

Hot Black Salsa: A Brief History of Petroleum in Cuba*

James Podruski¹, Evelio Linares Cala², and Scott E. Thornton³

Search and Discovery Article #30478 (2016)**

Posted December 19, 2016

*Adapted from oral presentation given at AAPG 2016 International Convention and Exhibition, Cancun, Mexico, September 6-9, 2016

**Datapages © 2016 Serial rights given by author. For all other rights contact author directly.

¹Alturas Resources Ltd., Merida, Mexico (jimpodruski@gmail.com)

²Ceinet, Cupet SA, La Habana, Cuba

³Burmah Oil Company Limited, Pahrump, Nevada, USA

Abstract

The rich and passionate history of Cuba includes petroleum exploration and development that can be divided into segments linked to the historical development of the country. The principal zone of exploitation of petroleum has been in a narrow belt along the north coast and the immediate offshore area of the island where a tectonically thickened Jurassic-Cretaceous carbonate source and reservoir section forms a supercharged petroleum system, manifest by numerous oil and gas seeps and asphalt dykes on the surface. Prior to Columbus's historic voyage in 1492, the Taino indigenous population utilized the asphalt to caulk their canoes and mixed it with chicle to protect their teeth. The first Spaniard to circumnavigate Cuba in 1508, Sebastian de Ocampo, used asphalt from seeps near La Habana to seal his ships, though no commercial exploitation occurred during the Spanish reign until the late 1800's. The first commercial subsurface discoveries were of heavy crude near Matanzas in 1872 and 58 degree "naptha" at Motembo in 1881 that provided town lighting. The War of Independence that ended in 1898 coincided with the technological revolution and commercial demand for petroleum that encouraged more exploration. About 150 wells were drilled from La Habana to Central Cuba from 1900 to 1959 by independent and multi-national operators, and several small fields produced small amounts of oil, primarily from or near serpentinite domes. Asphalt mines also were developed to pave streets in the USA, including New York City. Following the Cuban Revolution in 1959, several hundred more wells were drilled by Cupet, the State oil company, and all of the significant heavy oil fields of the north coast, such as Varadero, were discovered and produced, developing the first large scale petroleum infrastructure in the country. From 1990 onward, following the end of the Soviet Union and its support for Cuba, a number of companies from Canada, Europe, and Brazil have drilled about 20 exploratory wells without success, but have been, along with Cupet, successful in redeveloping fields along the north coast, drilling hundreds of horizontal wells from onshore locations into offshore traps, presently producing 50,000 BOPD. Finally, there have been several deep-water offshore wells drilled in the past 12 years by major operators, without success, though potential for more discoveries in the productive belt is promising.

HOT BLACK SALSA: **A BRIEF HISTORY OF PETROLEUM IN CUBA**

BY

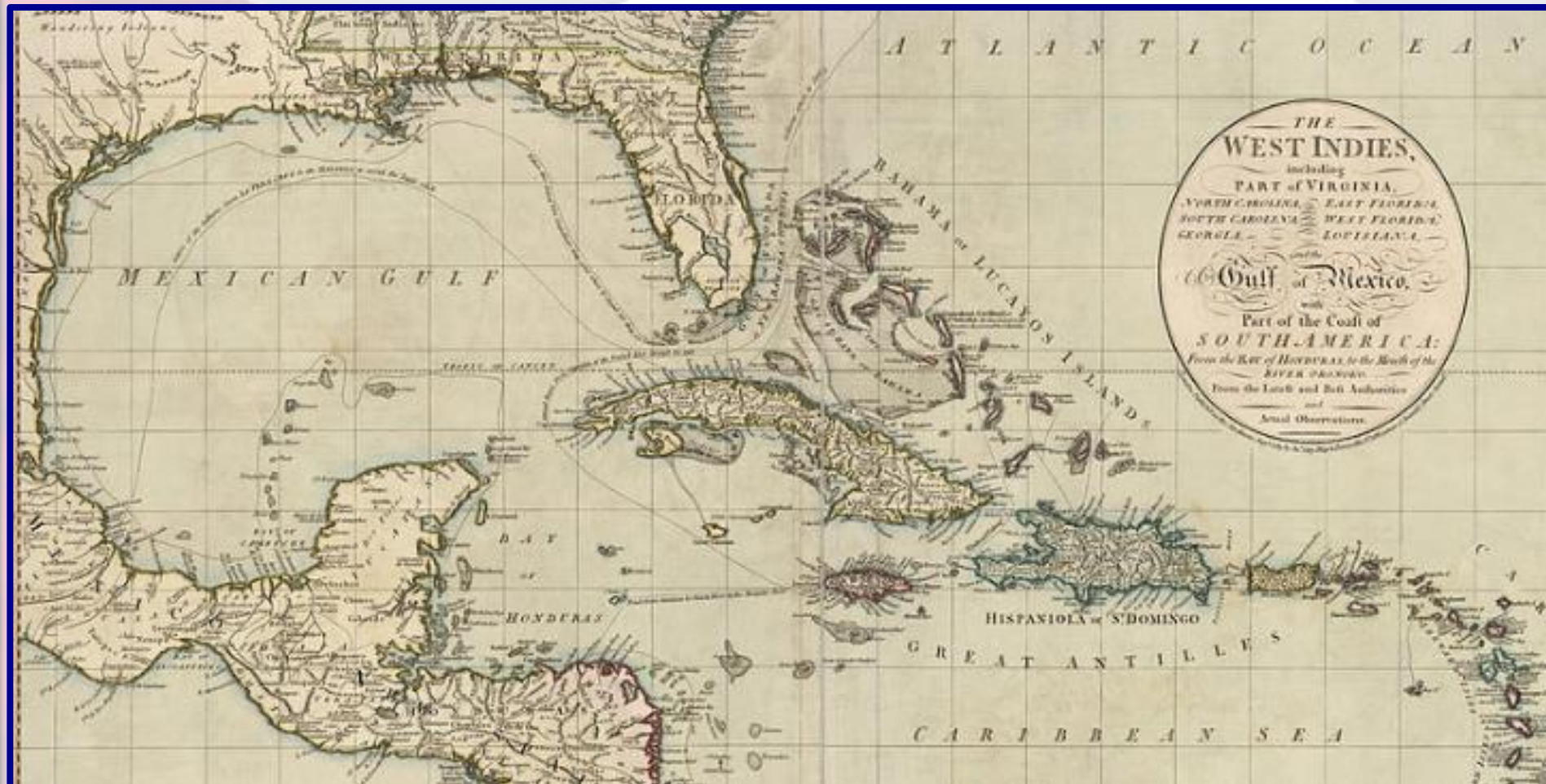
*JAMES PODRUSKI, ALTURAS RESOURCES;
EVELIO LINARES CALA, SOCIEDAD CUBANO DE GEOLOGIA;
AND SCOTT E. THORNTON* ECOPETROL AMERICA
NOW THE BURMAH OIL COMPANY LIMITED



AAPG-SEG ICE 2016
CANCUN
SEPT. 7, 2016

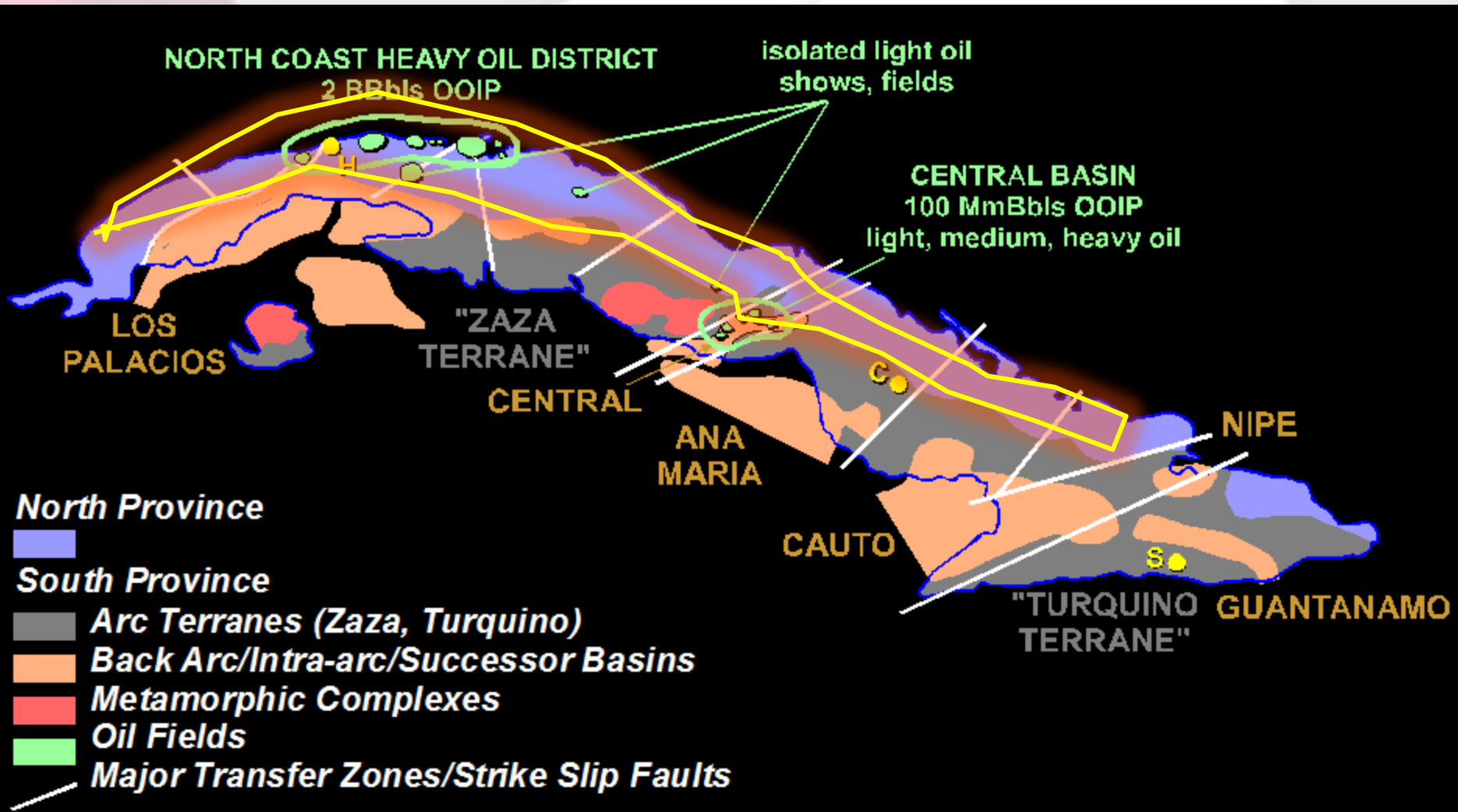


WHY IS THERE A HISTORY OF PETROLEUM IN CUBA?



WHERE IS THE PETROLEUM IN CUBA?

Active "leaky" petroleum system and present field locations



WHAT DOES THE "LEAKY" SYSTEM LOOK LIKE?

1. Active Seeps



2. Oil Saturated Outcrops/Exhumed Oilfields



3. Asphalt Dykes



The Four Phases of Cuban Petroleum History

I. Pre-commercial exploitation

- Indigenous Peoples, Spanish Explorers/Colonists

II. 1860 – 1960

- Spanish & Cuban phases, pre-WW II, 1950's

III. 1960 – 1990

- Centrally Planned Economy – Cupet

IV. 1990 – Present

- Onshore/Shallow Water, Deep Water

PHASE I. INDIGINEOUS PEOPLES OF CUBA CAULKING CANOES /TOOTH PROTECTION



PHASE I. TRADE OF CUBAN BITUMIN FOR MAYAN CHICLE AND SALT ??



OCAMPO CIRCUMNAVIGATES CUBA, 1508 USES OIL IN HABANA BAY TO CAREEN SHIPS



PHASE II

1. Late 1800's – Asphalt mined: paved streets in North America & used in industrial furnaces, >25 million tonnes
2. 1881 – naphtha & gas discovered at Motembo , commercial exploitation for gas lighting and lubricants until the automobile ~ 1900
3. 1898, Cuban independence from Spain
4. 1913, gas discovered in water well at Tropical Brewing Co., La Habana

PHASE II

5. Light oil discovered on north coast in 1915, activity increase 1910–WW II, production levels ~ 100's BOPD
6. Oil discovered in Central Cuba, 1954, set off exploration and exploitation boom

EARLY PHASE II

Asphalt mine at San Juan Bautista de Guanajay, Cuba. 1930

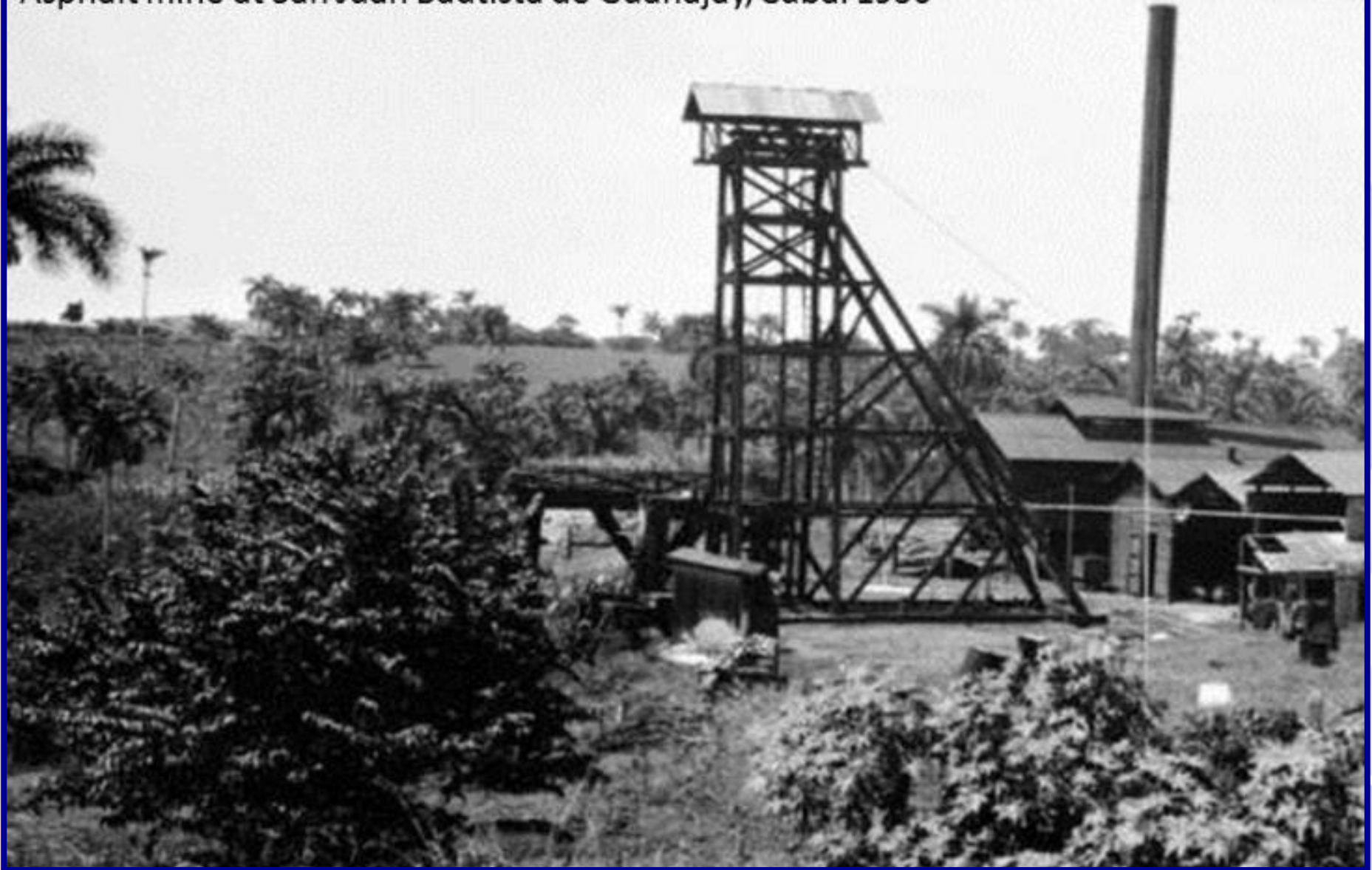
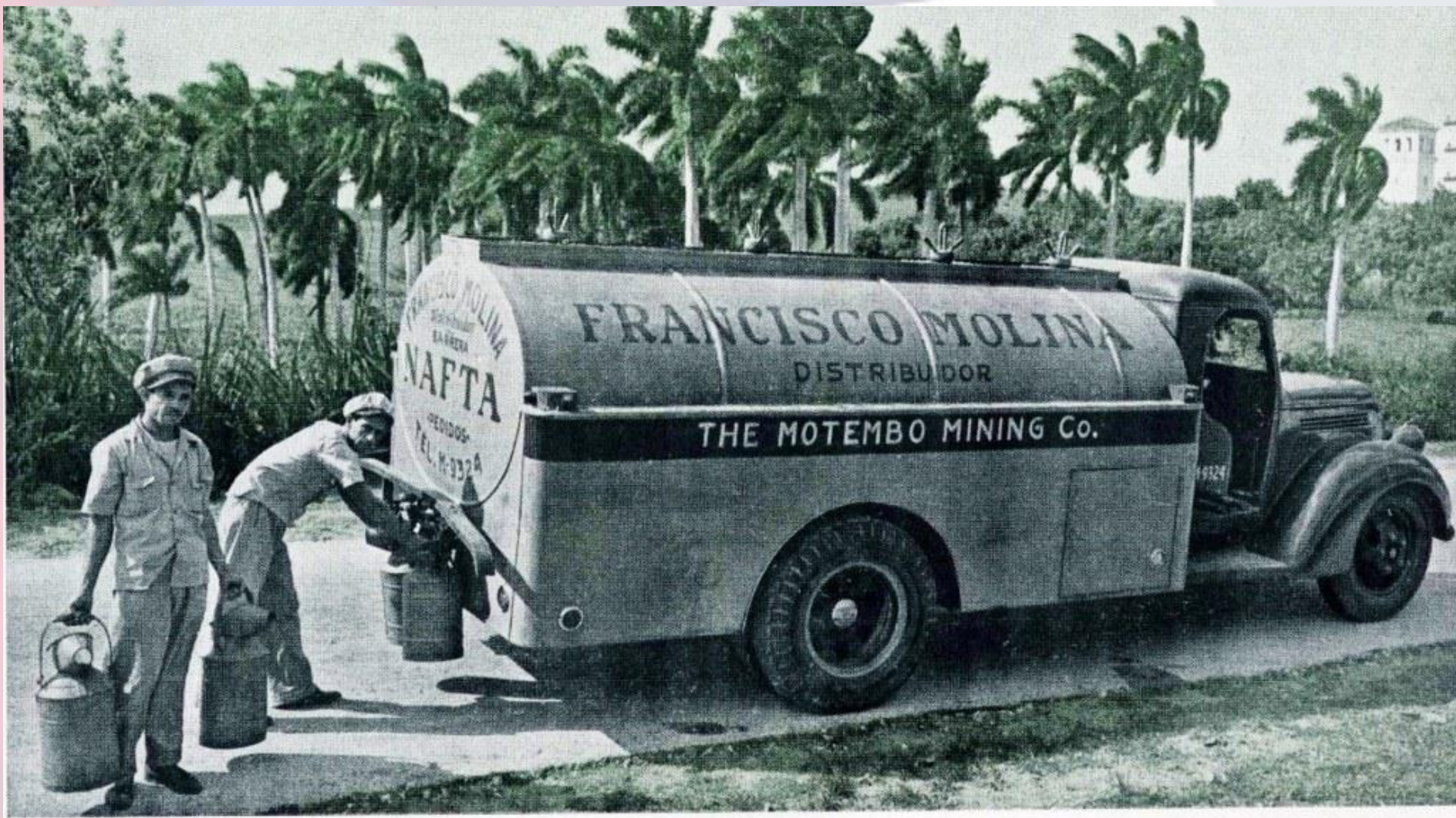


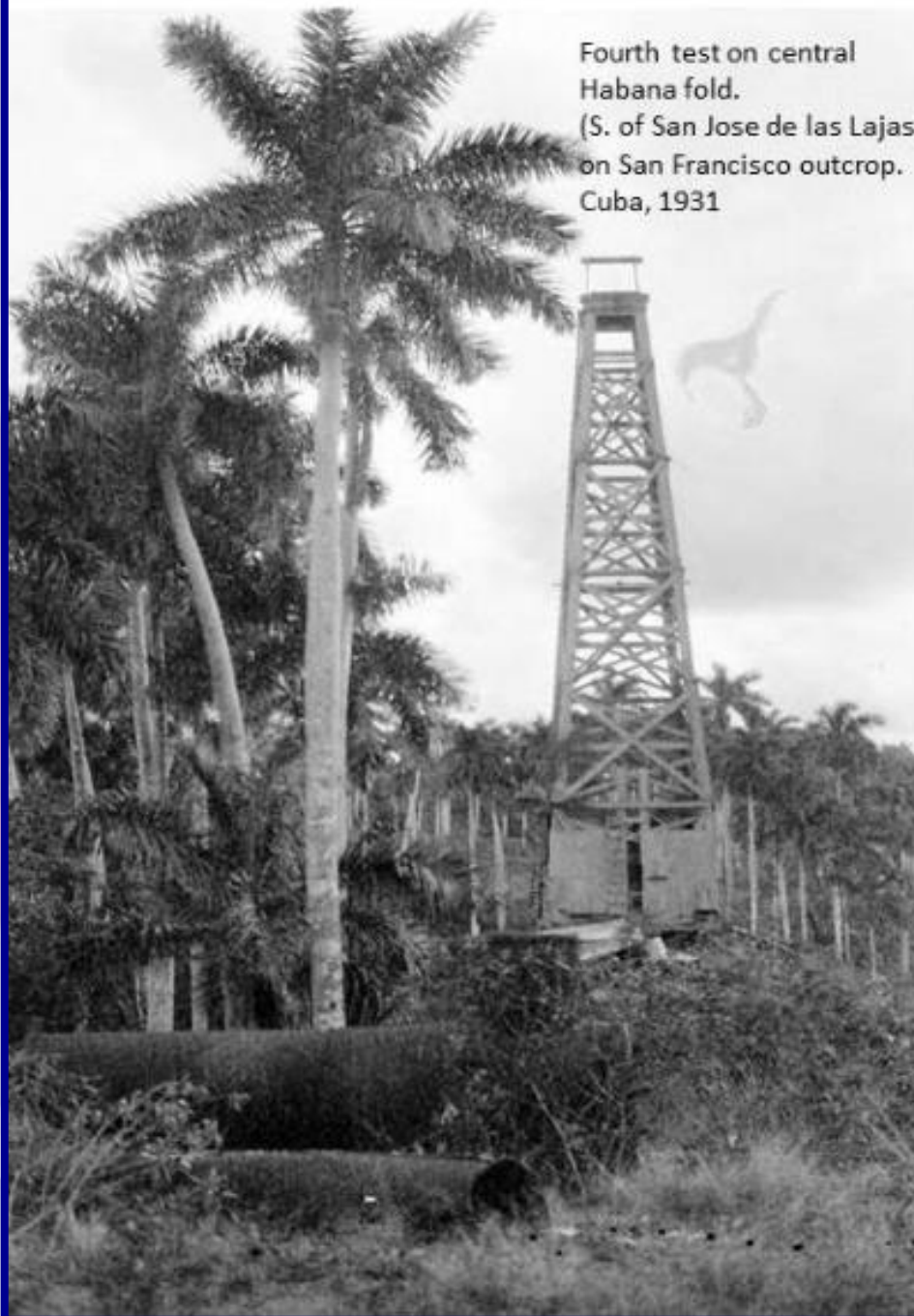


Fig. X-2. Trabajadores del yacimiento Motembo, Villa Clara, en la época de la gran extracción de nafta.



Eficiente servicio de distribución de nafta, directamente de los pozos productores al consumidor, (1944)

Fourth test on central
Habana fold.
(S. of San Jose de las Lajas)
on San Francisco outcrop.
Cuba, 1931



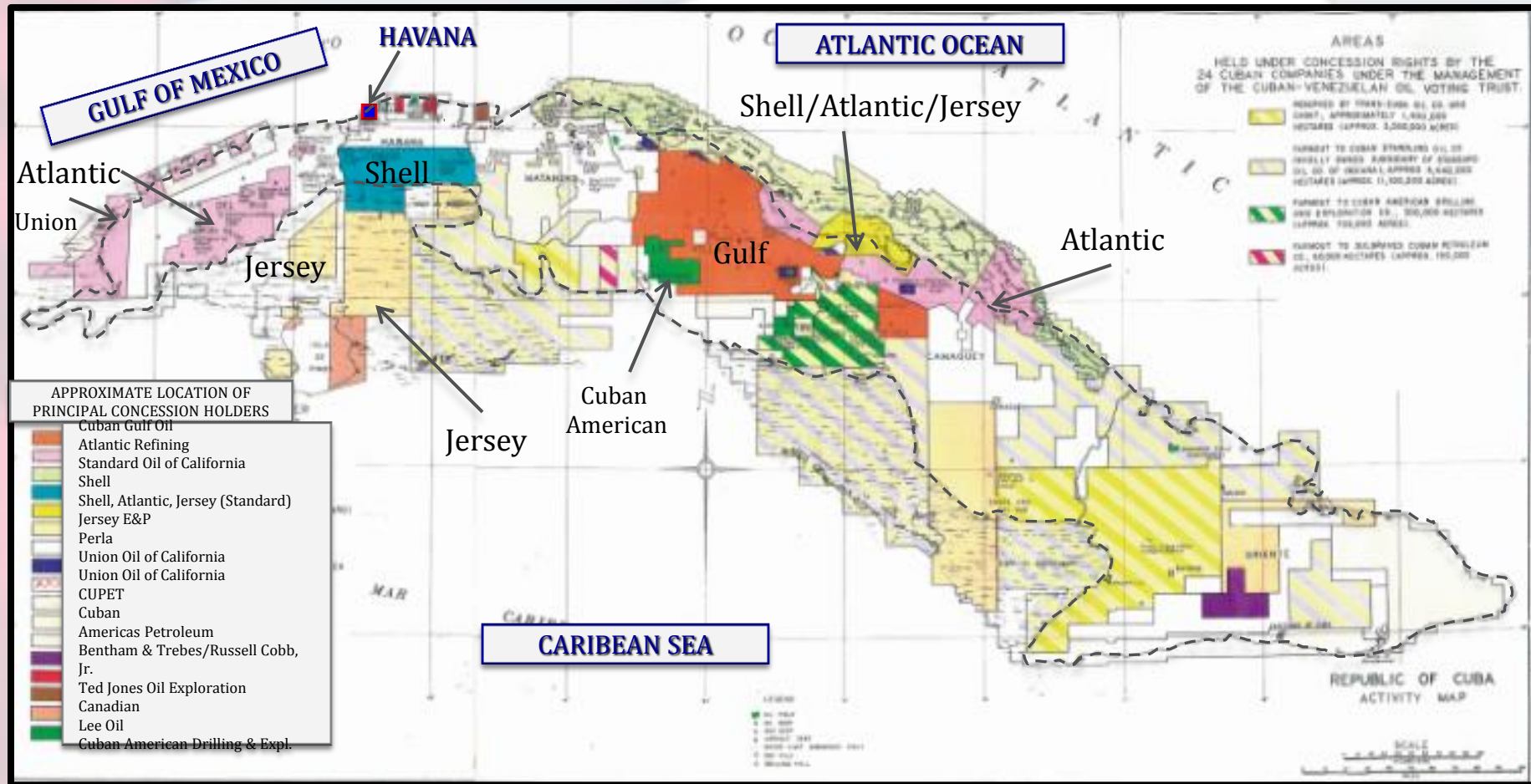
Tanks & refinery,
Bacuranao field, Cuba. 1930



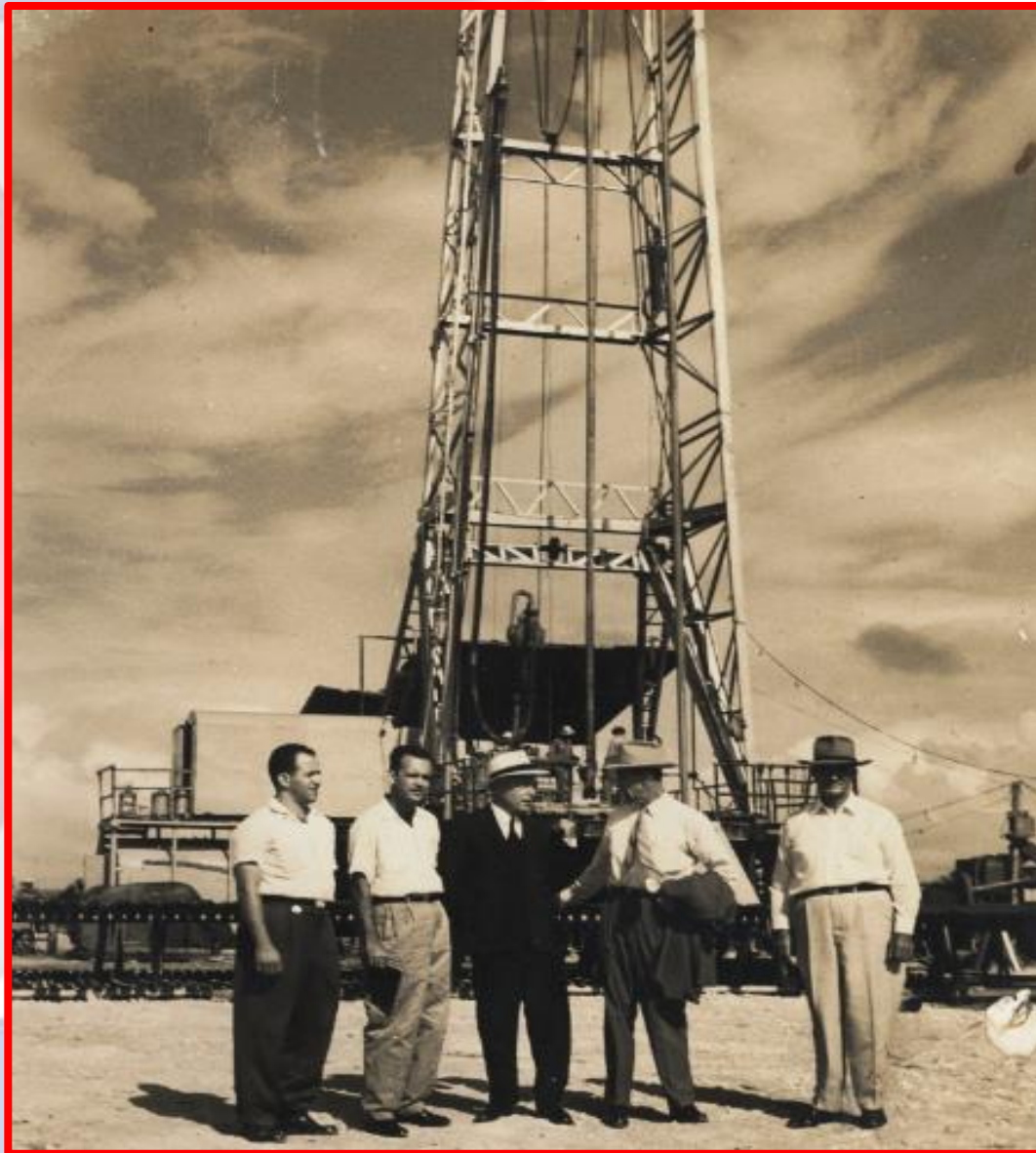
The 1950's Oil Boom

- Sparked by discovery at Jatibonico in 1954
- Over 20 companies active with most of country leased
- CP to 1959 ~ 5 MM BO
- ~ 400,000 BPA
- ~ 100 E & D wells per year

The 1950's Oil Boom



A WELL DRILLED IN LA HABANA IN THE LATE 1950'S



PRE-REVOLUTION CUBA



GEOLOGISTS AND THE CUBAN REVOLUTION



PHASE III

1. Cuban Revolution 1959, eventually evolves into CPE
2. Cupet, Cuban National Oil Company established
3. Varadero discovered 1971, initial north coast heavy oil E & D in several fields
4. Lead eventually to discovery of 27 fields with 550 MM Bbls Rec., CP ~350MM Bbls, used internally for power generation

OIL ACTIVITY DURING THE CUPET ERA, 1962-1990



Fig. V-6. Pozo Pinar No. 2 en el momento de su perforación. Sureste de San Diego de Núñez. Profundidad de 3825 m.



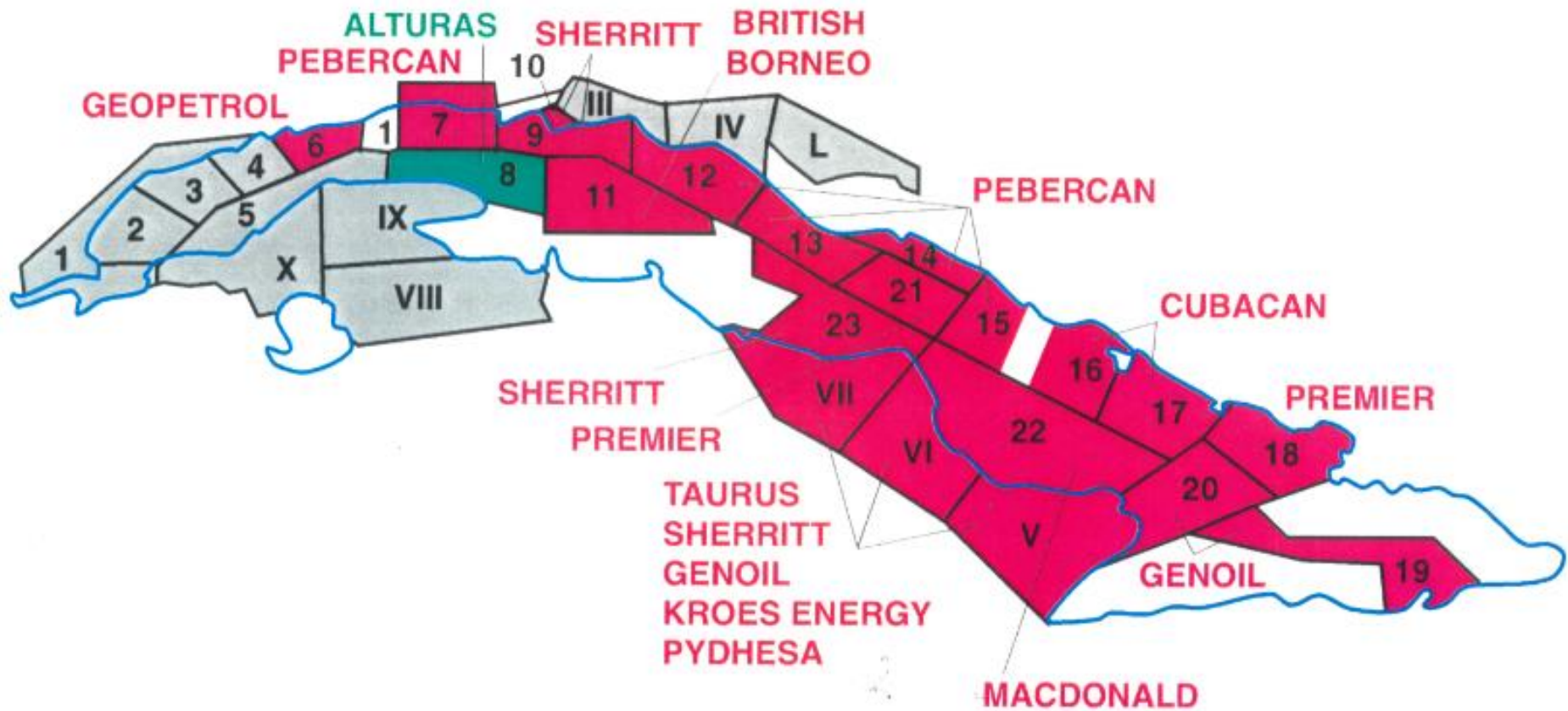
Fig. VII-4. Pozo del yacimiento Guanabo. Decenas de pozos se perforaron entre 1968-1970. En la actualidad se explora en la parte de Brisas del Mar mediante pozos dirigidos hacia el norte marino.

PHASE IV

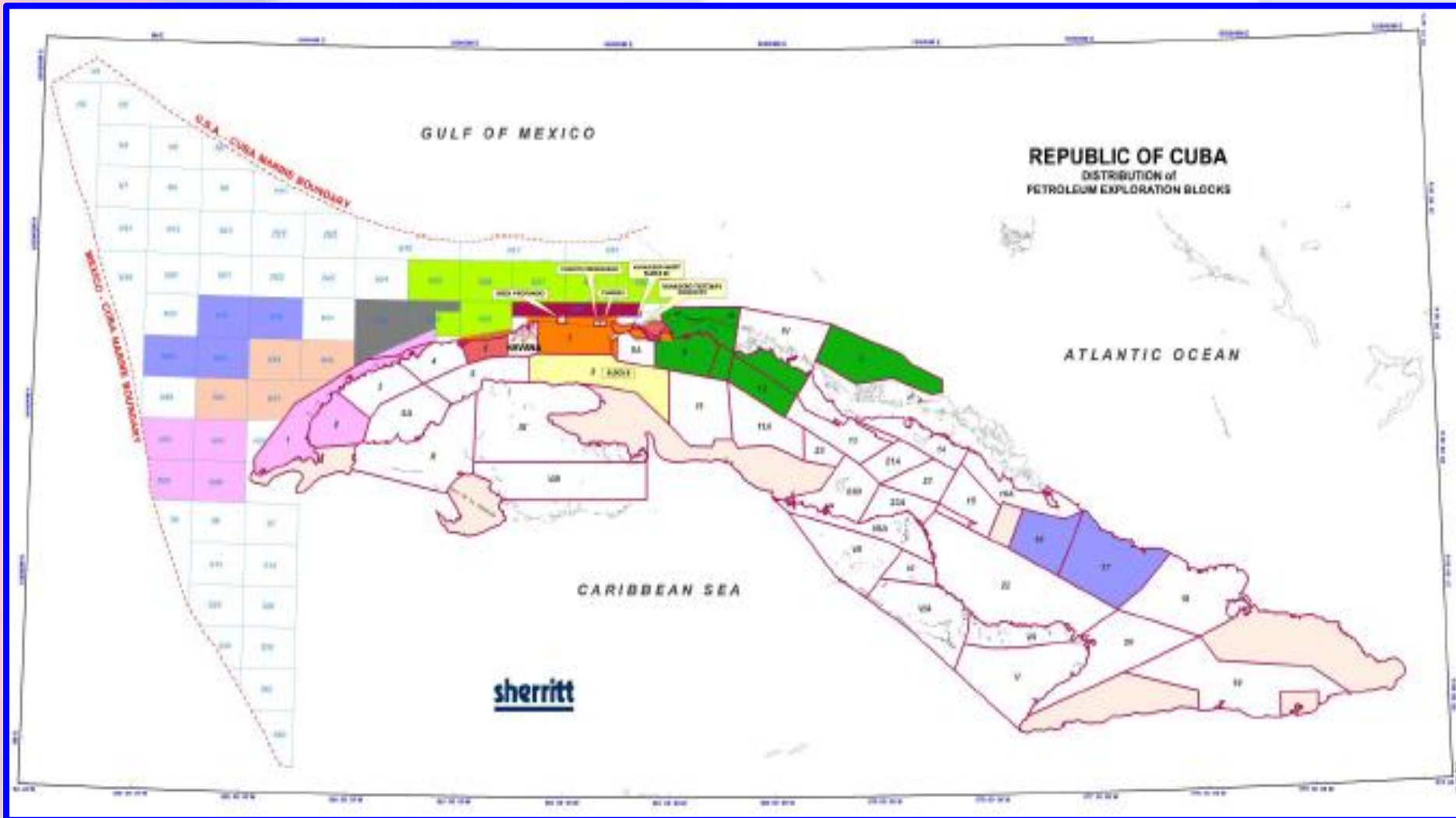
1. Cuba opens for oil exploration/exploitation under PSA's
2. 1990's land boom & drilling activity increase
3. Only success on north coast heavy oil trend, field extensions/discoveries
4. 2000's deep water blocks & drilling of 4 wells

EXPLORATION BLOCKS 1998

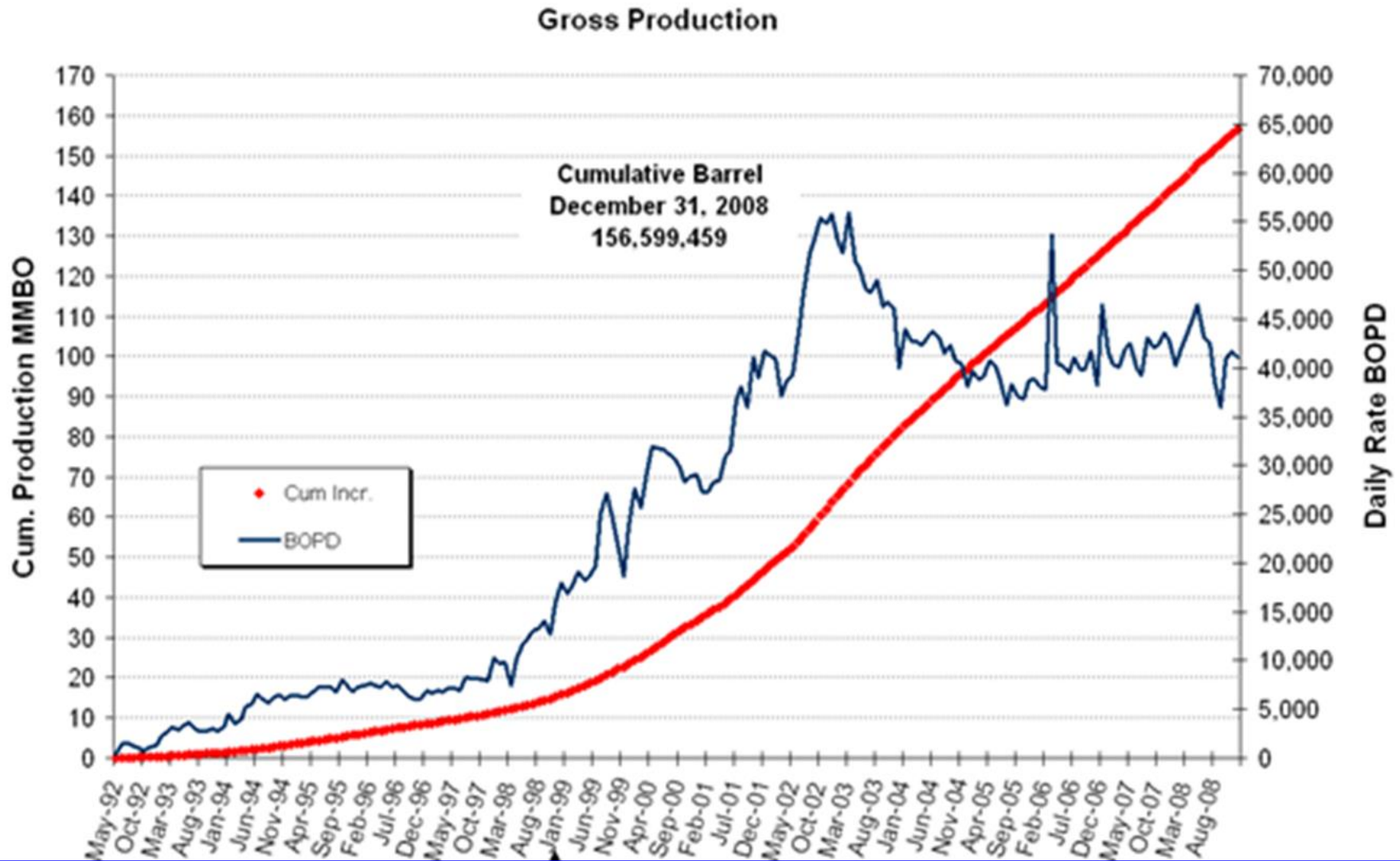
EXPLORATION BLOCKS



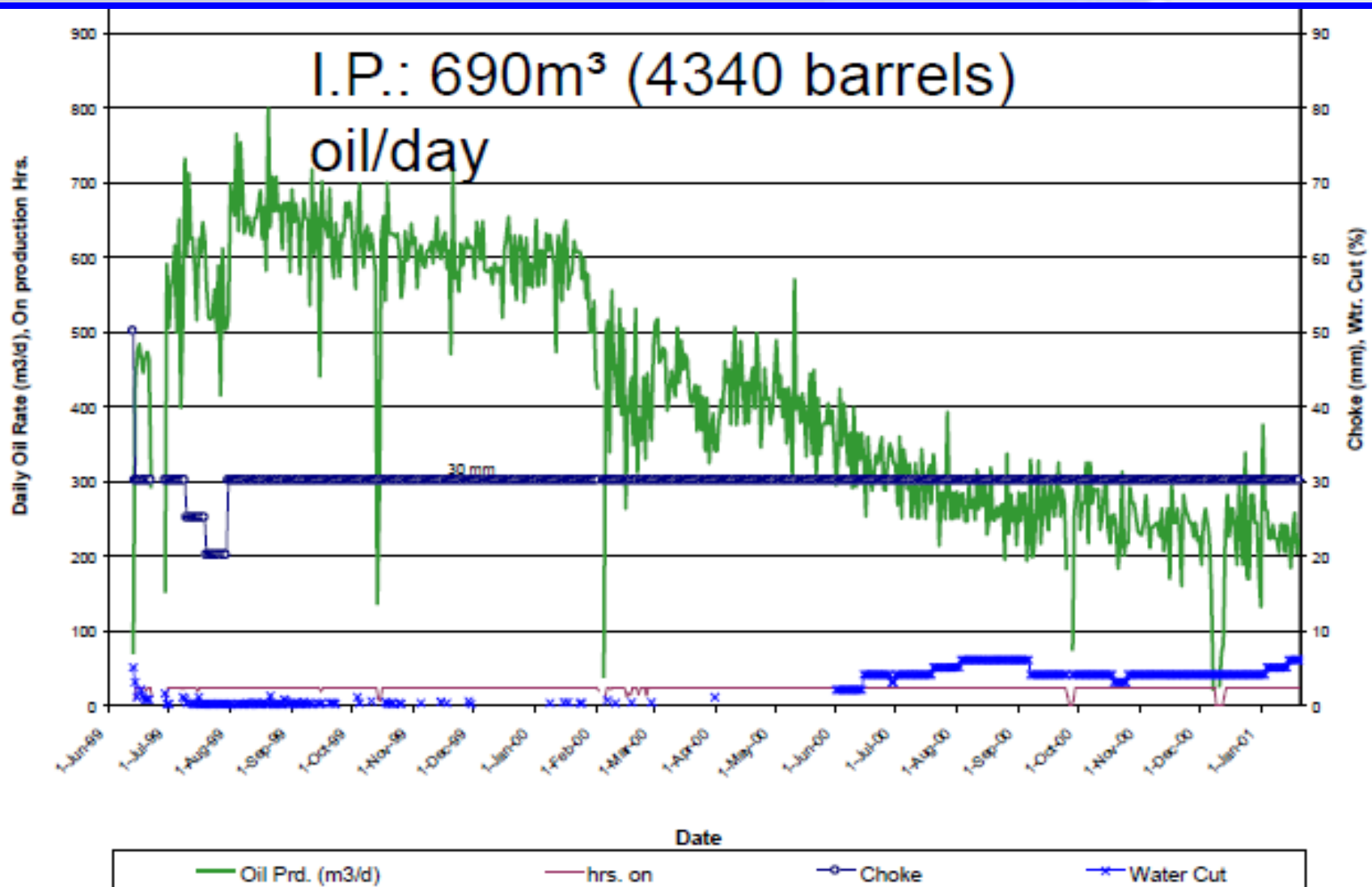
EXPLORATION BLOCKS, 2010



Cuban Oil Production in Modern Era (courtesy of Gordon Hurlburt, Sherritt International)



YUMURI 201



606,675 m³ (3,815,000 barrels) oil to December 2008

79m³ (496 barrels) OPD @ 20% WCT as of May 4, 2009

SHERITT RIG #2,
YUMURI 228



THE FUTURE OF ENERGY IN CUBA

A CUBAN LOGGING TRUCK "SUSTAINABLE DEVELOPMENT"



THE FUTURE OF ENERGY IN CUBA

Chasing Windmills????



Or – Find more hydrocarbons through
exploration and development

jimpodruski@gmail.com



ACKNOWLEDGEMENTS

*Gordon Hurlburt and Sherritt International
Thomas Ambrose, Retired, ex-Kewanee
Alan Fraser, Retired, ex-Atlantic Refining
Susanne Gendron, Editor*



jimpodruski@gmail.com