2020-2021 Exploration Results
ASPO : december, the 7th, 2021

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Pronounced drilling collapse: 2182 active rigs in May 2019 / 1176 rigs in May 2020 / 1570 in December 2021 (Baker-Hughes rig counts)

50/50 oil and gas years!

**Oil discoveries**: Brazil, Guyana, Suriname, US, Mexico, Ghana, Ivory Coast,

**Gas discoveries**: Malaysia, UAE, South Africa, Russia, Turkey, Azerbaijan

TOTAL discovered: ?
2020 EXPLORATION RESULTS – Rystad – October 2020

A light year with a 45/505 gas/Oil content; around 8 Gboe discovered
TotalEnergies leading the race for oil thanks to Suriname
Gasprom and UAE leading for gas

Summary of global conventional discoveries January–October 2020
Million barrels of oil equivalent

*The remaining communicated resources are placed as contingent to future drilling
Alaska Oil discoveries: Mitquq 1 and Merlin 1 in Nanushuk Cretaceous reservoir

Australia Oil Search tested the Nanushuk reservoirs in Alaska encountered in the Mitquq 1 ST1 and the Stirrup 1 wells.
Mitquq 1 ST1, 9 kilometres east of the proposed central processing facility of the Pikka Unit.
Net pay zone of 52.5 metres (172 feet) with a gas cap of 9 metres (29 feet). No OWC,
Mitquq 1 ST flowed at 1,730 bopd from a single stimulated zone.

Australia 48 Energy announced (August 2021) success well in Merlin 1 (Peregrine program- 100 % );
45 ‘ light oil (35 °) feet, Not tested, TD : 5267 ‘
Peregrine project estimated OIP : 1.5 Gbo.
Merlin-2 to b drilled 2022,
Significant oil discovery at the **Leopard prospect** in Alaminos Canyon block 691 / WD 2070 m. Shell (50%) and Chevron (50%). 183 m net oil pay multiple levels. 300 Mbo RR?

At proximity to existing infrastructure and other discoveries in the Perdido Corridor? an opportunity to increase production in the Perdido Corridor, where its Great White, Silvertip, and Tobago fields are already producing. The **Whale discovery**, also in the Perdido Corridor, is progressing toward a FID in 2022,

**Recently appraised Blacktip discovery** located in Alaminos Canyon block 380 in WD :1,890 m. Wilcox discovery in the Perdido thrust belt, about 48 kmNNE from the **Perdido platform**

The Blacktip exploration well encountered 122 m net oil pay with good reservoir and fluid characteristics. RR : 250 Mbo
Mexico Offshore update

- REPSOL two consecutive oil discoveries, in the deepwater (WD: 600 m) Polok-1 (TD: 2620 m) and Chinwol-1 (TD: 1850 m) exploration wells in the Salina Basin, Block 29, Offshore Veracruz/Tabasco. Both wells confirmed high quality reservoirs with excellent properties, encountering net oil pay of 200 meters and 150 meters respectively, in Miocene sand reservoirs,

- Shell who won 9 DO blocks in 2018 have drilled already 4 to 5 Exploration Wells which seem to be went dry? No press release
In August 2021, Sayulita 1 Exploration well in Block 10 in the Cuenca Salina Sureste Basin, 70 kilometers off the coast. WD of 325 meters, TD of 1758 meters. 55 meters net oil pay in the Upper Miocene sequences with excellent petrophysical properties. Data indicate a production capacity for the well to approximately 3,000 bopd, The find may contain between 150 and 200Mbo OIP.

In 2020 discovery well Saasken 1 EXP, The Saasken-1 marks the sixth consecutive well drilled by Eni in the Sureste Basin. Situated about 65km off the coast, TD of 3,830m. The discovery may contain between 200 and 300 million barrels of oil (Mmbbl) in place. The well discovered 80m of net oil pay in the Lower Pliocene /Upper Miocene sequences. The data indicates a production capacity of 10,000 bopd for the well.

The two discoveries confirm the potential commercial outcome of Block 10 with other prospects located nearby, The Block 10: Eni (operator, 65%), Lukoil (20%) and Cairn (15%).
MEXICO-ENI production

- Eni said it had begun early production from the Miztón field in Area 1 off the coast of the state of Campeche, an area together with the Amoca and Tecoalli fields that is estimated to hold 2.1bn barrels of oil equivalent in place. Eni won the block in an auction in September 2015.

- Eni said the Miztón 2 well entered production with a promising 15,000 bopf in July 2019 in an EPS phase. Full field production will start in 2021 with a floating production storage and offloading, or FPSO, facility with 90,000 bopd,
Guyana-Suriname deep offshore EXPLORATION HOTSPOT

Bulletwood 1, Jabillo 1 and Sapote 1 wells in Canje block (Exxon 35 %, TotalEnergies 35 %, JHI 17 %, Mid-Atlantic 13 %): no commercial discoveries even if excellent reservoirs in these very deep drillings (TD 6500 to 7000 m) probable lack of closure

Tanager well (TD 7633 m) deepest ever drilled on Guyana, in Kaieteur block encountered heavy oil in UK sand reservoirs

**Cataback-1 Discovery in Stabroek Block:**
74 meters of net oil pay in high-quality sandstone reservoirs. It is located 6 km, east of Turbot-1 and was drilled in 1,807 meters WD. Cataback builds confidence in economy of the greater Turbot area.
SE Extension (block 58) of the EXXON Guyana giant discoveries  
Maka Central Well 1000m WD, TD : 6300m  
Upper Cretaceous turbidites  
1) Gas/condensates (50°API) 50 m hc bearing Campanian  
2) Light Oil (40 API) with 75 m hc bearing Senonian  
3) Turonian objective not reached due to overpressures  

Next well; Sapaka 1 : 20 km SE to be drilled in 2020, TOTAL will become operator after 3rd well
GUYANA-Exxon- Stabroek block update

**Exploration**: Exxon-Mobil: 45%; Hess 30% and CNOOC 25%. ExxonMobil made another oil discovery Cataback, in its prolific Stabroek Block and increased its estimate of the discovered recoverable resource to approximately 10 billion oil-equivalent barrels with other multibillions additional exploration stakes. This updated resource estimate includes the Cataback-1 well, which brings the total significant discoveries is 21 for a 26800 km2 block.

**Production**: to date, only the Liza Destiny FPSO in production, since December 2019, at around 120,000 bopd. Liza Unity FPSO will become Guyana’s 2nd offshore production unit, will be moored in January 2022 at WD of 1,600 meters, and should produce 220,000 bopd, with a gas treatment capacity of 400 million cftpd and water injection capacity of 250,000 bwpd. The FPSO will be able to store approximately 2 million barrels of crude oil.

Singapore's Keppel started work on the third FPSO unit, the Prosperity FPSO destined for the Payara development. At least six FPSOs are expected to be online in the Stabroek block by 2027 with the potential for up to 10 FPSOs on the block to develop the current discovered reserves. **Towards a 1 000 000 BOPD production?**

**Gas-to-Shore project**, the conceptual studies for a construction of a 50 MMscf/td pipeline from the Liza Phase 1 and Liza Phase 2 FPSO vessels to an onshore natural gas liquid (NGL) and natural gas processing (NGP) plant.
Maka-Kwaskwasi-Sapakara-Keskesi discoveries in 2020 and 2021 confirm excellent oil trend SE of Starbroek Exxon block in Guyana.

**Bonboni-1** offshore exploration well in the northern portion of Block 58, encountered sub-commercial oil volumes and will be plugged and abandoned. Bonboni-1 was drilled in WD of 2,000 meters. High quality, **water-bearing Campanian-Maastrichtian (main objective) reservoir.** In another Maastrichtian objective, the well penetrated 16 meters (52 feet) of net pay in a single zone, consisting of low-GOR, **25-degree API black oil.**
Suriname –TOTAL Apache- Block 58-Appraisal

**Sapakara South-1** DST flow test, an appraisal well drilled on the eastern edge of Sapakara; 4 kilometers from the discovery well. SPS-1 encountered 30 meters of net oil pay in a single zone of high-quality (1-2 Darcies) Campano-Maastrichtian reservoir.

"A restricted flow test averaged 4,800 barrels oil per day (bopd) for 48 hours of 34-degree API with GOR of approximately 1100 scf/bbl,

According to Apache, a single reservoir in SPS-1 proved connected resource of 350 Mbo IOIP.

"Seismic imaging of this Sapakara reservoir supports substantially more potential resource

**Keskesi South 1** went dry,
Block C-M-411, located in the Campos Basin pre-salt
Well 1-BRSA-1377-RJS, informally called Urissane, 200 km from the coast, in a WD of 2,950 meters.
Oil in reservoirs in the pre-salt section. The well data will be analyzed to better target exploratory activities in the area and assess the potential of the discovery. The CM-411 block was acquired in 2017, together with Blocks CM-210, CM-277, CM -344, CM-346 and CM-413. Petrobras is the operator of the block and holds a 50% interest, in partnership with ExxonMobil (50%).
Argentina- Vaca Muerta shales O&G: the world quickest growing unconventional play!

“no doubt that an average development in the Vaca Muerta oil zone delivers significantly higher production rates on a boe basis than an average US onshore tight oil well – with the Permian Delaware Basin being the only one that comes close to Vaca Muerta in this aspect,
Ivory Coast- Major discovery- CI 101 block

Baleine 1 well ENI 90 %; Petroci 10 %
TD : 3445 m
light oil-bearing intervals (40° API) of Santonian and Cenomanian-Albian age. Cenomanian-Albian level shows discrete to good reservoir and has been successfully tested to production. Very probable extension in block CI-802 (ENI op)

IOIP 1.5 to 2 Gbo
IGIP 1.8 to 2.5 Tcf
Eni announced a significant oil discovery on the Eban exploration prospect in CTP Block 4, offshore Ghana. Following the Akoma discovery made in 2019, the Eban-1X well has revealed that the complex could hold between 500 and 700 million boe IHIP oil. Located approximately 8km from the Sankofa Hub, the IHIP between the Sankofa field and the Eban-Akoma complex is now estimated at more than 1.1Bboe.

Eban – 1X well, WD : 545 m ; with a TD of 4179m, proved 80m single light oil column in a thick sandstone reservoir interval of Cenomanian age ; well deliverability potential is estimated at 5,000 barrels of oil per day. This is similar to the producing wells in the Sankofa Field.
In 2021, Canadian exploration company Reconnaissance Africa drilled 2 wells in the Kavango Basin (Permian Karoo basin).

The first stratigraphic test well (6-2) (TD : 2294 m) shows 200 meters of light oil and natural gas indicators over three discrete intervals in a stacked sequence of reservoir and source rock. Oil was then extracted from these samples and the results supported an active petroleum system with multiple source intervals.

The second stratigraphic test well (6-1) (TD : 2780 m) was designed to be drilled to a TD of 3,800 meters (12,500 feet). It encountered 343 meters of O&G shows, confirming an active petroleum system.

No real news since,,,and lot of speculations,
On October 21st, Recon Africa reported it concluded its acquisition of 450 kms of 2D seismic data, on time and on budget,
First 2D section Namibia onshore
TotalEnergies - South Africa, Outeniqua: Brulpadda and Luiperd Discoveries

Operator: TotalEnergies, 45% with Qatar Petroleum 25%, CNR 20% and Africa Energy 10%
1- Brulpadda WD: 1400 m; TD: 3600 m,
   - 57 m, gas and condensate, LK reservoirs
   - 550 Mboe to 1 Gboe

2- Luiperd: WD: 1800 m; TD: 3400 m
73 meters good HC net sandstones
DST 1: 33 Mcftd and 4300 bopd

Development! Gas To Shore,
Phase one: subsea wells feeding production to a shallow-water platform, with gas piped to a GTL facility and power plant
South Africa, Outeniqua : Brulpadda and Luiperd Discoveries

Sources: Africa Energy Corp
TotalEnergies and South Africa: a new romance?

1- South Outeniqua block covers an area of approx. **49,000 sq kms** in WD between 200 and 5,000 meters. TotalEnergies is the Operator with 75% and Qatar Petroleum 25%. It is located directly south of the **11B/12B block** where TotalEnergies, operator drilled Brulpadda and Luiperd.

2- The **DWOB and OBD blocks** cover a combined area of about **53,000 sq kms** in WD between 1,000 and 4,200 meters and are located in the Orange Basin directly south of **Namibian blocks 2912 and 2913A/B and 2914B**, JV partners are TotalEnergies (Operator) with a 50%, Qatar Petroleum 30% and Sezigyn 20%,
Azerbaijan Caspian Offshore Update

**Exploration**: BP and Azerbaijan's Socar made a gas condensate discovery after 14 months of drilling to a **depth of nearly 7,200 meters** in the Shafag-Asiman block in WD of 620 m, 125 km SE of Baku. **No figures given about** the size of the discovery. Logging and drilling of the Fasila strata had been successfully completed and the partners plan to drill an **additional lateral well in the direction of the structure's arch**. According to SOCAR predrilling report, the reserves of the Shafag-Asiman structure were **500 Gm3 of gas and 65 Mt of condensates** (bigger than Absheron: 350 Gm3 and 45 Mt condensates)

The find was hailed by the country's president, Ilham Aliyev, as a potential boost for 'Southern Gas Corridor' supplies to European markets.
Production/Transport:
Socar started trying to develop a "phase two" of the Southern Gas Corridor across Turkey to European markets, after first gas flowed to Italy via the Trans Adriatic Pipeline, TAP, at the end of 2020.
The Southern Gas Corridor comprises the 16 Bcm/year BP-operated Shah Deniz 2 field offshore Azerbaijan, the expanded South Caucasus Pipeline via Georgia, the TANAP pipeline in Turkey and the 10 Bcm/year TAP link via Greece and Albania to Italy (10 times less North Stream), Gas is sourced from the Shah Deniz field, but also the BP-operated Azeri-Chirag-Gunashli, or ACG, oil complex, and other fields operated by SOCAR.
Geant Absheron field, TotalEnergies operator, could become a source too: first gas beginning of 2022,
TPAO-Major Gas discovery in Turkey Black Sea

1-Sakarya 1 WD of 2,115m; TD 4,525m
More than 100m of the natural gas-bearing reservoir in Pliocene and Miocene sandstones,
gas reserves of 320 Gm3 of lean gas, which is the largest
gas reserves discovered in the Turkish Exclusive Economic Zone as well as in the Black Sea.

2-TPAO made a second discovery deeper at a depth of 4,775m in 2,117m WD. Additional 30m of gas play in sandstones of the early-Pliocene to late-Miocene,
3-the drilling of the exploratory well Amasra-1 in the northern Sakarya gas field discovered 135bcm gas,
4-the cumulative natural gas reserves of the field to 540bcm.
Probable biogenic gas/ Reservoirs quality?
TPAO-Major Gas discovery in Turkey Black Sea

Sakarya Gas Discovery

- Turkish energy minister quoting contingent resources of 405 Bcm (14.3 Tcf) of gas.
- Western Black Sea, 170km from the Turkish coast, 4km from the TurkStream pipeline.
- Discovered in Oct. 2020 with Tuna-1
- 2014m water depth.
- Pliocene to Miocene reservoirs at three levels between 3000 and 4775m.
- 2000km² 3D acquired in Q4 2019 by Shearwater Geoservices.
- Assumed to be structural trap but could be stratigraphic.
- No information on reservoir thickness, quality, extent or gas composition.
- Türkali-1 appraisal well started drilling in Nov. 2020, 4km to the NW of Tuna-1
CNOOC made a "large-sized" discovery at Kenli 10-2 site in Bohai Bay. The Kenli 10-2 oilfield is located in Laizhou Bay Sag in Southern Bohai Bay, with a WD of 15 meters. Kenli 10-2 oil bearing Fm is in the lower member of Mio-Pliocene Minghuazhen Fm and the oil properties are conventional heavy oil. The discovery well Kenli 10-2-4 was drilled at TD of 1,520 meters, and encountered oil pay zones with a total thickness of approximately 27 meters. The appraisal well tested approximately 569 bopd.

Xu Changgui, General Manager of Exploration Department of CNOOC said: "The successful discovery of the Kenli 10-2 oil field marked the breakthrough in discovery of lithological oilfield with reserve of 100 million tons in the shallow depression zone of the Bohai oilfields, demonstrated the broad prospects for exploration of lithological structures in the Bohai, and has great significance as a guide for exploration in similar basins."

Wang Dongjin, Chairman of the Company said, "CNOOC Limited will firmly grasp the leading role of oil and gas exploration, take the discovery of large and medium-sized oil and gas fields as the goal, continue to deepen geological understanding and technological innovation, actively promote the increase of oil and gas reserves and production, and contribute to the company's high-quality development."
MALAYSIA-2021 results- a PTTEP hunting ground!
Blocks 405B, 410 B and 417 Sarawak offshore

The Sirung-1 well; Block SK405B, revealing more than 100 m of O&G,

PTTEP announced a large gas discovery at the Lang Lebah-2 well, offshore Sarawak; TD 4,320 meters with over 600 meters of proven net gas pay in Miocene carbonates! The well is in Block 410 B in the Central Luconia Province; It could be "the largest-ever gas discovery by PTTEP." Gas Quality?

PTTEP made a discovery in Block SK417 at Dokong-1 exploration well, TD of 3,810 meters; 80 meters of gas column, Second gas discovery at Nangka-1, in Block SK417, in the shallow waters of Baram Province. TD of 3,758 meters and encountered gas pay in sandstone reservoir.
Onshore shallow gas Emirates

“Adnoc and Dubai Supply Authorities signed a strategic co-operation agreement to continue to explore for and develop the shallow gas resources after the discovery of 80 Tcf of shallow gas in the area between the Abu Dhabi and Dubai," Adnoc said. About 10 exploration were drilled by Adnoc in its first ever exploration campaign in Dubai in more than 5000 square kilometres of area between Saih Al Sidirah and Jebel Ali, according to the Dubai Media.

Press release in February 2020 ; no news since !

Sabkha Environments : limestones, marls, evaporites
Probable biogenic gas and Tight réservoirs !