Trinidad and Tobago Tar Sands.
Introduction

What is Tar Sand?

• Tar Sand or Bituminous Sand is a loose to consolidated sandstone or a porous carbonate rock, impregnated with a heavy asphaltic crude oil.

• It is a mixture of primarily sand, bitumen and water.
Global Scenario

- Tar sand deposits are found in over 70 countries in the world.
- $\frac{3}{4}$ of the world’s tar sand reserves are found in 2 countries. (Canada & Venezuela)
- Tar sands represents $\frac{2}{3}$ of the world’s total petroleum reserves.
- The single largest deposit is the Athabasca Oil Sands in Canada. Estimated reserves are approx. 1.5 trillion bbls.
- Commercial production began in 1967 (30,000 bopd).
- Current production levels from Canada is approx. 1.1 million bopd. Expected to increase to 4 million bopd by 2020.
Oil Sand Processing Chain
Map Showing Area of Interest

Legend:
- Petrotrin Fields
- Area of Interest

AREA OF INTEREST (PARRYLANDS / GUAPO)

3222 HA.
Parrylands Tar Sands

Location:
• Situated in the Parrylands Oilfield located in the Point Fortin region of SW Trinidad.

Acreage:
• Resource covers an area of approx. 3222 hectares (7900 acres).

Geological Parameters:
• Resource lies north of the Los Bajos Fault in the region of the Lot One Anticline and Guapo Syncline areas. It is Pliocene in age and belong to the Lower Morne L’Enfer Formation. It outcrops on surface and extends to a depth of approx. 600 feet.
Tar Sand Distribution in SW Trinidad

Trinidad Coring Program
October, 2005

- Morne L'Enfer unit 6c
- Oil sand outcrop
- Oil sand cored
- Both wet and oil sand intervals
- Wet, no oil sand

Meters
0 500 1,000 2,000

Vance River
Guapo
Cochrane Village
Cruse
Point Fortin
New Horizon
Forest Reserve
PCO
E-48 fault

???
???
NW – SE Cross Section showing Parrylands Tar Sand Resource Study Area
Work done in Trinidad to date

- **Pre 1985**: Conducted outcrop reconnaissance and drilling of shallow boreholes by Trintoc

- **1985 to 1989**: Geological mapping, reserve estimates, lab testing to achieve effective extraction process. Ore reserve study of area provide preliminary estimates of 1.5 billion barrels with a bitumen grade of 10 – 12%.

- **1989 to 1995**: Joint feasibility assessment of resource with Athabasca Oilsands Research Authority (AOSTRA) in Canada and application of Taciuk process to Trinidad deposit.

Work done in Trinidad to date (Cont’d)

- **2000**: MOU signed with Canadian based company, Western Oil Sands for oil sand sampling and extraction testing.

- **2002**: MOU further extended to enable continuation of work.

- **2002 – 2007**: Conducted a preliminary environmental review and the coring of 19 boreholes ranging from 200 to 650 feet. Further assessment of resource.

- **2007-2008**: Western Oil Sands bought out by Marathon Oil. MOU terminated on August 2008.

- **2009 to Present**: MEEA proposed that a license be awarded to Petrotrin for the exploration of tar sand deposits. License to be granted outside the competitive bidding process to undertake a specific scope of works.
Project Deliverables for granting of License

• Prepare final survey plans for the Parrylands and Guapo Licensed Acreage.

• Quantify the reserves of bitumen in place.

• Quantify the recoverable reserves of bitumen based on the recommended technology.

• Identify an appropriate proven conventional process plant technology for the extraction of bitumen and production of synthetic crude.
Project Deliverables for granting of License (cont’d)

• Research the potential risks associated with tar sands mining to a depth of 600 feet on ground water aquifers, saline intrusion and regional subsidence.

• Research the use of an emulsifier for the extraction of bitumen from tar sands and related process technology to produce synthetic crude, as an alternative to conventional methods.

• Determine project feasibility based on investment capital, operational expenses, rehabilitation costs and price.

• Advise of possible fiscal regime for oil sands exploitation.
Way Forward

- Complete Feasibility Study for Granting of License
- Develop a Business Model
- Select JV partner
- Negotiate Heads of Agreement
  - Taxes
  - Royalties
  - Work Program
- Production Contract