



Trinidad and Tobago
Section

TOP DRIVE

SPETT NEWSLETTER

JANUARY/FEBRUARY 2019 ISSUE

2018 PETROBOWL TALK

NEW SPETT DIRECTOR FOR CONTINUING
EDUCATION

6 QUESTIONS WITH ASHWIN
SRINIVASAN





Moving towards Sustainability

In the JPT journal, March 2019 issue, Sami Alnuaim, 2019 SPE President addresses the use of technology as a key component in achieving sustainability. Within the article he discusses challenges faced by the industry as it relates to sustainability. Given the above, I felt it necessary to further expand on one of the challenges mentioned, “how do we use technology to transform our industry to a low-carbon-intensity industry to help in addressing the global climate change challenge, while extending the economic and social benefits of oil and gas to improve human lifestyle on earth?

Whilst researchers may identify several strategies for achieving this, in Trinidad and Tobago, the regulator of the energy industry, the Ministry of Energy and Energy Industries (MEEI) plans that include both a component of technology and policy changes to address this global phenomenon. Some of these are;

- Waste to Energy Expressions of Interest;
- Development of a utility scale Renewable Energy (RE) Power Generation Plant;
- Development of CARICOM Regional Energy Efficiency Building Code;
- Amendment of the Trinidad and Tobago Electricity Commission Act and Regulated Industries Commission Act to allow smaller producers of RE to connect to the grid;
- Solar LED lighting in Play Parks;
- Member of the Carbon Dioxide Enhanced oil recovery road map (CERM) project. *The CERM project is an innovative collaboration between academic institutions and government energy institutions toward sustainable development of known oil reserves using the technology of Carbon Dioxide Enhanced Oil Recovery.*

This topic definitely stimulates one's interest as it is without a doubt that sustainability continues to be a fundamental global commitment and with only the right application of technology as well regulatory thrust, can sustainability be achieved within the near future.

Happy reading and stay tuned for our upcoming events!

Ayasha Nickie
Section Chair
SPETT 2017-2019

INSIDE THIS ISSUE:

- 3 SPETT PETROBOWL TEAM 2018 SHARES ON THEIR EXPERIENCE AT ATCE**
- 4 NEW SPETT DIRECTOR FOR CONTINUING EDUCATION**
- 5 6 QUESTIONS WITH ASHWIN SRINIVASAN**
- 7 TRINIDAD AND TOBAGO ENERGY CONFERENCE AND TRADE SHOW 2019**
- 8 ANNOUNCEMENTS**
- 10 UPSTREAM HIGHLIGHTS**
- 12 PRODUCTION STATISTICS**
- 14 DID YOU KNOW?**

SPETT Petrobowl Team 2018 shares their experience at ATCE

by Chandini Chickooree

On Monday 18th February 2019, the SPETT hosted a talk with the 2018 Petrobowl team at the Geoscience lab, University of the West Indies at 5:30 pm. This talk served as a recap of the Annual Technical Conference and Exhibition (ATCE) which the team attended to participate in the Petrobowl Championship in Dallas Texas as well as thinking ahead for this year's involvement in Petrobowl to ultimately attend the championship in Calgary, Canada.

This short but informative event consisted of attendees which included staff members and students of both UWI and UTT. The outgoing Petrobowl team members described their experience at the conference to be intriguing, interesting and enjoyable. They expressed their gratitude to be allowed the opportunity to not only represent UWI but also the SPE Trinidad and Tobago Section and to have the invaluable experience awarded to them to network with other students and professionals internationally.

The students have already begun planning for Petrobowl 2019, with Regionals scheduled to take place during May in Bolivia.

SPETT would like to express our sincere gratitude to the outgoing team and our sponsors and all persons who supported fundraising ventures to cover the team's costs. Additionally, we would like to wish our incoming team best of luck!



SPETT Board welcomes its newest Director - Ashwin Srinivasan

The SPETT Board welcomes Ashwin Srinivasan as the new Director of Continuing Education.



Ashwin's career with Shell started in 2007 with his first assignment being the renewal of core-flooding capabilities at the Bellaire Technology Center (BTC) Hydrocarbon Recovery laboratories in Houston. He then had a 2 year stint at the Carbon Capture and Storage (CCS) Center of Excellence (CoE), where he was responsible for designing and providing real time surveillance to Shell's first CCS driven CO2 injection pilot for the flagship Zrogen project in Australia. He spent the next five years working as the Reservoir Engineer on the mega giant Majnoon oil field in Iraq having seen it

through from the licensing rounds through to achieving First commercial production. Ashwin then moved to Houston for two years as a global WRFM consultant responsible for driving Shell's global WRFM strategy as well as rejuvenating uptake of annual reviews – especially reservoir reviews and Annual Field Performance Reviews.

Ashwin is currently working as a Senior Reservoir Engineer with Shell Trinidad and Tobago providing comprehensive reservoir engineering expertise to ongoing growth projects, Exploration projects and existing producing assets in the East Coast Marine Area of Trinidad and Tobago. He holds a Master's degree in Petroleum Engineering from the University of Texas at Austin. He is married to Sadhavi and they are parents to a Goldendoodle named Homer.

6 QUESTIONS

With Ashwin Srinivasan, SPETT's New Director of Continuing Education

1

What has your experience been like with other SPE sections?

I've been a member of three SPE sections, prior to being a part of the SPE Trinidad and Tobago chapter. I joined SPE in 2006 at the University of Texas (UT) at Austin chapter where I was completing my Masters in Petroleum Engineering. A key highlight there was being part of a four-member team that placed 2nd globally at the 2007 ATCE Petrobowl in Anaheim California. I later joined the SPE Bangalore section and held positions of Young Professionals Chair and External Outreach Chair. It was extremely exciting to play a part in setting up a new SPE chapter in a city that wasn't historically an oil and gas hub and also being a part of the growth journey that culminated in our section winning the gold medal award. During my last assignment in Houston with the SPE Gulf coast section, I mentored multiple young professionals and participated in many Distinguished lecture sessions. I'm extremely honored to have been selected as a Session Chair for Reservoir Engineering at the 2019 SPE ATCE in Calgary.

2

From your experience, what initiatives did your previous SPE chapters have that were successful?

That's a very interesting question. The initiatives and mandates for each SPE chapter I've been involved with closely mirrored the industry dynamics in those demographics. For example, the Bangalore chapter focused on digitalization, data analytics and technology given its location in the silicon valley of India. One distinctive initiative from the Bangalore section was the organization of the first Young Professional's Workshop in 2006 that was attended by over 100 oil and gas delegates from all over the globe. It helped create a sense of community and collaboration among young professionals in academia and industry and also put the SPE Bangalore section on the global map. Alternately, the Gulf Coast chapter focused on technical advances in Deepwater and unconventional oil and gas exploration and production. A stand out initiative of this section was a specific focus on joint industry projects ensuring that young graduates were closely connected with ongoing industrial technological innovations and developments.



What suggestions can you make to improve SPETT's service to its members?

SPETT has been pivotal in the growth journey of the energy industry in Trinidad and Tobago. One area that continues to hold enormous potential to further strengthen this role is increased collaboration and technical knowledge sharing amongst SPE, academia and the industry in order to reach holistic solutions for technical challenges in an integrated manner. This is an area that I plan to dedicate a lot of my time in the capacity of a Continuing Education Director.



What plans do you have coming in as the new Director of Continuing Education?

I'm extremely excited and honored to have been appointed as the new Director of Continuing Education. I plan to use my position to reinvigorate and foster increased collaboration between universities, student chapters, industry and SPE. These are very exciting times given the growth journey for the energy industry in Trinidad and Tobago. I believe that SPE has a crucial role to play in ensuring that the younger generation of energy professionals are adequately skilled to address the technical challenges and contribute to innovative ideas in oil and gas exploration and production in the coming years. In line with this vision I will actively encourage our members to consider taking the SPE Petroleum Engineering Certification exam and also participate in distinguished lectures in order to grow their knowledge, gain industry experience and be recognized as industry experts.



How has your experience in Shell T&T been thus far? What does

Shell T&T has been one of the most dynamic assets that I have been a part of. It's extremely exciting to be a part of the growth journey of this diverse and inclusive asset. My current role as a Senior Reservoir Engineer involves providing comprehensive reservoir engineering expertise to ongoing growth projects, exploration projects and existing producing assets in the East Coast Marine Area of Trinidad and Tobago.



What advice would you give to young professionals entering the industry?

The future of the energy industry in Trinidad and Tobago is very bright. My advice to young professionals would be to stay driven, inquisitive and strive for excellence. Given that the energy industry is constantly changing, it's extremely important that young professionals are versatile and are open to acquiring skills that are relevant to addressing the issues at hand. A motivated and driven set of young professionals is key for ensuring the success of Trinidad and Tobago's future energy aspirations.

Trinidad and Tobago Energy Conference and Trade Show 2019

The Trinidad and Tobago Energy Chamber hosted its Annual Trinidad and Tobago Energy Conference and Trade Show on Monday 4th to Wednesday 6th February 2019 at the Hyatt Regency, Port of Spain. It was themed Technology: Transforming the Industry and was aimed at critically analyzing how technology is changing the energy industry and the implications of these changes on the planning, implementing and operations of the energy sector.

Mr. Eugene Tiah, Chairman of the Energy Chamber of Trinidad and Tobago, highlighted in his welcoming remarks the need for regulatory reform and local content to foster growth of our local Energy Services Sector. The Prime Minister, the Honorable Dr. Keith Rowley and the Minister of Energy and Energy Industries, Senator Franklin Khan, both gave optimistic views of the outlook of our Energy Sector in the near to medium term. They list contracts with Upstream Operators such as BHP, BPTT, EOG Resources, Shell and DeNovo and citing statistics on expected gas in 2019/2020 and beyond.

The conference also included its first 'All female' panel discussion including persons such as Claire Fitzpatrick, Regional President of BPTT, Pria Narinesingh, Country Managing Partner EY, Penelope Bradshaw-Niles, Permanent Secretary (Ag) Ministry of Energy and Energy Industries, Siana Teelucksingh, Renewable Energy Consultant, Kristen Ray, Vice President Technology BHP (Petroleum) and was facilitated by Dr. Carla Noel-Mendez, Corporate Affairs Manager, BHP.

The Energy Conference was well attended by industry professionals inclusive of many SPETT members and boasted this year of it highest attendance compared to the past 2 years. SPETT wishes to express congratulations to the Trinidad and Tobago Energy Chamber on a job well done.



ANNOUNCEMENTS



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Trinidad and Tobago
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Upcoming Events

Technical Lecture: National Oil Spill Contingency Plan

Speaker: Mr. Craig Boodoo

Date: Monday 25th March 2019

Time: 5:30pm

**Location: Ministry of Energy & Energy Industries , Wrightson Road,
Port-of-Spain**

[Click to RSVP](#)

Technical Lecture: Trinidad and Tobago's Petroleum Fiscal Regime

Speaker: Ms. Greta Jackman

Date: Wednesday 10th April 2019

Time: 5:30pm

Location: TBD

[Click to RSVP](#)

Distinguished Lecture: Developing the next generation of completion engineers.

Speaker: Mr. Mark Van Domelen

Date: Tuesday 16th April 2019

Time: 5:30pm

Location: Courtyard Marriott - Port-of-Spain

[Click to RSVP](#)

UPSTREAM HIGHLIGHTS

Local and Regional

BP has announced its first gas production from its Angelin development in February 2019. Under budget and on time, this development includes a new platform and four wells off the south-east coast of Trinidad. The new platform is BPTT's 15th installation offshore T&T and has a production capacity of 600 MMscfd. Angelin is BPTT'S first major project development supported by the application of ocean bottom cable (OBC) seismic acquisition with advanced processing, allowing enhanced imaging of its reservoirs in the Columbus basin offshore Trinidad. BPTT'S two new developments, Cassia Compression and Matapal is expected to come onstream in 2021 and 2022 respectively.

BHP The first few months of 2019 is set to be a busy time for deepwater exploration in TT as BHP is reportedly set to drill three wells to follow up its Bongos 2 discovery last year. The Bongos 2 well was drilled in BHP's Trinidad and Tobago Deep Atlantic Area (TTDAA) Block 14, in deepwater east of Tobago. The wells will be drilled by the Deepwater Invictus drillship, which has been drilling for BHP in TTDAA and the Gulf of Mexico.

BP has awarded to McDermott International a significant contract for the engineering, procurement and construction of the Cassia Compression Platform, located 35 mi (57 km) southeast off the coast of Trinidad. McDermott will provide engineering, procurement, construction, hook-up and commissioning of the 8,928 ton (8,100-metric ton) Cassia C topsides, a 3,747 ton (3,400-metric ton) jacket and a 793 ton (720-metric ton) bridge to link Cassia C with the existing Cassia B platform that currently sits in 223 ft (68 m) of water.

SHELL has extended its contract for the Rowan Gorilla VI jack up in Trinidad. This Super Gorilla class jack-up will continue its drilling program until March 2019 whereby the rig will then be used for platform support and accommodations work until approximately November 2019.

HESS Corporation has announced positive results from the Tilapia-1 and Haimara-1 wells offshore Guyana, bringing the total number of discoveries on the Stabroek Block to 12. Tilapia-1 encountered approximately 93 m of high-quality oil-bearing sandstone reservoir and was drilled to a depth of 5,726 m in 1,783 m of water. The well is located approximately 5.5 km west of the Longtail-1 well. In addition to Tilapia-1 the Turbot area includes the Turbot, Longtail and Pluma discoveries. The Haimara-1 well encountered approximately 63 m of high quality, gas condensate bearing sandstone reservoir. The well was drilled to a depth of 5,575 m in 1,399 m of water.

EXXON MOBIL announced two recent discoveries in February 2019 thus totalling the offshore Guyana finds to 12. The company's gross recoverable resource estimate is now greater than 5.5 billion barrels of oil equivalent for the Stabroek Block. ExxonMobil has boasted of a robust inventory of additional prospects in the 6.6 million acres Stabroek Block with significant upside potential and plans for approximately 10 exploration wells in the 2019-2010 period. The company is ready to begin oil production in Guyana with the Liza Phase 1 Development by 2010 and is expected to make its Final Investment Decision in Q1 2019 for Phase 2 of the project.

VENEZUELA U.S. sanctions will sharply limit oil transactions between Venezuela and other countries and are similar to but slightly less extensive than those imposed on Iran last year. Treasury's notice makes more explicit that the sanctions restrict foreign entities from doing business with Venezuela using the U.S. financial system or U.S. brokers after April. With most oil transactions conducted in dollars, that is expected to sharply curtail off Venezuela's efforts to seek buyers around the world.

UPSTREAM HIGHLIGHTS

International

SHELL has started production from the world's largest floating liquified natural gas (FLNG) facility off the coast of Western Australia. It will not enter the initial phase of production with gas and condensate and an ultra-light form of crude oil – being produced and moved through the facility. An annual production capacity of 3.6MM tonnes of LNG, 1.3MM tones of condensate and 400,000 tonnes of liquified petroleum gas is expected.

PETROBRAS has put the finishing touches on the first wave of development at the massive offshore Brazil Lula Field, pumping first oil from the latest floating production unit to be installed at the country's largest oil and natural gas producer. The FPSO P-67 floating production, storage and offloading vessel, or FPSO, is the ninth FPSO installed at Lula and officially ends the first phase of development at the field. The FPSO, which was installed at the Lula Norte area, has installed capacity to produce 150,000 b/d and process 6 million cu m/d, according to Petrobras.

PREMIER OIL shares were up after the company updated the market on the successful completion of part of its Zama well appraisal program in the Gulf of Mexico. The appraisal revealed 152 metres of net pay encountered above the oil water contact. Alongside this, it revealed a 73% Net-to-Gross ratio, which proved higher than that at Zama-1 and ahead of pre-drill estimates. Moreover, reservoir quality was noted as like that at Zama-1 as anticipated.

BHP board as approved funding (44% interest) to develop the Atlantis Phase 3 project in the US Gulf of Mexico. This follows sanction by BP, as the operator (56% interest), of the Atlantis Phase 3 project, announced in January 2019. Atlantis Phase 3, located in deepwater Gulf of Mexico off the coast of Louisiana, is a subsea tie back of eight new production wells that will be drilled and completed to access infill resource opportunities. First production is expected in the 2020 calendar year and is estimated to increase production by approximately 38,000 boed gross at its peak.

VACA MUERTA shale oil production soared 52% and gas 193%. Vaca Muerta, the biggest shale play in Argentina, led a year-on-year increase in oil and natural gas production in 2018 in Neuquen, as more companies bet on the resources for growth in the southwestern province. Neuquen's Ministry of Energy and Natural Resources said the province's total oil production rose 12.7% on the year to an average of 116,739 b/d in 2018, the highest in seven years. Crude production reached its highest last year in December, when it averaged 130,388 b/d, it added

PREMIER OIL has taken advantage of its second consecutive year of record oil production to make larger than expected cuts into its still-significant debts. Production exceeded forecasts with a 7% rise to 80,500 oil barrels per day (bpd). Revenue increased 27% to US\$1.4 billion, stimulated by the higher average commodity prices. Premier also spent less than targeted on projects, with full-year capital expenditure reported at US\$355 million versus US\$365 million and similarly operating costs for the year were below guidance, with the new metric marked at US\$ 16.9 per barrel oil equivalent.

PRODUCTION STATISTICS

NOVEMBER 2018

Monthly Average Crude Oil
Production

COMPANY	Production (bopd)
BHP Trinidad & Tobago	1,132
BPTT	7,507
EOG Resources	1,145
PERENCO	10,334
SHELL Trinidad	946
DeNovo	40
Heritage	24,700
Heritage Lease Ops	6,667
Heritage Farmouts	517
Heritage IPSCs	994
Trinity E & P	1,511
TOTAL	55,493

Monthly Average
Nat Gas Production

COMPANY	Production (mmscf/d)
BHP Trinidad & Tobago	108
BPTT	2,113
EOG Resources	441
PERENCO	30
DeNovo	25
Heritage	18
SHELL Trinidad	724
TOTAL	3,459

PRODUCTION STATISTICS

DECEMBER 2018

Monthly Average Crude Oil
Production

COMPANY	Production (bopd)
BHP Trinidad & Tobago	3,242
BPTT	7,383
EOG Resources	1,249
PERENCO	10,487
SHELL Trinidad	979
DeNovo	77
Heritage	23,555
Heritage Lease Ops	6,807
Heritage Farmouts	466
Heritage IPSCs	932
Trinity E & P	1,469
TOTAL	56,646

Monthly Average
Nat Gas Production

COMPANY	Production (mmscf/d)
BHP Trinidad & Tobago	338
BPTT	2,023
EOG Resources	445
PERENCO	30
DeNovo	80
Heritage	18
SHELL Trinidad	753
TOTAL	3,687

A BRIEF HISTORY OF FRACKING

by Kamlesh Ramcharitar

Fracking has been around since the 60s...the 1860s to be precise. Much like James Cameron's resurrection of 3D movies in his 2009 epic - Avatar, fracking has recently resurfaced as a come-back champion of technologies. Sure, the fracking of the latter half of the 19th century was hardly the well-oiled machine (no pun intended) that it is today, but it certainly set the stage for decades of innovation to come!



1949 HYDRAFRAC

HOWCO licenses a technology to pump gelled napalm & gasoline to frac a limestone formation in Kansas. 332 wells treated in the 1st year with an average 75% productivity increase noticed

1997 Mitchell Energy

A young engineer named Nicholas Steinsberger working at the company founded by George P. Mitchell tries pumping a job using slick-water (to the chiding of his colleagues) and is astonished when it results in the first widely successful Barnett Shale frac completion - S.H. Griffin No. 3

2017...Outlaw!

The world's longest ever shale lateral (Outlaw C 11H) was drilled and completed to a length of 19,500 ft. in less than 17 days! The total well length from spud to kickoff to toe, measures 27,750 ft. and exists within Ohio's Utica shale play which is known to produce condensates.

1857 Guns Blazing

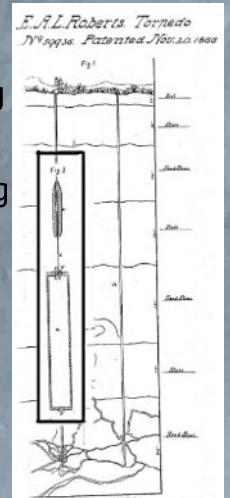
Preston Barmore uses gunpowder to blast the bottom of a 122 ft. borehole in Canadaway creek, NY and create a gas flow



1862

SuperIncumbent Fluid Tamping

Col. Edward A.L. Roberts patents a method for exploding a nitroglycerin torpedo in a water-filled borehole to concentrate the force. Illegal adapters of the technology are called 'moonlighters' for the fact they 'shot' wells at night, under the moonlight



1968 1.5 Million pounds

...of proppant is pumped for the 1st time in Stephens County, Oklahoma during a frac job by Pan American Petroleum (later Amoco)

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