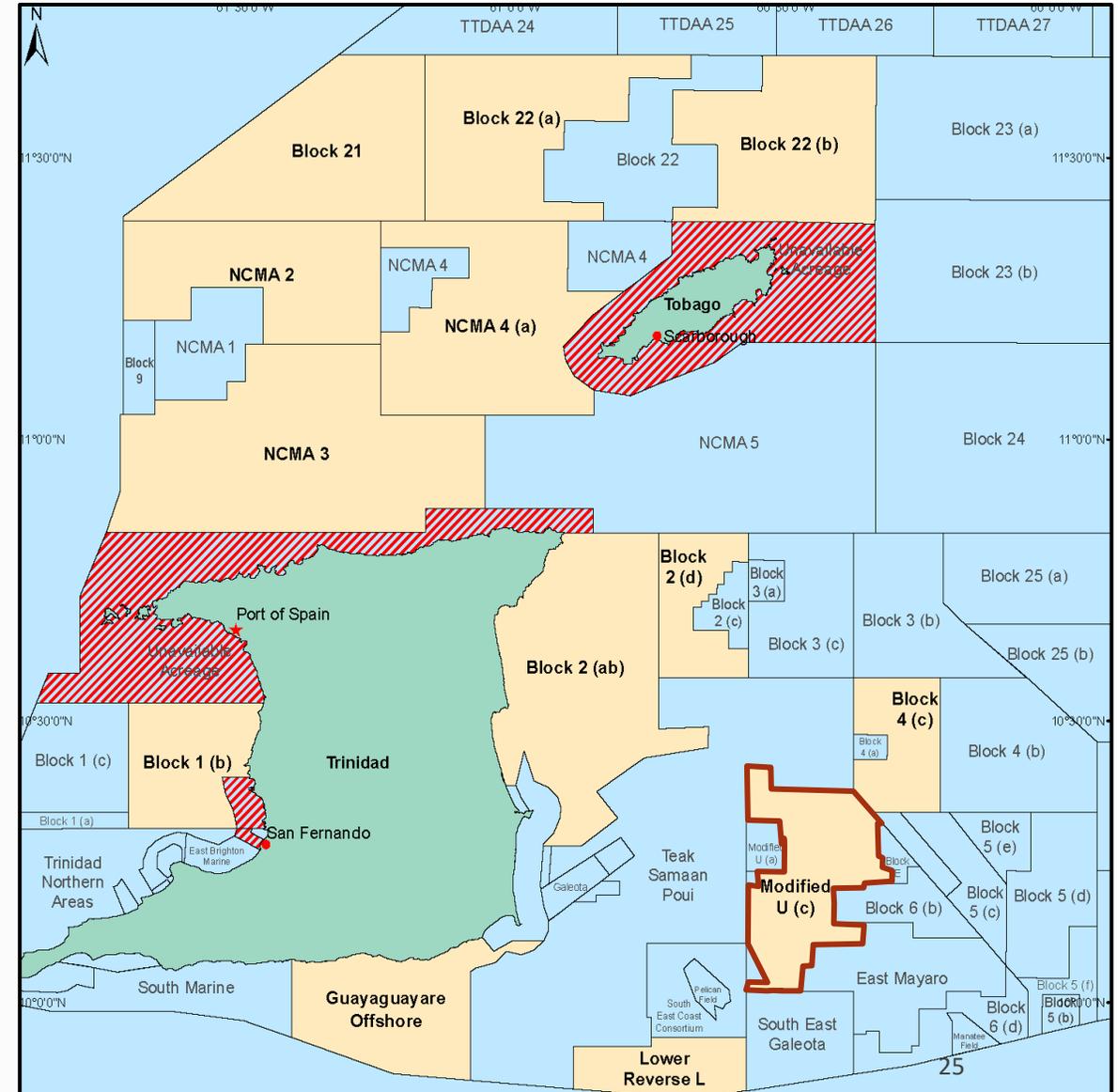
- Block size: 767.75 km<sup>2</sup>
- Water Depths: 75m to 250m
- Block History: 1977-Block Modified U(a)4 was awarded to Enron Gas & Oil  
2002-Block Modified U (b) was awarded to EOG  
2009- Block Modified U (c) became the relinquished portion of Blocks Modified U (a) and U (b).

## Petroleum System

- Source: Cretaceous Naparima Hill/Gautier Formations
- Reservoir: Pliocene Sands
- Reservoir Depths: 2700m to 4400m
- Reservoir Quality:  $\phi$  = 15 to 30%, N:G= 20% to 97%
- Trap Types: Structural and Stratigraphic combination
- Seal: Interbedded Pleistocene shales

## Data

- Seismic: 2008 Osprey 3D, Osprey SECC Merge 3D, Southtrend Merge 3D
- Wells: Mot Mot-1, Tanger-1, U(b)-1, U (b)-2 and offset wells in licensed portions of block



# Block Lower Reverse L



## Background

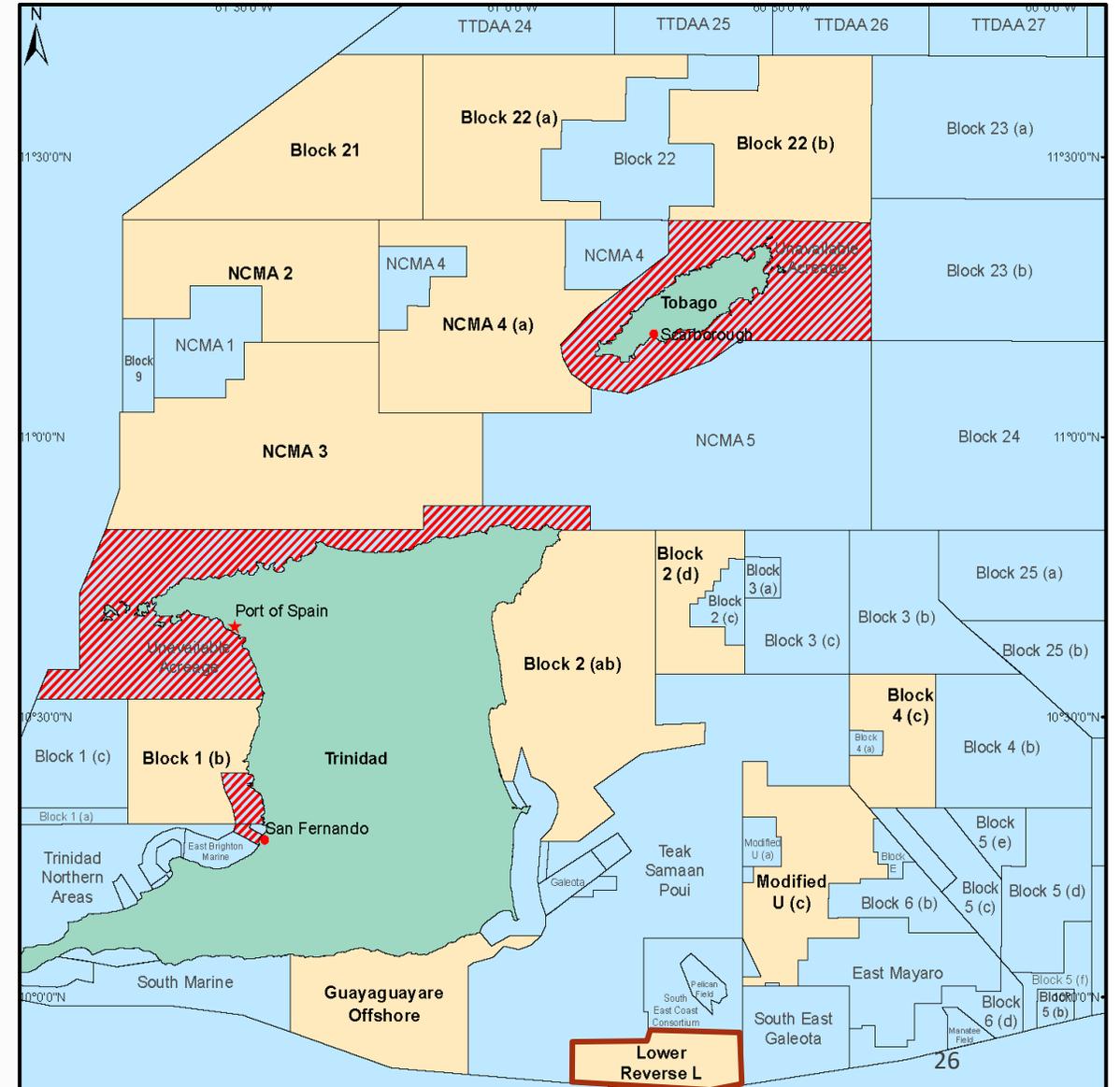
- Block size: 363.64 km<sup>2</sup>
- Water Depths: 80m- 200m
- Block History: 1980-Block LRL was awarded to Mobil Exploration Trinidad Ltd  
2002-Block LRL was awarded to EOG Resources  
2009-EOG Resources relinquished Block LRL

## Petroleum System

- Source: Cretaceous Naparima Hill and Gautier Formations
- Reservoir: Late Pliocene Sands
- Reservoir Depths: 4000m to 4500m
- Reservoir Quality:  $\phi$  =15% to 29 %, N:G= 20% to 97%
- Trap Types: Structural
- Seal: Interbedded Pleistocene shales

## Data

- Seismic: 1996 Amoco LRL 3D ; 2003 LRL Pecten 3D
- Wells: Reverse L East-1, Reverse L West-1, Pamberi-1, LRL-1, LRL-2, LRL-3



# Guayaguayare Offshore



## Background

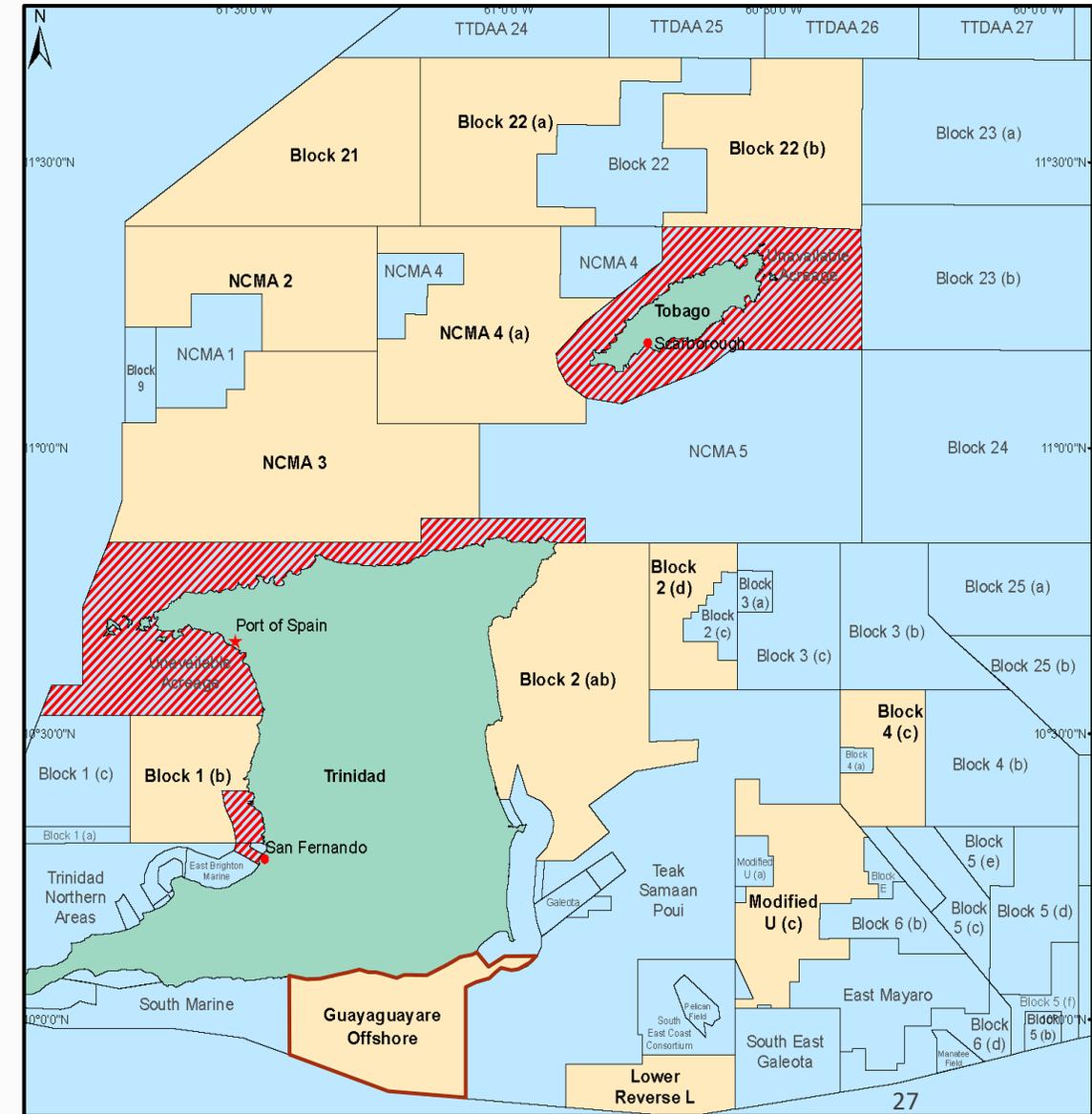
- Block size: 817.16 km<sup>2</sup>
- Water Depths: 75m
- Block History: 1989- S-11 awarded to Mobil
  - 1998- Divided into S-11(a) & S-11(b), Elf/Amoco/Repsol awarded S-11(b)
  - 2005- Made part of Guayaguayare Block.
  - 2009- Awarded to Voyager
  - 2015- Transferred from Voyager to Range Resources in.
  - 2020- PSC terminated

## Petroleum System

- Source: Cretaceous Naparima Hill and Gautier Formations
- Reservoir: Plio-Pleistocene sands of Palmiste, Mayaro and Gros Morne Formations
- Reservoir Depths: 1500m to 16,500m
- Reservoir Quality:  $\phi = 14$  to 33%,  $K = 200$  to 1000mD
- Trap Types: Combination of structural and stratigraphic
- Seal: Intraformational shales

## Data

- Seismic: 1990 Mobil 2D Survey, South Marine 2D Survey, Voyager 3D Survey, Mobil 3D Survey and ELF 3D Survey
- Wells: Canari Marine-1, 1x, Carambola-1, Columbus-1, Morpho-1, South Marine-4



# Block 1(b)



## Background

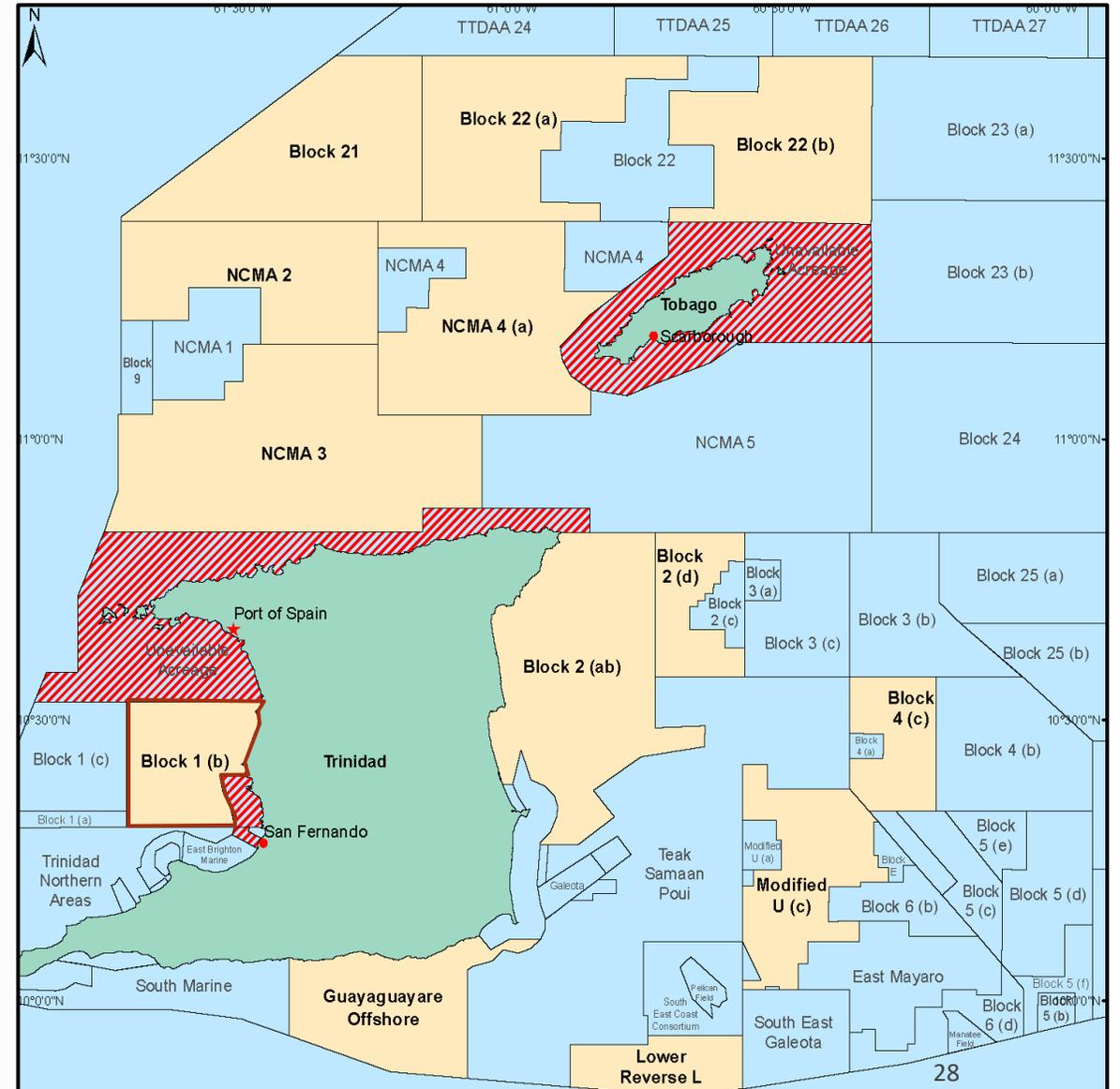
- Block size: 577.99km<sup>2</sup>
- Water Depths: 50m
- Block History: 2005-Block 1(b) was awarded to Petro-Canada and Petrotrin  
2009- Petro-Canada sold block to Centrica Energy  
2016- Centrica Energy sold block to DeNovo Energy  
2017- DeNovo relinquished Block 1(b)

## Petroleum System

- Source: Miocene-Pliocene Brasso/ Manzanilla Formation
- Reservoir: Pliocene Mazanilla, Springvale and Talparo Formations
- Reservoir Depths: 2500m to 6000m
- Reservoir Quality:  $\phi$  = 15 to 33%, N:G= 10% to 65%
- Trap Types: Combination of structural and stratigraphic
- Seal: Overburden and interbedded clays
- Migration: Occurs along main fault lines and fracture systems

## Data

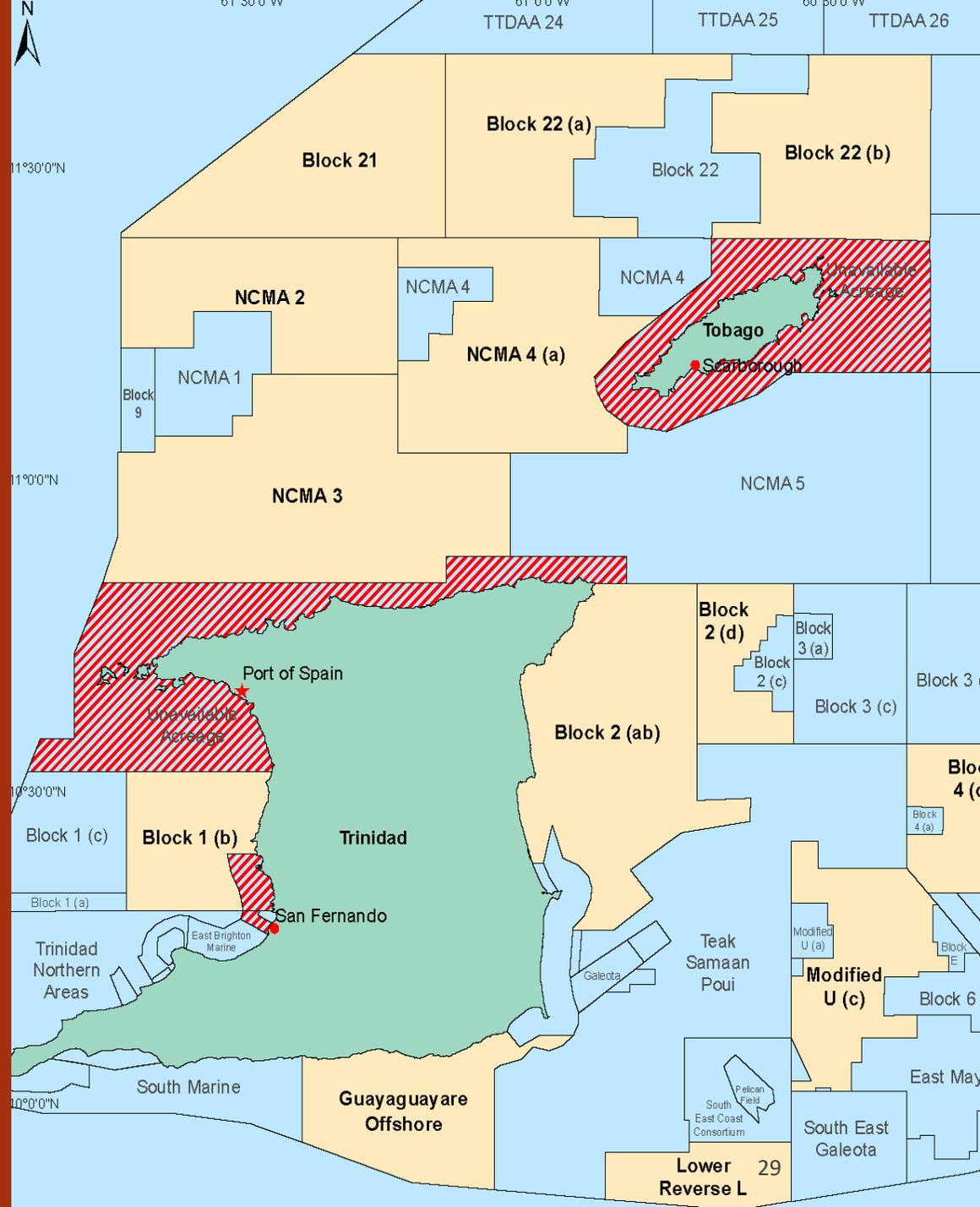
- Seismic: 2006 PetroCanada 3D Survey
- Wells: Couva Offshore-1, Couva Marine-1, 1a, 2, 3X, East Domoil-1, Goodrich-1, Anole-1, Tarouba-1 and offset wells in adjacent licensed blocks



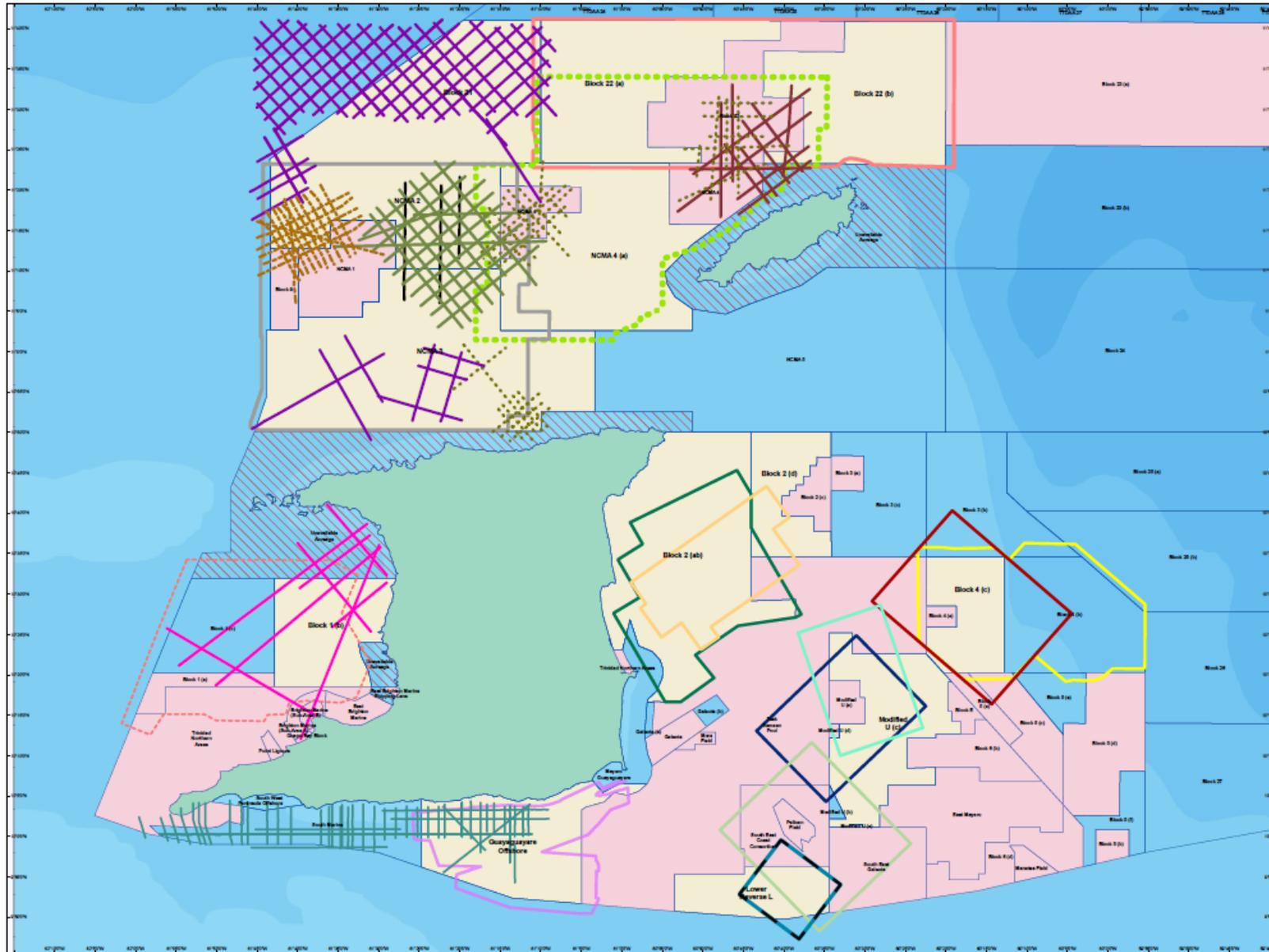


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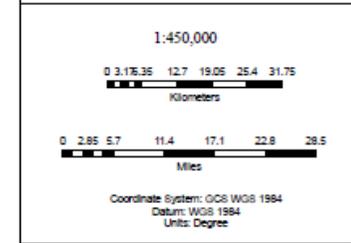
# Let's Talk Data!



# Shallow Water Seismic Dataset



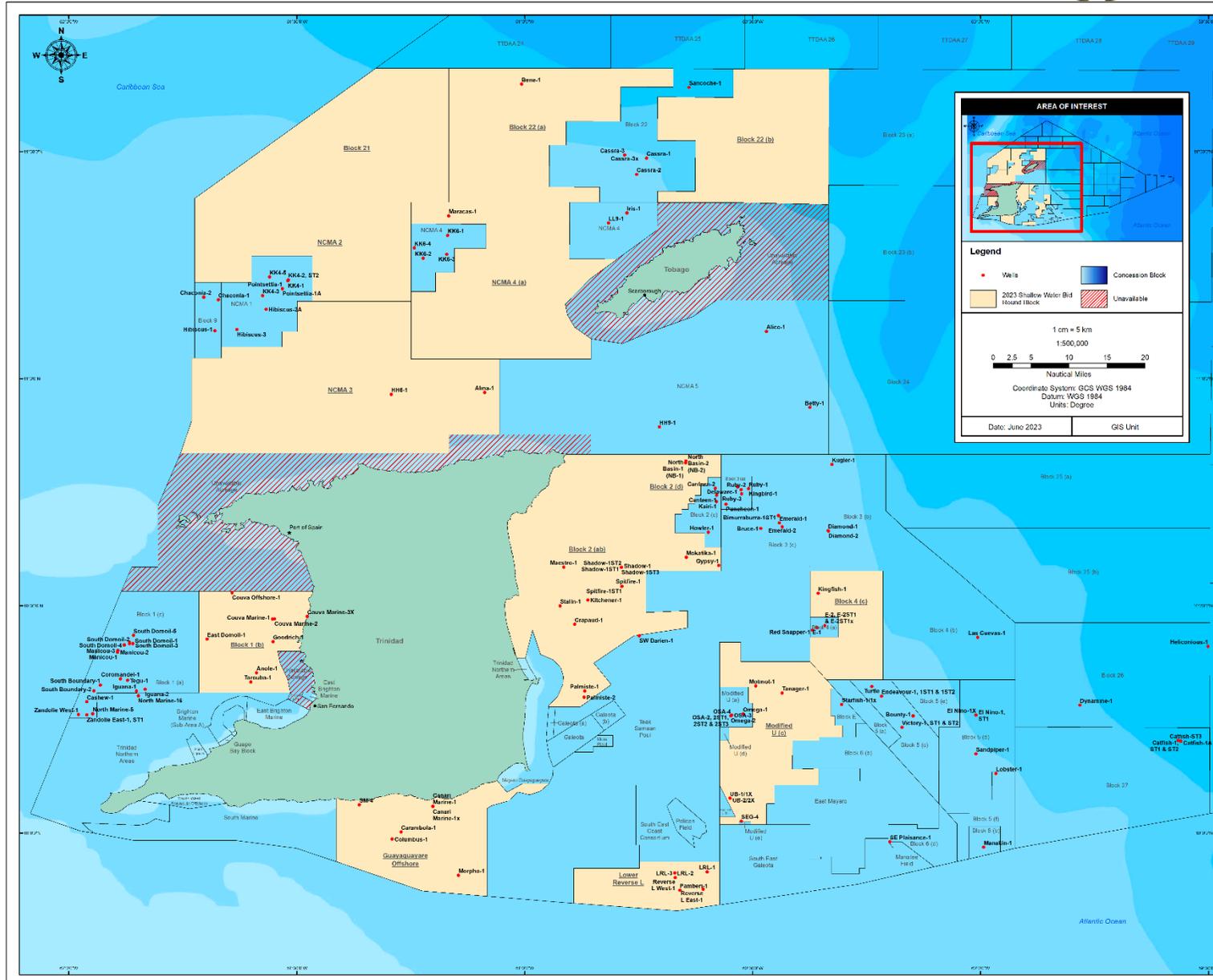
- 1968 UNDP NCMA 2D
- 1973 NCMA 2D survey
- 1977 NCMA 2D survey.dbf
- 1980 NCMA 2D
- 1988 South Marine 2D Survey
- 1993 BGTT 2D Survey
- 1996 Amoco LRL 3D
- 1997 Western Geco 2D Survey
- 1998 EOG OGG Ua Reprocessed 3D
- 1997 BHP 2(ab) OBC Reprocessed
- 2003 EOG LRL Pecten-Claro 3D
- 2004 Petrotrin 2D Survey
- 2006 PETROCANADA B22 3D
- 2006 Petrocanada 1a1b 3D
- 2006 EOG 4(a) 3D
- 2008 EOG Southtrend SECC PSDM Merge
- 2008 Osprey SECC Merge 3D
- 2012 Centrica NCMA 4 Block22 Merge 3D
- 2012 NIKO NCMA 2 & 3 3D
- 2012 NIKO 2(ab) 3D
- 2012 Voyager Mobil Elf 3D Merge
- 2012 NIKO OGG 4a 4b 3D Survey
- Bidround Blocks
- Licensed Block
- Open Block
- Unavailable Acreage
- Trinidad and Tobago



Date: July, 2023

Disclaimer:  
The information presented in the Upstream Activity Map reflects the most current information that can be substantiated by the Legal Department of the Ministry of Energy and Energy Industries.

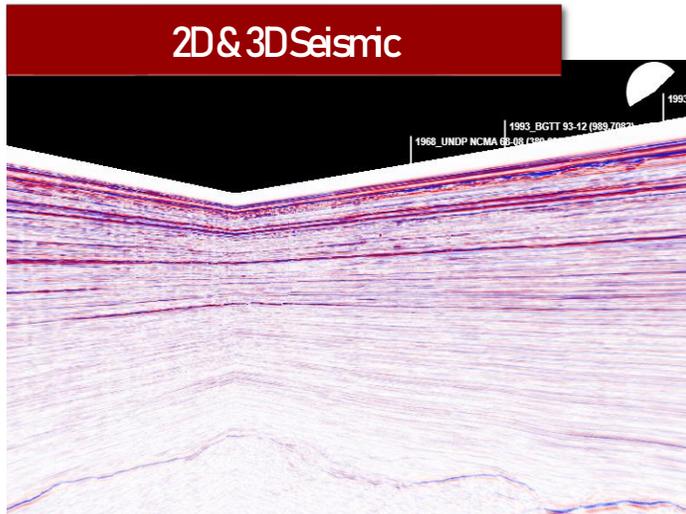
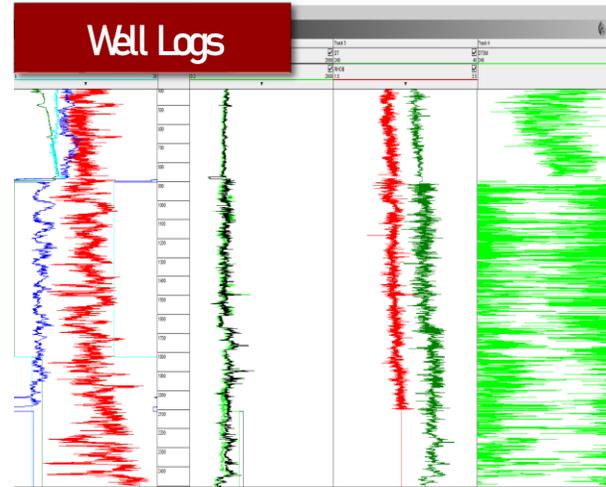
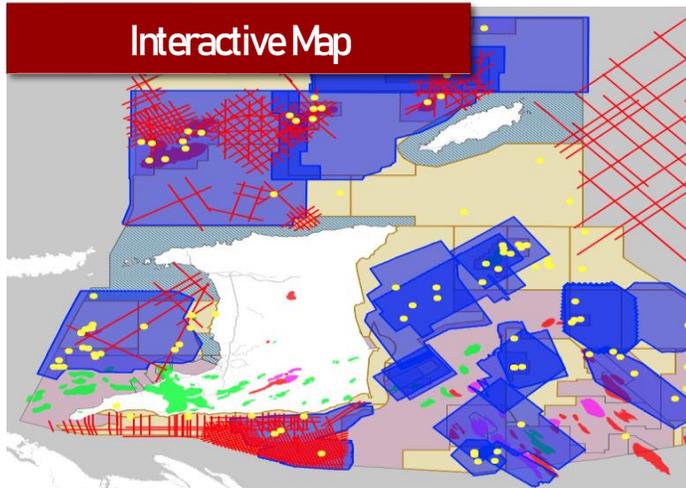
# Shallow Water Wells Dataset



# Virtual Data Room



Government of the Republic of Trinidad and Tobago  
Ministry of Energy and Energy Industries



**Reports**

TRINIDAD AND TOBAGO

**Petro-Canada Trinidad & Tobago Inc**

Final End Of Well Report For Bene-1 Block 22

AUTHORISATION			
Name / Position	Signature	Date	
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Reviewed by: Nigel Bradley Senior Drilling Engineer			
Approved by: Brian Brown Drilling Superintendent			
Craig McGregor Drilling Manager, North West Europe & Northern Latin America			

DOCUMENT CONTROL			
Document:	Final End Of Well Report For Bene-1		
File:	Bene-1 End of Well Report.doc		
Loc:			
Record of Issue:			
Rev No.	Date	Modification Details	Checked by
0	February 2010	Final	NDB

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<https://ttshallowwaterbid2023.com/>



Fill Out Data Request Form

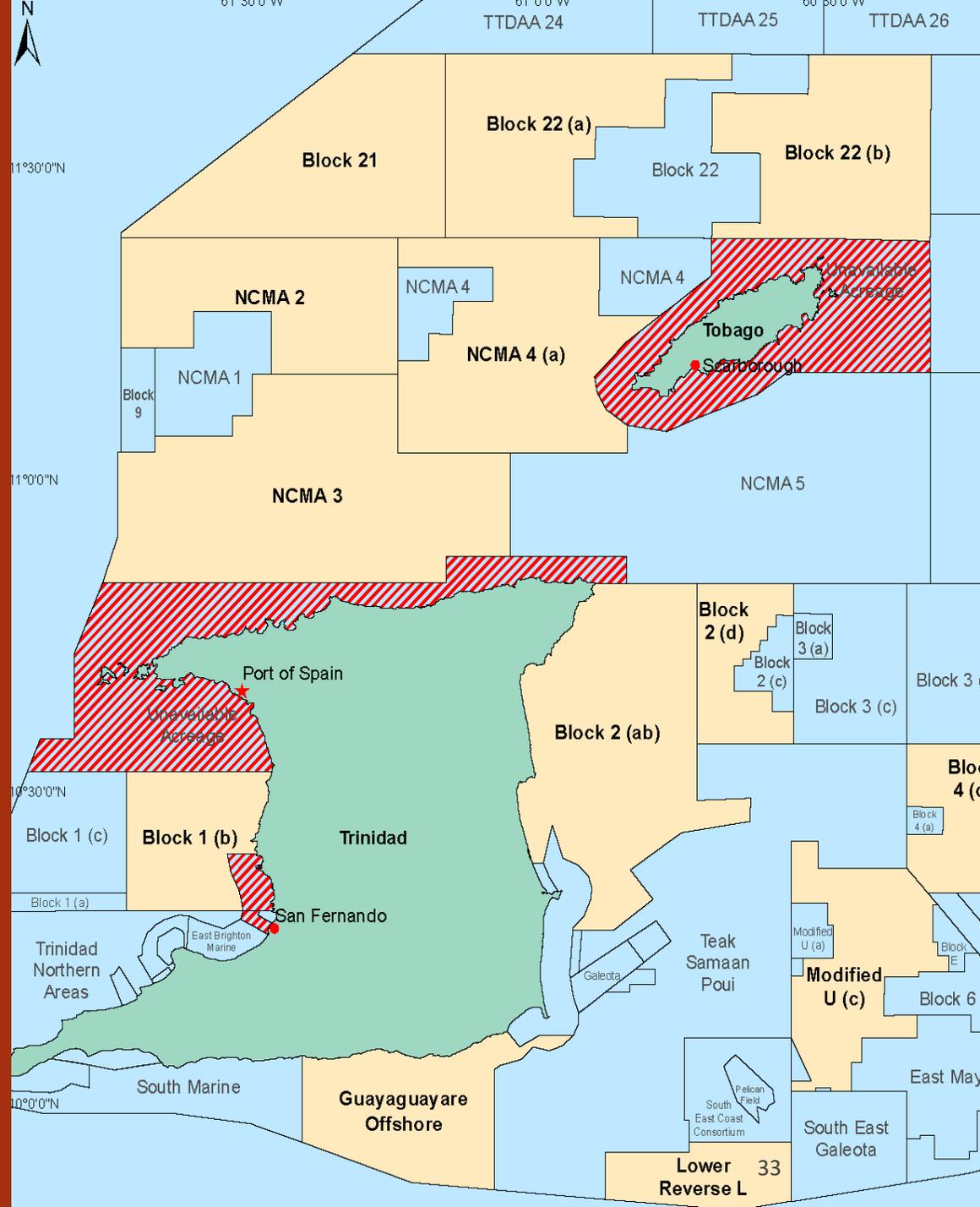
Review, sign and submit DUA

Access Data



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Ministry of Energy and Energy Industries

**Reminder!**







Government of the Republic of Trinidad and Tobago

Ministry of Energy and Energy Industries

FOR FURTHER INFORMATION

VISIT OUR WEBSITE AT  
<https://energy.gov.tt>

CONTACT  
[bidround@energy.gov.tt](mailto:bidround@energy.gov.tt)

**Thank you!**