
PPIC
ALEGRIA OIL AND GAS PROJECT
6th National Mining, Geology and Metallurgy (MGM) Workshop and Conference
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Polyard Petroleum International Group Ltd.
06 March 2019
Davao City

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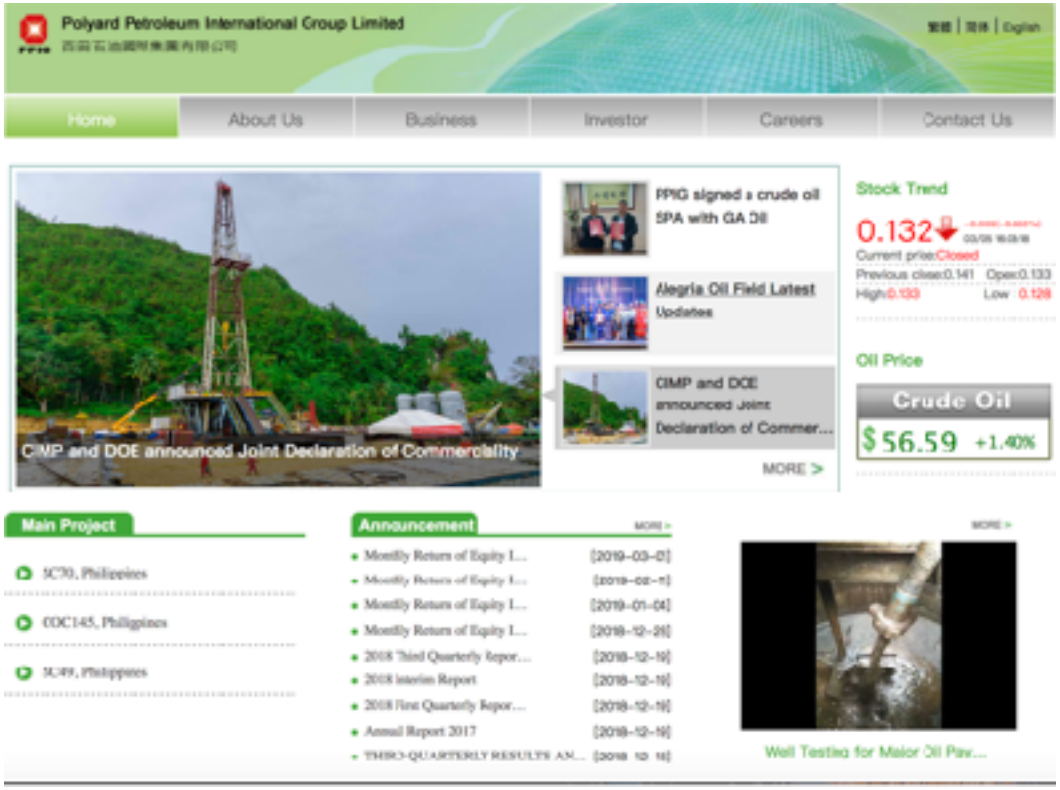
Polyard Petroleum International Group Ltd.

Polyard Petroleum International Group Limited ("PPIG"), a company listed on the Hong Kong GEM (Stock Code: 8011), mainly engages in the exploration, development and production of oil and gas, provision of professional technical services and trading of petroleum-related products.

China International Mining and Petroleum Co. Ltd. is a subsidiary of PPIG.



Presentation Outline

- Legal Framework of Petroleum Service Contracts
- Nature of and Benefits from Upstream Petroleum Industry
- General Geology
- Project Overview
- Project Progress
- Declaration of Commerciality

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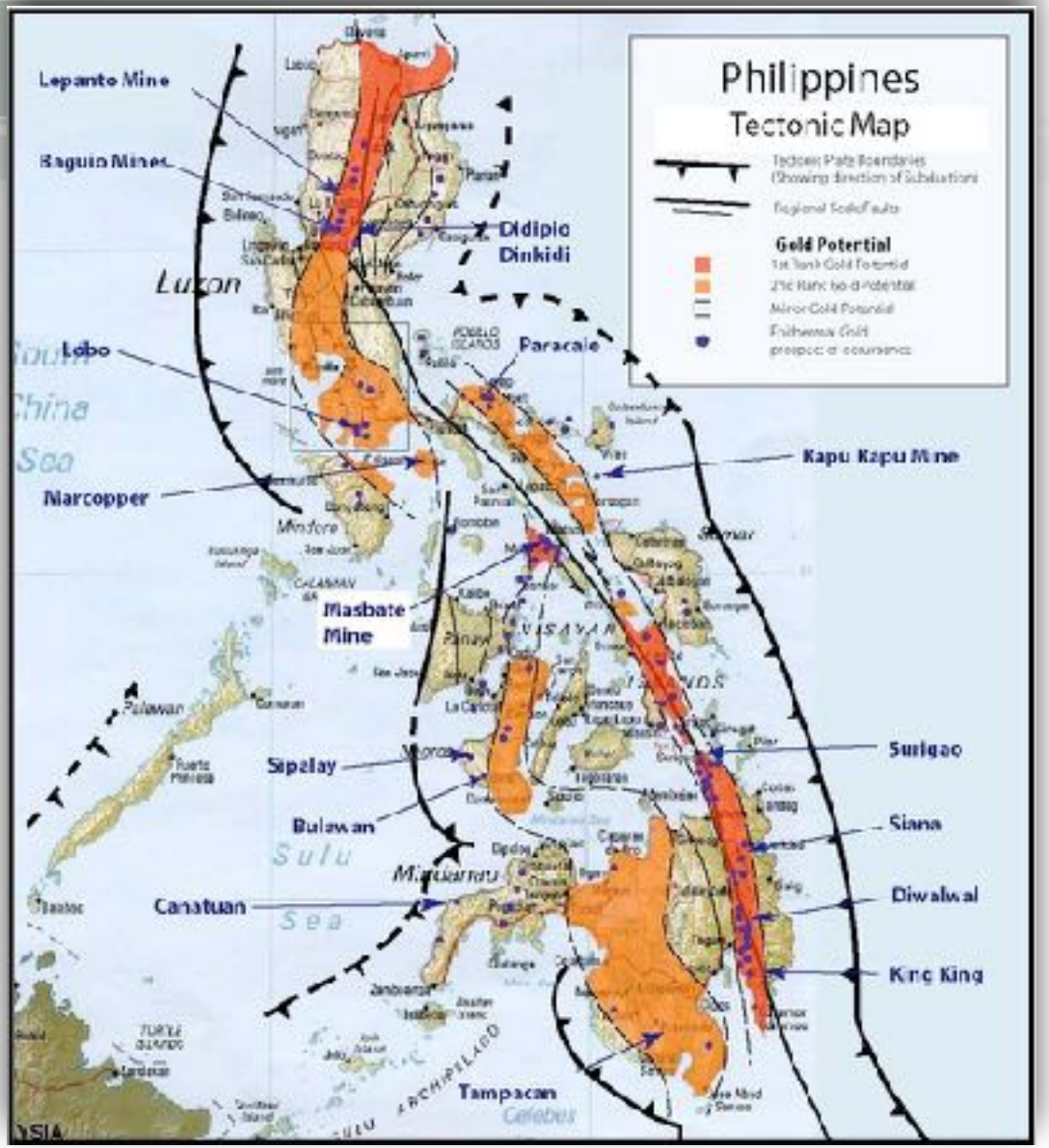
Constitution

All lands of the public domain, water, minerals, coal, petroleum, and other mineral oils, all forces of potential energy, fisheries, forests or timber, wildlife, flora and other natural resources are owned by the state.

The exploration, development and utilization of these natural resources are under the full control and supervision of the State.



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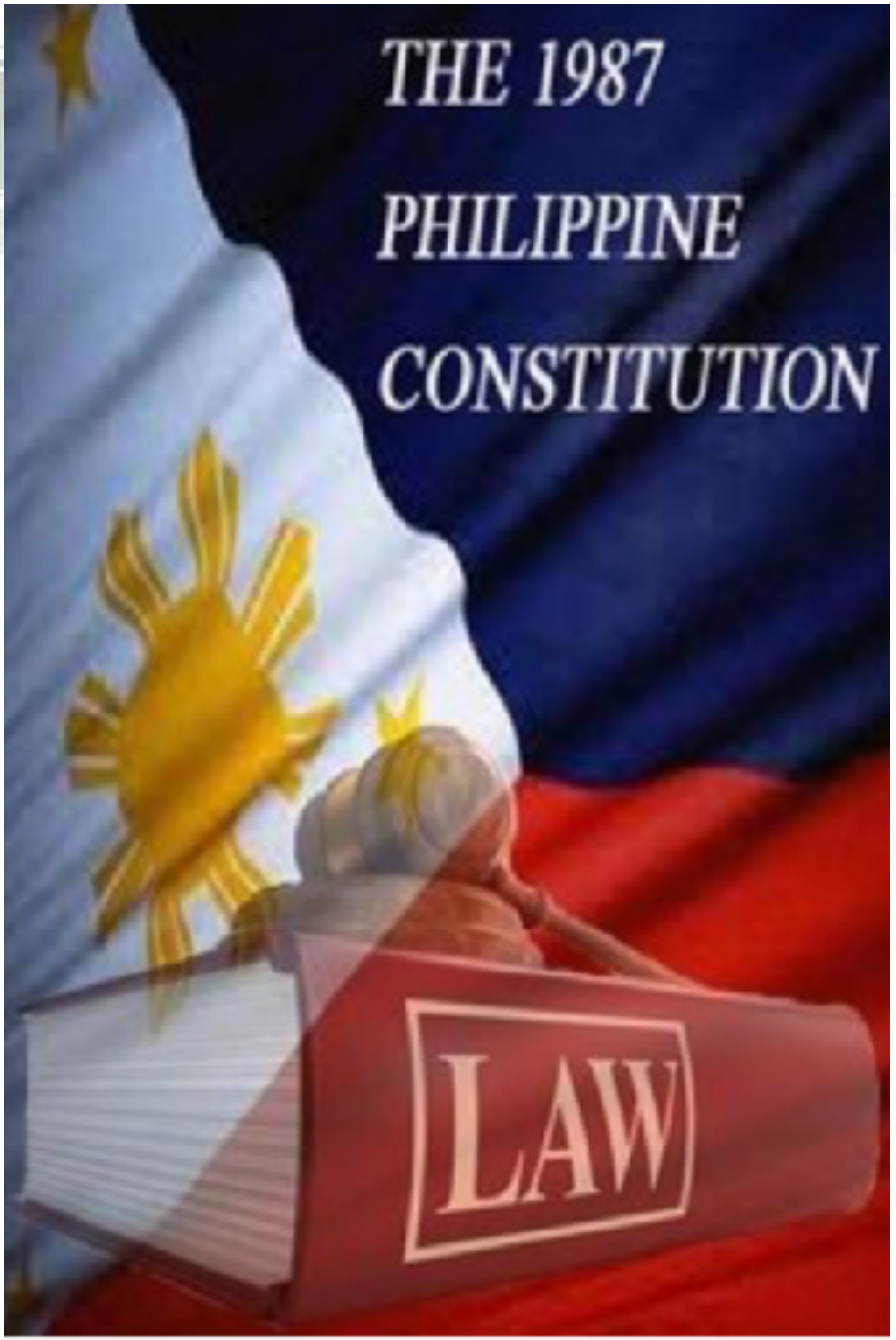
Constitution

The State has the option of entering into co-production, joint venture or production sharing agreements with Philippine citizens of Philippine corporations or associations.

At least 60% of the capital of a corporation or association must be owned by Phil. Citizen to qualify as a Philippine corporation or association.



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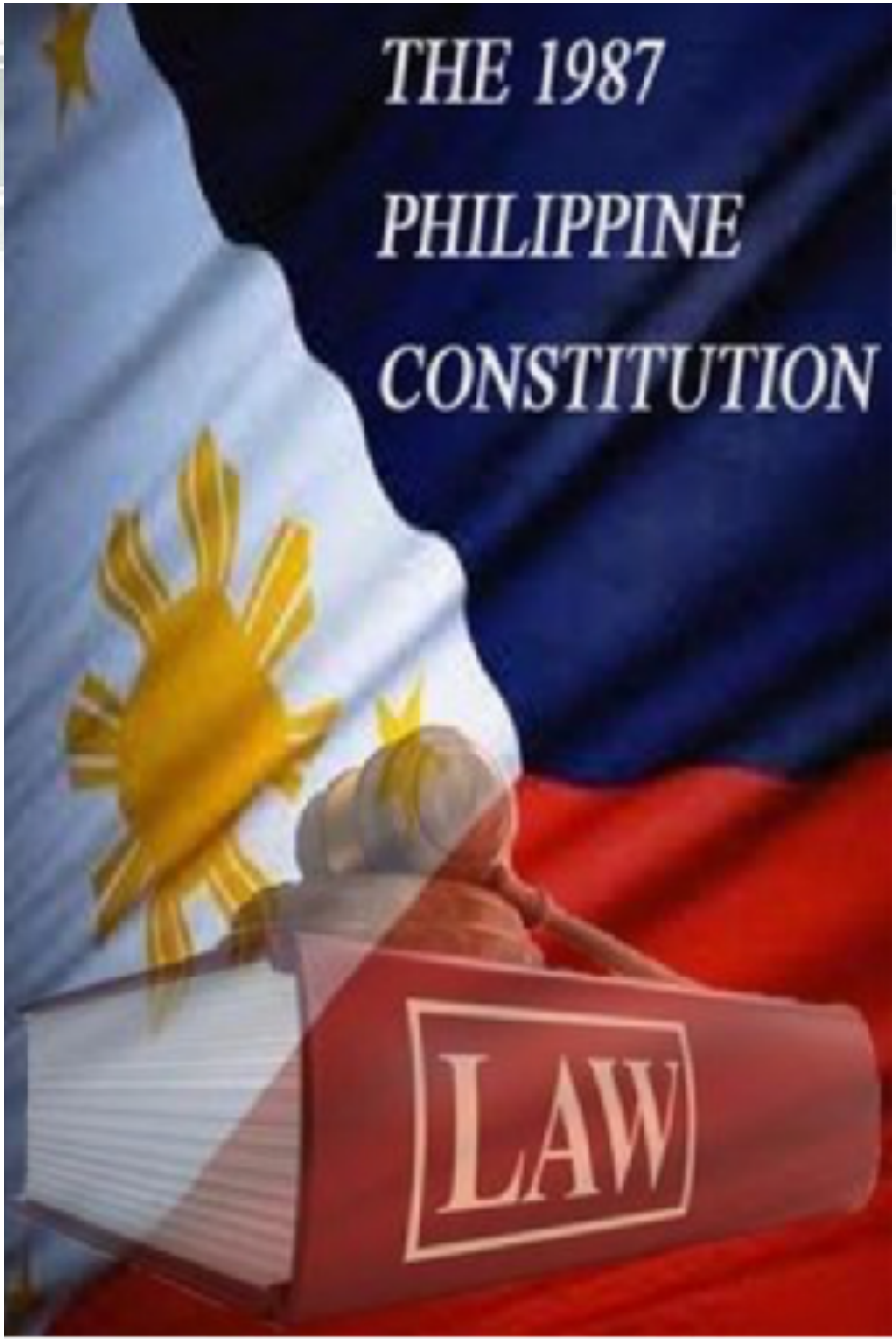
Constitution

Exception to the nationality requirement: The Constitution authorizes the President to enter into agreements with foreign-owned corporations involving either financial or technical assistance, for large- scale exploration, development and utilization of minerals, petroleum and other mineral oils.



The Legal Framework

Art XII, 1987 Constitution

PRESIDENTIAL DECREE NO. 87 – OIL EXPLORATION AND DEVELOPMENT ACT

Presidential Decree No. 1354 – preferential tax rates

Presidential Decree No. 1459 – authority of DOE Secretary

Republic Act 7638 – Department of Energy law

Highlights of PD 87

- Government may award Service Contracts to qualified entities.
- The Contractor shall furnish services, technology and financing.
- Proceeds of sale of the petroleum produced under the contract shall be the source of funds for payment of the service fee and the operating expenses due the Contractor.
- Contract may authorize the Contractor to take and dispose of and market either domestically or for export.
- No investment from and risk to Government.

Nature of the Upstream Petroleum Industry

- **Highly regulated and controlled** – Petroleum resources are owned by the State. Exploration and production activities can only be undertaken under a Service Contract with the Government.

- **High risk** – Exploration success rate in the Philippines is about 10%. Thus, the risk of failure (no oil or gas found) is about 90%.

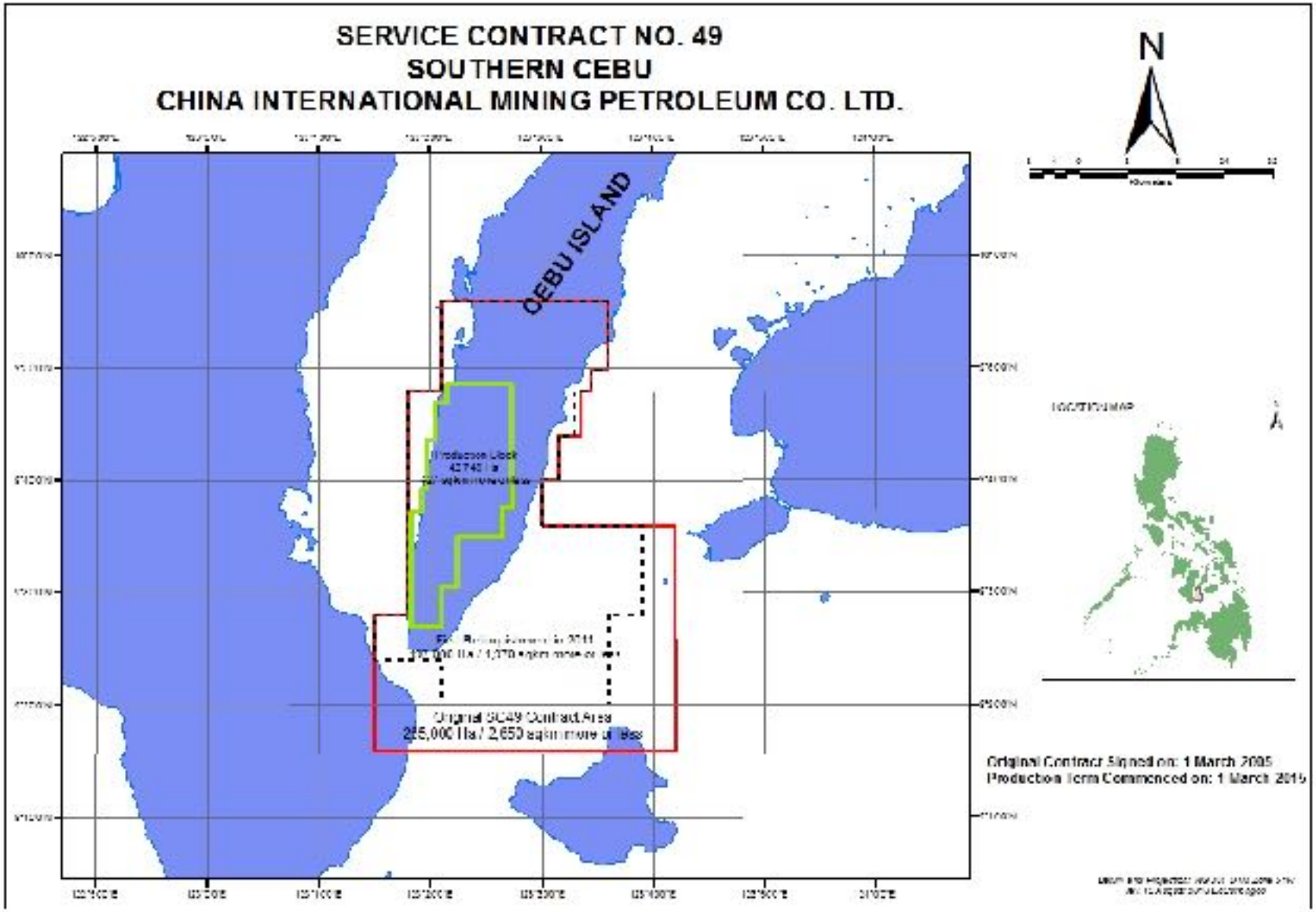
- **Capital intensive** – The most promising areas are located offshore. Depending on the location and water depth, drilling one exploration well could cost between USD50 million to USD 100 million.

- **Requires long-term commitment** – The standard Service Contracts awarded by the Government provide for an exploration term of 7 years (extendible for 3 years) and a production term of 25 years (extendible for 15 years).

Benefits from the Upstream Petroleum Industry

- **Energy security** – Complements other indigenous sources of energy like hydro, geothermal, coal and renewables
- **Reduced reliance on imports** – In particular, imported coal or bunker fuel
- **Foreign exchange earnings -** For both the Government and the Service Contractors
- **Environmental benefits** – Natural gas is cleaner and produces less emissions compared to coal or bunker fuel
- **Employment and development of Filipino talent** – Competence transfer has allowed for many key roles (managerial and technical) in the industry to be assumed by Filipinos. An opportunity to showcase to a global audience, Filipino capability for safe and reliable operations.

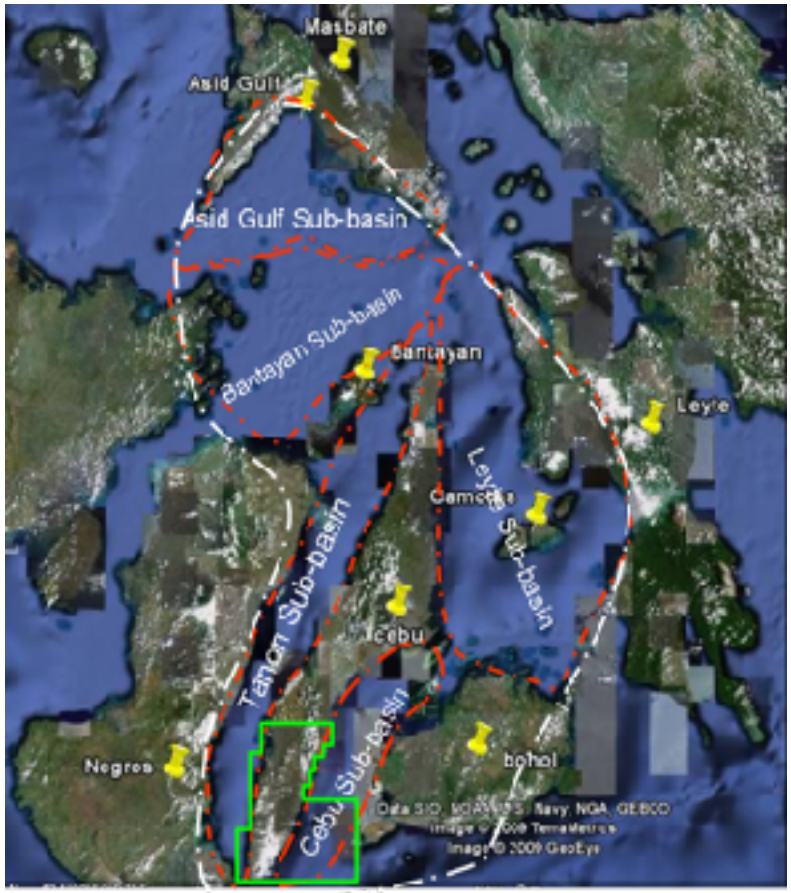
Location of SC 49



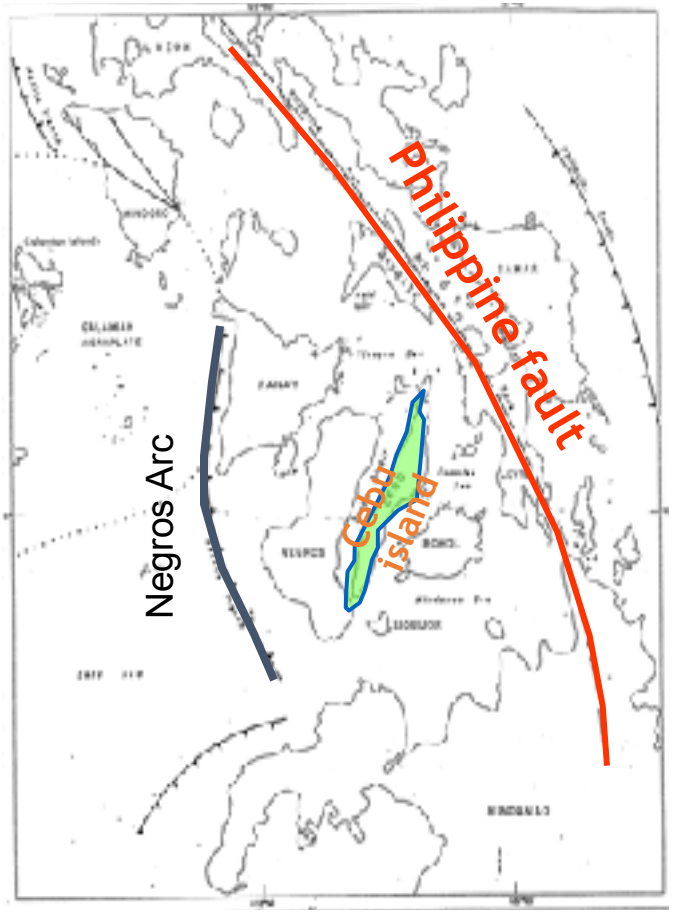
SC 49 Basin Style and Structural Features

The Visayan basin was a back arc basin to the Negros Subduction which was later deformed by the strike slip movement of the Philippine Fault Zone.

Location of Visayan basin and subbasins

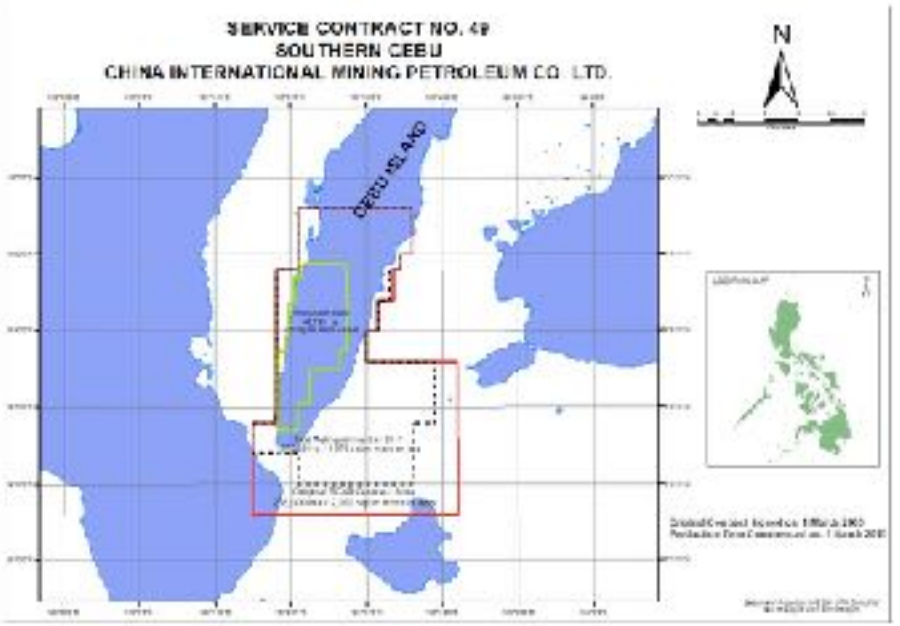


Regional tectonic setting of Visayan basin



SC49 Alegria Oil & Gas Project Overview

- An onshore license block with proven hydrocarbon accumulation, the reservoir has been tested and proven to have commercial flow potential
- Approx. 2,650 sq. km, of which the 1,000 sq. km are onshore
- Located in South Cebu, Philippines
- Service Contract No. 49 was granted on 01 March 2005 covering 25-year Production Period, extension is up to 15 years
- CIMP, PPIG's subsidiary, is the operator holds 80% participating interest



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Local Government Consultations

CIMP was required to conduct consultation with all LGUs concerned, or the legislative councils (*sanggunian*) at the provincial, city/ municipal, and barangay levels.

Alegria Oil and Gas Project Progress

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SC49 Alegria Oil & Gas Project, Philippines

Polyard-2 Well Testing Completed With Commercial Flow Rates Established

- Polyard-2 Well was tested on 2 February 2015; The established flow rates from the various tests would be sufficient to set up a gas-to-power project; the feasibility of the power project is now being considered
- Polyard-2 Well tested about 80,000m^3 of gas per day

SC49 Alegria Oil & Gas Project, Philippines

Polyard-2 Well Testing Completed With Commercial Flow Rates Established

- 187.5 -1,232m : 24 zones with oil and gas shows from a gross interval of 96.9m
- Logs indicated 8 zones with oil and condensates from a 49.3m interval; and 13 zones with gas shows from a 43.6m interval

Gas discharging from a depth of 903.61m

Flames reaching 10 meter high.

SC49 Alegria Oil & Gas Project, Philippines

Polyard-1 Well Testing Completed With Commercial Flow Rates Established

- Polyard-1 Well was successfully tested and completed on 16 December 2015. After five(5) DSTs, commercial flow rates were established
- In the gross interval of 180.5 - 829.5m,18 zones were identified with oil and gas shows with a gross thickness of 94.9m
- The logs indicated a net pay of 21.7m from 8 oil bearing zones

SC49 Alegria Oil & Gas Project, Philippines

Polyard-1 Well Testing Completed With Commercial Flow Rates Established

Oil & Gas discharging from well during DST of Polyard-1 Well.

Polyard-1 Well produces oil with associated gas.

SC49 Alegria Oil & Gas Project Progress

- CIMP drilled Polyard-2 which encountered high gas production when it was tested in 2015, and subsequently submitted the Plan of Development ("POD") for the discovered gas resource based on the drilling results in 2015.
- After the discovery and successful testing of the Polyard-2 well on January 2015, CIMP submitted a POD for the development of the gas discovery on 06 August 2015 entitled "**Submission of Proposal of Development for the Discovered GAS Resource referred to as Development and Appraisal Program – A8 Fault Block, SC49, Philippines**".
- On 11 November 2015, the DOE approved the POD for SC 49 that will be used as the basis for the Joint Declaration of Commerciality and the conversion of the contract area from exploration to production phase.
- On 13 November 2015 the DOE and CIMP issued the Joint Declaration of Commerciality ("JDC") stipulating that the Alegria Gas Field located in Southern Cebu, which contains natural gas, is hereby jointly determined by the Parties to be in Commercial Quantity
- On 22 December 2015, the DOE wrote to CIMP confirming the JDC signed on 13 November 2015.

SC49 Alegria Oil & Gas Project Progress

- CIMP drilled three more new wells, Polyard-3, Polyard-6, and Polyard-8 in 2016, and new oil reservoirs were found. Three wells were drilled in 2016:
  - 9 July 2016 – Polyard-3 well reached TD; tested OIL on DSTs.
  - 14 October 2016 – Polyard-6 well reached TD; tested GAS on DSTs.
  - 30 November 2016 – Polyard-8 well reached TD; tested OIL on DSTs.

SC49 Alegria Oil & Gas Project, Philippines

Polyard-3 Well Testing Completed With Commercial Flow Rates Established

- Polyard-3 Well was tested and completed on 30 August 2016. After seven (7) DSTs, commercial flow rates were established
- From a gross interval : 433 - 2092m, 41 zones of 190.1m have oil and gas shows; logging indicated 6 oil bearing zones of 33.6m, and 2 gas bearing zones of 8.5m

Polyard-3 Production Tree

Polayrd-3 Well - Oil flows out into tank

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OIL

SC49 Alegria Oil & Gas Project, Philippines

Polyard-3 Well Testing Completed With Commercial Flow Rates Established

Oil & Gas discharging from well during Polyard-3 Well testing

SC49 Alegria Oil & Gas Project, Philippines

Polyard-6 Well Testing Completed With Commercial Flow Rates Established

- Polyard-6 Well was spudded on 23 September 2016, 1,420m TD was reached on October 2016
- Logs indicated 36 intervals with a gross thickness of 137m; 3 intervals indicated gas (gross 31.2m) and 16 poor gas show intervals (gross 74.8m)

Polyard-6 Well Spud-in Ceremony

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GAS

SC49 Alegria Oil & Gas Project, Philippines

Polyard-6 Well Testing Completed With Commercial Flow Rates Established

- Polyard-6 Well was drilled and completed in 26 days, tests indicated a stable gas flow rate of 21,000m^3 of gas per day

Polyard-6 Well Oil & Gas discharging from well

SC49 Alegria Oil & Gas Project, Philippines

Polyard-8 Well Testing Completed With Commercial Flow Rates Established

- Polyard-8 Well was drilled and completed 28 December 2016
- Test indicated a stabilized rate of 153.22 barrels of oil per day (BOPD) of light crude oil with 1,387m^3 of gas per day as associated gas

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OIL

SC49 Alegria Oil & Gas Project, Philippines

Polyard-8 Well Testing Completed With Commercial Flow Rates Established

Polyard-8 Oil & Gas discharging from well

Polyard-8 Well Oil flows out into tank

PPIG

OIL

SC49 Alegria Oil & Gas Project, Philippines

Polyard-9 Well Testing Completed With Commercial Flow Rates Established

- The gross interval: 186.5 - 790.9 m, 38 zones (gross 122.8m) have oil and gas shows; Logs indicated 4 zones as oil bearing zones (23.0m); 5 poor oil zones (15.8m); 1 gas bearing zone (6.5m) and 9 poor gas zones (31.9m)
- After 3 DSTs, the established flow rate is 86.55 barrels of oil per day (BOPD) with 1,200m^3 of gas per day of associated gas

SC49 Alegria Oil & Gas Project, Philippines

Polyard-9 Well Testing Completed With Commercial Flow Rates Established

Polyard-9 Well oil & gas discharging from well

Declaration of Commerciality

SC49 Alegria Oil & Gas Declaration of Commerciality

- The **"Plan of Development for Block A8 under Service Contract No. 49"** referred to as the POD for GAS for the Alegria Gas Field granted last 11 November 2015 was revised and integrated in the overall POD referred to as **"The Plan of Development on SC49 Block"** following the discovery of oil in Polyard-1 well (2015), Polyard-3 well (2016) and Polyard-8 (2016).
  - Results of the 2016 wells, which tested a more liquid resource (oil-rich);
  - The cost for oil production and development will enable to CIMP to easily proceed because it is less capital-intensive than gas production, which requires the construction of production facilities based on the original POD for GAS; and
  - The cash flow from the oil production will be more advantageous to the Philippine Government and CIMP, as oil is easily marketable and will require less upfront capital cost.

SC49 Alegria Oil & Gas Declaration of Commerciality

- Based on the discovery after the drilling of Polyard-3 and Polyard-8 wells and subsequent reinterpretation of the entire Alegria Anticline, CIMP submitted on 27 March 2017 the new Plan of Development on SC49 Block to produce oil.
- On 25 September 2017, CIMP submitted to the DOE an "**Update on the Plan of Development for the Discovered Petroleum Resource in Southern Cebu**" together with a Third Party Evaluation Geological Reserves Report for SC49.

SC49 Alegria Oil & Gas Declaration of Commerciality

- Following the discovery of oil in Polyard-1 well (2015), Polyard-3 well (2016) and Polyard-8 (2016), CIMP embarked on the development of the oil resource for SC49.
- The new POD called for a layered development plan, i.e. based on reservoirs physical characteristics, fluid properties, pressure systems and production capacity. The oil resource will be developed before the gas resource to optimize recovery.

Reservoir – Maingit Fm

Maingit Clastics is the main exploration target

Maingit Clastics is the main reservoir target in SC49. The stratigraphic thickness could reach 800m but in some areas it is absent or drastically eroded. On the flanks of the anticline the thickness is preserved. The lithology is interbedded sandstone and mudstone typical of barrier sandstone bodies, the sandstone sequence can range from 3 to 26m in thickness with a sand:mud ratio of about 30%.

There were 11 wells in the western flank of the Alegria anticline, hydrocarbons were encountered and were able to flow to surface at a rate of about 140 BOPD and up to 5 MMSCFGPD on tests. Note some wells were not tested.

Traps – Alegria anticline Fault Blocks

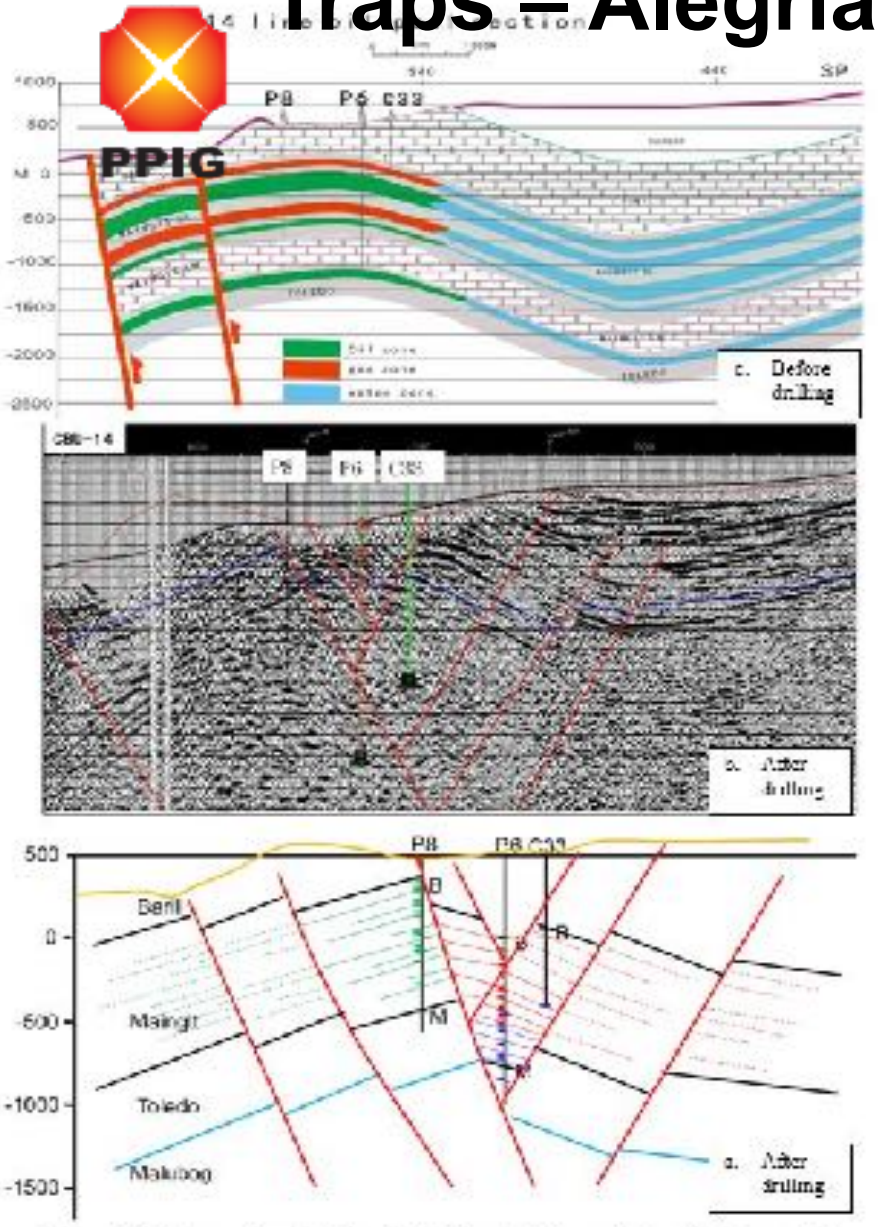

Figure 5-3 Comparison of Seismic Profile and Reservoir Type before and after drilling in Alegria Anticline

< Before Drilling P6

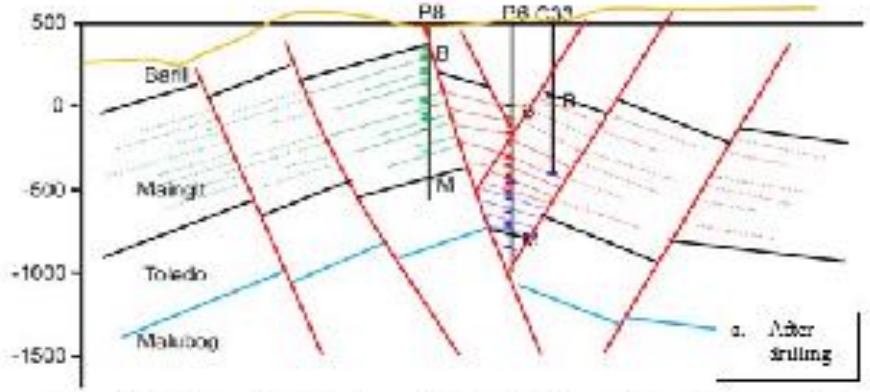

Figure 5-3 Comparison of Seismic Profile and Reservoir Type before and after drilling in Alegria Anticline

< After Drilling P6

Traps – Alegria anticline Fault Blocks

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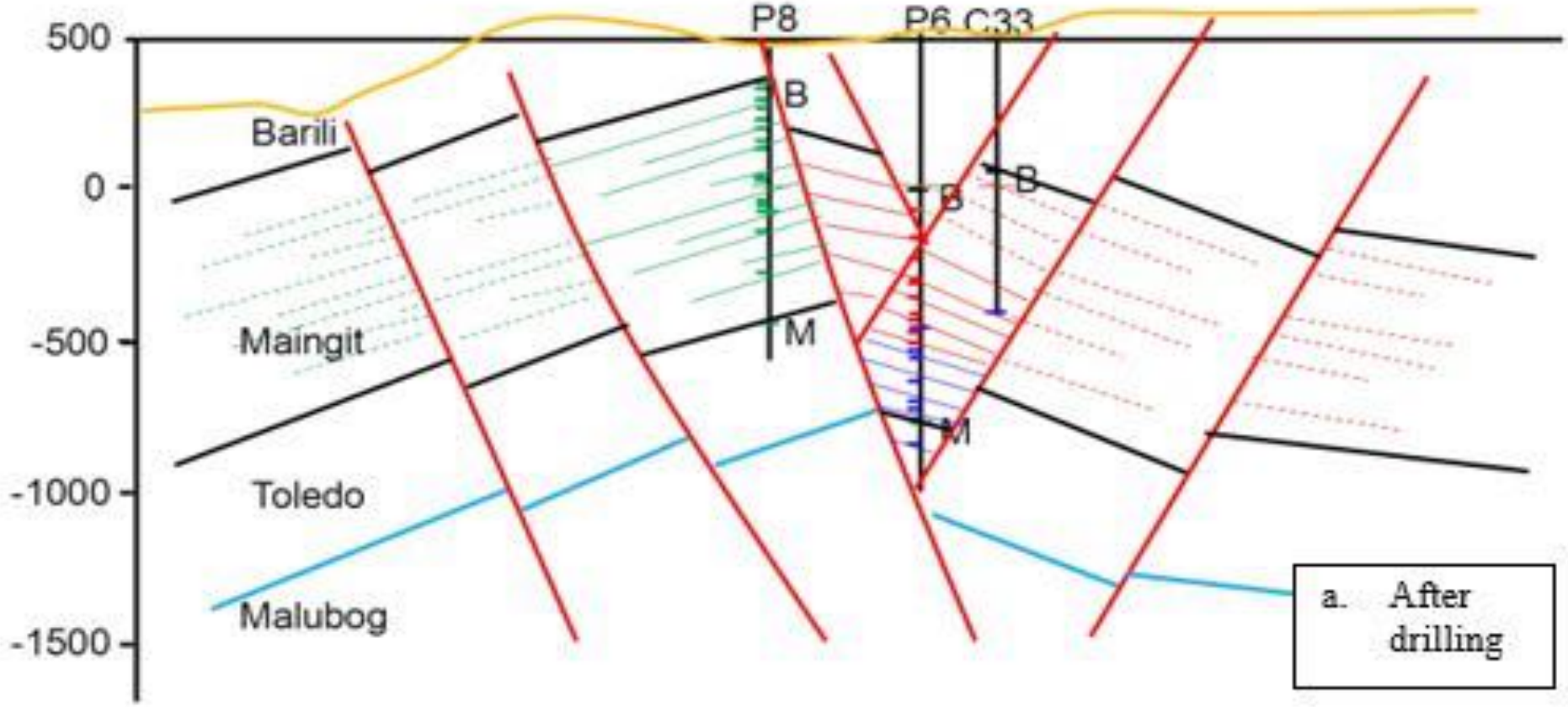


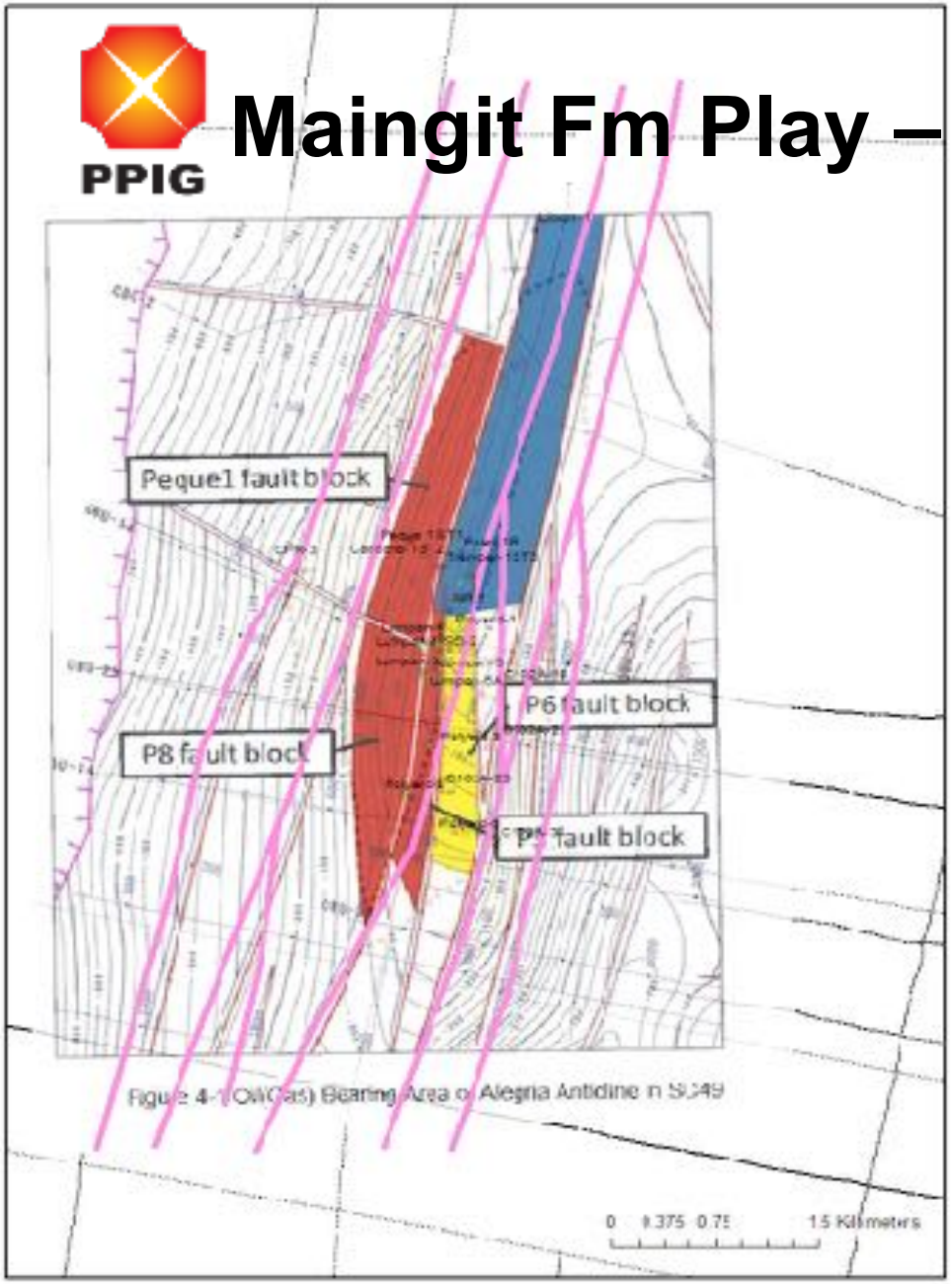
Figure 5-3 Comparison of Seismic Profile and Reservoir Type before and after drilling in Alegria Anticline

< After Drilling P6

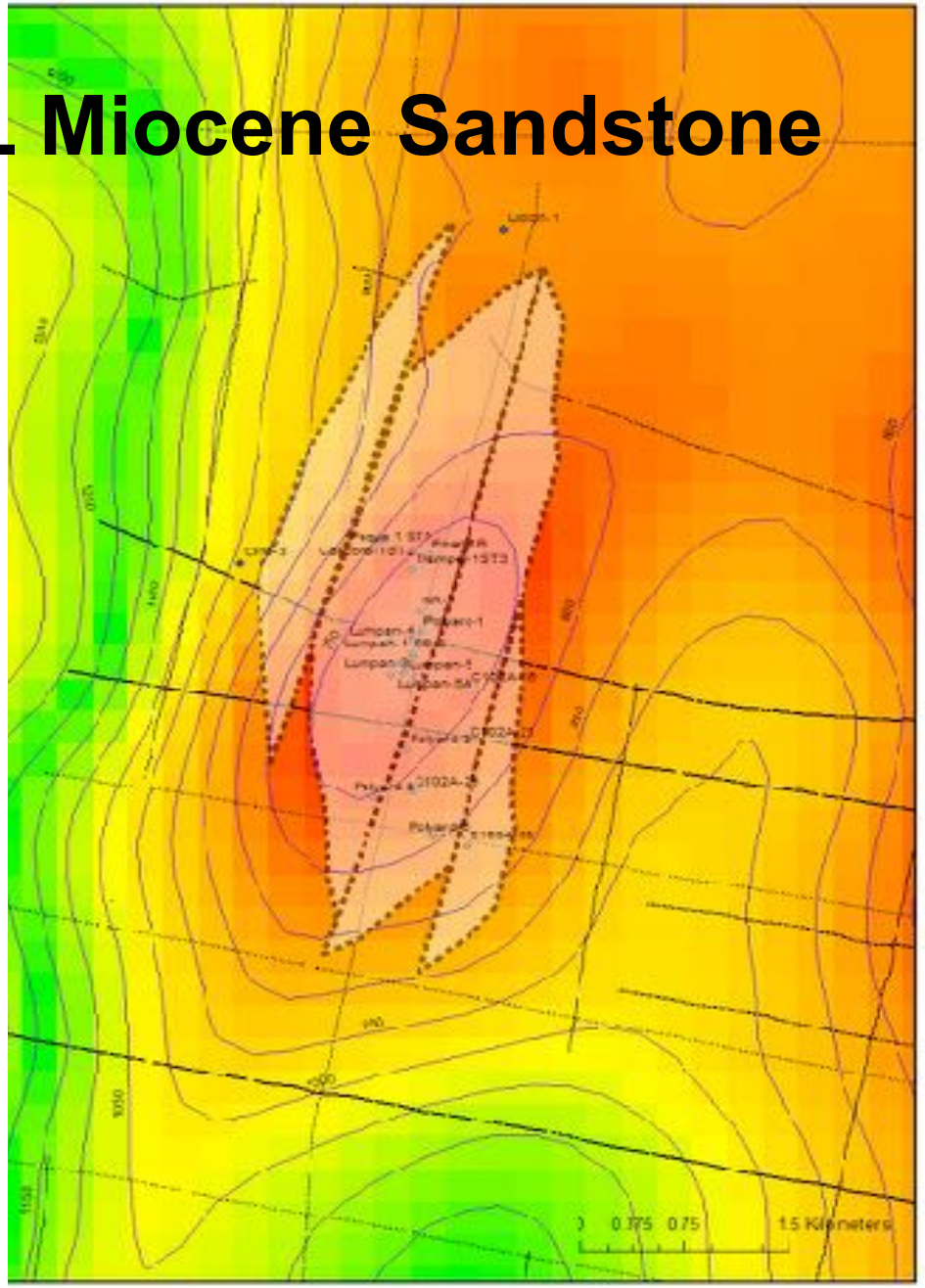
Summary

Well	Net Pay m	Pressure Difference MPa	Testing method	Production Index/m $m^{3/}$ (d·MPa·m)	Draw-up rate %	Single Well Productivity m^3/d	Production Rate m^3/d
P3	5.1	4.03	Oil Testing	0.53	85	9.26	12.14 (78 BOPD)
			Well Testing	0.86		15.02	
P8	5.7	1.21	Oil Testing	2.05		12.02	20.43 (128 BOPD)
			Well Testing	4.92		28.84	
Average							16.29 (102BOPD)

Maingit Fm Play – L Miocene Sandstone



Various Fault Blocks in the Alegria Anticline



Top Maingit Structure Map

Hydrocarbon In Place Calculation

Probable Reserves

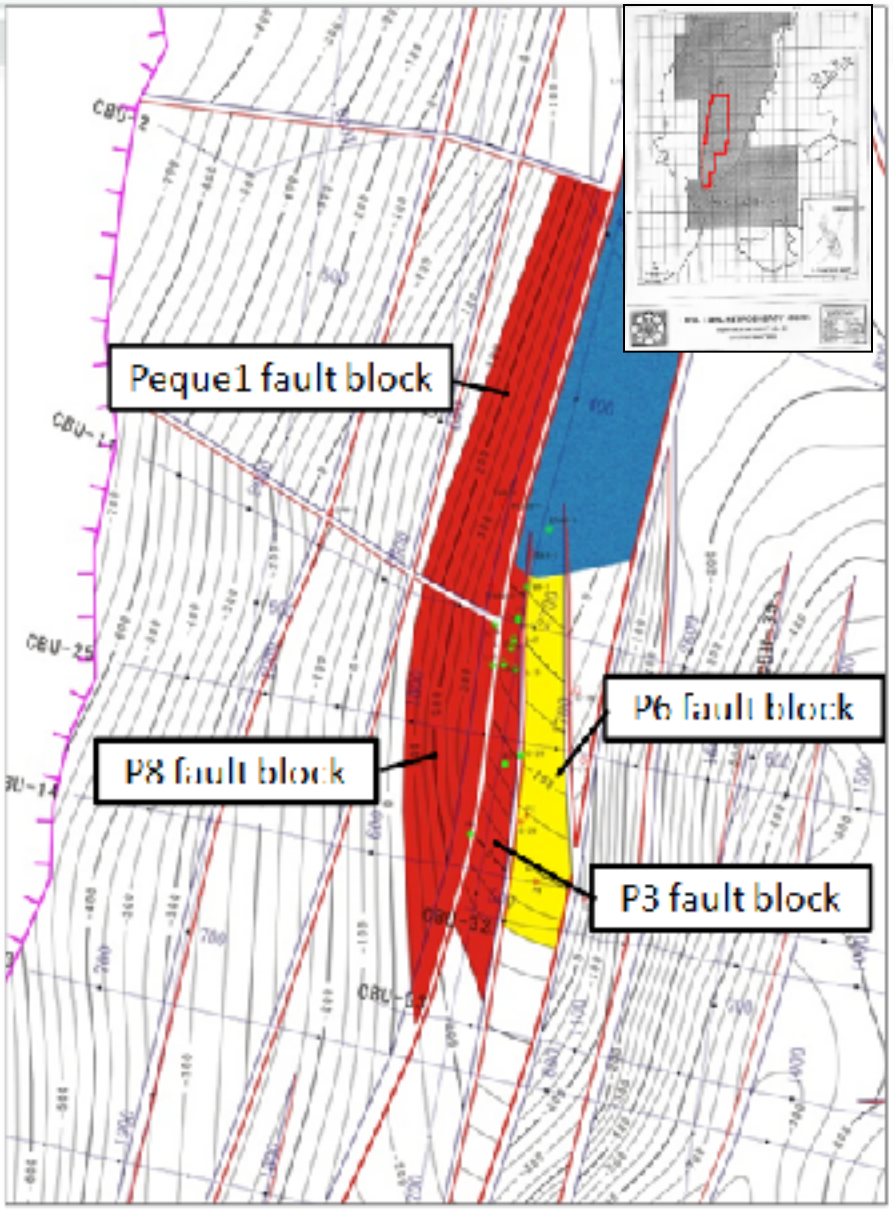
Tab 5 Geological Reserves Calculation of Alegria Anticline SC49

Reserves calculation unit		Hydrocarbon bearing area (km^2)	Average net pay thickness (m)	Average porosity (%)	Average initial oil(gas) saturation (%)	Formation crude oil volume factor	Gas volume factor	Oil in place (MMBBL)	Gas in place (BCF)
Formation	Fault block								
Maingit Upper sandstone	P3	0.37	20.80	24.85	53.65	1.05		6.16	
	P8	1.15	9.55	23.46	56.47	1.05		8.72	
	P6	0.7	15.7	25.1	50.8		0.009		5.51
	Subtotal	2.22						14.88	5.51
Maingit Lower sandstone	P3	0.35	9.80	22.86	54.96	1.05		2.6	
	Peque1	0.54	15.18	24.05	56.07	1.05		6.62	
	P8	0.87	5.44	24.08	56.08	1.05		3.83	
	P6	0.5	11.6	26.2	51.2		0.007		3.92
	Subtotal	2.26						13.05	3.92
Total		2.65						27.93	9.43

SC49 Alegria Oil & Gas Project, Philippines

Calculated Reserves of Alegria Anticline in SC49 (Based on CAS Report in 2017)

OOIP	**27.93**	**MMBBL**
OGIP	**9.43**	**BCF**
OHIP	**29.51**	**MMBOE**



Commerciality

Definition of terms:

- A project is commercial if the degree of commitment is such that the accumulation is expected to be developed and placed on production within a reasonable time frame. *(A reasonable time frame for the initiation of development depends on the specific circumstances but, in general, should be limited to around 5 years.)*

- In relation to petroleum reserves and resources, **economic** refers to the situation where the income of an operation exceeds the expenses involved in, or attributable to, that operation.

Joint Declaration of Commerciality (JDC)

Service Contract 49

Section IX Determination of Commerciality	
1. Submit Appraisal Report on HC Trap (Reserves Calculation)	3rd Party Reserves Certification submitted
2. Plan Of Development shall include the Maximum Efficient Rate and the expected duration of the production	POD Oil approved 19 December 2017
3. Unanimous decision to declare that HC bearing trap may be an oil field containing petroleum in commercial quantity	14 March 2018

Extract from the Plan Of Development

Plan Of Development shall include the Maximum Efficient Rate and the expected duration of the production	From POD
Production Rate	The flow rate of P3 and P8 during testing, i.e. 235 BOPD and 153 BOPD respectively is the basis of the estimated production rate for the production schedule Crude oil production of new wells decline fast at the initial stage of production then slowing down later, the monthly decline rate for the Initial stage is 15%, the monthly decline rate for the middle stage is 7.5% and the monthly decline rate for the later stage is 1.5%
Duration of Production	The Economic Life of the project has been modelled for a production period of 19 years

SC49 Alegria Oil & Gas Declaration of Commerciality

- On 19 December 2017, the DOE approved the the POD presented and submitted by CIMP.
- Following the approval of the POD for OIL entitled “The Plan of Development on SC49 Block”, the DOE and CIMP entered anew into a JDC on 14 March 2018.
- On 12 March 2018, pursuant to the approved POD, CIMP signed a crude oil SPA with a local buyer, oil sales officially commenced.

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JDC

DOE and CIMP
Joint Declaration of Commerciality
14 March 2018

PRESIDENT RODRIGO ROA DUTERTE

Republic of the Philippines

19 May 2018

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- Lecturer, Asian Institute of Technology (Bangkok), UP National Institute of Geological Sciences
- http://www.philippine-resources.com/

Additional Slides

Hydrocarbon Play Description

Late Miocene interbedded sandstone sequences with fault bounded closure; sealed by Pliocene marls and limestones and charged by underlying Mesozoic and Oligocene source rocks and coal during Late Miocene to the present

Source Rocks

Structural deformation creating deep depocenters resulted in the accumulation of three (3) possible source rock sequences namely; the Late Cretaceous Pandan Fm, the Oligocene Cebu Fm and the Early Miocene Malubog Fm found in Southern Cebu.

Pandan Fm: deposited in a coastal plain with swamp facies exhibiting the distinctive black shale and coal sequences.

Cebu Fm: transgressive sequence with littoral facies including coal and later transgressed by shallow water limestone then capped by deep water sediments of coals and marls.

Malubog Fm: deep-water facies with sandstone, shale, and conglomerate.

Geothermal Gradient

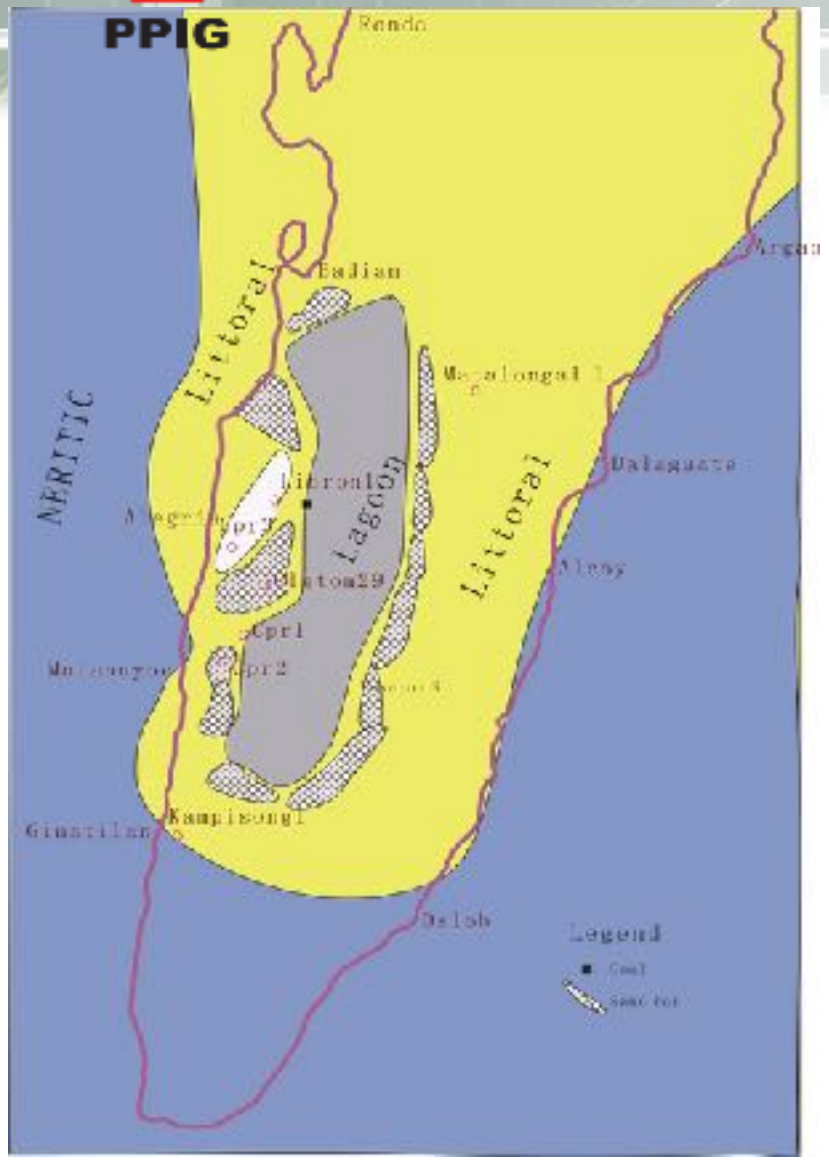
Geothermal gradient in Visayan basin ranged from 3.01 to 6.67 ℃ /100m
The higher gradients are readings near the Philippine Fault System.

Average geothermal gradient from SC49 wells range from 2.21 to 3.59℃/100m

Kampisong anticline south of Alegria anticline
3.59℃/100m
Malabuyoc anticline
SC-1 well：2.25℃/100m；
CPR-1 well: 2.21℃/100m

Alegria anticline:
SC-2 well：2.35℃/100m。

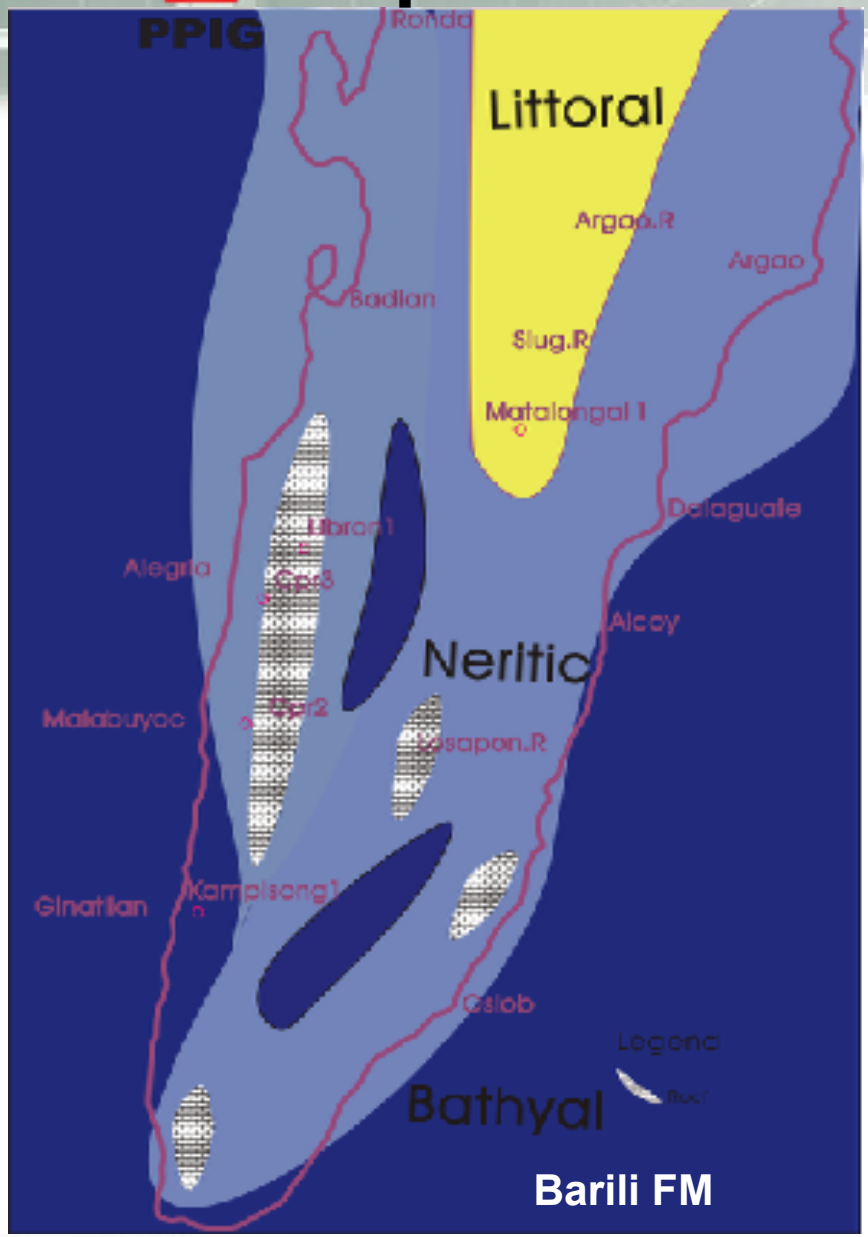
Reservoir – Maingit Fm



Maingit Clastics

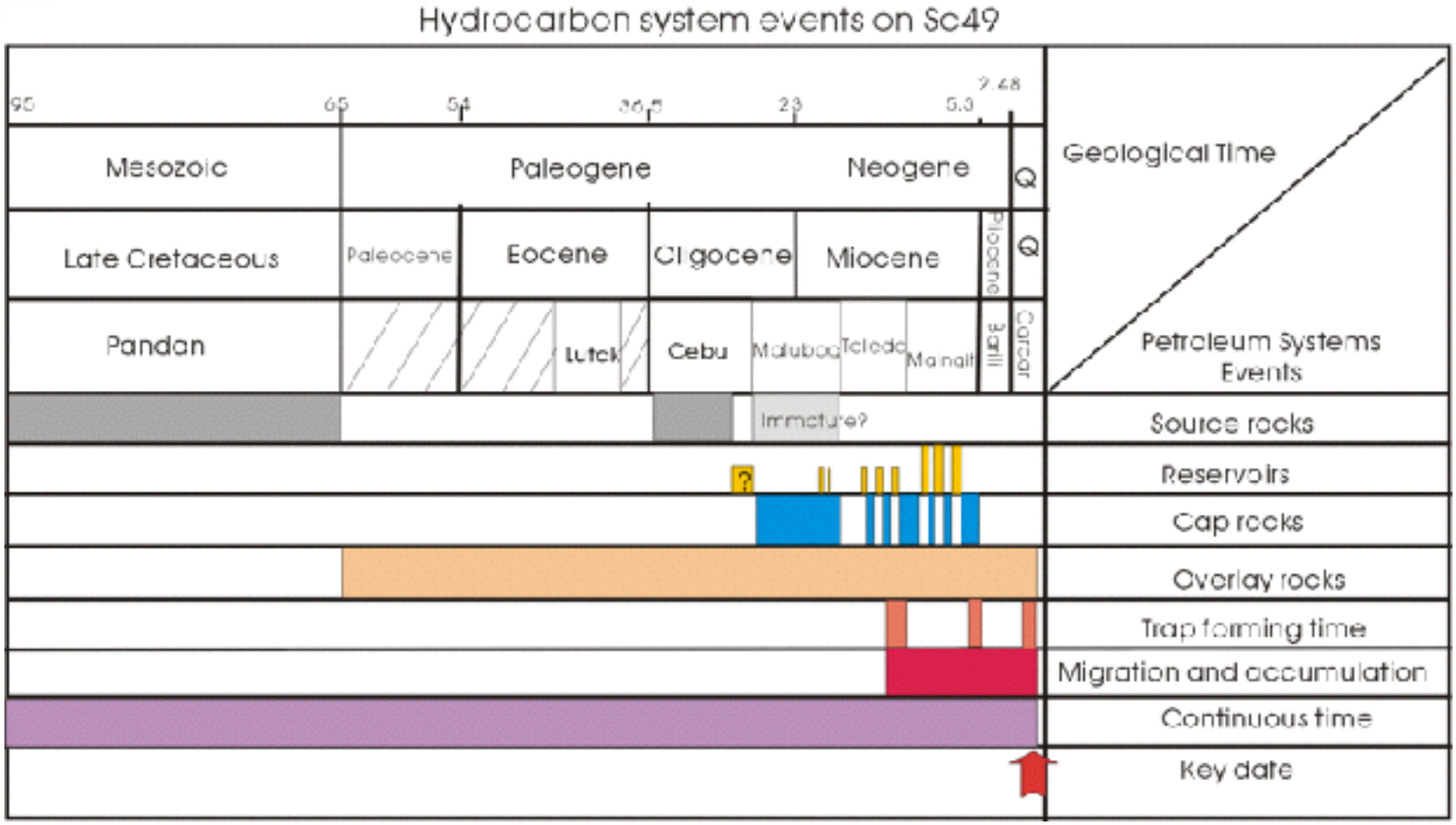
- Maingit Fm in SC49 :
- Maingit Fm outcrops in the core of Alegria anticline in south Cebu, all the wells drilled intersected this formation. There are two lithologic sequences in the Maingit Fm: the lower part are shallow-water carbonates (grey to white with high visual porosity while the upper section are composed of arenaceous sediments with minor coal fragments; there are two sand bodies separated by interbeds of mudstones and a thick mudstone sequence on top.
- The paleoenvironment during Late Miocene when Maingit Fm was being deposited was lagoonal with barrier islands; the Alegria Anticline is subaerial. The lagoonal area had coal deposits while the Malabuyoc area had thick tidal sand deposits as seen in Cletom 29 well.
- In the littoral zone are wells Lumpan-1, CPR-1, Peque-1 and CPR-2 with 13-40m thick sand bodies were encountered. In the supra-tidal area of low energy would be SC-2, Lumpan-4、CPRS-3 where sands are not well developed.

Cap rock – Barili Fm



- Barili Fm in SC49 :
- Barili Fm is a transgressive sequence that resulted in the deposition of shallow water carbonate sequences in the whole Visayan basin.
- There were 21 samples for palaeontological study collected in SC49. The lithology contained marl, mudstone and tuff-sand belonging to deep water facies of the Barili Fm.

Hydrocarbon Events Chart



Critical Time