



**GOVERNMENT OF THE REPUBLIC OF TRINIDAD AND TOBAGO
MINISTRY OF ENERGY AND ENERGY INDUSTRIES**

SPEECH

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**SOCIETY OF PETROLEUM ENGINEERS OF TRINIDAD AND TOBAGO
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Good morning to all participants. It is my pleasure to address you this morning at the 2018 Energy Resources Conference and Exhibition of the Society of the Petroleum Engineers of Trinidad and Tobago (SPETT).

The Society of Petroleum Engineers (SPE) is one of the premier energy related professional non-profit organizations in Trinidad and Tobago (T&T). The Society in its forty-five (45) years of existence has contributed significantly to the development of the domestic energy sector through its membership either individually or in your collective efforts as an organization.

Please accept my congratulations for the sterling work that the SPE has performed in the continuous upgrading of its members skill sets and knowledge, as well as the wider energy community. This has redounded to the benefit of T&T by ensuring our skill base which is major attraction for foreign investors is kept abreast of industry developments and remains relevant.

Your organization has had the benefit of the experience of esteemed practitioners such as the late Trevor Boopsingh and Professor Andrew Jupiter former Permanent Secretaries, Ministry of Energy and Energy Industries (MEEI), Mr. Frank Look Kin former President of the National Gas Company of Trinidad and Tobago Limited

(NGC) and Mr. Vincent Pereira, President of BHP. I take this opportunity to applaud those distinguished persons and all those who have contributed to the development of this organization.

In particular, I wish to single out for commendation, members of my own staff at the MEEI, **Ms. Ayasha Nickie**, current Chairperson, and **Ms. Jeneece Isaac**, the Outgoing Vice-Chairperson and Financial Chairperson for the 2018 SPE Conference and Exhibition.

The outstanding work of the SPE has been acknowledged internationally. Your credits include an international SPE Award for Section Excellence, a Gold Standard Award, four (4) SPE Regional Awards (received by your members), a SPE Distinguished Service Award and an Outstanding Student Chapter Award.

The SPE Conference and Exhibitions are eagerly anticipated by industry practitioners as they address in a comprehensive way, technical issues facing the industry as well as showcasing new technological advances and services. Based on the agenda, this year's international conference will be the most important professional technical forum of its kind in T&T for 2018. It is structured to provide insights into the mechanisms required to cope with short and long-term challenges

facing the upstream oil and gas industry. The conference theme - **Forging Ahead: Changes, Challenges, Opportunities** is therefore quite appropriate.

The petroleum engineering profession has played a major role in the development of oil and gas resources by pioneering innovation, and thereby enabling these resources to be produced in a safe manner and at affordable prices. The profession has come a long way from the early origins of the industry commencing in 1848 when the first oil well was drilled in Azerbaijan, using a cable tool drilling technique that was developed in ancient China. Trinidad was not too far behind with its first oil well being drilled in 1857 in the vicinity of the pitch lake in La Brea.

Other technological developments that accelerated the exploration of oil and gas resources included horizontal drilling (1941), hydraulic fracturing (1949) and now making a major come back in the shale revolution, Jack-up Drilling Rig (1954), first semi-submersible drilling rig (1962), (imaging) OBN 3D seismic processing (1982) and reservoir simulation sand control. In 1996, Qatar commissioned the first LNG exporting facility. T&T followed shortly thereafter with the Atlantic LNG Train 1 in 1999, Train 2 in 2002, Train 3 in 2003 and Train 4 in 2005.

The profession has been an instrument of change in oil and gas. T&T's development as an oil and gas province is in large measure due to the contributions of organizations such as the SPE and its membership. On behalf of the GORTT and as Minister of Energy and Energy Industries, please accept my heartfelt acknowledgement for your sterling contribution to the energy sector of T&T.

In March 2018, the Government held the first ever public consultation on the energy sector of this country, aptly called **Spotlight on Energy**. The objective of this consultation was to provide the population on the status of the domestic energy sector. There were concerns about the sustainability of the sector and its contribution to the economy of T&T. This situation was compounded by depressed oil and gas prices and a less than favourable outlook.

These concerns to some extent were abated by the upturn in the performance in the upstream. New gas contracts were executed for the supply of gas to downstream. BP, Shell, BHP and EOG have committed to investing in excess of US\$10Bn over the next five (5) years. The net result is that gas production has reached its highest in years and based on companies' projections is likely to be sustained over the next five (5) years.

New gas supplies include BPTT's Angelin Project which is due to come on-stream in calendar first quarter 2019, and will provide in excess of **550Mmscf/d**. The De Novo project is due to come on-stream by fiscal first quarter 2019, with **60Mmscf/d** rising to **80Mmscf/d**. Shell has embarked on a campaign to increase gas production from its upstream assets. The company has sought to re-invigorate its East Coast assets starting with its Starfish Field. The results of the 'Infill Drilling' to date have seen new production in May 2018 of **50Mmscf/d** and which is projected to rise to **181Mmscf/d** on completion of the campaign. The infill drilling campaign has also commenced in its Dolphin Field with the first of four (4) wells being spudded in May 2018. First gas is expected in September 2018, and on completion the development is estimated to yield **195Mmscf/d**. Shell is also working on a development plan for its Colibri Project which encompasses Blocks NCMA 4 and Block 22. First gas is expected in 2021, with initial rates of **300Mmscf/d**.

Overall, the concern about the gas situation is abating as energy companies have committed to geo-technical, exploration and development activities aimed at identifying and producing new gas fields. Gas production is on the rise, increasing from **3.3Bcf** per day in 2017, to an estimated **3.8Bcf** per day in 2018, and is projected to stabilize at approximately **4.1Bcf** per day over the period 2020 to 2022. Both BG and Shell, the major gas producers have approached the GORTT for extensions to

their contracts and licenses cementing their long term future in T&T. The other major gas producers EOG and BHP have committed to the exploration and development activities which will maintain production in the medium to long-term.

As we speak, BHP is currently drilling the deep-water Victoria Prospect in Block 5 with the Drill Ship Invictus. This is a follow-up well to the **5Tcf**, Le Clerc discovery in 2017. In a real sense, the country's long term future depends significantly on this drilling programme.

Discussions are also continuing apace with Venezuela on the supply of gas from the Dragon Field and cross border development on Loran Manatee. On Wednesday, June 27, 2018, a Government Team led by Minister Stuart Young and including officials from the MEEI and the NGC will be meeting Venezuelan Government officials and representatives from PDVSA to discuss and finalize a Term Sheet for the sale of gas from the Dragon Field. The Government expects success in these negotiations.

T&T's economy initially developed from the revenue accruing to Government from the taxation of oil for T&T oil is better business than gas. Unlike natural gas, and particularly LNG, the marketing arrangements for oil are transparent and measurable

(reference price-WTI, Brent etc.). Oil is also subject to a wider range of taxes that is, supplementary petroleum tax, petroleum profits tax, unemployment levy and royalties. There is no supplementary petroleum tax on natural gas and only this year a 12.5% royalty was imposed on all gas. Accordingly there is merit in promoting increased production of oil. Additionally, the impact on the service sector is greater with regards to oil production.

However, despite tax incentives the country's crude oil production continues to decline. Over the last five (5) years production has fallen from 81,157Bbls/d to the current production of 68,291Bbls/d. The decline in production can be attributed to natural decline and the absence of any new discoveries.

Apart from new discoveries, the potential for the turnaround of the domestic oil industry lies with State Owned Petrotrin which possesses the majority of the country's crude oil reserves and to a lesser extent Perenco, which holds the licence for the Shallow Horizons of the Teak, Samaan and Poui Fields. When I speak about Petrotrin, I don't know whether to laugh or cry. As a former employee of Petrotrin, I feel great pain to see the current state of the company.

Petrotrin currently produces 40,270Bbls/d or 59% of the total domestic oil production and has seen a steady decline in its oil production. This decline is due to limited exploration activity which is as a result of financial constraints and asset integrity issues. Under my watch, Petrotrin has to and is going to change. To turn around Petrotrin there has to be: (1) New Leadership (2) New Technology (3) The Right Skills Set (Petroleum Engineers and Geoscientists) and (4) Significant Capital Injection.

Arising from the mandate given by Government to the Board of Directors that Petrotrin must become a viability entity, the Board has been taking steps to manage and reduce costs and to expand its productive base. In this regard, the company has set out an ambitious work programme aimed at improving oil production. The salient elements of the programme includes the continuation of its asset integrity programme, drilling and workovers both on-shore and off-shore, the implementation of its South West Soldado Project and increasing Joint Ventures. Based on these initiatives Petrotrin has projected the increase in production by as much as 35%.

Perenco and Petrotrin produce approximately 75% of the country's crude oil production. Perenco's crude oil production currently stands at 10,840Bbls/d or approximately 16% of the country's total oil production. Perenco is also seeking to

increase its oil production by approximately 100% within a period of five (5) years. To achieve this level of production the company has formulated a programme which includes the deployment of secondary recovery, an infill drilling campaign and access to new oil and gas reserves. In relation to new resources, the Ministry is currently in the process of finalizing the draft Competitive Bidding Order for a new bid round which will comprise offshore blocks in shallow water.

Additionally, the Government is also seeking to extend its maritime jurisdiction seawards to the outer edge of its continental margin in accordance with Article 76 of the United Nations Commission on the Limits of the Continental Shelf. The delineation of T&T's continental shelf beyond two hundred (200) nautical miles from the baselines, from which the breadth of territorial sea is measured, will allow this country to exploit the natural resources to be found on that extended portion of its continental shelf. A multi-disciplinary team chaired by the Ministry of Foreign and CARICOM Affairs is currently preparing the defence of the country's claim which is with the Commission. This could have significant long term benefits to T&T's exploration acreage.

In a regional context, the Caribbean Region has now become the focus of oil and gas companies in their quest for new hydrocarbon resources. On June 21, 2018, Exxon-

Mobil announced its eighth oil discovery in offshore Guyana, which is estimated to increase reserves by 500MBOE. The company has projected the start-up of production in 2020 of 120,000Bbls/d increasing to 500,000Bbls/d by late 2023. Given the extensive experience of T&T in the energy sector, our country have been engaged in discussions on mutual co-operation. Arising from these discussions, the GORTT and Guyana have agreed on a Memorandum of Co-operation in the energy sector. A signing of the Memorandum of Co-operation between our Governments is scheduled for the sometime next month in Guyana. I will be representing the Government of the Republic of Trinidad and Tobago as its signatory to the Memorandum of Co-operation. It will be an umbrella agreement in which Energy Service Companies in T&T will be allowed to operate and seek preferential business in Guyana.

Success in exploration in the deep-water areas of Guyana has stimulated interest in other Caribbean Countries. There are currently exploration activities being conducted in Suriname, Cuba, Barbados, Grenada, Jamaica and Guyana. As the oldest and most experienced oil and gas economy T&T has taken the lead in a Caribbean Energy Diplomacy, for which I have taken charge. This initiative will initially include the above mentioned countries.

In an international context, T&T, will be hosting the 20th Ministerial Meeting of the Gas Exporting Countries Forum (GECF) on November 24, 2018. Energy Ministers from the following countries are expected to attend: Algeria, Azerbaijan, Bolivia, Egypt, Equatorial Guinea, Iran, Iraq, Kazakhstan, Libya, the Netherlands, Norway, Nigeria, Oman, Peru, Qatar, Russia, the United Arab Emirates and Venezuela. The Meeting will be chaired by the Minister of Energy and Energy Industries as the President of the GECF for 2018. There will also be a natural gas symposium to be held in the margins of the Ministerial Meeting. Confirmation of attendance has already been received from the Ministers of Energy of Russia, Qatar, Venezuela and Iran. I also propose to invite as special guests CARICOM Energy Ministers.

As a Government, we are confident that we are on the right track in creating a sustainable oil and gas economy. Both the Downstream Industry and LNG will continue to play major roles in the domestic energy sector. It is our intention to provide the appropriate support to these industries to ensure their continued operation.

However, of major concern is the inadequate contribution received by the country from the monetization of our hydrocarbon resources. In the buoyant times, this inequity was masked by the seemingly high revenue contribution provided by the

energy sector to the economy of T&T. This inequity was exposed by Poten and Partners in the Gas Master Plan Report.

One of our first actions was the introduction of a royalty rate of 12.5% on natural gas. Another was to resuscitate the Permanent Petroleum Pricing Committee whose mandate is to advise the Minister of Finance whether the disposition of natural gas, crude oil, and petroleum products is at fair market value. This was followed by the commencement of engagement with the major gas producers.

In April 2018, under the leadership of the Honourable Prime Minister, Dr. Keith Rowley, a Government Team including myself, and Minister Stuart Young met in London with the major gas producers BP and Shell to discuss energy related issues and in particular the revenue accruing to the state from the operations of these companies.

Arising from these discussions the Prime Minister agreed with the energy companies to the establishment of empowered negotiating teams to meet at the earliest date to commence discussions on these issues and their finalization with an agreed time-frame. On Wednesday, June 20, 2018 the Government Team led by the MEEI met with BPTT and on Friday, June 22, they met with Shell. We expect hard negotiations

on both sides. We recognize that energy companies must receive a fair rate of return on investment. However, oil and gas are wasting assets and therefore we have a sovereign right to extract a fair economic rent from its monetization. I, personally look very optimistically to the conclusion of these negotiations.

One of the other issues engaging the Government is the level of added value generated by upstream activities in T&T. A study has shown that the traditional approach to local content has not worked for developing resource rich countries. It has been suggested that only 17% to 20% of oil and gas investments remain in local economies. However, I would wish to suggest that in T&T, it is much less than 17%. The countries that have been successful in retaining significant added value to their economies have imposed legally-mandated targets, preferential treatment of suppliers and minimum training commitments. Suasion has not worked and therefore the Government will have to consider the alternatives.

There is also a case for the review of employment practices. This is one of my pet peeves. A significant amount of funds either through scholarships by energy companies and by the Government has been invested in the training of our young energy professionals. Yet, there is a substantial amount of unemployment and under-employment among these young professionals contrary to glossy adverts that seem

to suggest otherwise. In a recent invitation for applications for six (6) vacant positions of Petroleum Engineers, the MEEI received two hundred and forty-one (241) applications. I encourage the energy companies both local and foreign, to invest in the training and recruitment of our young professionals, especially engineers and geoscientists as well to institute larger internship programmes. There is also a responsibility on the part of engineers, to actively protect their profession by ensuring this in the same manner, as the legal and medical profession where only certified persons are allowed to conduct certain activities.

The continued development of our hydrocarbon resources must be viewed in the context of the global move to renewables as a significant source of energy and as a means of reducing greenhouse gas emissions.

Government supports the introduction of renewables as a part of our energy mix and has set a target of 10% renewables in the generation. On February 22, 2018 Government deposited its instrument of ratification of the Paris Agreement confirming its pledge to assist in the reduction of greenhouse gas emissions. However, the transformation of the energy landscape has not kept pace with the demand of an increasing world population for energy increases. In the face of such demand, all sources of energy, conventional, unconventional, as well as renewables

will be required to adequately cover growing consumption levels.

As consumption rises, there is a need to reduce the level of emissions from the burning of fossil fuels. The industry therefore needs to invest in technology that will reduce, and ultimately eliminate, the harmful greenhouse gas emissions. In this regard, there have been proven initiatives such as carbon capture and storage. In T&T, the MEEI in collaboration with the University of West Indies (UWI), St Augustine has been conducting studies in the feasibility of carbon capture and storage and in particular, projects for the enhanced oil recovery. Therein lies an opportunity for T&T to reduce its greenhouse gas emissions.

Finally, T&T's petrochemical sector is responsible for the majority of the large fixed sources of CO₂. The sector comprises of ammonia, methanol, urea, cement, iron and steel production as well as gas processing and the refining of petroleum. The power generation sector is the second largest source of emissions after the petrochemicals. The two main contributors of CO₂ in the petrochemical sector are methanol and ammonia. Together they make up approximately 85% of the sector's CO₂ emissions with ammonia having the larger stake at 45%. Methanol the lesser with 40% of total CO₂ emitted by the petrochemical sector. T&T's emissions have increased steadily over the past few years, from 23.40MMT in 2007 to 34.9MMT in 2016.

Over the years, there has been a number of proposals with respect to carbon capture, transmission and storage. These include an onshore pipeline network from Pt. Lisas to onshore oilfields in the South-Western Trinidad, development of CO₂-EOR infrastructure and CO₂ sinks such as depleted oil and gas reservoirs. This is a project that Petrotrin has gone to sleep on, but I intend to wake them up.

The emission of greenhouse gases presents both a challenge and opportunity for the oil and gas industry. From inception, there have been challenges, but the industry has rallied through innovation to make petroleum products safe and affordable. If fossils are to have a long term future, the issue of greenhouse gas emissions must be addressed. The industry has overcome other challenges in the past, and I am confident that applications will be developed to minimize or eliminate greenhouse gas emissions.

The SPE has been an organization that has been at the forefront of change by collecting, disseminating and the exchanging of technical knowledge to practitioners in the oil industry. It is this feature of the organization that has made the SPE Conferences and Exhibition a must attend event for practitioners in the industry. I have looked at the programme, the papers, the panel discussions and I am quite impressed.

In closing, please let me congratulate the SPETT for the sterling work that it has performed in T&T and please accept my best wishes for a successful Conference and Exhibition.

I thank you.