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Dr. Richard Hubbard, COO
President Energy PLC
11 Hill Street
London
W1J5LF
United Kingdom

23rd January 2014

Re: Independent Audit Report of certain Prospective Resources located in the Pirity and Demattei Licenses, Onshore Paraguay

Dear Sirs,

On Friday 20th December 2013, Cambrian Consultants (CC) America, Inc. d/b/a RPS ('RPS') was requested by President Energy PLC ('President' or 'Company') to provide a formal and independent Audit Report (the 'Report') regarding the work the Company has done to assess certain Prospective Resources located within the Pirity and Demattei Licences, Onshore Paraguay (the 'Properties'). The prospects will be reported in two Reports, with this Report describing the first set of prospects.

The work has been conducted under a formal Letter of Engagement (the 'Agreement') between RPS and President dated 20th December 2013. The report is issued by RPS under the appointment by President and is produced as part of the Services detailed in the Agreement subject to the terms and conditions therein. The Report is addressed to the Company and is only capable of being relied on by the Company, and any Third Parties under and pursuant to (and subject to the terms of) the Agreement.

The audit considers the progress made in the exploration of the licences with regard to seismic acquisition, processing, interpretation and the formal assignment to President Energy of working interest in the license. President Energy PLC is an AIM listed company with associated disclosure requirements and, as such, this Report has been written in accordance with the requirements of the AIM Guidance Note for Mining, Oil and Gas Companies dated June 2009 (the "AIM Guidance Note").

In accordance with your instructions to us and the requirements of the AIM Note, we confirm that we:

1. are professionally qualified and a member in good standing of a self-regulatory organisation of engineers and/or geoscientists including SPE, EI, AAPG and EAGE;
2. have at least five years' relevant experience in the estimation, assessment and evaluation of oil and gas assets;
3. are independent of the Company, its directors, senior management and advisers;
4. will be remunerated by way of a time-based fee and not by way of a fee that is linked to the value of the Company;
5. are not a sole practitioner;
6. have the relevant and appropriate qualifications, experience and technical knowledge to appraise professionally and independently the assets, being all assets, licences, joint ventures or other arrangements owned by the Company or

proposed to be exploited or utilised by it ("Assets") and liabilities, being all liabilities, royalty payments, contractual agreements and minimum funding requirements relating to the Company's work programme and Assets ("Liabilities"); and

7. consider that the scope of this Report is appropriate, given the Group's Assets and Liabilities and includes and discloses all information required to be included therein and was prepared to a standard expected in accordance with the AIM Note.

Neither RPS, nor any of its directors, staff or sub-consultants who contributed to this report has any interest in the Company; or any of the advisers to the Company; or the Assets; or the outcome of the Offer.

Standard applied

In compiling this Letter we have used the definitions and guidelines set out in the Petroleum Resources Management System ("PRMS") by the SPE/WPC/AAPG/SPEE in 2007 as the internationally recognised Standard required by the AIM Guidance Note as above.

Qualifications

RPS Energy is an independent consultancy specialising in petroleum reservoir evaluation and economic analysis. The provision of professional services has been solely on a fee basis. Mr. Andrew Kirchin, Executive VP, Consulting for RPS (Houston), has supervised the evaluation. Mr. Kirchin has over 25 years of experience in upstream oil and gas.

Other RPS employees involved in this work hold at least a degree in geology, geophysics, petroleum engineering or a related subject or have at least five years of relevant experience in the practice of geology, geophysics or petroleum engineering. The geological audit and analysis was principally conducted by Mr. Chuck Barker, a Geological Advisor with RPS in Houston. Mr. Barker is a licensed Professional Geologist of Texas and has in excess of 35 years of experience in the oil and gas industry. The engineering and economic audit was principally conducted by Mr. Andrew Fair, a Principal Engineer with RPS in Houston. Mr. Fair is a licensed Professional Engineer of Texas and has over 35 years of experience in the oil and gas industry.

Effective Date and material change statement

The evaluation of the Properties is calculated as at 1st January 2014 (the "Effective Date"). We confirm that there has been no material change to the Properties between the Effective Date to the date hereof and we are not aware of any significant matters arising from our evaluation that are not covered by this Report which might be of a material nature.

Reliance on source data

The report is based on production data and information available up to December 31, 2013. An Effective Date of 1st January 2014 has been assumed for the valuation.

The Services have been performed by a RPS team of professional petroleum engineers, geoscientists and economists and is based on data and previous reports, supplied through President.

Our approach has been to audit the Company's technical interpretation of their base case geoscience and engineering data for the field for reasonableness and to review the ranges of uncertainty for each parameter around this base case in order to estimate ranges of potential petroleum initially-in-place and recoverable Resources. We have also audited the Company's indicative success case discounted cash-flow models on a per prospect basis. Where we found inconsistencies between the models, their assumptions or data used, these were alerted to the Company and generally re-run if the impact of the inconsistency was considered material.

- RPS has been informed by President that no new data exists since the date of the last report that would materially impact the results or conclusions of the Report.

Executive Summary

President Energy is currently embarked on a work-program under a farm-out agreement ('FOA') with Pirity Hydrocarbons S.R.L. for the Pirity License ('Pirity') and Crescent Global Oil Paraguay S.A. for the Demattei License ('Demattei'). The farm-in agreements for both licenses were signed on 11th September 2012 and President was initially granted 11.8% working interest ('WI') in Pirity and 3% WI in Demattei but assumed Operatorship in both licenses immediately. Under the terms of the FOAs, President will earn further tranches of interest by executing a phased work-program designed to promote a progressive exploration for each license such that, upon completion of the work, President shall have earned a 59% WI in Pirity and 60% in Demattei. The required work-program is discussed in detail in Section 1.1 of this Report but it is noted that the "Earning Obligations" are capped at $50MM in the case of Pirity and $42MM in the case of Demattei, such that upon meeting these expenditure limits the full earned WI shall be transferred to President regardless of what elements of the work-program have been completed. President currently has an 11.8% WI in Pirity which will increase to 23.6% when the first exploration well is spudded. In Demattei, President has earned 10.125% to date which will increase to 17.25% upon spudding of an exploration well on the license.

Reserves

No Reserves are assigned to the Properties described above.

Contingent Resources

No Contingent Resources are assigned to the Properties described above.

Prospective Resources

President's Prospective Resources are assigned to the Properties as tabulated below.

Table A – Prospective Oil Resources Summary for Cretaceous Reservoirs

Prospect - Licence Oil/Condensate (MMstb)	Gross				Net Attributable[3]			
	Low Estimate	Best Estimate	High Estimate		Low Estimate	Best Estimate	High Estimate	GPoS
Lecho Reservoir								
Tapir – Pirity	27	75	186		15.9	44.3	109.7	**26.8**
Jurumi – Pirity	40	93	194		23.6	54.9	114.5	**26.8**
Pecari – Pirity	23	73	188		13.6	43.1	110.9	**26.8**
Yacare – Pirity	3	9	32		1.8	5.3	18.9	**23.0**
Jacaranda – Pirity/Demattei[1]	72	192	489		42.5	113.3	288.5	**16.8**
Pirgua Reservoir[2]								
Jacaranda – Pirity/Demattei[1]	6	14	31		3.5	8.3	18.3	**17.3**

Notes:
1. The Jacaranda Cretaceous Prospect lies mainly within Pirity but extends slightly into Demattei.
2. The Pirgua reservoir is potentially sourced by the Paleozoic and is therefore likely to be a wet gas with condensate.
3. Net Attributable shown is 59% based on the Pirity FOA and after completion of the Earning Obligations. President's current WI in Pirity is 11.8% until the first exploration well is spudded whereupon it increases to 23.6%.

Source: - RPS Energy audit of President's Volumetrics and Assumptions

Table B – Prospective Condensate Resources for Paleozoic Reservoirs

Prospect - License Condensate (MMstb)	Gross				Net Attributable[2]			
	Low Estimate	Best Estimate	High Estimate		Low Estimate	Best Estimate	High Estimate	GPoS
Paleozoic Reservoir								
Jacaranda – Pirity/Demattie[1]	9	27	80		5.4	16.2	48.0	**19.2**
Tapir - Pirity	6	15	37		3.5	8.9	21.8	**13.4**

Notes:
1. The Jacaranda Paleozoic Prospect lies across the Pirity and Demattei licence boundary. As currently mapped, the mean case trap geometry is 35% Pirity 65% Demattei.
2. Net Attributable shown is 59% based on the Pirity FOA and after completion of the Earning Obligations. President's current WI in Pirity is 11.8% until the first exploration well is spudded whereupon it increases to 23.6%. The Jacaranda Paleozoic results are presented as net using 60%.

Source: - RPS Energy audit of President's Volumetrics and Assumptions

Table C – Prospective Gas Resources Summary for Paleozoic Reservoirs

Prospect - License Primary Gas (Bscf)	Gross				Net Attributable[2]			
	Low Estimate	Best Estimate	High Estimate		Low Estimate	Best Estimate	High Estimate	GPoS
Paleozoic Reservoir								
Jacoranda – Pirity/Dematte[1]	288	908	2707		172.8	544.8	1624.2	**19.2**
Tapir - Pirity	207	509	1255		122.1	300.3	740.5	**13.4**

Notes:
1. The Jacaranda Paleozoic Prospect lies across the Pirity and Demattei licence boundary. As currently mapped, the mean case trap geometry is 35% Pirity 65% Demattei.
2. Net Attributable shown is 59% based on the Pirity FOA and after completion of the Earning Obligations. President's current WI in Pirity is 11.8% until the first exploration well is spudded whereupon it increases to 23.6%. The Jacaranda Paleozoic results are presented as net using 60%.

Source: - RPS Energy audit of President's Volumetrics and Assumptions

Table D – Prospective Associated Gas Resources Summary for Cretaceous Reservoirs

Prospect - Licence Associated Gas (Bscf)	Gross				Net Attributable[3]			
	Low Estimate	Best Estimate	High Estimate		Low Estimate	Best Estimate	High Estimate	GPoS
Lecho Reservoir								
Tapir – Pirity	18	50	129		10.6	29.5	76.1	**26.8**
Jurumi – Pirity	26	62	132		15.3	36.6	77.9	**26.8**
Pecari – Pirity	15	49	129		8.9	28.9	76.1	**26.8**
Yacare – Pirity	2	6	21		1.2	3.5	12.4	**23.0**
Jacaranda – Pirity/Demattei[1]	46	131	327		27.1	77.3	192.9	**16.8**
Pirgua Reservoir[2]								
Jacaranda – Pirity/Demattei[1]	195	451	1021		115.05	266.09	602.39	**17.3**

Notes:
1. The Jacaranda Cretaceous Prospect lies mainly within Pirity but extends slightly into Demattei.
2. The Pirgua reservoir is potentially sourced by the Paleozoic and is therefore likely to be a wet gas with condensate.
3. Net Attributable shown is 59% based on the Pirity FOA and after completion of the Earning Obligations. President's current WI in Pirity is 11.8% until the first exploration well is spudded whereupon it increases to 23.6%.

Source: - RPS Energy audit of President's Volumetrics and Assumptions

Notes for Tables A to D: "Gross" are the 100% Resources that are attributable to the licence whilst "Net Attributable" are those estimated to be attributable to President's WI post earn-in.

GPoS is the Risk Factor associated with the Chance of Discovery.

Basis of Opinion

The results presented herein reflects our informed judgement based on accepted standards of professional investigation, but is subject to generally recognised uncertainties associated with the interpretation of geological, geophysical and engineering data. The Services were conducted within our understanding of petroleum legislation, taxation and other regulations that currently apply to these interests. However, RPS is not in a position to attest to the property title, financial interest relationships or encumbrances related to the properties.

Our estimates of resources and value are based on the data set available to, and provided by President. We have accepted, without independent verification, the accuracy and completeness of these data.

Site visits were not undertaken by RPS. Since no Reserves are being assigned a site visit to these assets was not considered necessary.

The report represents RPS' best professional judgement and should not be considered a guarantee or prediction of results. It should be understood that any evaluation, particularly one involving exploration and future petroleum developments, may be subject to significant variations over short periods of time as new information becomes available. As stated in the Agreement, RPS cannot and does not guarantee the accuracy or correctness of any interpretation made by it of any of the data, documentation and information provided by the Company or others in accordance with the Agreement. The Consultant does not warrant or guarantee, through the Services, this report or otherwise, any geological or commercial outcome.

This report relates specifically and solely to the subject assets and is conditional upon various assumptions that are described herein. The report, of which this letter forms part, must therefore be read in its entirety. Except with permission from RPS, this report may only be used in accordance with the Agreement. It must not be reproduced or redistributed, in whole or in part, to any other person than the addressees or published, in whole or in part, for any purpose without the express written consent of RPS. The reproduction or publication of any excerpts, other than in relation to any Admission Document or similar, is not permitted without the express written permission of RPS.

Yours faithfully,

For and on behalf of RPS

Andrew J. Kirchin
Executive Vice President, Consulting Business Unit (US)

Charles T. Barker
Licensed Professional Geologist

Andrew R. Fair
Licensed Professional Engineer

Independent Audit Report of certain Prospective Resources located in the Pirity and Demattei Licenses, Onshore Paraguay

Prepared for: President Energy PLC

PRESIDENT ENERGY

DISCLAIMER

The opinions and interpretations presented in this report represent our best technical interpretation of the data made available to us. However, due to the uncertainty inherent in the estimation of all sub-surface parameters, we cannot and do not guarantee the accuracy or correctness of any interpretation and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, cost damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees.

Except for the provision of professional services on a fee basis, RPS does not have a commercial arrangement with any other person or company involved in the interests that are the subject of this report.

January 2014

RPS

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1 INTRODUCTION

On Friday 20th December 2013, Cambrian Consultants (CC) America, Inc. d/b/a RPS (‘RPS’) was requested by President Energy PLC (‘President’ or ‘Company’) to provide a formal and independent Audit Report (the ‘Report’) regarding the work the Company has done to assess certain Prospective Resources located within the Pirity and Demattei Licences, Onshore Paraguay (the ‘Properties’).

This Report reviews the exploration activity, prospect potential, volumetric assessment, conceptual development plans and indicative mean success case economics of that President has worked up for the Cretaceous Rift Basin and Pirity Sub-Basin, Onshore Paraguay, (see Figure 1.1).

President has provided background documents for this review which are shown in the following list:

Schlumberger – IES- 3D Petroleum Systems Modeling Olmedo-Pirity Basin, Thermal and Maturity History, Hydrocarbon Generation, Explulsion and Migration Modeling. Jan, 2009, Revised Mar, 2009.

Schlumberger – IES- Petroleum Systems Modeling of the Yacoraite-Lecho/Palma Largo System in the Olmedo-Pirity Basin of Argentina and Paraguay. Jan 10, 2009, Revised Mar. 10, 2009.

Schlumberger – Phase I Final Report- Integrated Exploration Services, Pirity Sub-basin, Paraguay, Contact #RU-1008-03 and Extension # RU-1008-03-01 for Crescent Global Oil, LLC, Mar. 10, 2009.

President Energy, Paraguay – High Impact Exploration, September, 2012.

DeGlolyer and MacNaughton – CPR Evaluation of the Paraguay Blocks Pirity and Demattei for President Energy, Dec. 15, 2012.

President Energy, Paraguay – Pirity Rift Basin, 2014 Chaco Drilling Campaign, 2013.

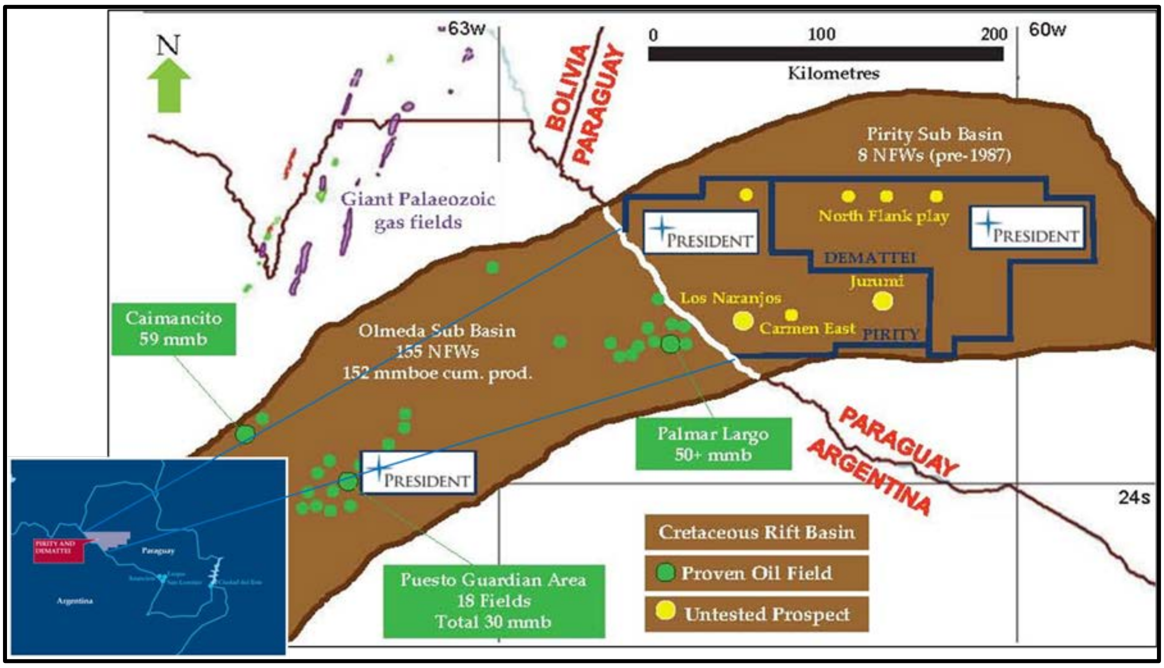
President Energy, Paraguay – Central Graben Trend- (Palmar Largo-Los Naranjos-Jurumi. 2013.

Schlumberger – Project President Energy: Modeling the Devonian Petroleum System-Pirity Sub-basin, Nov. 2013.

Schlumberger – Olmedo-Pirity Basin Study for President Energy. Nov. 28, 2013.

Schlumberger – Petrophysical evaluation of key wells in the Olmeda-Pirity Basin, Dec 2013.

Public documents available have also been used in this review.



Source: President Energy

Figure 1.1: Cretaceous Rift Basin Showing Pirity and Demattei Concessions

1.1 Licenses

The licenses were originally granted to Pirity Hydrocarburos SRL (Pirity Concession) and Crescent Global Oil Paraguay SA (Demattei Concession) in 2008, both for an exploration period of 4 years. During 2012, both Concessions had amendments, with the Pirity Concession 4 year period starting in September 2012 and the Demattei Concession 4 year period starting in April 2012.

The minimum work program required by the Paraguaian government was as follows:

- Years 1 & 2 – Acquire 2D/3D of no less than 100 km before exploratory perforations to better delineate certain leads.
- Years 3 & 4 – Drilling of no less than 15,000 linear meters in exploratory completed wells must be completed. If opting for the extension of 2 additional years, 1 additional well should be perforated of 5,000 meters each year.

President Energy entered into Farm-out Agreements with both companies on 11th September 2012 acquiring an initial 11.8% working interest ('WI') in Pirity and 3% WI in Demattei but assumed Operatorship in both licenses immediately. President Energy is currently embarked on a work-program under each farm-out agreement ('FOA'). The work program conducted during 2013 has earned President a working interest of

10.125% (original farm-in interest was 3%) in Demattei and will earn a 23.6% WI in Pirity as soon as the first exploration well is spudded (original farm-out interest was 11.8%).

A summary of the present day license holding is shown as Table 1.1.1 below.

Licence	Operator	Working Interest	Status	Licence Expiry	Licence Area	Comments
Pirity	President Energy PLC	11.8% [1]	Exploration	September, 2016	8,582 sq km	Seismic commitments are fulfilled. Exploration drilling is the next requirement
Demattei	President Energy PLC	10.125% [2]	Exploration	April,2016	7,893 sq km	Seismic commitments are fulfilled. Exploration drilling is the next requirement

Notes 1 President Energy will earn up to 59% WI under a phased work completion agreement to a maximum expenditure of $50MM
2 President Energy will earn up to 60% WI under a phased work completion agreement to a maximum expenditure of $42MM

Table 1.1.1: Summary of Assets - Farm-In Commitments for Pirity and Demattei

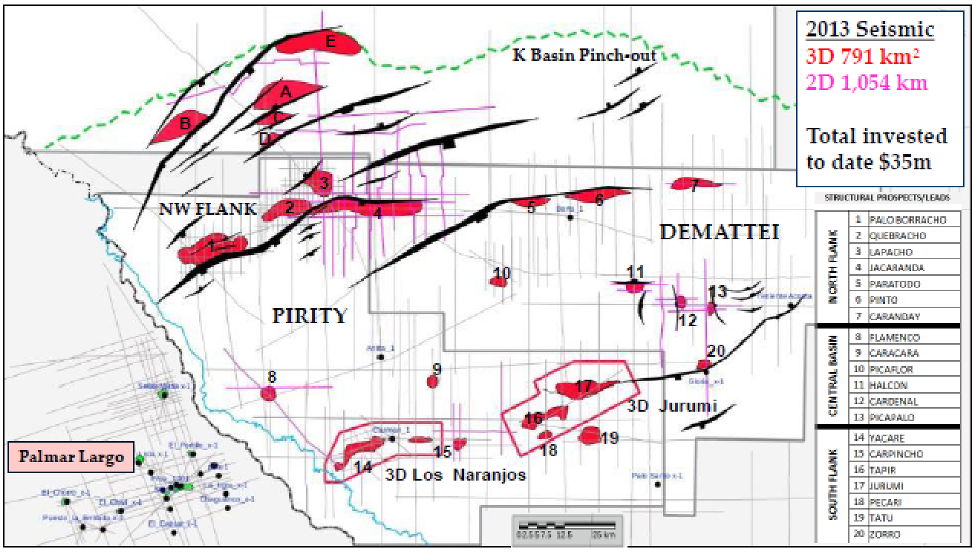
Under the terms of the FOAs, President will earn further tranches of interest by executing a phased work-program designed to promote a progressive exploration for each license such that, upon completion of the work, President shall have earned a 59% WI in Pirity and 60% in Demattei. The work program that is envisaged to earn President's final WI now largely consists of drilling three exploration wells on each Concession although it is noted that the "Earning Obligations" are capped at $50MM in the case of Pirity and $42MM in the case of Demattei, such that upon meeting these expenditure limits the full earned WI shall be transferred to President regardless of what elements of the work-program have been completed.

It is understood that under the terms of the FOAs, President acquired the 11.8% working interest (WI) immediately in the Pirity Concession for US$10 million in cash and the 3% WI in the Demattei Concession for US$2 million in cash. The total up-front payment in cash of US$12 million was used to repay back-costs in respect of each Paraguayan Concession. Further WI in each Concession will be acquired incrementally by President as it fulfills the work commitments or as it meets the "Earning Obligations as described above.

Other than the working interests held by President, Pirity and Crescent, LCH hold a 5% working interest in Pirity Concession. A 5% gross overriding royalty on Pirity block exists, held by Weins and Klassen.

2 2013 SEISMIC AND G&G WORK PROGRAM

During 2013 (March to November) President contracted Global Geophysical who acquired 791 km^2 3D and 1054 km of 2D seismic as shown in Figure 2.1. The data has been processed and interpretation of Category 1 key prospects (Jurumi/Tapir-16, Yacare-14 and Jacaranda-4, Pirity Concession) has been completed and will be discussed in detail in this document. The interpretation process continues for the remainder of preliminary (older 2D seismic) 25 prospects/leads shown in Figure 2.1 below.



Source: President Energy

Figure 2.1: Location Map 2013 Seismic Program

The seismic acquisition, processing and interpretation has delineated several prospects that were previously identified on 2D data to the point that the remaining geological risks to making a successful discovery are now irreducible and the next step is that a well must be drilled to gather further data and hopefully make a discovery.

The work program conducted during 2013 has earned President a working interest of 10.125% (original farm-in interest was 3%) in Demattei and will earn a 23.6% WI in Pirity as soon as the first exploration well is spudded (original farm-out interest was 11.8%).

3 METHODOLOGY

In accordance with President's request and the Agreement covering the provision of the Services, RPS has conducted formal and independent Audit Report (the 'Report') regarding the work the Company has done to assess certain Prospective Resources located within the Pirity and Demattei Licences, Onshore Paraguay (the 'Properties').

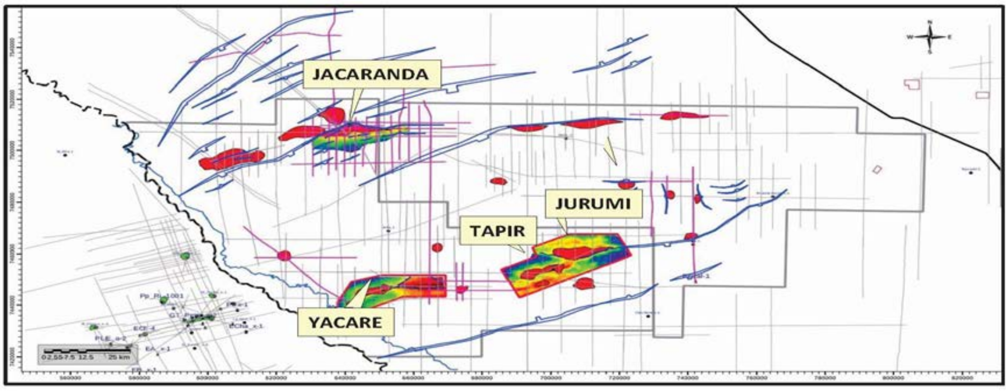
Our approach has been to audit the Company's technical interpretation of their base case geoscience and engineering data for the field for reasonableness and to review the ranges of uncertainty for each parameter around this base case in order to estimate ranges of potential petroleum initially-in-place and recoverable Resources. We have also audited the Company's indicative mean success case discounted cash-flow models on a per prospect basis. Where we found inconsistencies between the models, their assumptions or data used, these were alerted to the Company and generally re-run if the impact of the inconsistency was considered material.

RPS notes that the work presented by President has been based on "standalone" evaluation of each prospect, some of which have multiple reservoir targets that can be tested with a single well. Each prospect and stacked target has been treated independently both at a risking and at an economic modelling level. This has advantages and disadvantages in terms of risk presentation and the aggregation of Resources and indicative success case economics which are explained in more detail in the relevant sections.

4 EXPLORATION PLANS

Three wells are planned for drilling by President in the Pirity Concession during 2014 in the Category 1 prospects as shown in Figure 4.1. A Letter of Intent has been signed with Queiroz Galvao Oleo e Gas, a Brazilian Contractor.

The Pirity Cretaceous Basin is on trend and in a similar structural position to the NE from the Palmar Largo complex fields proven productive with a reported 50 MMBOE across the border in Argentina.

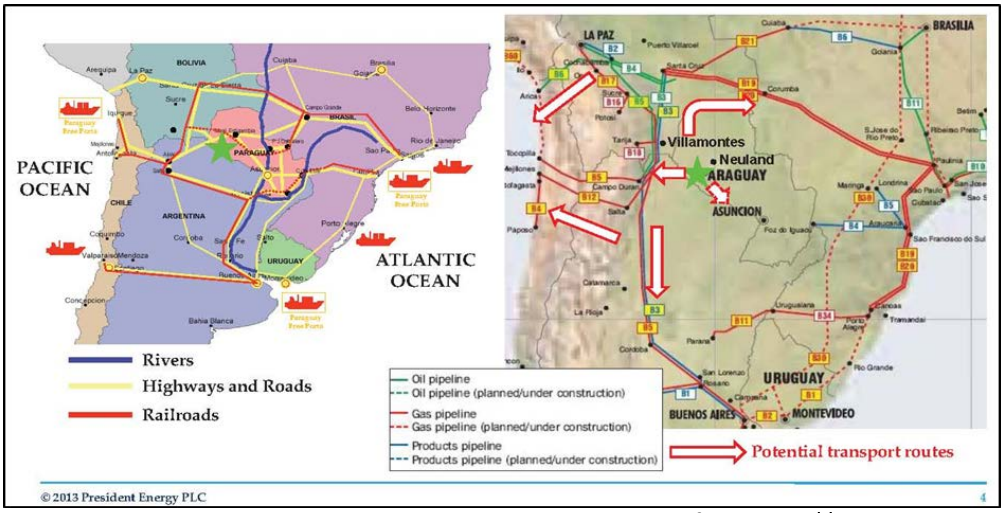


Source: President Energy

Figure 4.1: Category 1 Prospects for 2014 Drilling Campaign, Pirity Concession

4.1 Regional Infrastructure Paraguay

A drilling oil and gas discovery at Pirity/Demattei can be capitalized on with development and petroleum distribution using available infrastructure with alternative routes as shown in Figure 4.1.1 below.



Source: President Energy

Figure 4.1.1: Regional Infrastructure Map Identifying Petroleum Distribution

5 GEOLOGY

5.1 Overview

Paraguay and in particular the present-day Chaco basin is a modern foreland basin bounded on the west by the Andean ranges, the Brazilian shield (Guapore) to the northeast and merges with the Parana and Pampa basins to the east and south (Figure 5.1.1).

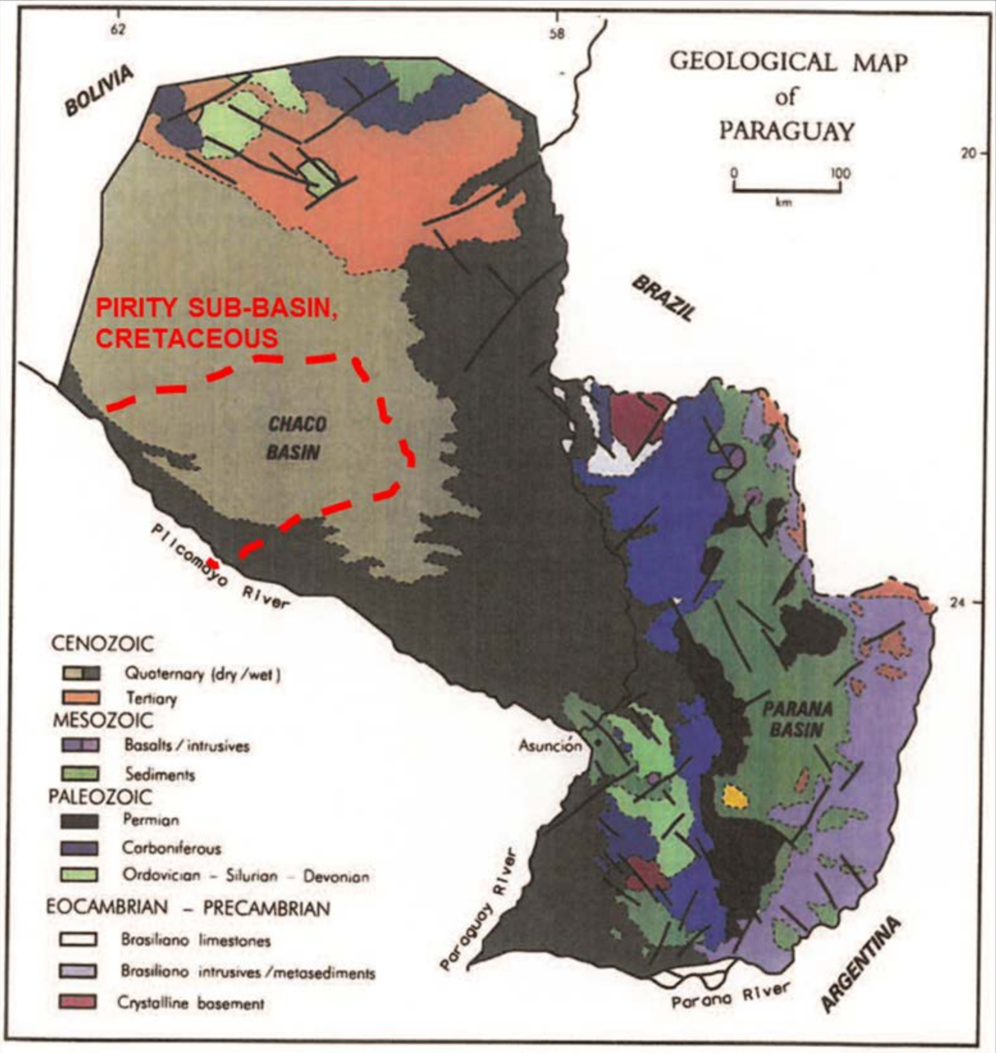


Figure 2—Simplified geology of Paraguay. The study area of the Paraguayan Chaco basin is on the western side of the Paraguay River.

Source: AAPG Memoir 62

Figure 5.1.1: Geological Map of Paraguay

Northwest and northeast trending structural lineaments characterize the tectonic style. During the early Paleozoic, late Paleozoic, late Mesozoic and Cenozoic differential reactivation along basement trends resulted in subsidence phases (See Figures 5.1.1 thru 5.1.4). Unconformities, non-deposition or low sedimentation rates occur at the phase boundaries.

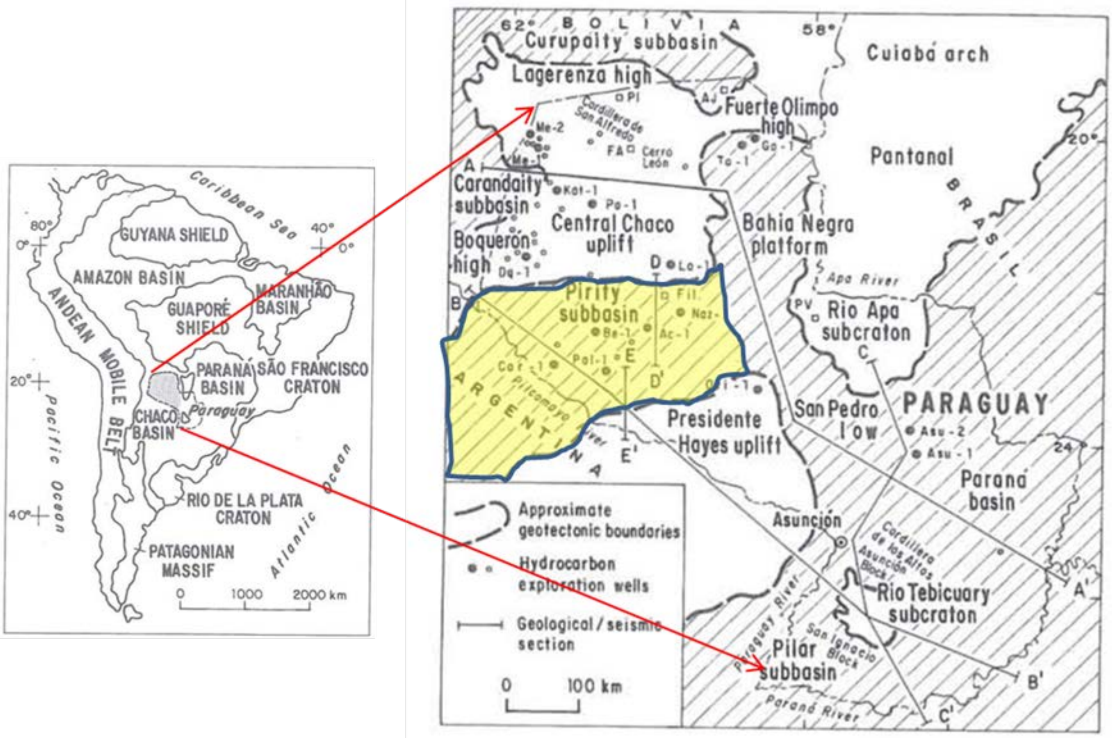


Figure 3—Major Cretaceous tectonic units of Paraguay showing the distribution of hydrocarbon exploration wells and the locations of geologic and seismic sections mentioned in the text. Abbreviations: Fil, Filadelfia; PV, Puerto la Victoria; AJ, Adrian Jara; FA, Fortin Aroma; PI, Palmar de las Islas; Me-1, Mendoza-1 well; Me-2, Mendoza-2 well; To-1, Toro-1 well; Ga-1, Gato-1 well; Kat-1, Katerina-1 well; Pa-1, Parapití-1 well; Dq-1, Don Quijote-1 well; Lo-1, Lopez-1 well; Car-1, Carmen-1 well; Pal-1, Palo Santo-1 well; Be-1, Berta-1 well; Ac-1, Tte.Acosta-1 well; Naz-1, Nazareth-1 well; Ori-1, Orihuela-1 well; Asu-1, Asunción-1 well; Asu-2, Asunción-2 well.

Source: AAPG Memoir 62

Figure 5.1.2: Major Cretaceous tectonic units of Paraguay

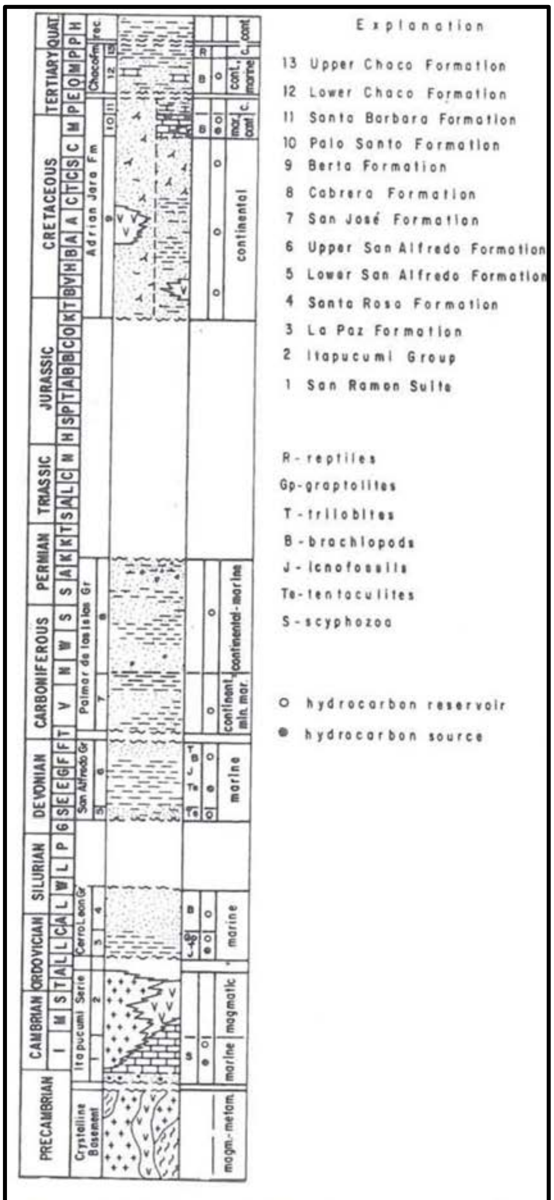
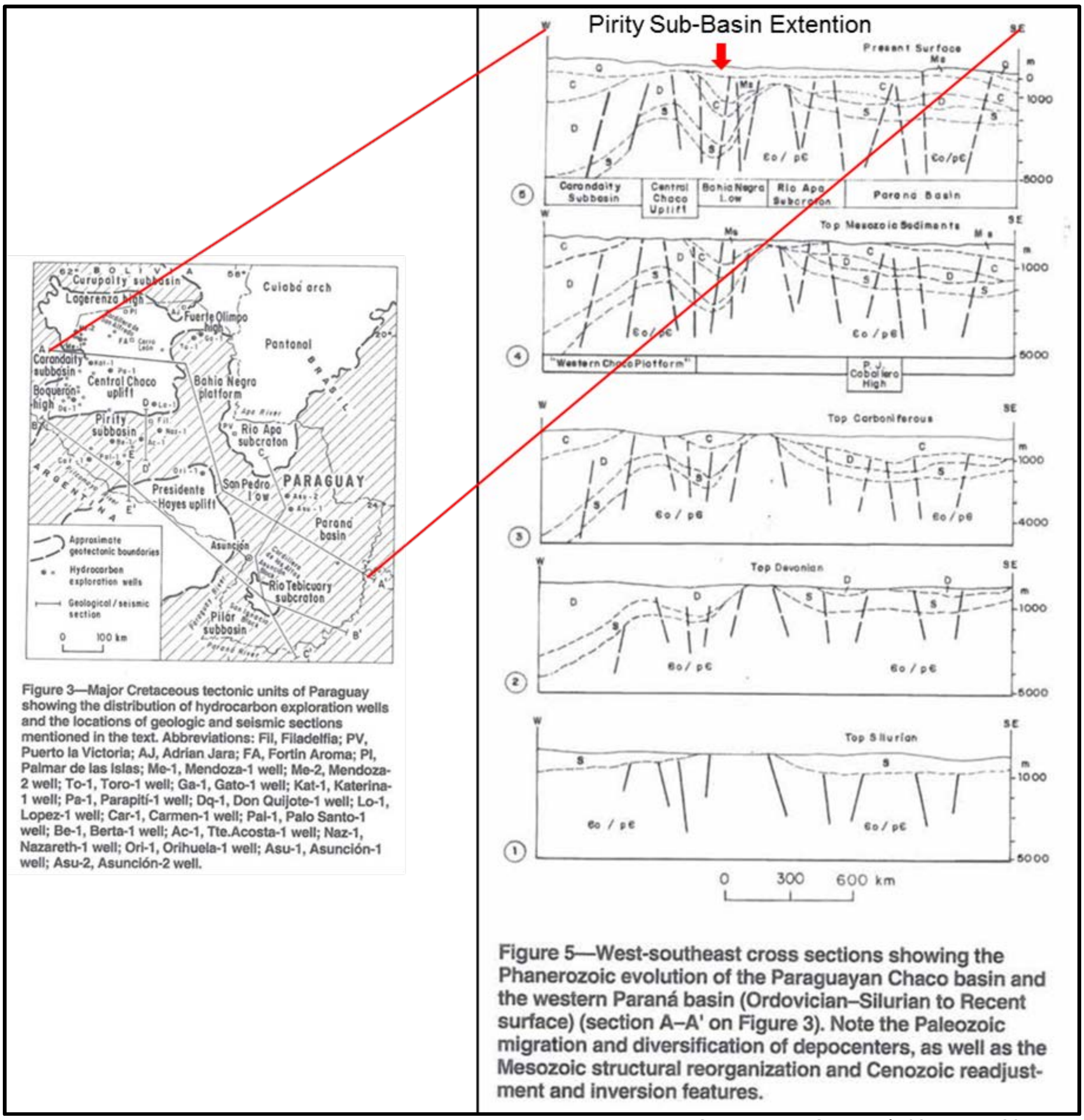


Figure 4—Simplified lithostratigraphic column of the Paraguayan Chaco basin.

Source: AAPG Memoir 62

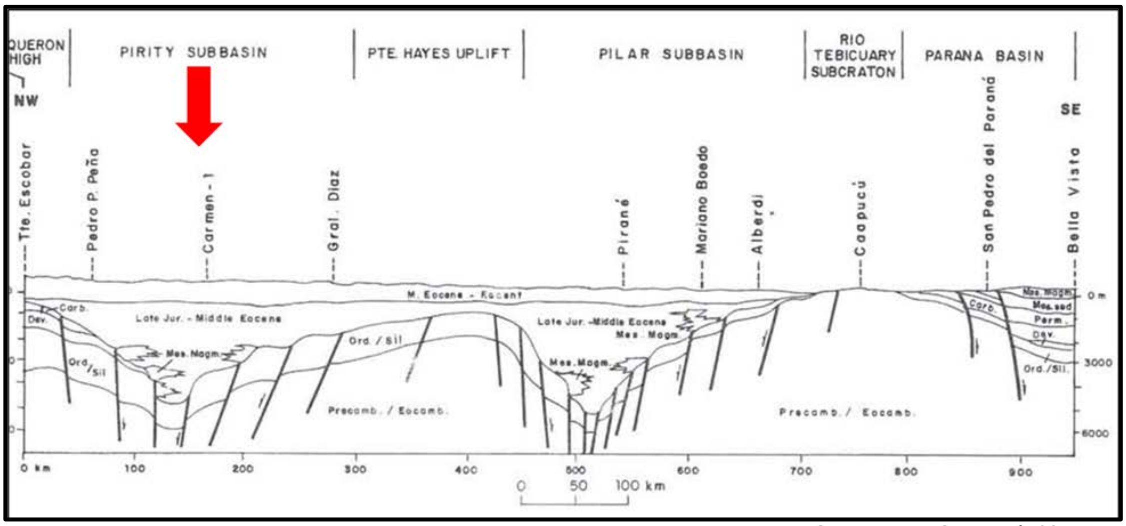
Figure 5.1.3: Simplified Lithostratigraphic Column of Chaco Basin, Paraquay



Source: AAPG Memoir 62, page 189

Figure 5.1.4: Tectonic evolution of the Cretaceous Rift and the Pirity Sub-Basins

A NW-SE structural/stratigraphic cross section (B-B') across the Cretaceous Rift in the western part of the Paraguay Pirity Sub-Basin is shown in Figure 5.1.5.



Source: AAPG Memoir 62

Figure 5.1.5: Structural and Stratigraphic Cross Section

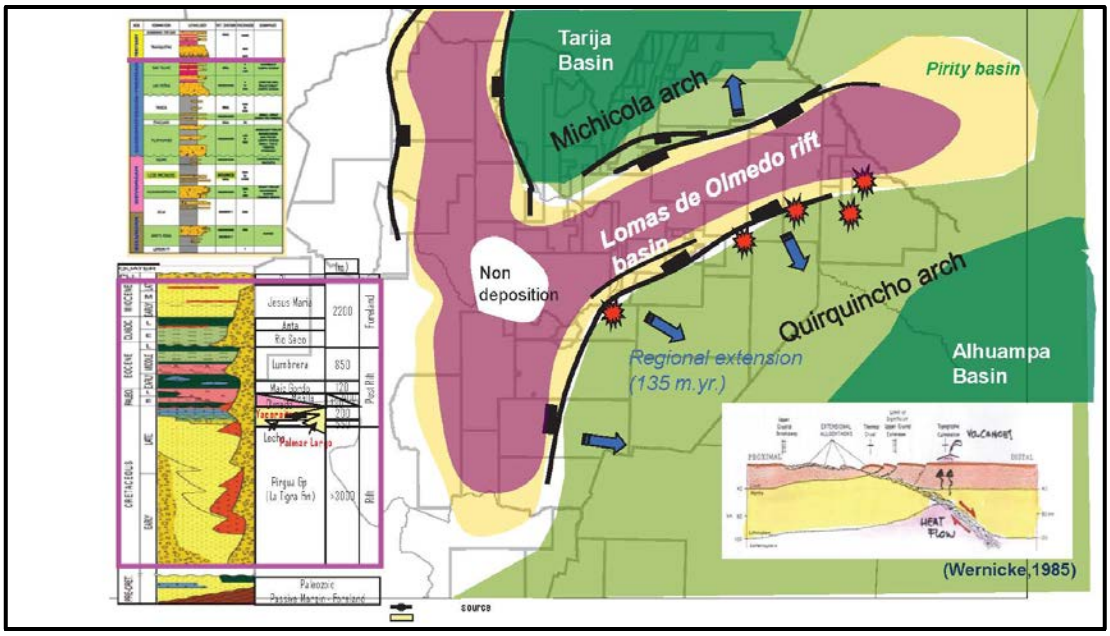
Broadscale geology reportedly suggests an extensive sedimentary platform was laid down during the Ordovician and continued until the Mesozoic. Carboniferous, Devonian shown in Figure 5.1.5 as present only on the north flank of the basin on the Boqueron High, but seismic interpretations by President suggest that accommodation space exists for Devonian and Carboniferous to be present especially on the north flank in the Jacaranda prospect.

Only, the Curupaity, Carandaity and San Pedro depocenters had continuous subsidence as well as the Parana basin. Upper Carboniferous continental glacial sediments and Lower Permian shallow marine sediments rest upon the Devonian rotated basement blocks at an angular unconformity in the northwest part of the Chaco basin. A complete section of Devonian and Upper Carboniferous and Lower Permian is preserved in the Curupaity sub-basin (location on Figure 5.1.4).

Northwest and northeast structural trends controlled Paleozoic sedimentation in the Chaco basin. Minor vertical and horizontal movements occurred and were sufficient to form depocenters, intrabasinal highs and sediment facies distribution.

5.1.1 Mesozoic Time

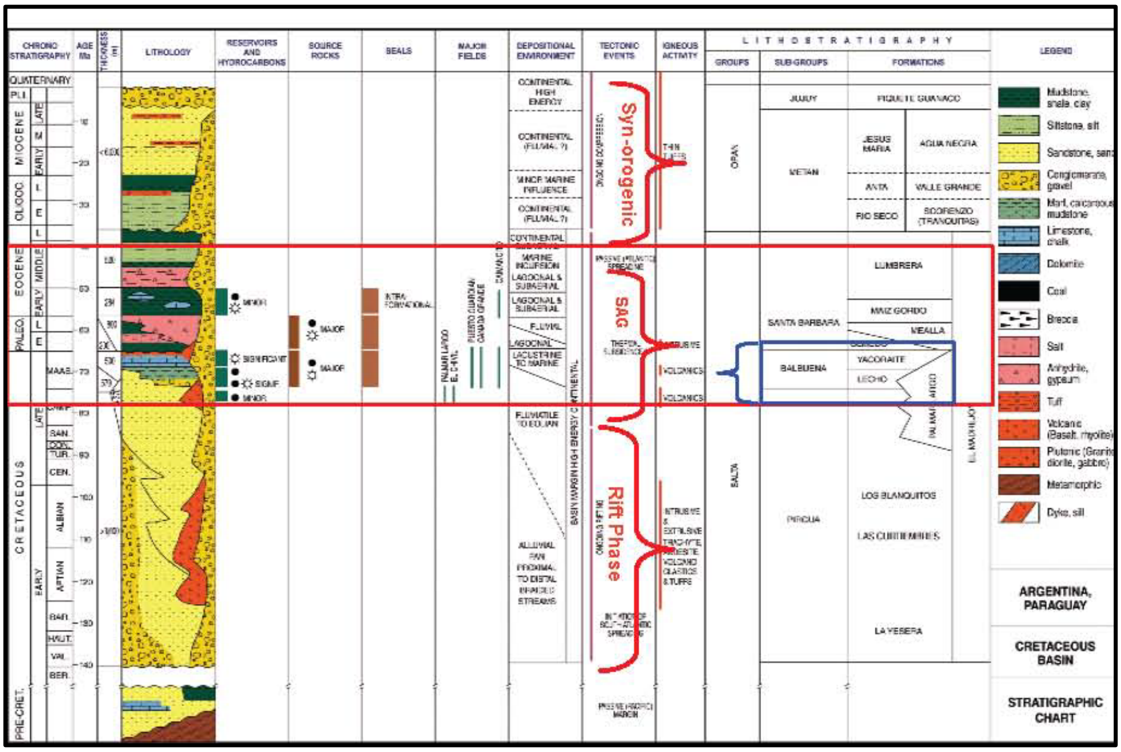
The opening of the South Atlantic (230-65 Ma) is reflected by the deposition of the Adrian Jara Formation in the Curupaity sub-basin and the Berta, Palo Santos and Santa Barbara formation in the Pirity Sub-basin (Figure 5.1.3).



Source: President Energy

Figure 5.1.1.1: Cretaceous Rifting Olmedo (Argentina) and Pirity (Paraguay) sub-basins

Widespread extension from early Cretaceous to middle Eocene time accompanied the development of the Mesozoic Rift basins. (Figures 5.1.1.1 & 5.1.1.2)

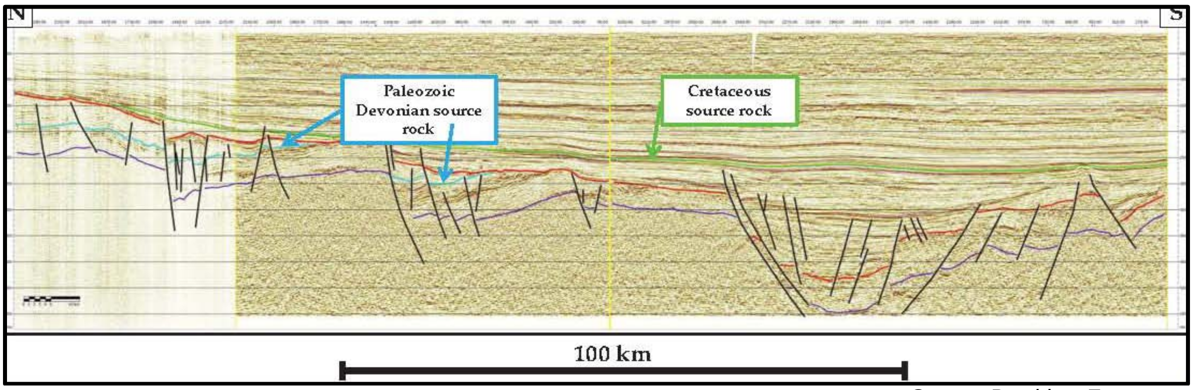


Source: President Energy

Figure 5.1.1.2: Litho/Stratigraphic Column showing major periods of Rifting and detail for Balbuena

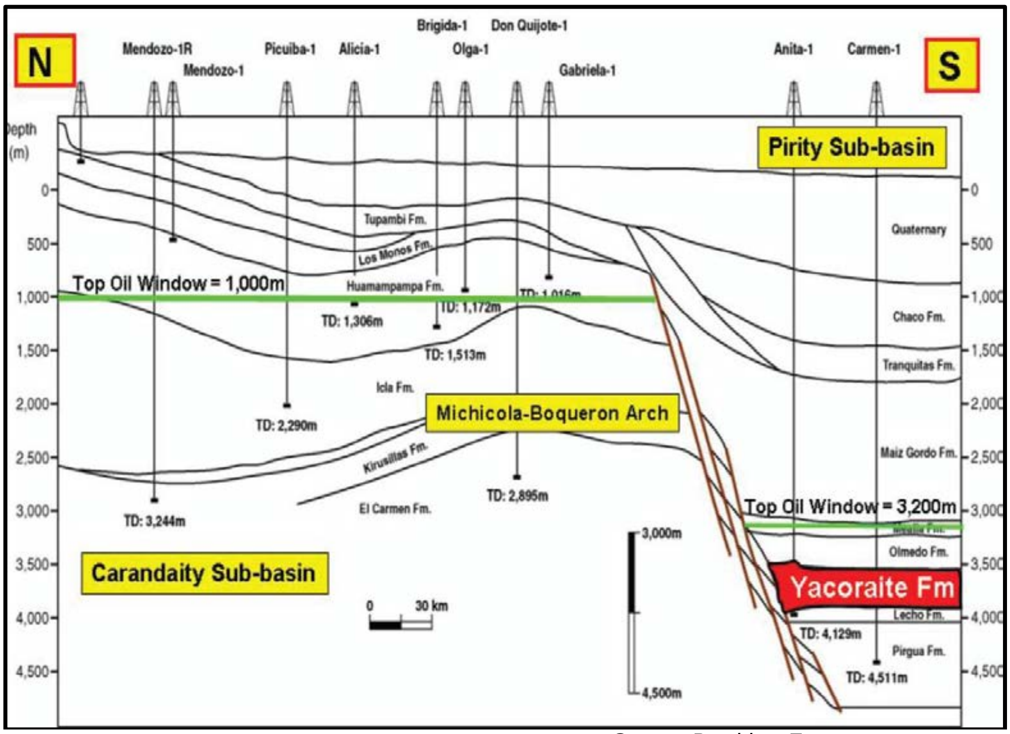
Older basins and highs were significantly modified with the Carandaity and Curupaity sub-basins stabilized with only low sedimentation rates. New depocenters subsided along NE-SW trends resulting from uplift on existing highs-Pirity and Pilar Sub-basins and the Bahia Negra platform which were accompanied by widespread continental sedimentation. The Pirity Sub-basin experienced a brief marine transgression from the SW during late Cretaceous time. Basic to alkaline magmatism (135-108 Ma and 70 Ma) occurred. Rifting during the Mesozoic generated the primary structures and reportedly started the maturation of potential source rocks.

The Pirity asymmetric half-graben structure was the result of intense en echelon faulting in a general NE-SW/NNE-SSW direction resulting in differential vertical and transverse movements (Figures 5.1.1.3 thru 5.1.1.5).



Source: President Energy

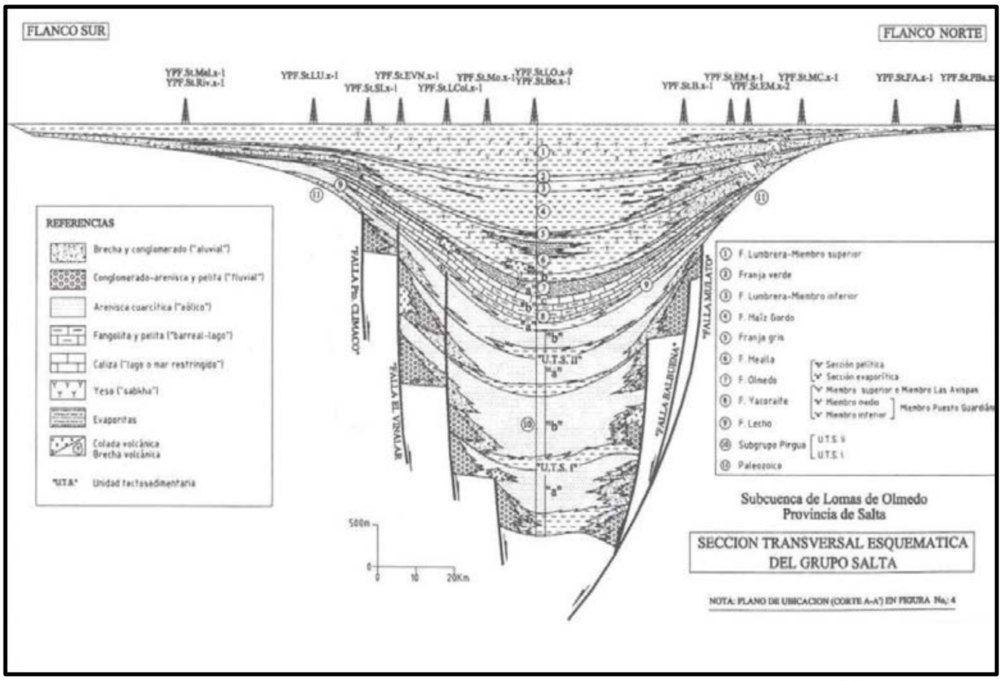
Figure 5.1.1.3: N-S Seismic line across the Pirity Sub-basin in Paraguay



Source: President Energy

Figure 5.1.1.4: Northern Flank of the Pirity Sub-basin N-S Structure Cross Section

Predominately continental sediments filled the basin with intermittent marine incursion from the SW varying in total thickness up to 4000m. Alluvial fan, fluvial, lacustrine and local eolian facies were deposited. Carbonates, clastics and evaporates are reported to be deposited in a marine environment of deposition.

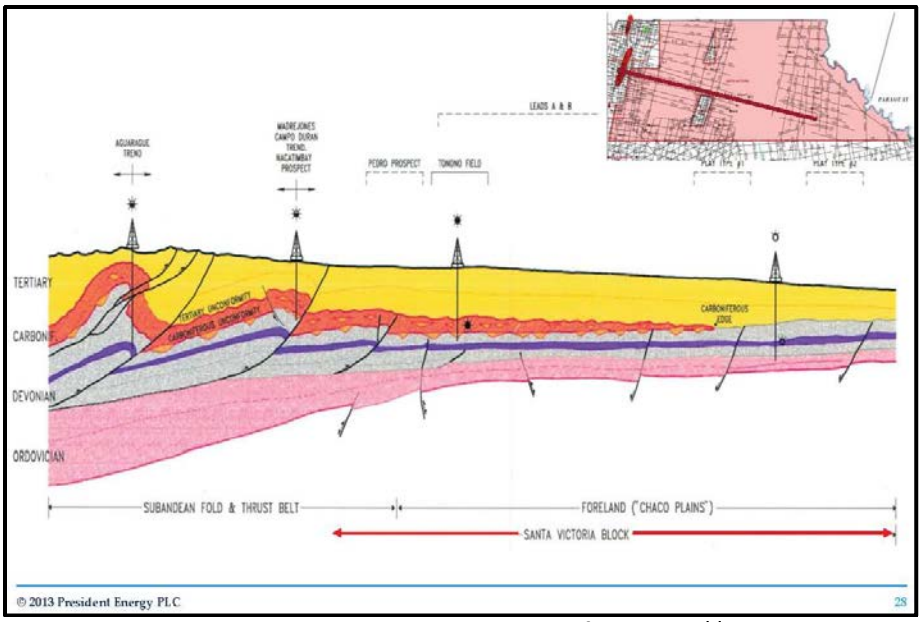


Source: President Energy

Figure 5.1.1.5: Lithostratigraphic cross section in the Olmedo Sub-Basin,

5.1.2 Cenozoic Time

Growth of the Andean ranges to the west of the Chaco basin (50-35 Ma) established a new sediment source and excluded marine influence from that direction. The thrusting in the Andean ranges created multiple reservoirs in the Devonian “quartzites” as the extension in the crestal rolls of the thrust sheets created significant natural fractures. The fracture trends generally have an N-S trend parallel to the thrust traces. Signification Devonian gas fields have been discovered along these fracture trends (Figure 5.1.2.1). The SV-1 and SV-2 well are shown in Figure 5.1.2.1 on the eastern part of the cross section in the South Victoria Block and were reported to have tested gas.



Source: President Energy

Figure 5.1.2.1: W-E Structural Cross Section in Argentina from Andean Ranges to Paraguay

Sub-basins and highs created during Mesozoic time were covered by thick continental sediments of the Chaco Formation (Figure 5.1.2.2).

SYSTEM	WESTERN PARAGUAY	FORMOSA PROVINCE ARGENTINA	ASUNCION AREA PARAGUAY	EASTERN PARAGUAY	CENTRAL WESTERN BRAZIL
Quaternary	Quaternary	Quaternary	Quaternary	Quaternary	Quaternary
Tertiary	Chaco Fm	Chaco Fm	T/Q undiff.	T/Q undiff.	T/Q undiff.
Cretaceous	Adrian Jara Fm; Sta. Barbara Fm; Palo Santo Fm; Mesoz. Magm.; Berta Fm	M. Boedo Fm; Mesoz. Magm.	Tert.Magm.; Palacios Fm; Mesoz. Magm.	Acaray Fm; Mesoz. Magm.	Baurú Fm; Mesoz. Magm.
Jurassic		Tacuarembó Fm		Misiones Fm	Botucatú Fm
Triassic					Piramboia Fm
Permian				Independencia Gr	RioBonitoFm-PassaDois Gr
Carboniferous	Palmar de las Islas Gr			Cnel. Oviedo Fm	Itararé Gr; Aquidauana Fm
Siluro - Devonian	San Alfredo Gr; Cerro León Gr			'Asu 1 - 2'; Cariy - V.Peña Fm	Ponta Grossa Fm; Furnas - V. Maria Fm
Cambro - Ordovician	Itapucumí Gr	Pirané Fm	Caacupé Gr; Itapucumí Gr	E. Ayala Fm-Caacupé Gr; Itapucumí Gr	Rio Ivai Fm
Precambrian	Rio Apa Subcraton	Crystalline basement	RioTebicuarySubcraton	RioApa-R.Tebicuary Subc.	South American Platform

Source: AAPG Memoir 62

Figure 5.1.2.2: Comparative Stratigraphy in Paraguay and Adjacent Argentina and Brazil

Within the Cretaceous Pirity Sub-basin area, only Lower Paloezoic Ordovician and Silurian unconformably underlying the Cretaceous has been penetrated based on well control in the Carmen-1 and the Palos Santos-1. 3D and 2D seismic interpretations by President indicate adequate accommodation space for Devonian sediments to be present assuming the Basement horizon picked is reasonable.

Figure 5.1.2.3 shows regional sediment isopach maps of the Ordovician through Mesozoic periods in the Pirity/Olemdo Sub-Basin areas based on well logs, outcrops and seismic interpretations, Chaco Basin. President 2D/3D seismic interpretations indicate accommodation space for the Devonian and Carboniferous to be present, especially on the north flank of the Pirity sub-basin.

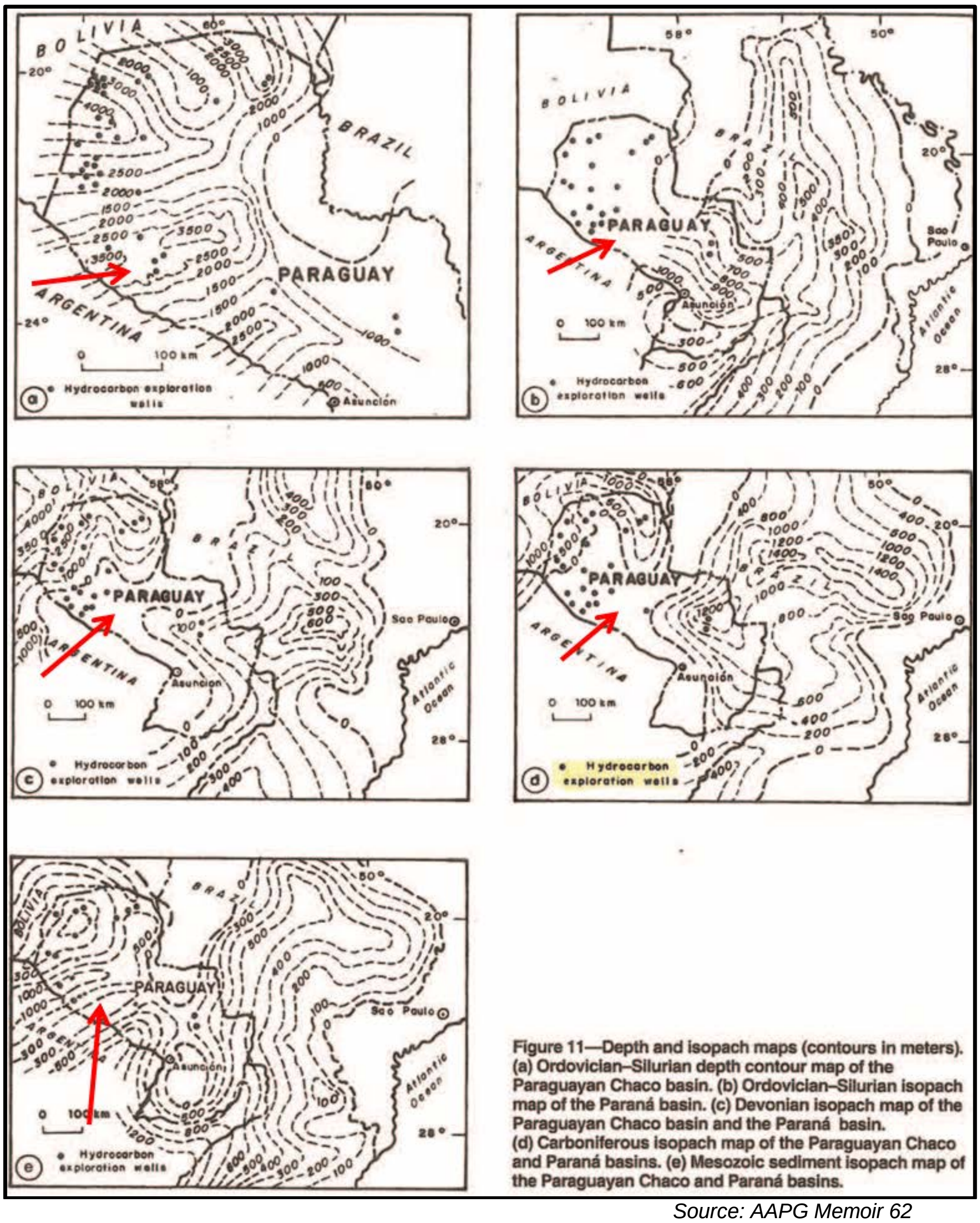


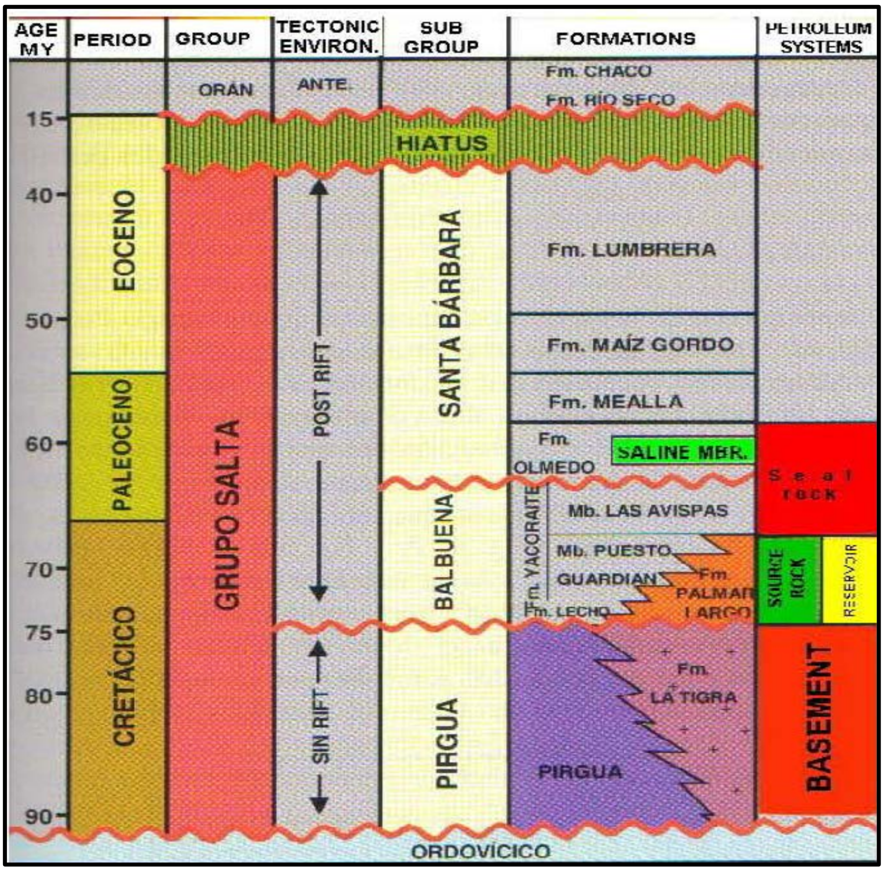
Figure 11—Depth and isopach maps (contours in meters). (a) Ordovician–Silurian depth contour map of the Paraguayan Chaco basin. (b) Ordovician–Silurian isopach map of the Paraná basin. (c) Devonian isopach map of the Paraguayan Chaco basin and the Paraná basin. (d) Carboniferous isopach map of the Paraguayan Chaco and Paraná basins. (e) Mesozoic sediment isopach map of the Paraguayan Chaco and Paraná basins.

Source: AAPG Memoir 62

Figure 5.1.2.3: Regional Isopach Thickness of the Ordovician through Mesozoic

5.1.3 Geology Stratigraphy

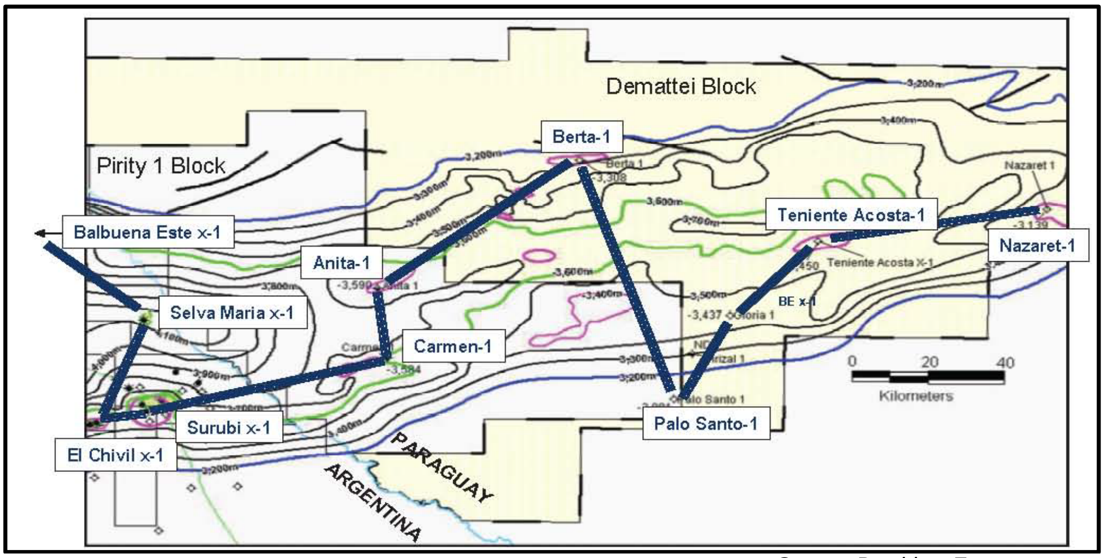
The Yacoraite formation, (Figure 5.1.3.1) is the primary producing reservoir and source in the Cretaceous Pirity/Olmedo Sub-Basin.



Source: President Energy

Figure 5.1.3.1: Statigraphic Columns for the Pirity/Olmedo Sub-Basins

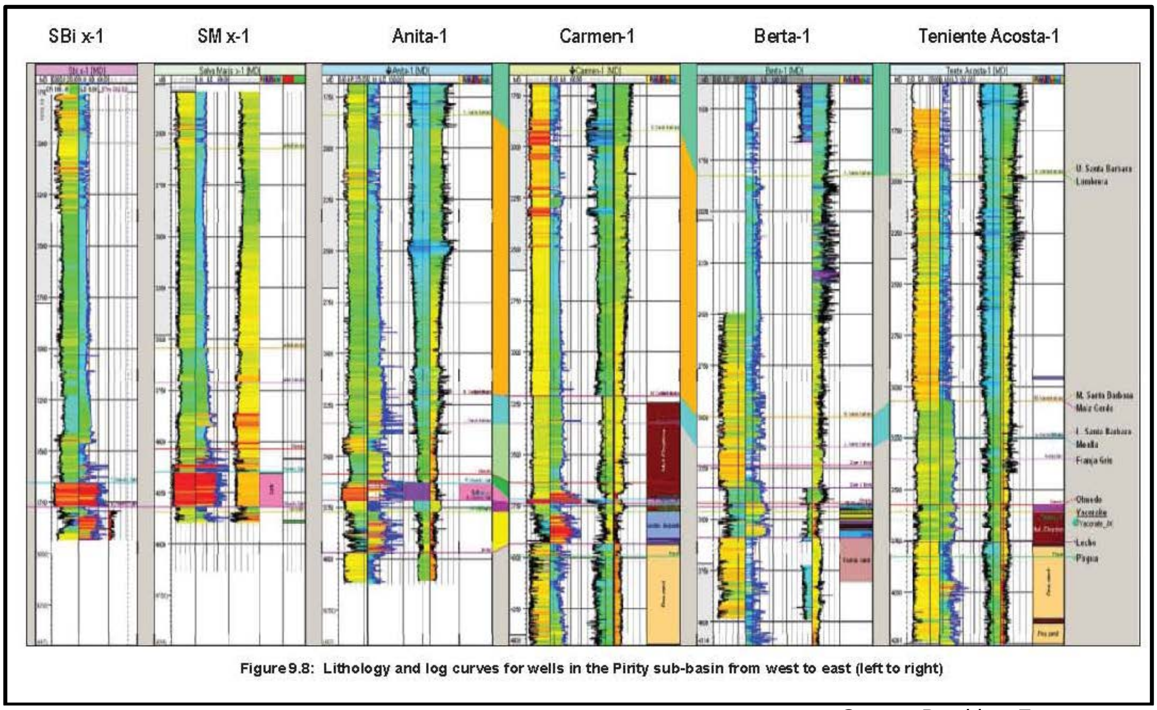
The geometry and distribution of the Yacoraite is shown in its depth structure in Figure 5.1.3.2. The Pirity/Olmedo Sub-Basin trend NE-SW and is approximately 60 Km wide with a relief of 600 m (-3200 to -3800 tvd depth).



Source: President Energy

Figure 5.1.3.2: Top Yacoraite Depth Structure and Line of Well Cross Section

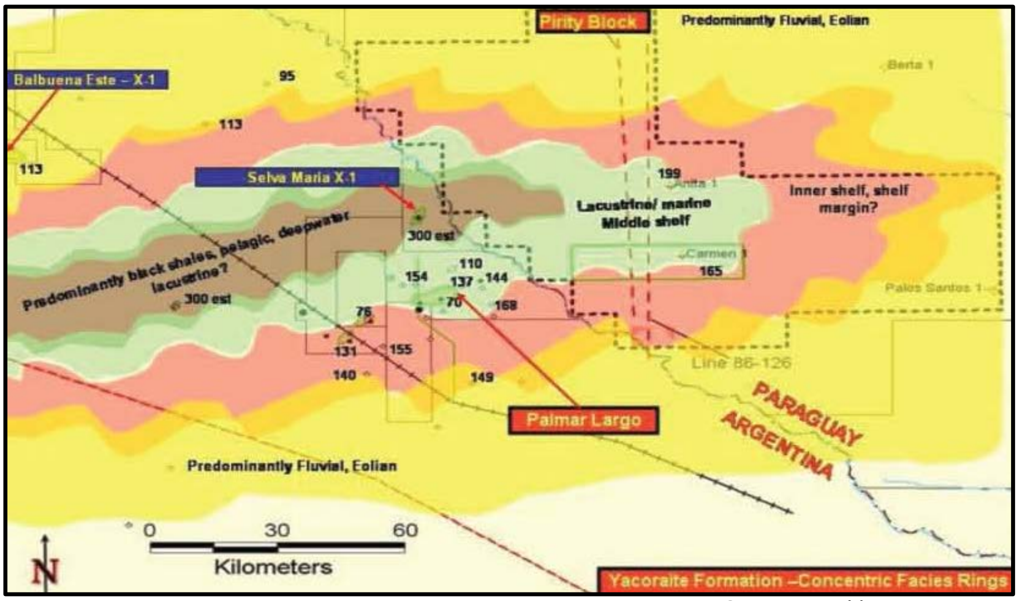
Lithology and log curves across the Pirity sub-basin are shown in Figure 5.1.3.3.



Source: President Energy

Figure 5.1.3.3: Lithology and log curves for wells in the Pirity sub-basin

Based on previous studies, well control thickness (95m to 300m) and lithology, Yacoraite Fluvial/Eolian to deepwater/lacustrine facies distribution in the Cretaceous Pirity/Olmedo Rift sub-basins was interpreted, Figure 5.1.3.4, which is reasonable. The Palmar Largo, Selva Maria X-1 and the Balburena Este-X1 are productive areas in Argentina (Figure 5.1.3.4).



Source: President Energy

Figure 5.1.3.4: Yacoraite Paleoenvironment for the Pirity/Olmedo sub-basins

Regional mapping for the Yacoraite and Lecho top depth structure is shown in Figure

5.1.3.5. The three main Category 1 prospect areas are shown as well.

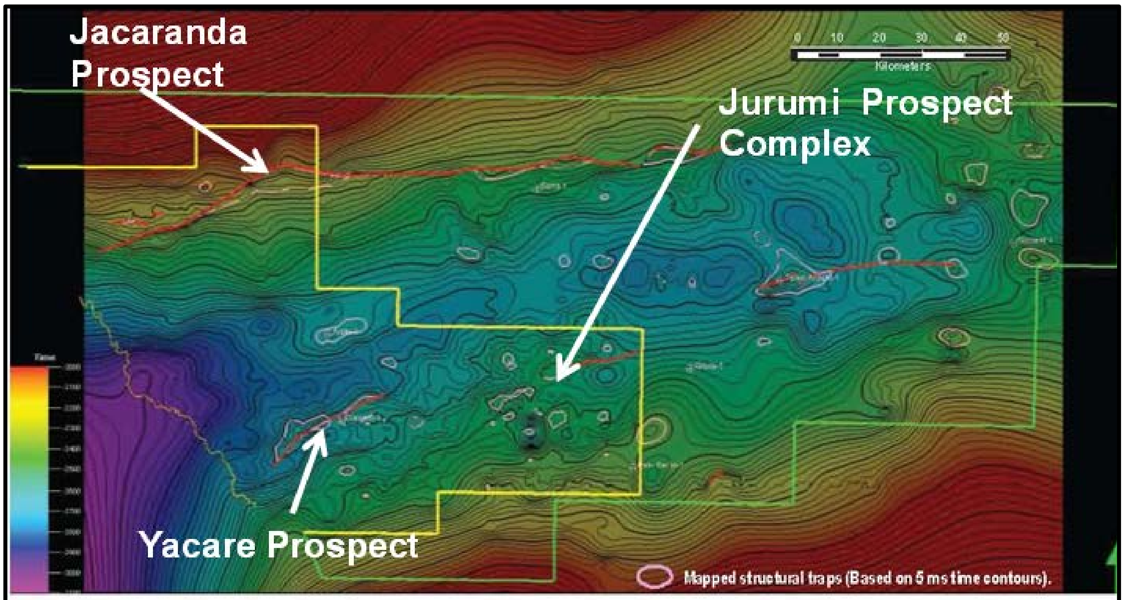


Figure 9.26: Regional interpretation 740 Km^2 of closure was mapped for the Yacoraite in the Pirity Sub-basin.

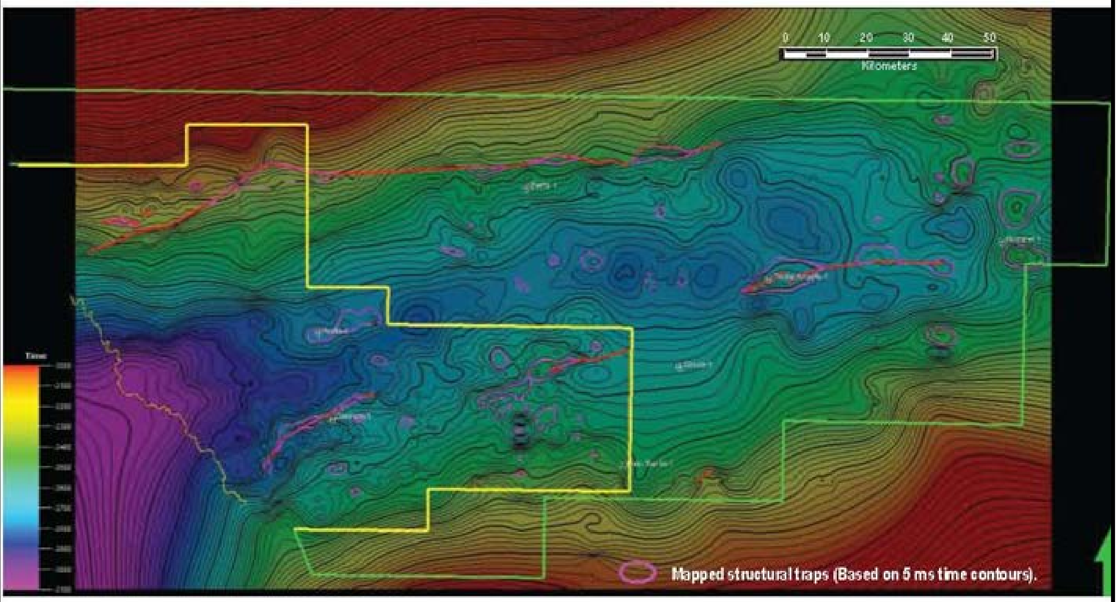


Figure 9.27: Regional interpretation 769 Km^2 of closure was mapped for the Lecho in the Pirity Sub-basin.

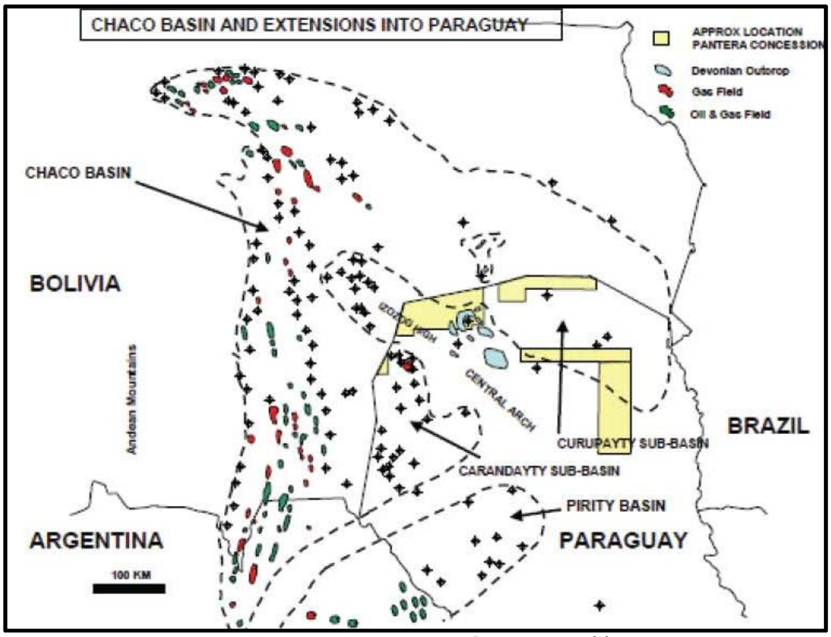
Source: President Energy

Figure 5.1.3.5: Yacoraite and Lecho Top Depth Structure in the Pirity sub-basin

5.2 Prospects

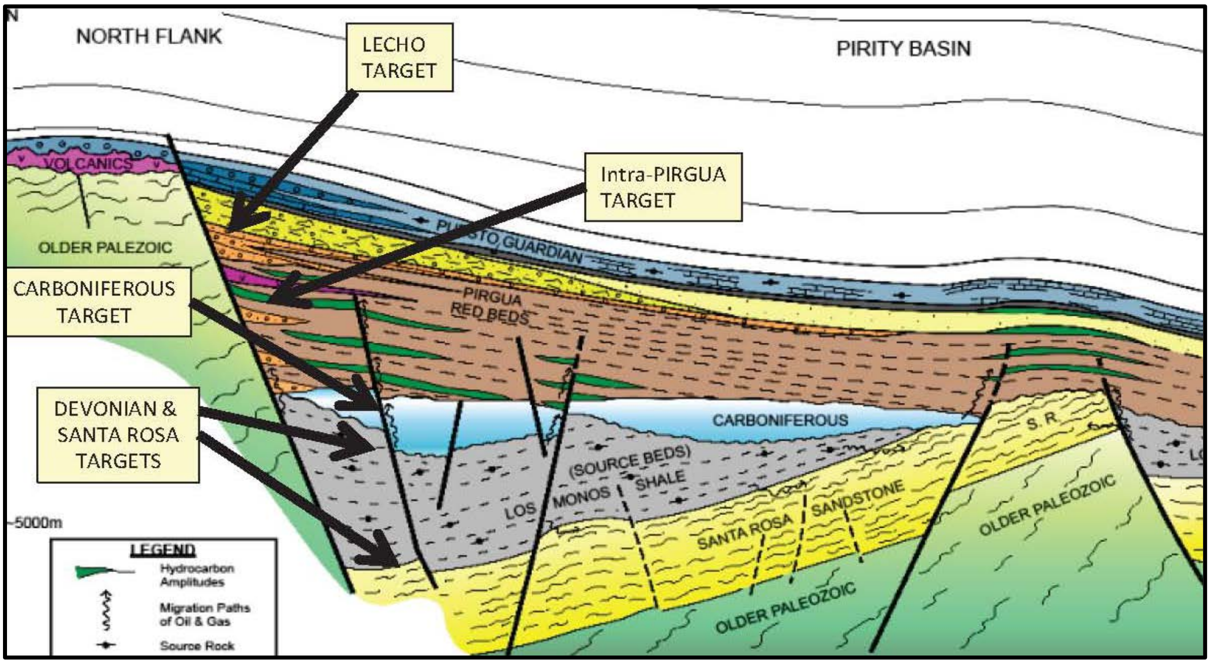
Jacaranda Prospect – NW Flank Pirity

The Jacaranda Prospect is located on the NW flank of the Cretaceous Pirity sub-basin in Paraguay. The Paleozoic Devonian and Carboniferous intervals have been proven productive to the west in the Chaco Basin of Bolvia and NW Argentina (Figure 5.2.1.1). Three main targets, Lecho, Intra-Pirgua and Paleozoic (Carboniferous, Devonian and Santa Rosa) have model economics for the Jacaranda prospect (Figures 5.2.1.2 and 5.2.1.3). The location of the Pirity, Carandaity and the Curupaity sub-basins in Paraguay are shown in Figure 5.2.1.1. Many of the 41 exploratory wells in Paraguay were drilled in the Carandaity sub-basin.



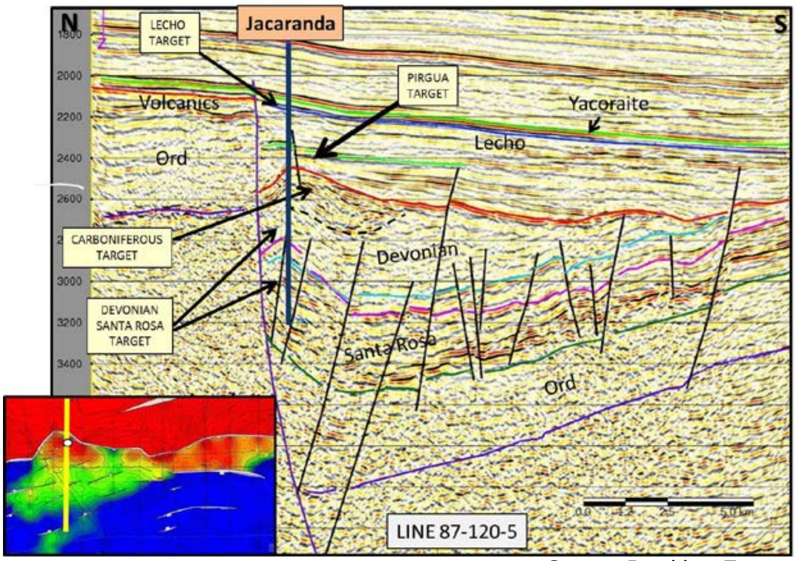
Source: President Energy

Figure 5.2.1.1: Devonian and Carboniferous Productive Fields



Source: President Energy

Figure 5.2.1.2: Jacaranda Prospect Trap Model, Showing Reservoir Targets

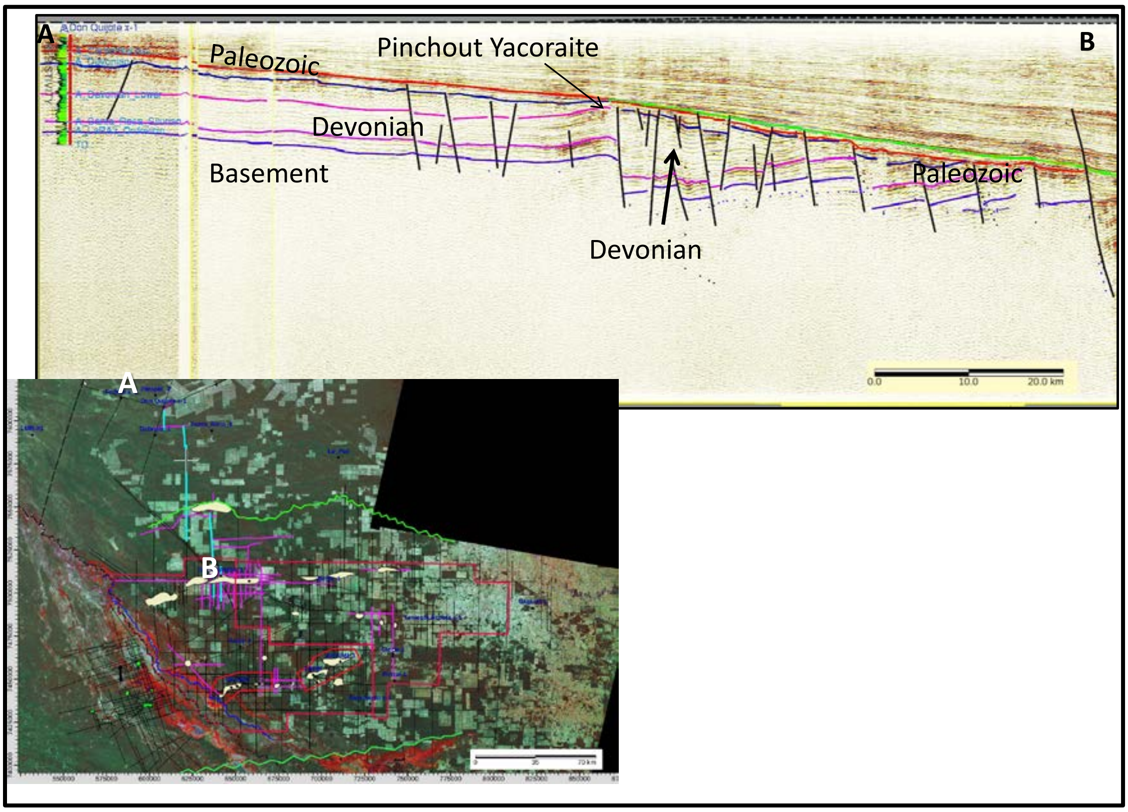


Source: President Energy

Figure 5.2.1.3: Jacaranda Prospect N-S 2D seismic line across the proposed location

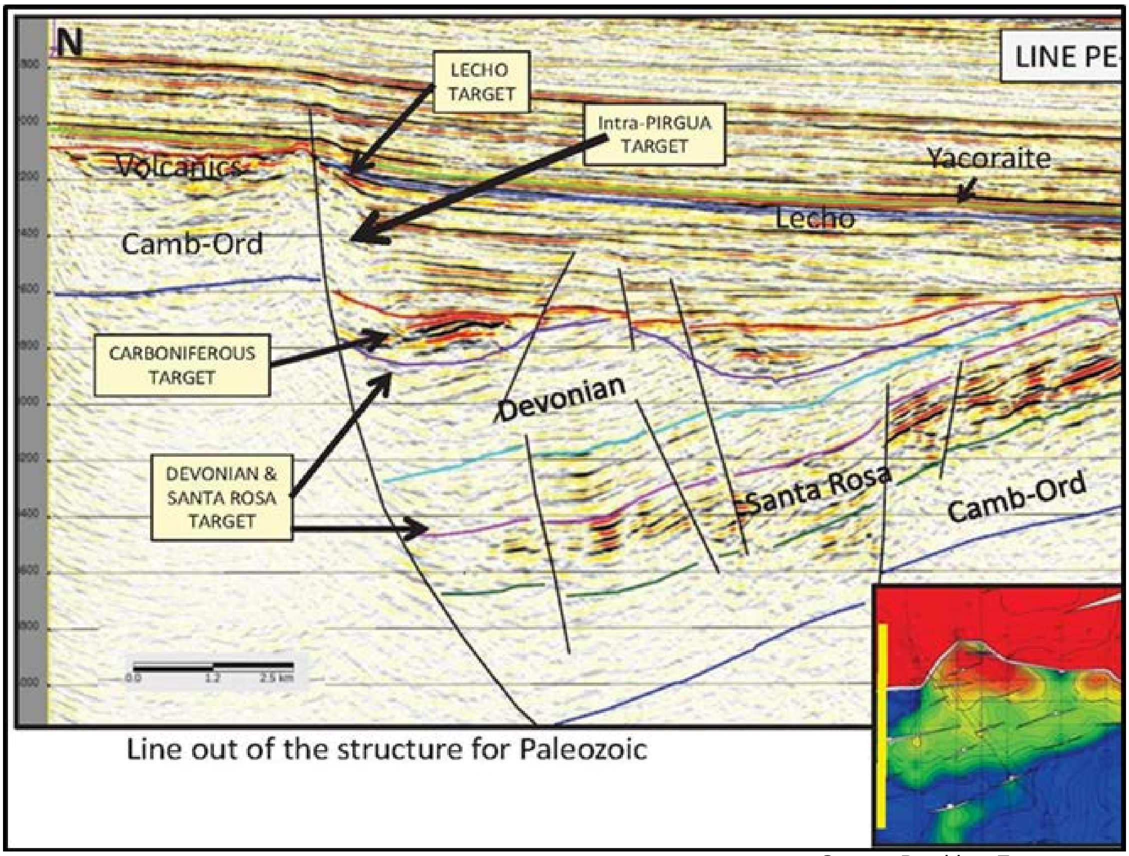
Jacaranda – Paleozoic

The intervals have been penetrated on the Boqueron High and the Carandaity and Curupaity sub-basin to the north of the Cretaceous Pirity-sub-basin (Figure 5.2.1.1). The wells (ref SV-1, SV-2 shown on Figure 5.1.2.1 as the eastern well symbol) in Santa Victoria in Argentina 110km west of the Jacaranda location penetrated the whole reservoir sequence and represent the closest analogues. The Don Quixote-1 well is 100 km north only had reservoirs in the Santa Rosa (50-70m net) but is located in the Boqueron High with unknown paleogeography. No petrophysical summary is available for these wells. President has interpreted the Net-to-Gross and sand thickness south to the Jacaranda prospect and beyond based on increase in 2D seismic reflection amplitudes (Figure 5.2.1.5). The Devonian/Santa Rosa sands apparently thicken to the west in Bolivia and Argentina to the Sub-Andean thrust belt where thrusting has created significant fracture porosity in the Devonian "Quartzite" which is present in a large number of giant gas fields.



Source: President Energy Interpretation

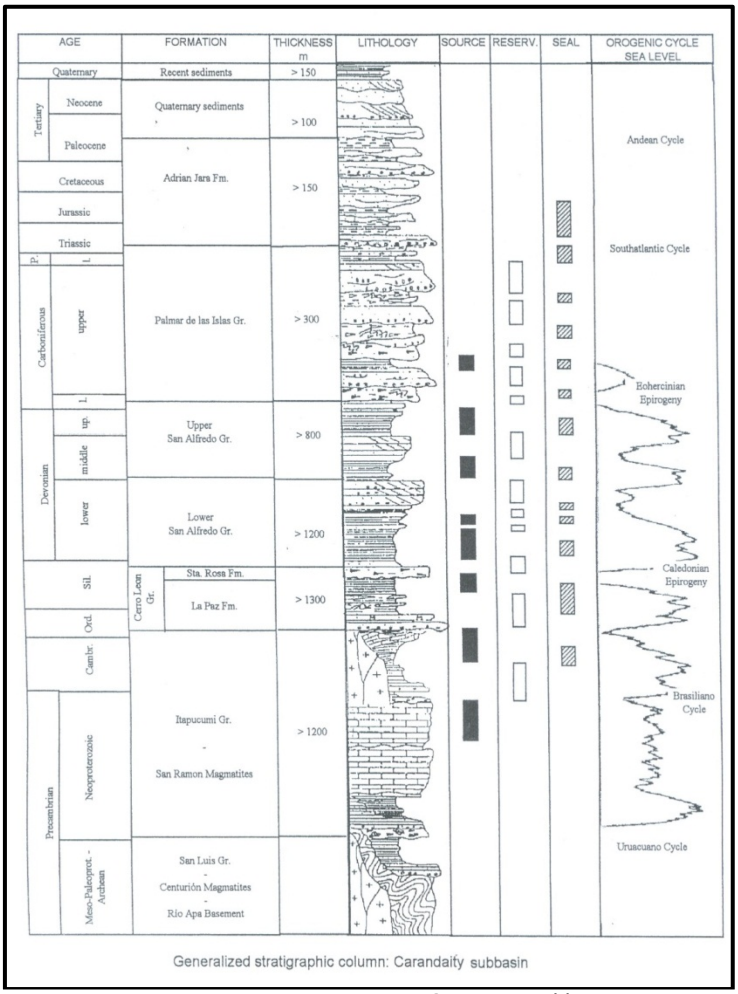
Figure 5.2.1.4: N-S composite 2D Seismic Lines from the Don Quixote-1 well (A)



Source: President Energy

Figure 5.2.1.5: N-S 2D Seismic line west of the proposed location

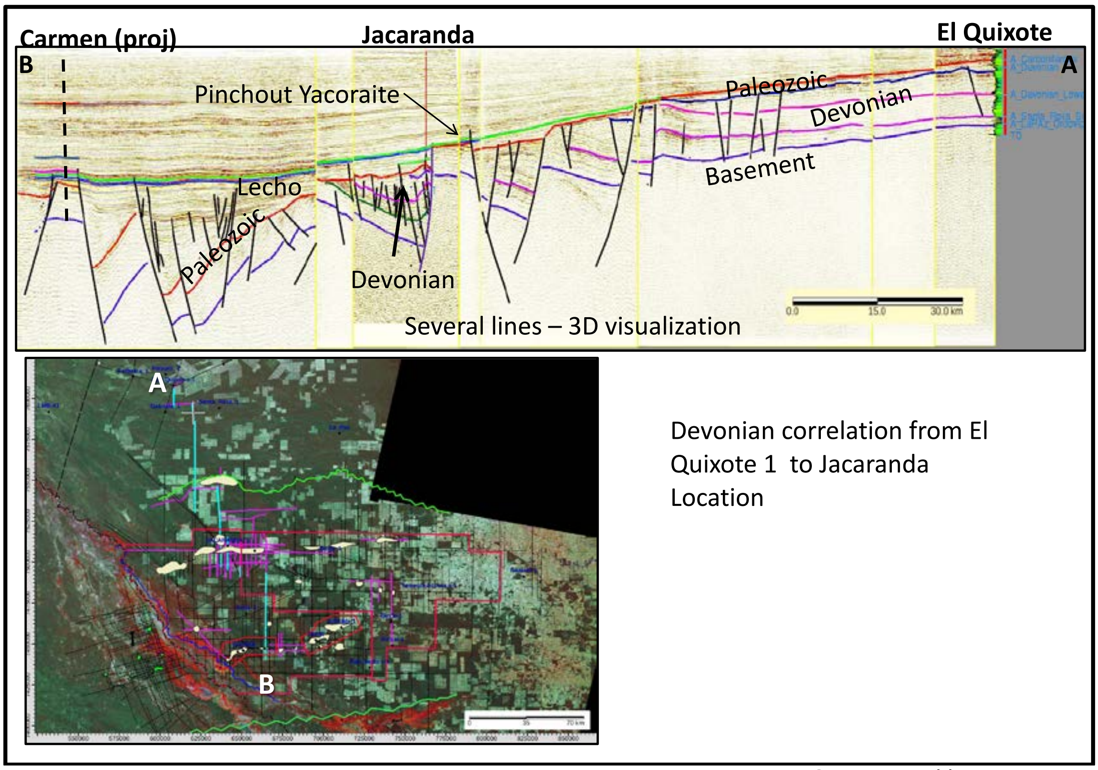
A single volumetric estimate of resource potential was made by President for the "Paleozoic" and includes potential opportunities in the Carboniferous channel sands, Devonian sands or Santa Rosa Devonian/Silurian sands as shown in Figure 5.2.1.5. The Paleozoic unconformity was used as the base depth structure for the GRV analysis and for calculating the unrisked resource. The uncertainty in the reflector continuity for any particular Paleozoic horizon (below the unconformity), would not warrant attempting to map the depth structure at this time. Therefore RPS believes that President Energy's approach is reasonable. A full stratigraphic column (Figure 5.2.1.6) shows the expected sediment fill for the Devonian and the Carandaity sub-basins.



Source: President Energy

Figure 5.2.1.6: Generalized Stratigraphic Column Carandaity sub-basin

The Jacaranda prospect is located about 100 km south of the Quixote-1 well. The Yacoraite Pinchout shown is approximately the north edge of the Cretaceous Rift Pirity sub-basin. A N-S composite 2D seismic line from the Don Quixote-1 to the Carmen-1, 170 km to the south with an uncertain Basement horizon is shown in Figure 5.2.1.7.

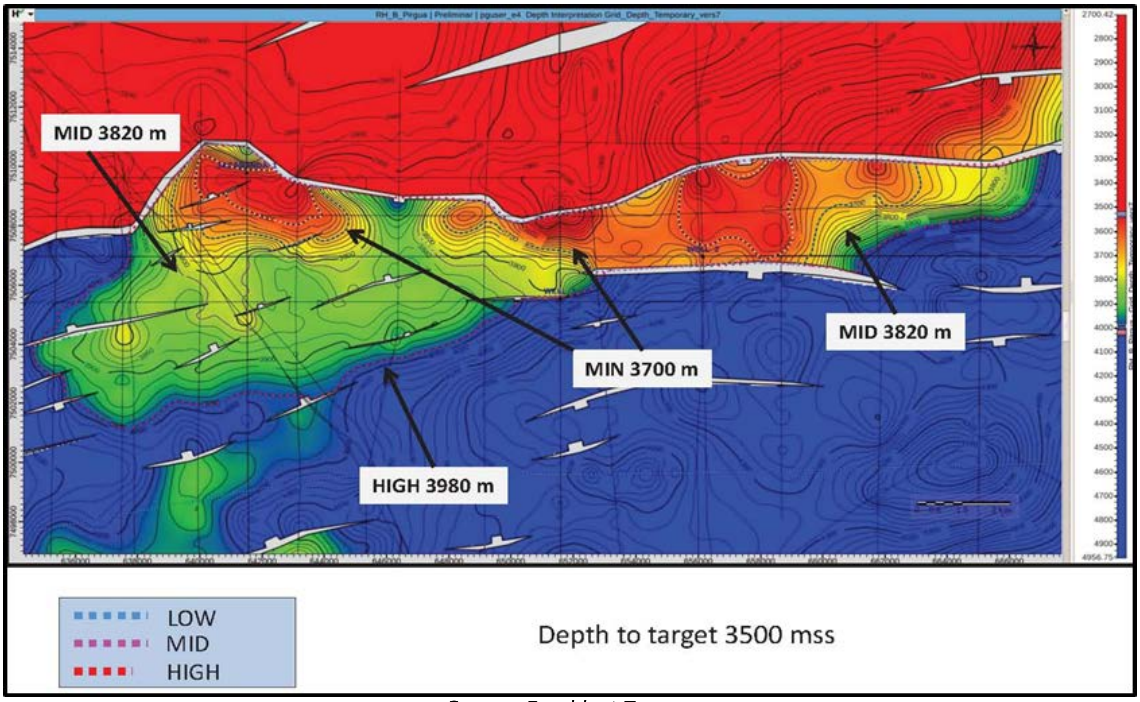


Source: President Energy

Figure 5.2.1.7: N-S composite 2D seismic line from the Don Quixote-1 to the Carmen-1

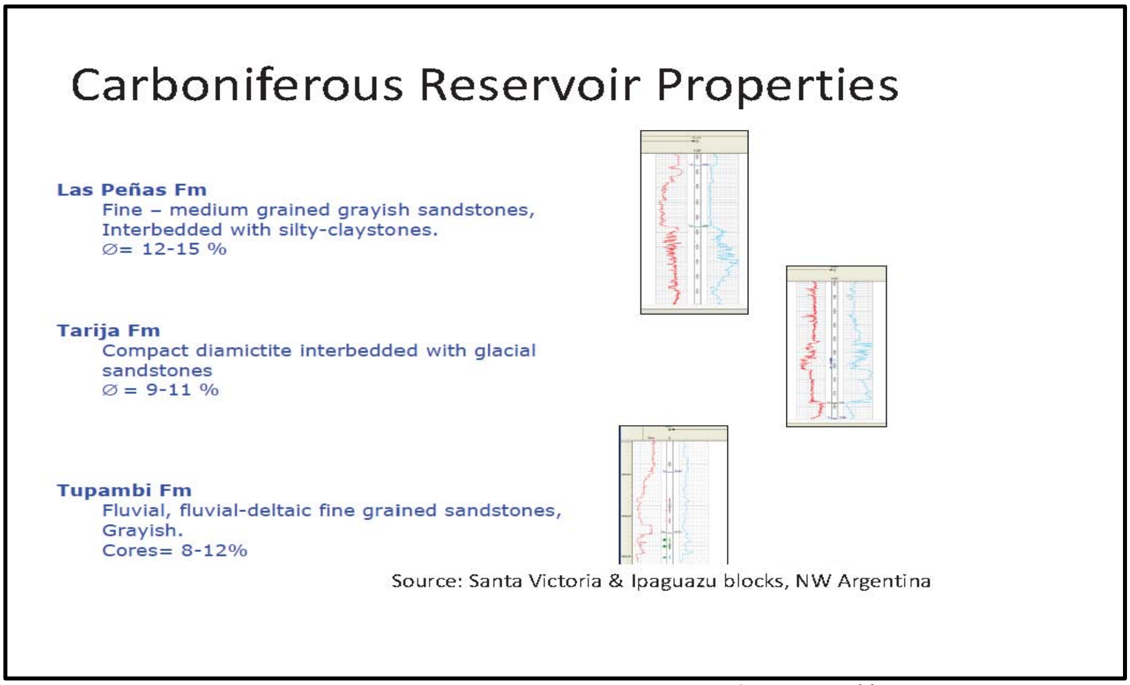
Jacaranda Prospect: Paleozoic Targets Geological Description

Uncertainty of the presence of reservoir, reservoir quality, lateral distribution and trap at the faulted basin edge of the Pirity sub-basin exists. The wells (ref SV-1, SV-2 are approximately located as the eastern well symbol in Figure 5.1.2.1) in Santa Victoria in Argentina 110km west of the Jacaranda location penetrated the whole reservoir sequence and represent the closest analogues. The Don Quixote-1 well is 100 km north only had reservoirs in the Santa Rosa (50-70m net) but is located in the Boqueron High with unknown paleogeography. The faulting may be associated with natural fractures enhancing permeability in reservoirs present, but may also create lost circulation drilling problems. The Carboniferous crest appears to have been eroded to the west of the prospect (Figure 5.2.1.5). The presence of the faulting may provide migration pathways for the Devonian Los Monos shale source rocks. Paleozoic Reservoirs (and younger) may be side-sealed via juxtaposition across the main fault against older tight Paleozoics and Basement providing some seal potential (Figure 5.2.1.5). Occurrence of higher seismic reflection amplitudes packages, especially in the Santa Rosa, might provide evidence of the possibility of reservoir occurrence; unfortunately these amplitude are mainly seen away from the prospect crest to the south. There are some higher amplitudes in the younger Paleozoic rocks within the prospect area (prognosed to be Carboniferous). A Paleozoic depth structure showing potential accumulation limits/Est. GWC used in calculation of the GRV is shown in Figure 5.2.1.18. A Carboniferous reservoir properties summary is shown in Figure 5.2.1.9.



Source: President Energy

Figure 5.2.1.8: Top Paleozoic Depth Structure showing Potential Accumulation Limits



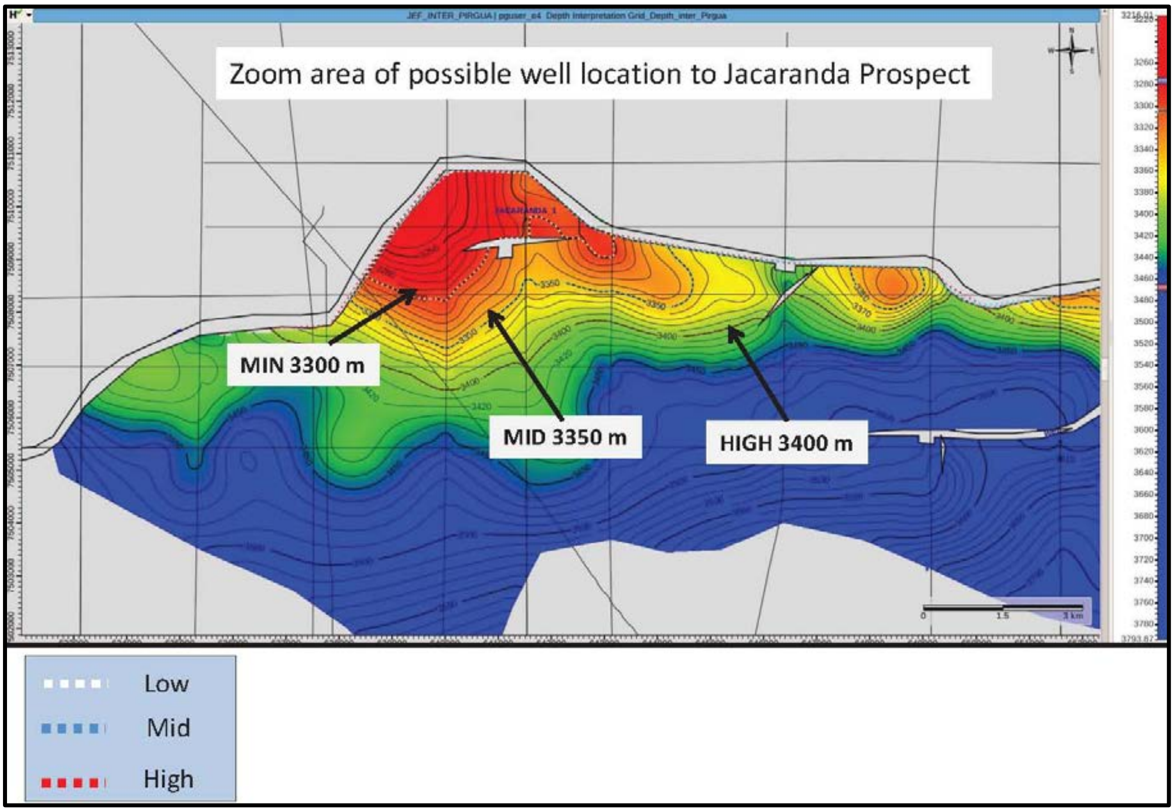
Source: President Energy

Figure 5.2.1.9: Carboniferous Reservoir Properties from NW Argentina

Jacaranda Prospect: Pirgua Geologic Description

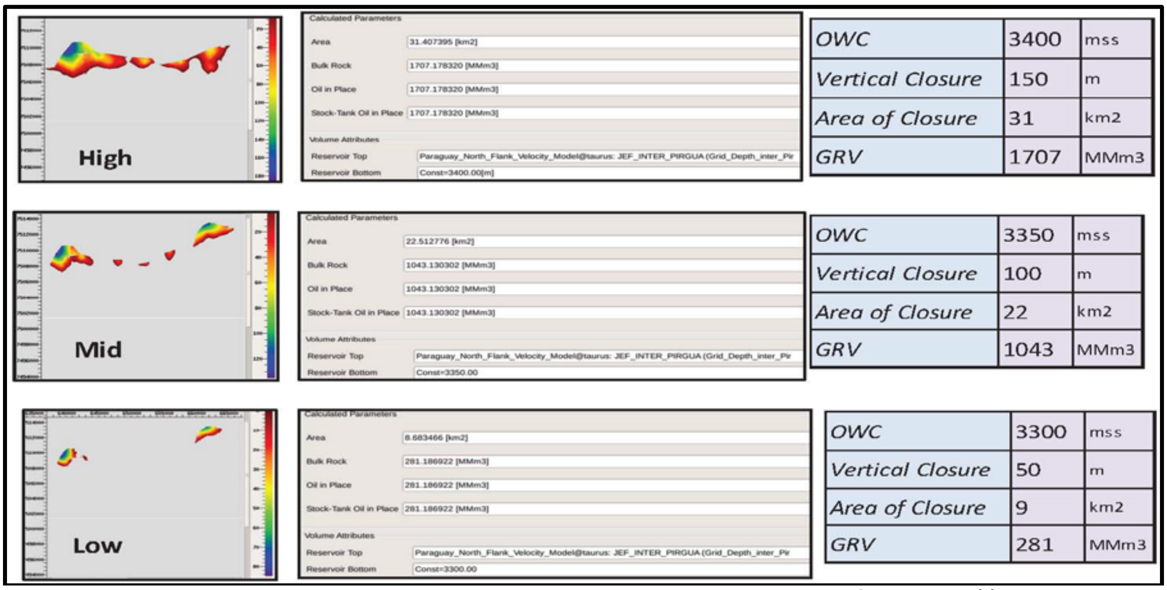
Cretaceous Intra Pirgua 2D seismic amplitude reflections have been interpreted by President to represent potential gas bearing sand accumulations. Well petrophysical analyses for the Pirgua for the Carmen-1, Anita-1 and Berta-1 (See Section 6 of this report) and are thought to be reasonable for resource estimates. The reservoirs are the red beds filling the Pirity rifted basin. The Jacaranda Intra-Pirgua are continental red beds which can be fluvial, alluvial, lacustrine sediment deposits which can have significant variation in lateral continuity, quality and thickness for individual interbeds.

The depth structure for the intra Pirgua is shown in Figure 5.2.1.10 with the GRV calculation shown in Figure 5.2.1.11. The Intra Pirgua target is shown on 2D seismic in Figures 5.2.1.12 and 5.2.1.13.



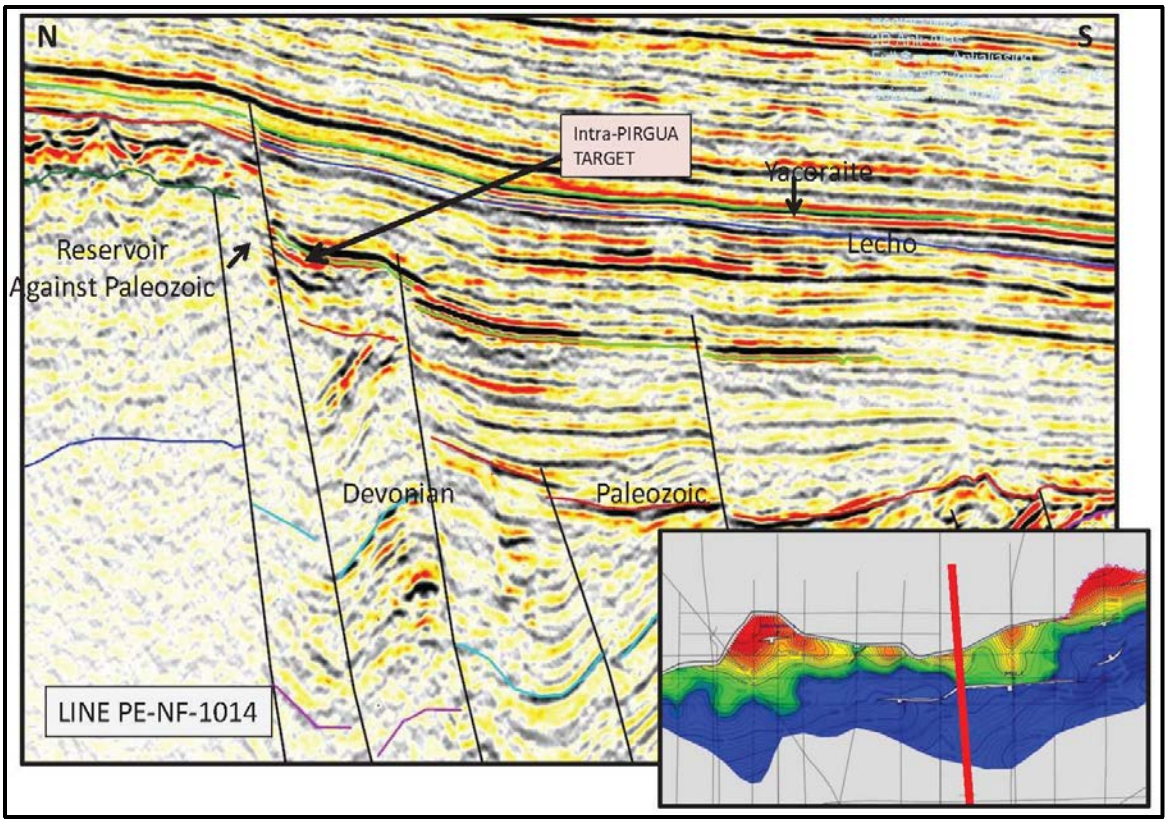
Source: President Energy

Figure 5.2.1.10: Top Intra Pirgua Depth Structure



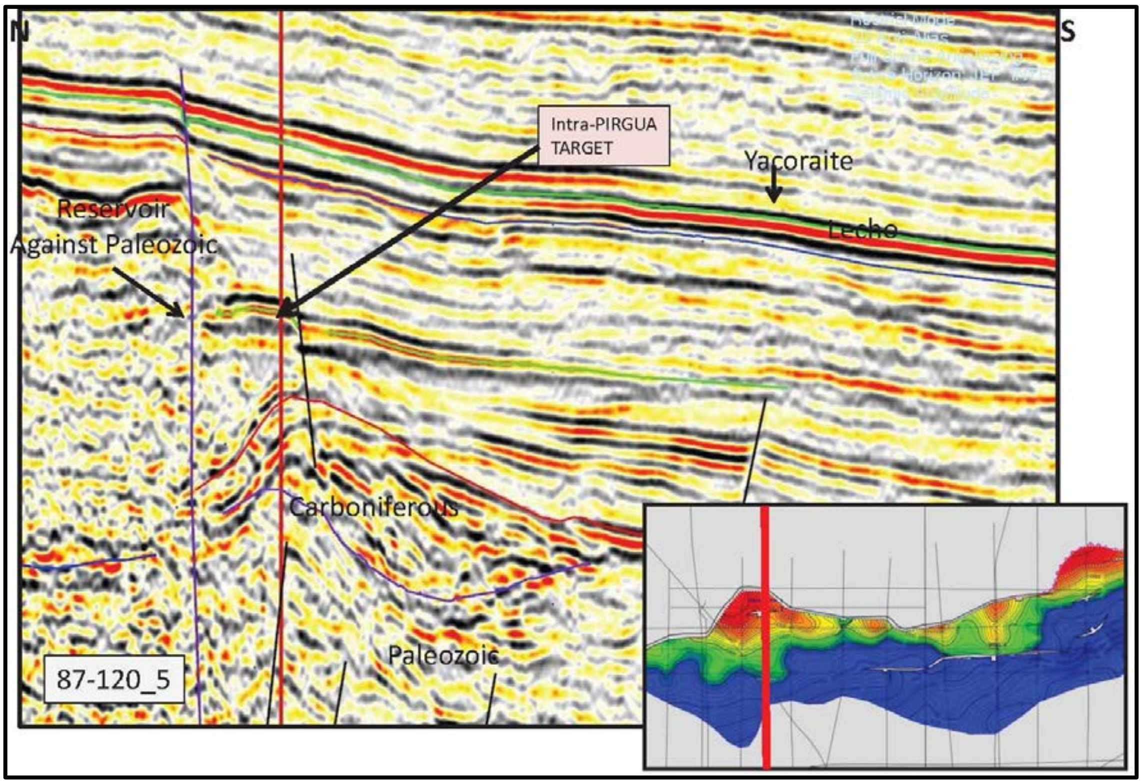
Source: President Energy

Figure 5.2.1.11: Pirgua Target GRV Volumetrics



Source: President Energy

Figure 5.2.1.12: Intra Pirgua Target shown on 2D Seismic Line PE-NF-1014 east of the proposed location



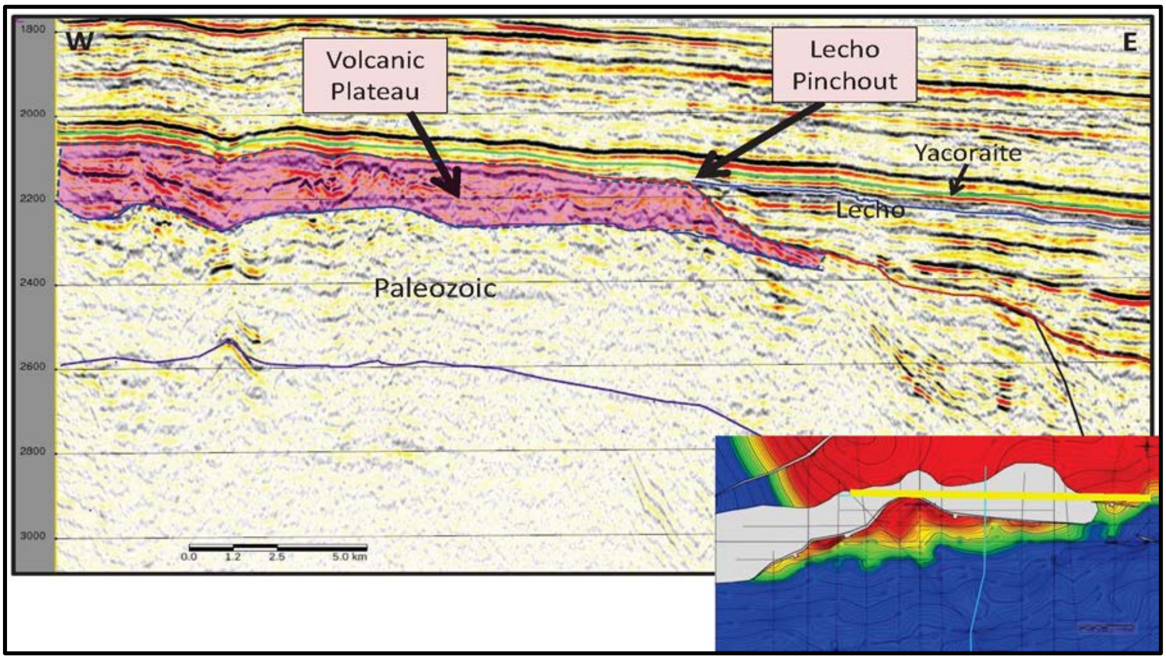
Source: President Energy

Figure 5.2.1.13: N-S 2D Seismic Line 87-120-5 showing Intra Pirgua target

President has suggested that higher seismic amplitude for the interval could represent an indication of gas bearing sand but this is uncalibrated by well data and could equally be a response to water-filled porosity or diagenetic effects such as cementation. Uncertainty of the presence of reservoir, reservoir quality, lateral distribution and trap at the faulted basin edge of the Pirity sub-basin exists but is interpreted to be the post rift red-beds filling the Pirity rifted basin above the Paleozoic unconformity. The presence of faulting could create natural fractures enhancing permeability in reservoirs present, but may also create lost circulation drilling problems. Additional minor faulting may be associated with the larger north boundary trap fault. The presence of the faulting may provide migration pathways for the Devonian Los Monos shale source rocks to feed the Pirgua reservoir. Reservoirs may be side-sealed via juxtaposition across the main fault against older tight Paleozoics and Basement providing some seal potential (Figure 5.2.1.3).

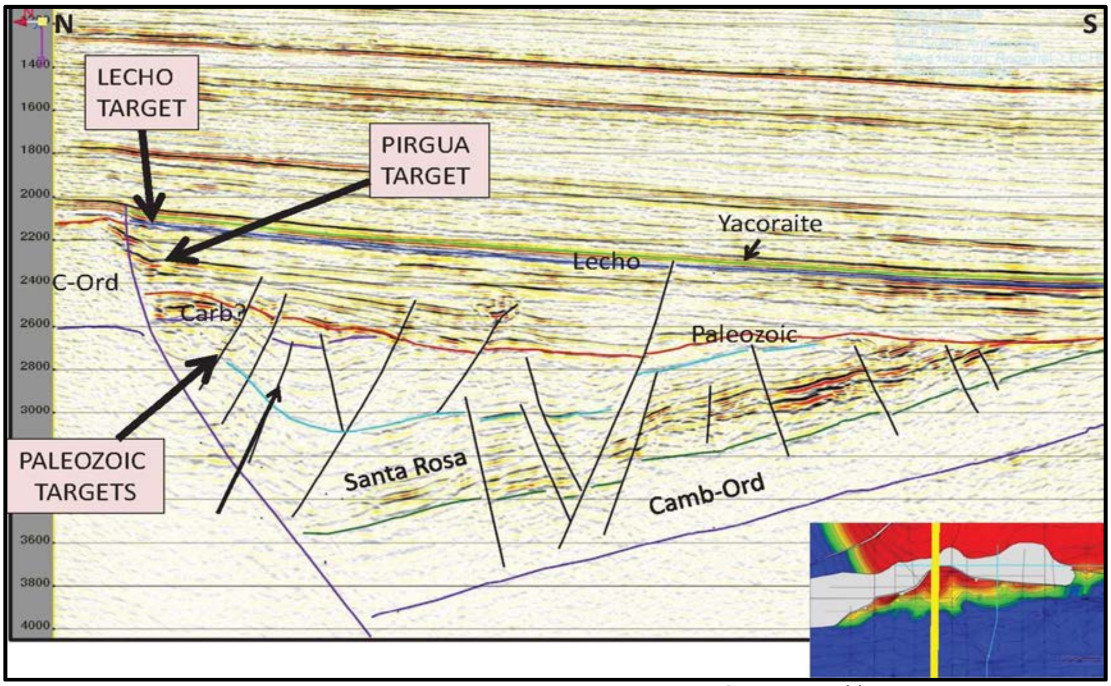
Jacaranda Prospect: Lecho Geologic Discussion

The Lecho sands member occurs at the base of the Yacoraite and is mapped as a basin-wide sand that has been proven productive on the north flank of Palmar Largo at an up-dip pinchout. The sand is on south dip and is trapped updip by 3-way fault closure. The sand lies beneath the Yacoraite shale which is considered by the referenced studies to be the source rock for the oil in Palmar Large. Oil expelled from the Yacoraite in the deep source kitchen into the Lecho reservoir beneath, provides a direct migration pathway up-dip to Palmar Largo vesicular volcanics which form the primary reservoir in Palmer Largo area with some minor production from the Lecho where it on-laps the volcanics within closure. A similar setting could be present in the Jacaranda prospect Figure 5.2.1.14. The Lecho is present in the Berta-1, Carmen-1, Anita-1, Gloria-1 and the Acosta-1 wells with petrophysical analyses (see section 6 of this report) for the sandstone. A NS seismic line across the proposed location is shown in Figure 5.2.1.15 and a depth structure shown in for the Lecho sandstone in Figure 5.2.1.16. The Jacaranda Lecho is a long distance from the nearest well control and is on the northern flank of the Pirity sub-basin where it is thinning to a pinch-out north of the prospect and may also change facies. The nearest well is the Berta-1, about 50 km east, but had inconclusive and missing Lecho data. The Anita-1 is located about 30 km south of Jacaranda and reasonable well log calculated reservoir porosity and permeability are indicated. It is indicated not to be present about 100 km to the north in the Don Quixote-1 due to non-deposition on an existing high. The Lecho filled in the lows on the topography and the volcanics terrain where present. The thickness varied depending on the topographic relief and probably onlapped existing relief. RPS considers the reservoir risking tobe reasonable and agrees the seismic reflector is a good mapping horizon.



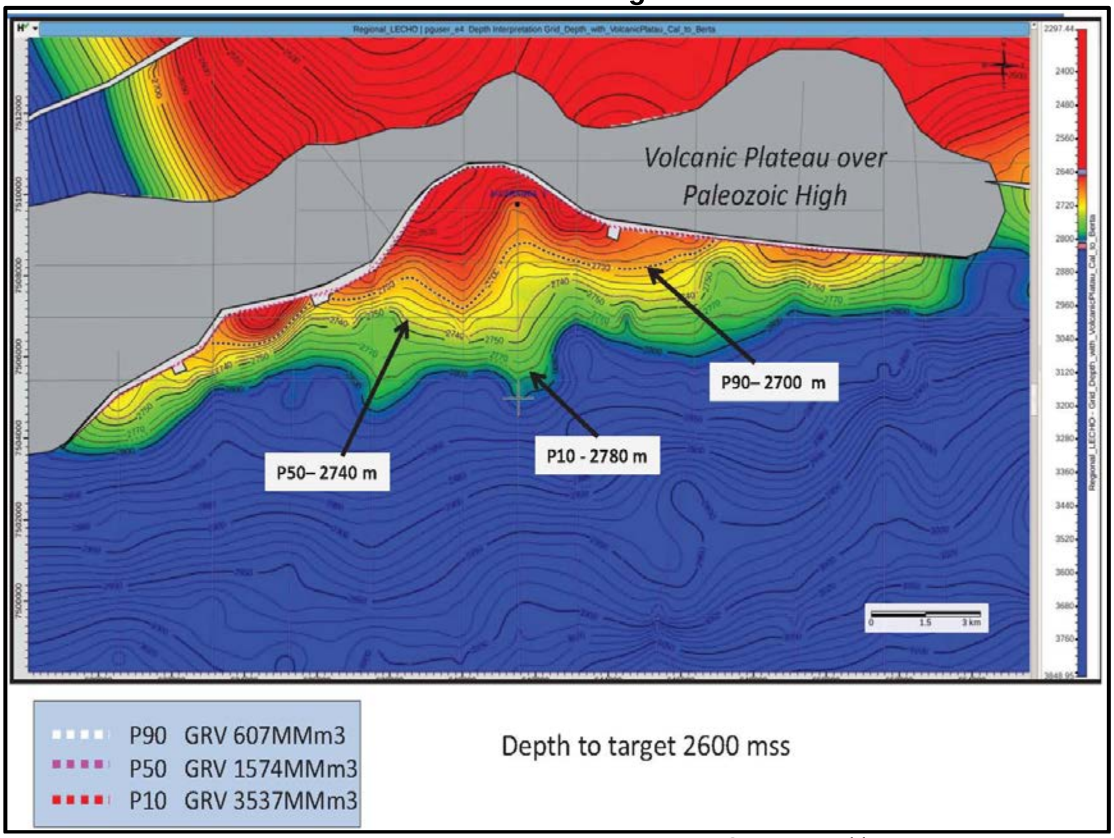
Source: President Energy

Figure 5.2.1.14: W-E 2D Seismic Line showing Lecho target pinchout onto the volcanicss



Source: President Energy

Figure 5.2.1.15: N-S 2D seismic line through the proposed well location showing the Lecho target

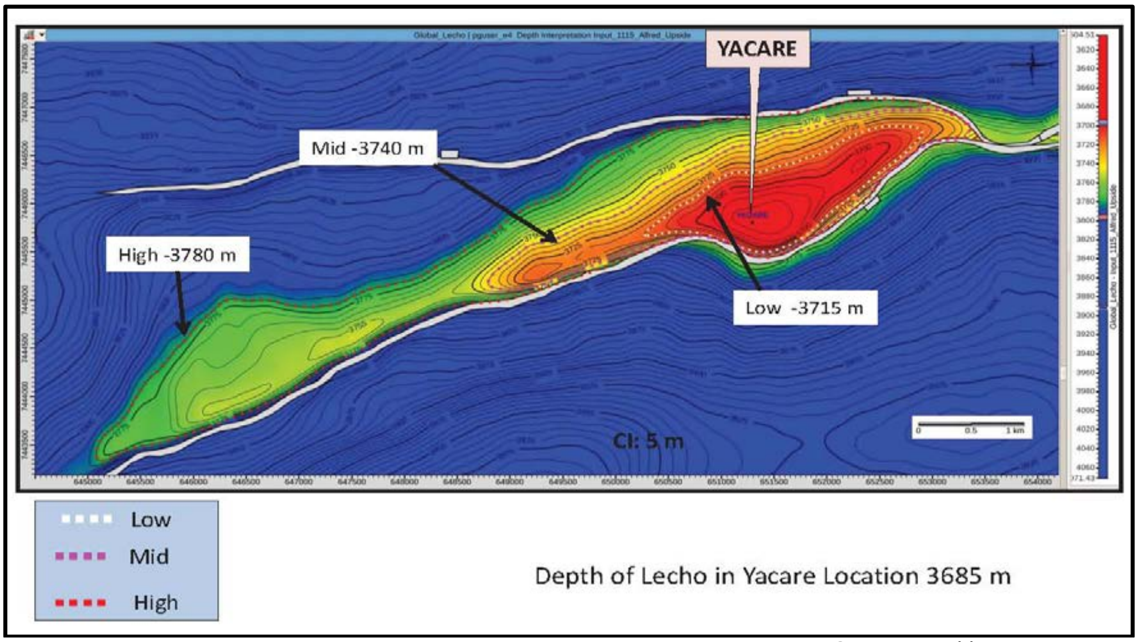


Source: President Energy

Figure 5.2.1.16: Top Lecho Depth Structure with Potential Accumulation limits used for GRV estimates

Yacare Prospect: Lecho Geologic Discussion

The Yacare prospect is located on the south flank of the Cretaceous Pirity sub-basin in Paraguay, Figure 5.2.1.18. It is on trend and to the NE of the Palmar Largo field which is productive across the border in Argentina. The prospect primary target is the Lecho sand lying just below the Yacoraite shale source rock. The Carmen-1 well, located 5 km to the east across a fault, penetrated the Lecho (Figures 5.2.1.19 and 5.2.1.20). Although relatively up-dip from Yacare, the well was wet. The Company believes that Carmen-1 is down-dip from the structural culmination that forms the Jurumi complex but is located of a structure that did not have up-dip mapped closure to the east. Yacare is separated from Carmen-1 by a subtle counter-regional dip (dipping to the east on a generally dipping to the west flank of a high). The Yacare structure is a partial 4-way to 3-way fault bounded closure trending NE-SW.

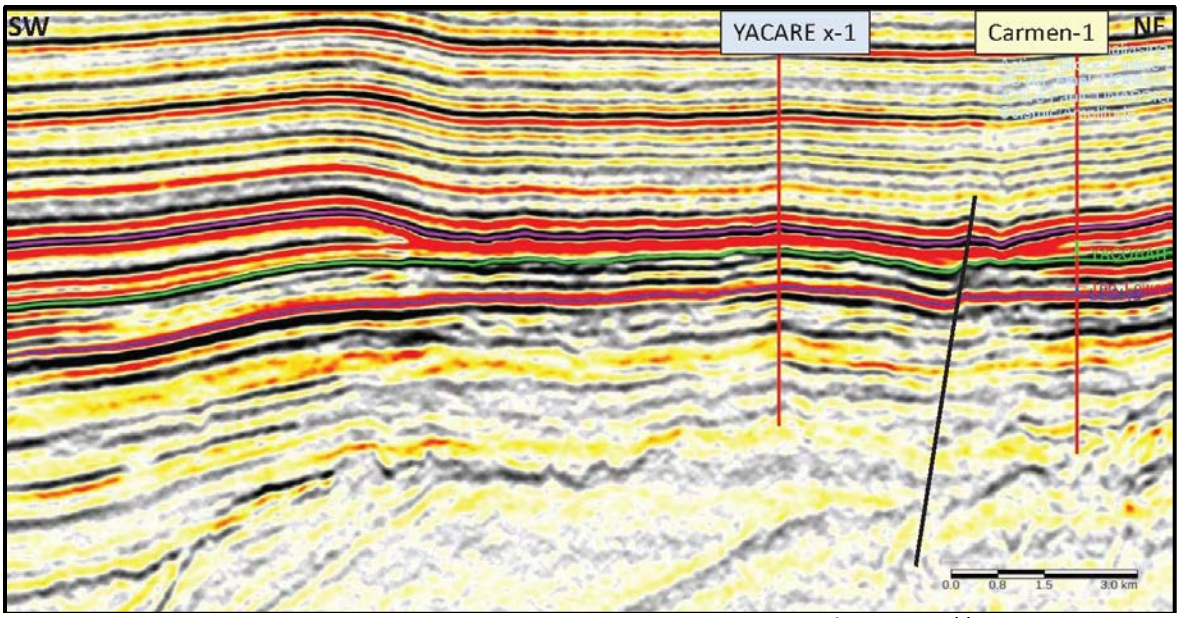


Source: President Energy

Figure 5.2.1.18: Top Lecho Depth Structure showing Potential Accumulation Limits

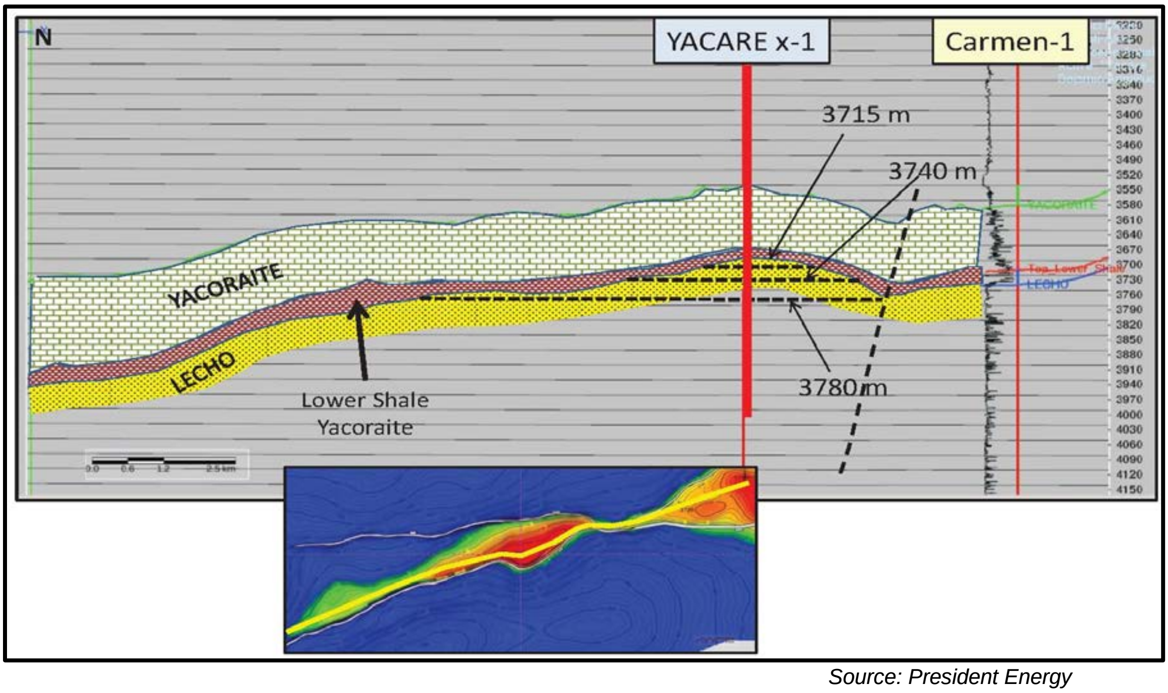
The 3D seismic data as shown in Figure 5.2.1.19 indicates that the Lecho is a good reflection. No apparent thinning occurs on the Yacare structure during Yacoraite and Lecho deposition, suggesting that structural development occurred later. The faulting separating the Yacare and Carmen-1 is assumed to be sealing (Figures 5.2.1.19 and 5.2.1.20). If the fault does not seal and the subtle dip is not preserved in depth (this will be critically dependent on the velocity modelling used in depth conversion), the Carmen-1 may have tested the Yacare prospect. The Company is carrying out further PSDM studies on the prospect to test whether the apparent counter-regional dip is robust.

The volcanics productive zones in the Palmar Largo field are not present, but the Lecho is expected to be present and is identifiable on the seismic. The Olmedo Salt seal present in the Palmar Largo fields above the Yacoraite is also present in the Yacare prospect. A N-S and E-W seismic line is shown in Figures 5.2.1.21 and 5.2.1.22. Figure 5.2.1.23 is a model of seismic Xline 5323.



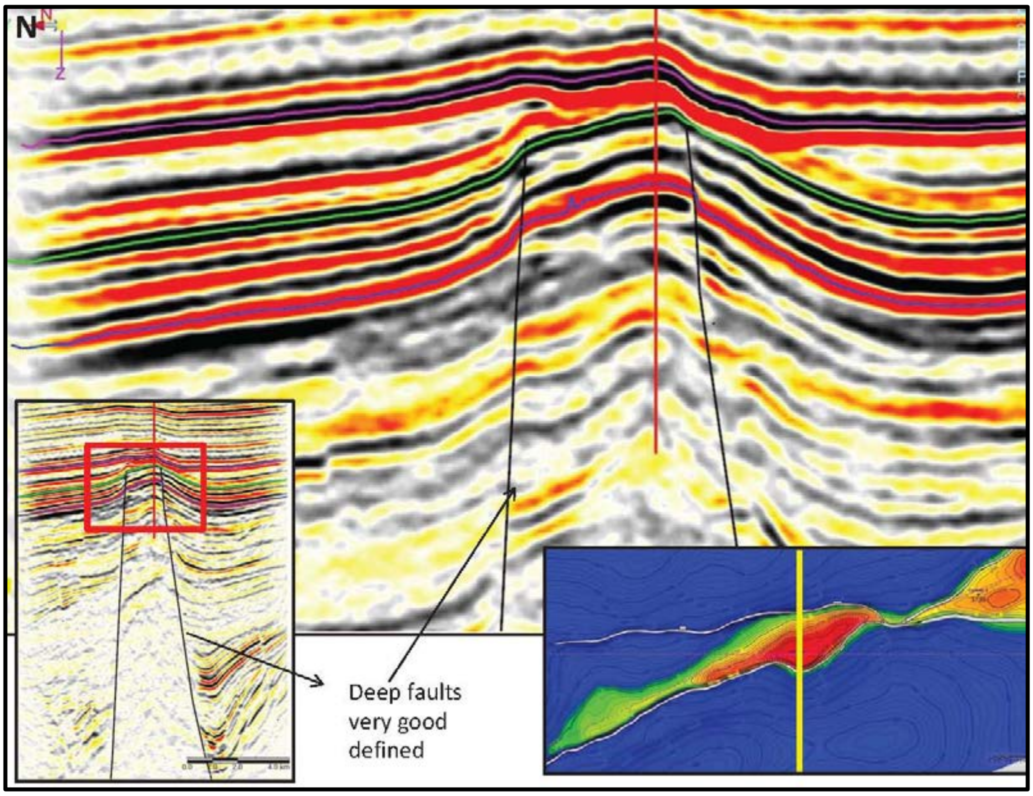
Source: President Energy

Figure 5.2.1.19: NE-SW 3D Seismic Arbitrary Line, green is Yacoraite; blue below is Lecho; purple is Olmedo Salt



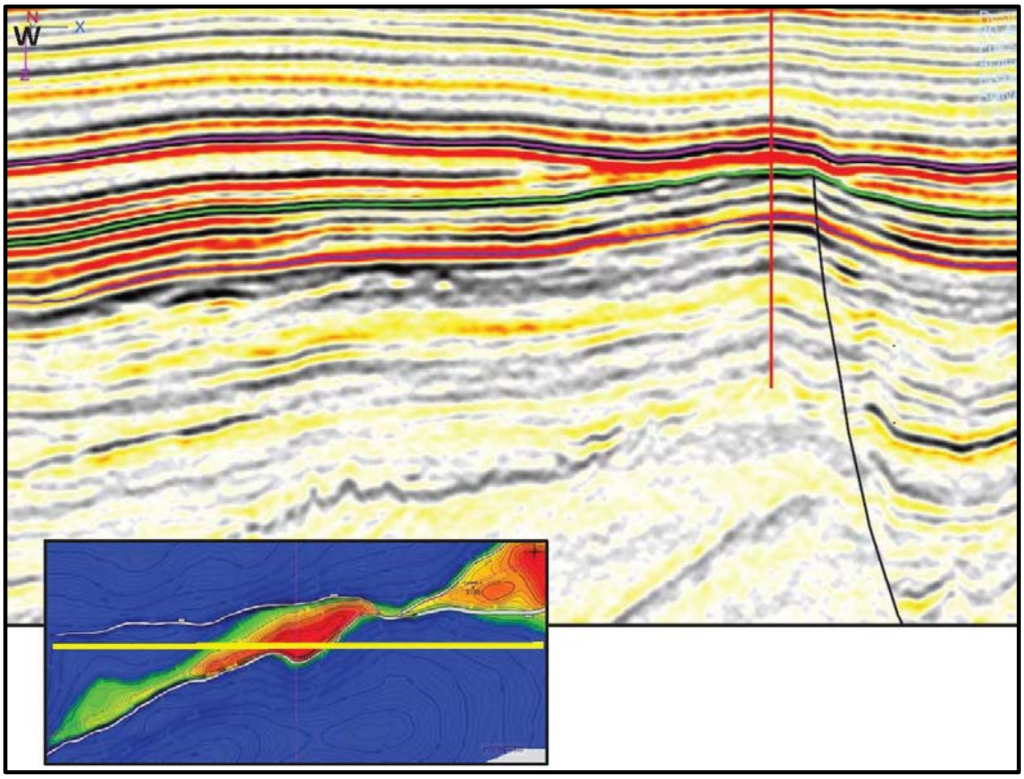
Source: President Energy

Figure 5.2.1.20: Yacare Prospect Model 3D Seismic NE-SW Arbitrary Line



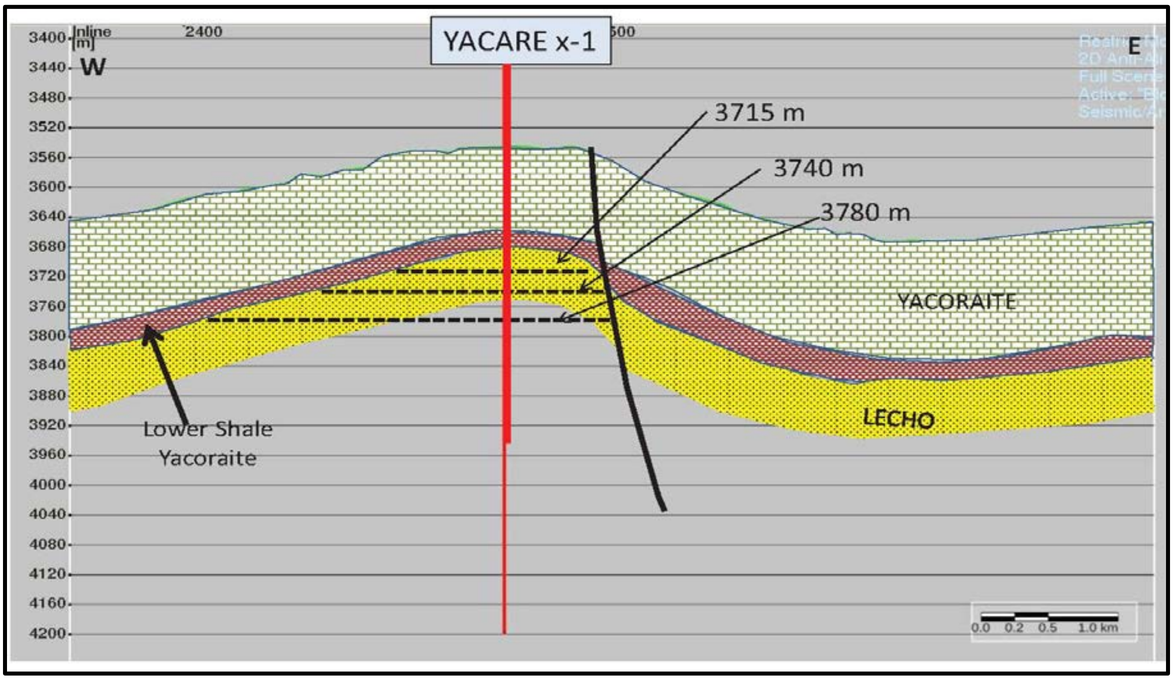
Source: President Energy

Figure 5.2.1.21: N-S 3D Seismic Inline 2476: Yacoraite/green; Lecho/blue; purple/Olmedo Salt



Source: President Energy

Figure 5.2.1.22: E-W 3D Seismic Xline 5323: Yacoraite/green; Lecho/Blue; purple/Olmedo Salt



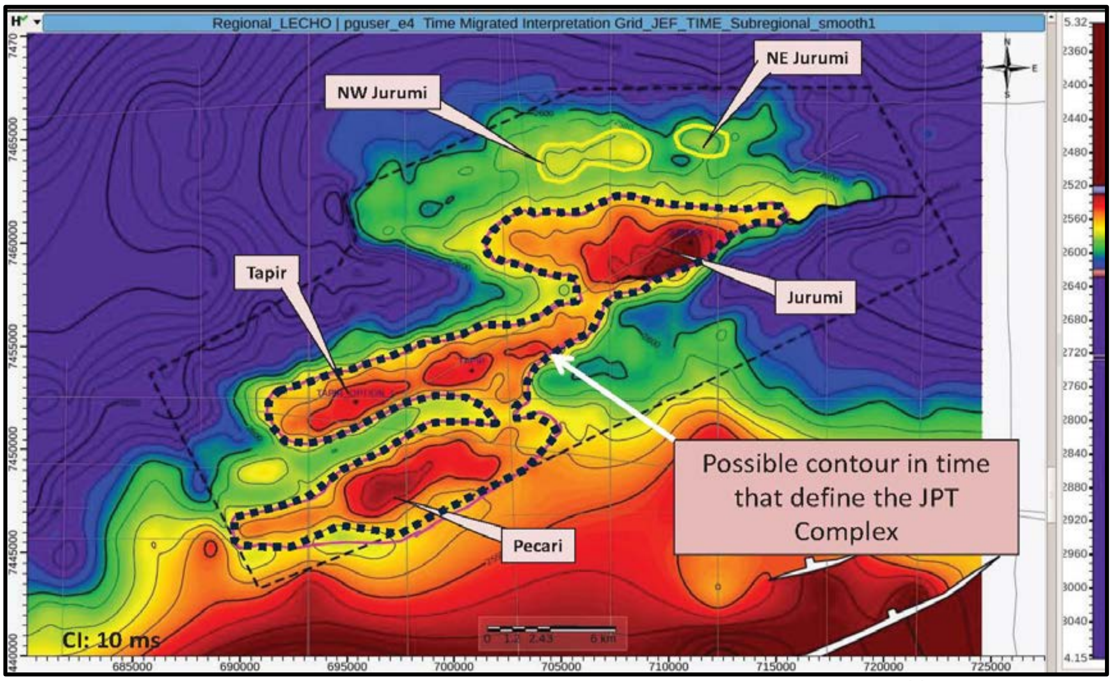
Source: President Energy

Figure 5.2.1.23: Yacare Prospect E-W 3D Seismic Xline 5323 Model

Jurumi Complex – Lecho Geologic Discussion

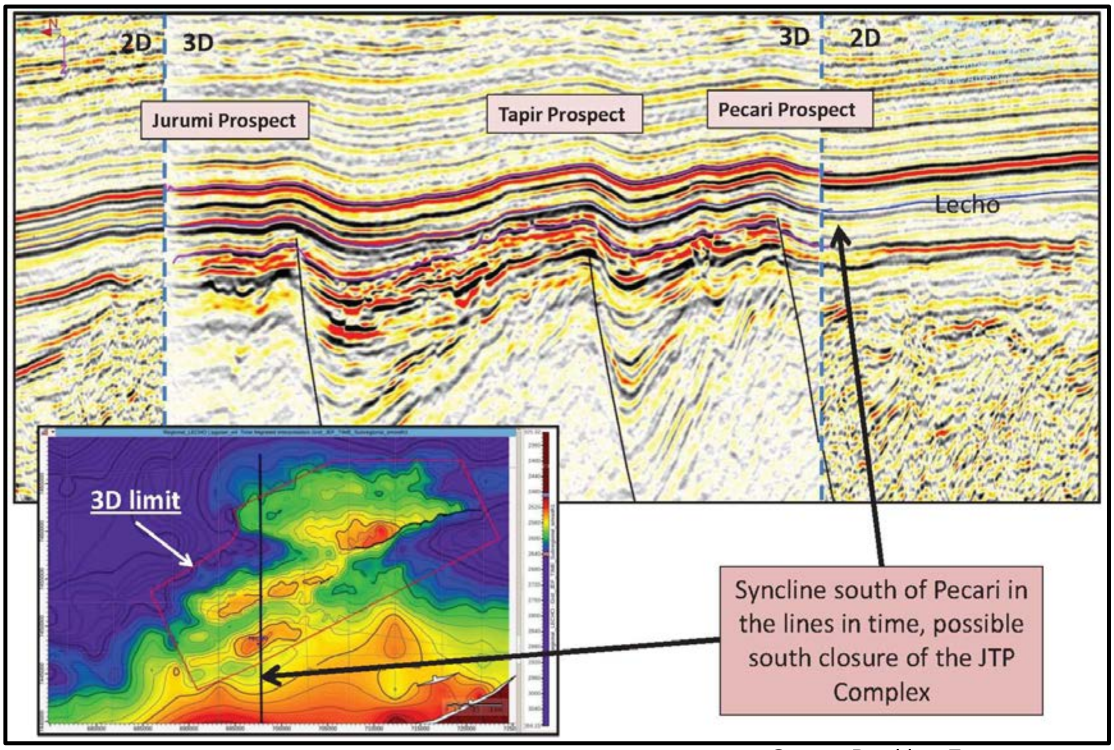
The Jurumi complex is located to the NE of Yacare prospect. Five prospect areas have been identified by President based on 3D seismic interpretation with economic modelling currently run on the Tapir, Pecari and Jurumi (Figure 5.2.1.24). The Cretaceous Lecho is a primary target in the Tapir, Pecari and Jurumi with the Paleozoics as a secondary target evaluated to-date only in Tapir.

The Tapir, Pecari and Jurumi prospects are NE-SW trending are largely 4-way dip closures draped over highs each bounded on the south flank by a high angle-south dipping normal fault (Figure 5.2.1.25). It is possible that the there may be an element of faulting in the trap geometry which may impacts the size of the accumulation in the event of discovery. A volcanics equivalent to the productive zone in the Palmar Largo field in Argentina, has been interpreted as being present under the prospects. Thin to minor Olmedo Salt is interpreted to be present in Jurumi complex.



Source: President Energy

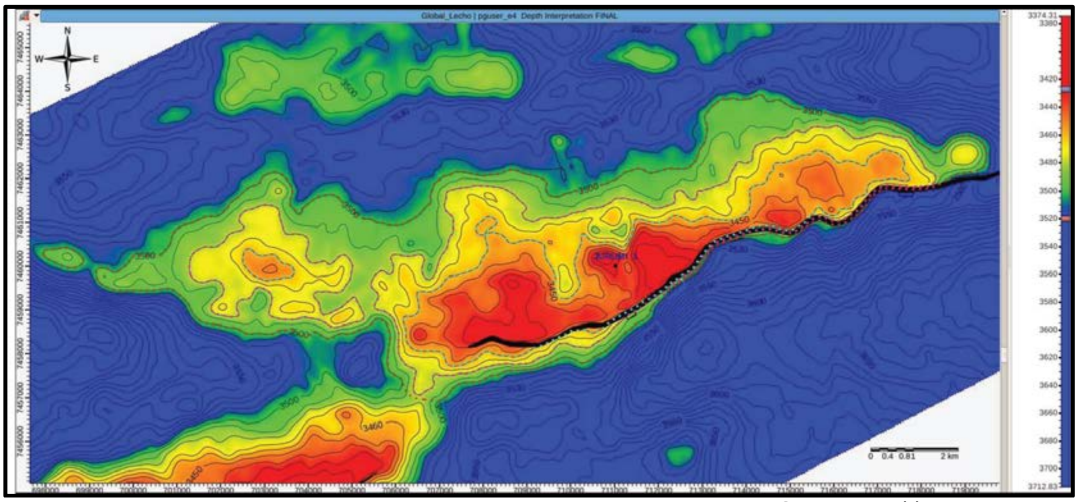
Figure 5.2.1.24: Jurumi Prospect Complex on Top Lecho Depth Structure showing five prospect locations



Source: President Energy

Figure 5.2.1.25: N-S 2D/3D Seismic Lines with Lecho Time Depth Structure

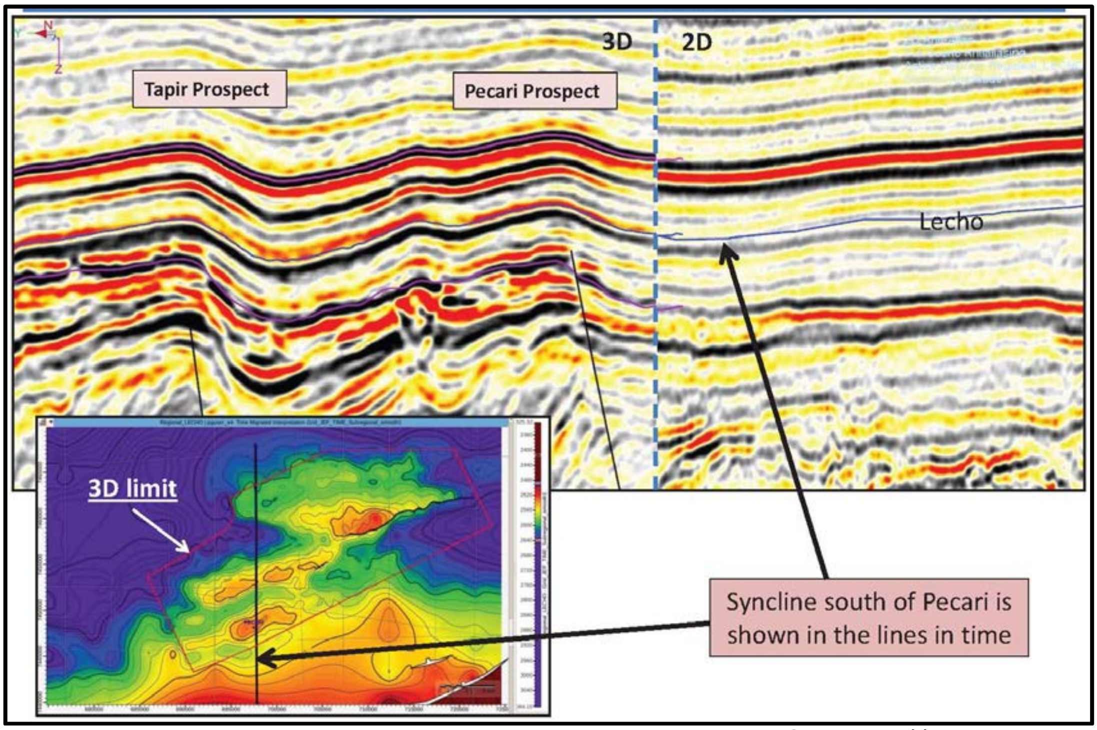
A depth structure on the Jurumi Prospect and Pecari Prospect with potential accumulation limits is shown in Figures 5.2.1.26 and 5.2.1.28.



Source: President Energy

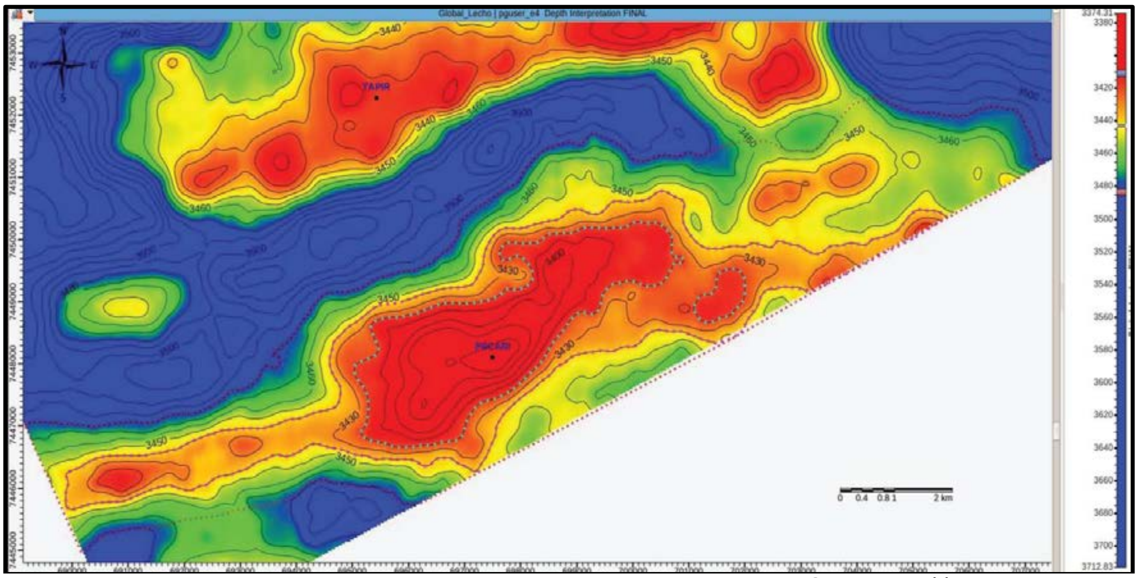
Figure 5.2.1.26: Jurumi Prospect – Top Lecho Depth Structure

Changes in seismic velocity remains a risk, like Yacare, and may result in compartmentalized accumulations rather than one larger prospect (Figure 5.2.1.26 shows the multiple culminations on the depth structure map that may share a common contact or may not). Apparent thinning in the Lecho is due to the fact that the underlying volcanics had variable topographic relief and the Lecho filled the valleys early and on-lapped the high relief later (Figure 5.2.1.27). The thinning does not appear to syn-depositional uplift or structure development. The Olmedo Salt seal, if present is expected to thin.



Source: President Energy

Figure 5.2.1.27: N-S 3D/2D Seismic Lines with Lecho Time Depth Structure

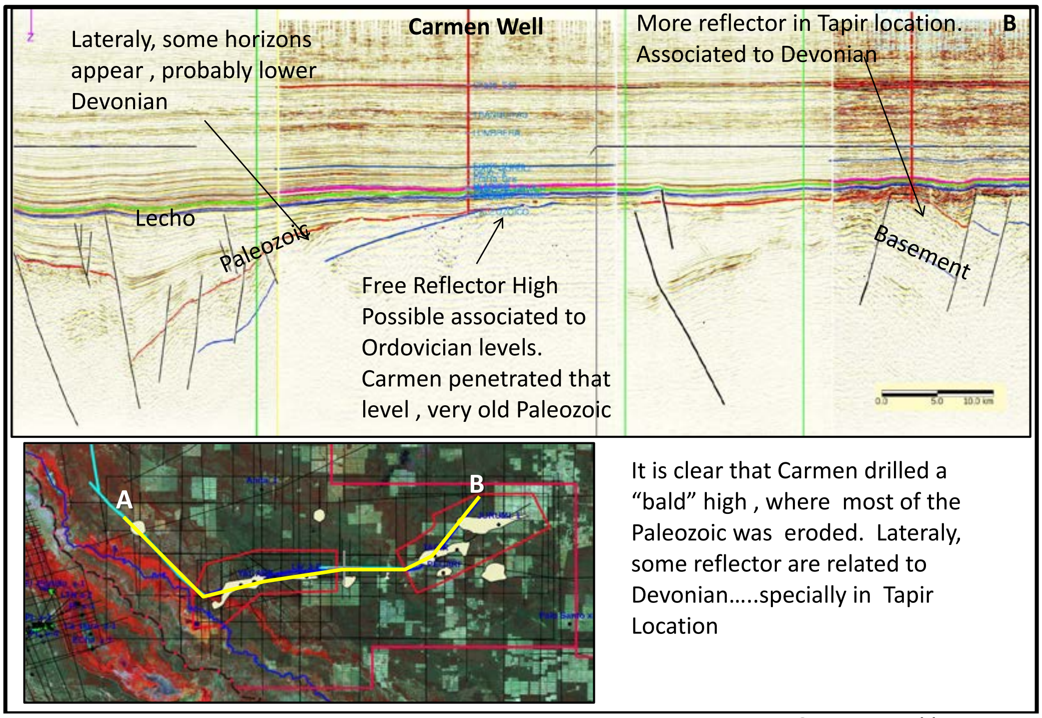


Source: President Energy

Figure 5.2.1.28: Top Lecho Depth Structure with Potential Accumulation Limits/Est. OWC used in calculating GRV

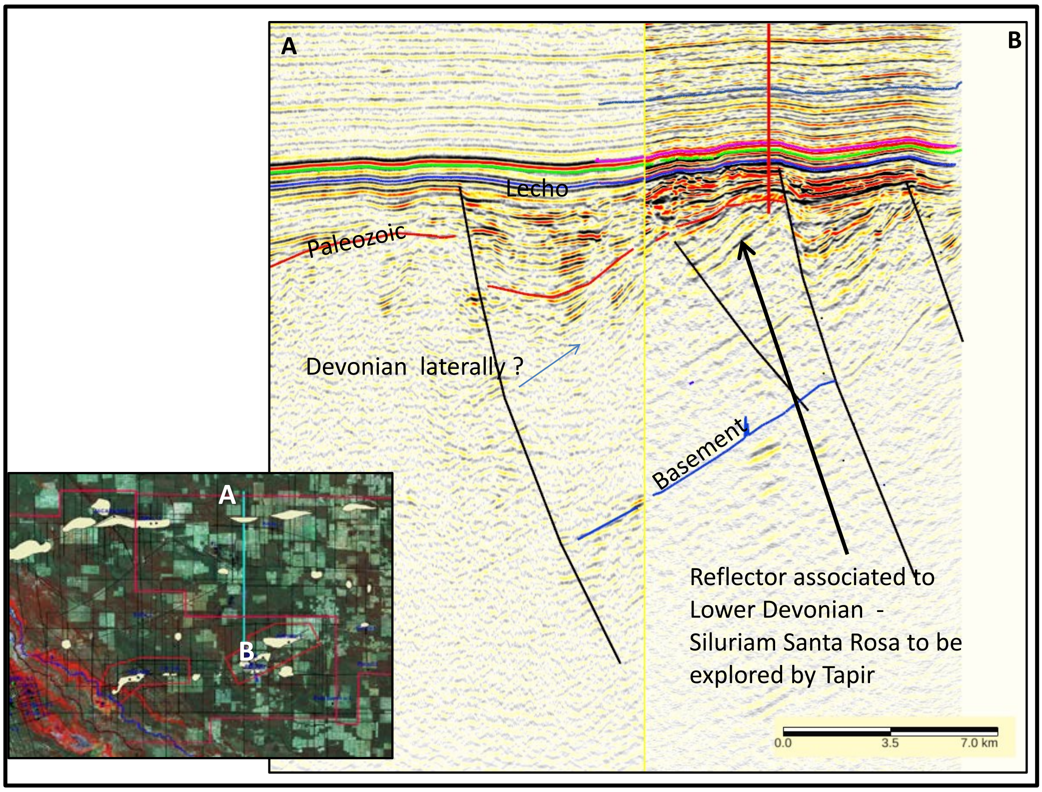
Tapir Prospect – Paleozoic Geologic Discussion

Paleozoic potential for the Devonian may lie beneath the Tapir (and others but yet to be evaluated) prospect and is a secondary target for the Tapir prospect well. The Carmen-1 penetrated lower Paleozoic Silurian/Ordovician rocks beneath the Cretaceous Lecho below the Paleozoic unconformity (Figure 5.2.1.29). Fair 3D seismic reflections dip at an angle beneath the Paleozoic unconformity. A Basement horizon has been mapped by President, but is difficult correlation due to a poor reflectivity. Mapping of the 3D seismic indicates that there is adequate accommodation space to have Devonian, Santa Rosa sand and Los Monos source rock equivalents to be preserved (Figures 5.2.1.30). The Tapir Paleozoic prospect has dipping Paleozoic potential beneath the Paleozoic Unconformity. The nature of the sediment seal overlying any hydrocarbon reservoir is at risk. President has mapped potential accommodation space for Devonian reservoir and source rocks, in the Tapir prospect area, but the distribution, quality and thickness is at risk. Any Paleozoic reservoir that is present has been breached at the unconformity, possibly for a significant time period and if volcanics are invoked as a seal, it should be noted that they could also be vesicular as seen in Palmar Largo.



Source: President Energy

Figure 5.2.1.29: W-E Arbitrary Seismic Line Between the Carmen-1 and the Tapir Prospects proposed locations



Source: President Energy

Figure 5.2.1.30: N-S 3D Seismic line showing the proposed well location and possible accommodation space for Devonian accumulation

6 PETROPHYSICS

6.1 Reservoir Parameter Analysis

Well log petrophysical analyses for five wells in the Pirity sub-basin was completed and provides summary information for the Cretaceous - Yacoraite, Lecho and Pirgua intervals in each well (Figure 6.1.1). Net (reservoir) interval thicknesses were calculated using a porosity > 7% (approx. 1 md) and a Vcl< 30% cutoff for the Gross Interval. The zones evaluated did not contain net hydrocarbon pay and were “wet”. A review of the information and the Pdf computer processed well logs indicates that the calculated reservoir parameter for Gross thickness, Net reservoir thickness, Net to Gross, Average Porosity, Average Water Saturation (Sw), Average Clay Volume (Vcl) and Average Permeability (md) is reasonable and provides a base for the prospect resource calculations prepared by President. No digital well log data files were available to run a test evaluation. The Carmen-1, Gloria-1 and the Palo Santos-1 wells are in the general area of the Jurumi Complex (Tapir) and Yacare prospects while the Anita 1 is in the area of the Jacaranda prospect. No summary was prepared for the Palo Santos-1. The Carmen-1 well log Gamma Ray (GR) curve track on the far left indicates a high Net-to-Gross for sand in the Lecho and Pirgua (see Figure 6.1.2) indicating that values of 77% and 65% are reasonable. The average porosity of 15% and 13% shown on the summary table for the Lecho and Pirgua is reasonable and is represented on the PHIE (effective porosity curve) on Figure 6.1.3 with the track scale ranging from about 0 on the left, to 25% on the right.

Well	Zones	Top	Bottom	Reference unit	Gross	Net	Not Net	Missing Log Info	Net to Gross	Avg Porosity	Avg Sw	Avg VCL	Avg Perm (md)
ANITA 1	Yacoraite	3771.0	3970.0	m	199.00	66.30	108.10	24.60	0.33	0.11	0.98	0.09	19.44
ANITA 1	Lecho	3970.0	4064.4	m	94.43	87.93	6.50	0.00	0.93	0.18	1.00	0.13	37.33
ANITA 1	Pirgua	4064.4	4126.9	m	62.47	45.40	0.20	17.00	0.73	0.18	1.00	0.13	45.11
CARMEN 1	Yacoraite	3778.0	3937.0	m	159.00	13.90	145.10	0.00	0.09	0.10	0.97	0.17	3.95
CARMEN 1	Lecho	3937.0	3996.0	m	59.00	45.60	13.40	0.00	0.77	0.15	1.00	0.12	30.57
CARMEN 1	Pirgua	3996.0	4510.9	m	514.90	333.90	170.10	11.00	0.65	0.13	1.00	0.11	26.31
BERTA 1	Yacoraite	3462.2	3587.1	m	124.92	34.022	90.9	0	0.272	0.112	0.999	0.172	18.126
BERTA 1	Lecho	3587.1	3636.1	m	48.98	Data inconclusive due to tool pick up and missing data							
BERTA 1	Pirgua	3636.1	4790.9	m	1154.84	326.00	95.00	734.00	0.28	0.19	1.00	0.13	145.15
GLORIA 1	Yacoraite	3628.1	3765.7	m	137.69	79.34	57.95	0.40	0.58	0.09	1.00	0.12	8.51
GLORIA 1	Lecho	3765.7	4015.9	m	250.16	207.60	36.70	6.00	0.83	0.14	1.00	0.15	18.20
TENIENTE ACOSTA 1	Yacoraite	3608.7	3755.0	m	146.34	118.24	28.10	0.00	0.81	0.10	1.00	0.10	25.51
TENIENTE ACOSTA 1	Lecho	3755.0	3860.4	m	105.44	92.34	5.20	7.90	0.88	0.17	1.00	0.17	14.13
TENIENTE ACOSTA 1	Pirgua	3860.4	4257.9	m	397.46	258.50	126.10	13.00	0.65	0.12	1.00	0.16	4.93

Cut-offs:
Por>7% (c. 1mD)
Vcl <30%

Berta 1: Data quality is poor over Pirgua

Source: President Energy

Figure 6.1.1: Well Petrophysical Summary of selected Pirity Sub-basin Wells, highlighting Carmen-1

The Cretaceous Olmedo salt is considered a good seal and is approximately 20 m thick in the Carmen-1 and about 50 m thick in the Palmar Largo X-1 (Figures 6.1.2 and 6.1.3).

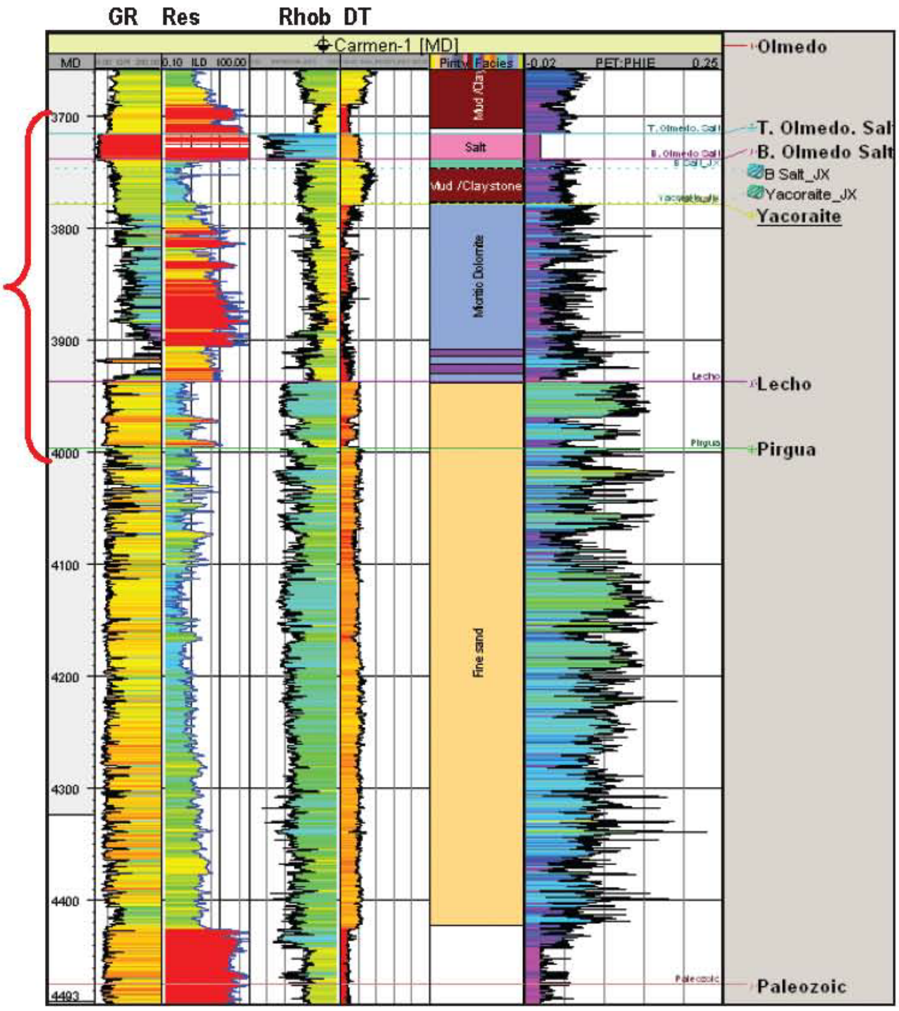
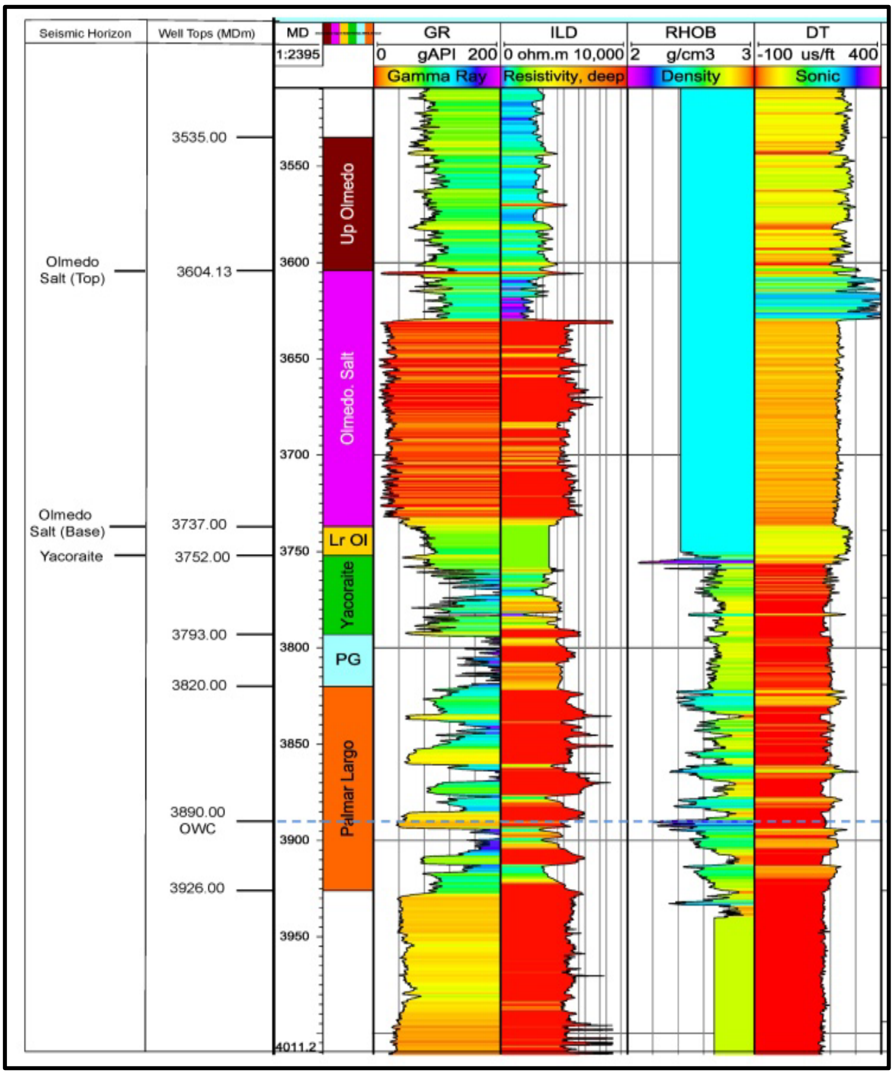


Figure 9.5: Carmen-1 well logs and effective porosity (PHIE).

Source: President Energy

Figure 6.1.2: Carmen-1 computer processed well log with effective porosity

A copy of the Palmar Largo X-1 well is shown in Figure 6.1.3 for comparison. The "Palmar Largo" zone is generally equivalent to the Lecho. The Olmedo salt is shown in red in track 2 (GR).



Source: President Energy

Figure 6.1.3: Palmar Largo X-1 well log

6.2 Source Rock Potential

President Energy provided third-party studies covering source rock reviews of the Yacoraite and Cretaceous Pirity/Olmedo Subbasins of Paraguay and Argentina.

Conclusions of these studies are as follows:

- Deposition of organic rich shales reported in several upper Cretaceous sediments include Middle and Upper Yacoraite and Olmedo Formations
- Yacoraite formation source rock facies generally deposited in saline lake with marine influence, anoxic conditions in restricted marginal and deeper water areas, Middle Yacoraite in lacutrine/restricted marine

Source rock facies, TOC and environment of deposition for the Cretaceous Pirity and Olmedo sub-basins based on well reports and basin publications is shown on Figures

6.2.1 and 6.2.2.

Source Rock Facies and TOC Values – Well Reports

Source	Basin	Well	Stratigraphy	TOC Range	Facies	Lithology
Gran Tierra	Olmedo	Alto de la Sierra x-1	Yacoraite	0.5 - 2.64%		
Gran Tierra	Olmedo	Balbuena Este x-1	Yacoraite	up to 1.7%		
YPF	Olmedo	Caimancito x-1	Yacoraite	1.34%	Distal Lacustrine	Shale
YPF	Olmedo	Caimancito x-1	Yacoraite	0.12%	Distal Lacustrine	Shale, calc
Gran Tierra	Olmedo	Caimancito xp-4	Yacoraite	0.96%	Distal Lacustrine	
Gran Tierra	Olmedo	Canada Rica x-1	Yacoraite	0.42 - 0.88%		
Gran Tierra	Olmedo	El Vinalar Norte x-1	Yacoraite	0.5 - 2.6%		
Gran Tierra	Olmedo	La Bolsa x-1	Yacoraite	0.5 - 2.01%		
Gran Tierra	Olmedo	La Horqueta x-1	Yacoraite	0.34%		
Gran Tierra	Olmedo	Los Blancos x-1	Yacoraite	0.06%		
Gran Tierra	Olmedo	Palmar Largo x-1	Yacoraite	0.73 - 4.25%		
YPF/PlusPetrol	Olmedo	Palmar Largo x-1	Yac. Las Avispas	0.72 - 0.76%	Lacustrine/Restricted Marine	Shale, dk gry
YPF/PlusPetrol	Olmedo	Palmar Largo x-1	Yac. Las Avispas	0.89 - 3.11%	Near shore Lacustrine	Shale, dk gry
YPF/PlusPetrol	Olmedo	Palmar Largo x-1	Yac. P. Guardian	0.05 - 1.22%	Lacustrine/Restricted Marine	Lst, blk to shale dk gry
YPF/PlusPetrol	Olmedo	Palmar Largo x-1	Yac. P. Guardian	0.15 - 1.42%	Lacustrine/Restricted Marine	Shale, gry to dk gry
YPF/PlusPetrol	Olmedo	Palmar Largo x-1	Yac. P. Guardian	0.17 - 0.52%	Lacustrine/Restricted Marine	Shale, gry
Gran Tierra	Olmedo	Selva Maria x-1	Yacoraite		Distal Lacustrine	
CPC	Pirity	Anita-1	Olmedo	0.04 - 0.95%	Near shore Lacustrine	
CPC	Pirity	Anita-1	Yacoraite	0.29 - 0.92%	Intertidal/Shallow marine	
Esso	Pirity	Berta-1	Olmedo	0.36 - 1.22%	Restricted Marine/supratidal	
Esso	Pirity	Berta-1	Yacoraite	0.59 - 1.88%	Restricted Marine/supratidal	
Oxy	Pirity	Carmen-1	Olmedo	0.34 - 1.37%	Near shore Lacustrine	
Oxy	Pirity	Carmen-1	Yacoraite	0.12 - 0.88%	Shallow marine/lacustrine	

Source: President Energy

Figure 6.2.1: Source rock facies and TOC values based on well reports

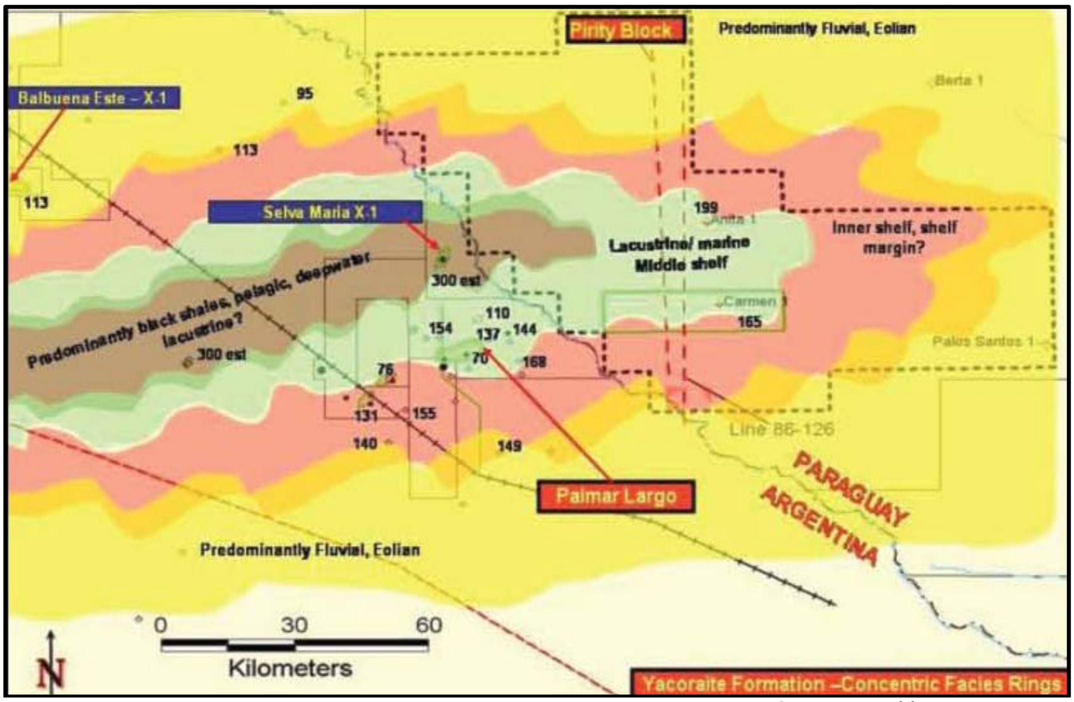
Source Rock Facies and TOC Values – Basin Publications

Source	Location	Stratigraphy	TOC Range	Facies	Lithology
Del Papa 2006	NE Argentina Cret Basin	Lumbrera Inferior Fm	up to 9%	Lacustrine	Shale, dk gry,
Disalvo 2002	NE Argentina - Puesto Guardian, Cuchima, Lumbrera, Caimancito fields	Yacoraite	0.1 - 12%	Lacustrine	Shale, lst
Jacobean 2006	Palmar Largo	Yacoraite	0.5 - 3%		Shale
Legerreta Villar 2011	NE Argentina Cret Basin	Yacoraite	0.5 - 6%		
Gran Tierra 2008	NE Argentina Cret Basin	Yacoraite Lower	up to 12%	Lacustrine/Restricted Marine	Shale
Gran Tierra 2008	Valle Morado x-1001	Yacoraite			Organic mudstone
Hernandez 1999	NE Argentina Cret Basin	Yacoraite	1 - 6%	Restricted Marine	Shale, blk
Marquillas 2006	NE Argentina Cret Basin	Yacoraite		Marginal marine	Shale , blk, multi colr
Omil 1996	NE Argentina Cret Basin - Cuchima and Lumbrera fields	Yacoraite	1-6%	Lacustrine	
Omil Boll	NE Argentina Cret Basin	Yacoraite/Las Avispas Mbr	0.5 - 3%	Lacustrine	
PlusPetrol 2000	NE Argentina Cret Basin	Yacoraite/Las Avispas Mbr	1 - 4%	Lacustrine/Lagoonal	Shale, mdst
Dyer2007	Olmedo Basin flanks	Yacoraite	0.2 - 2.5%		
Dyer2007	Carmen-1	Yacoraite	0.8-1.5%		
Dyer2007	Carmen-1	Olmedo Fm	1.0-1.5%		
Jacobean Farm Out	Carmen-1	Olmedo Fm	1.0-1.5%		
Pucci 2008	Pirity Basin	Yacoraite	0.8 - 1.5%		
Pucci 2008	Pirity Basin	Olmedo Fm	1.0-1.5%		
Pucci 2008	Olmedo basin flanks - Dragones x-1 well	Olmedo Fm	up to 3%	Restricted Marine/supratidal	Shale blk, evaporites
Dyer2007	Pirity Basin	Olmedo Fm	up to 3.3%		

Source: President Energy

Figure 6.2.2: Source Rock Facies and TOC values based on Basin publications

Yacoraite paleoenvironments vary from fluvial/eolian, inner shelf to shelf margin to Lacustrine marine middle shelf, to black shales in pelagic deepwater to lacustrine (Figure 6.2.3). The Palmar Largo, Selva Maria X-1 and the Balbuena Este-X1 are productive areas in Argentina.

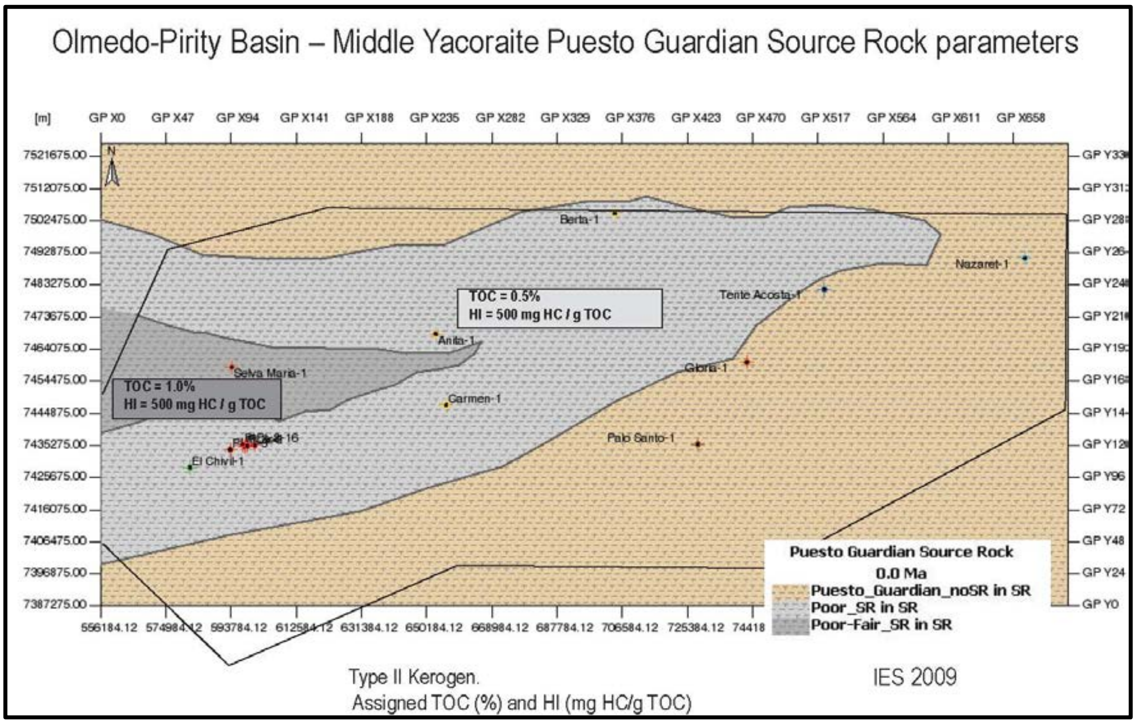


Source: President Energy

Figure 6.2.3: Yacoraite Paleoenvironment for the Pirity/Olmedo sub-basins

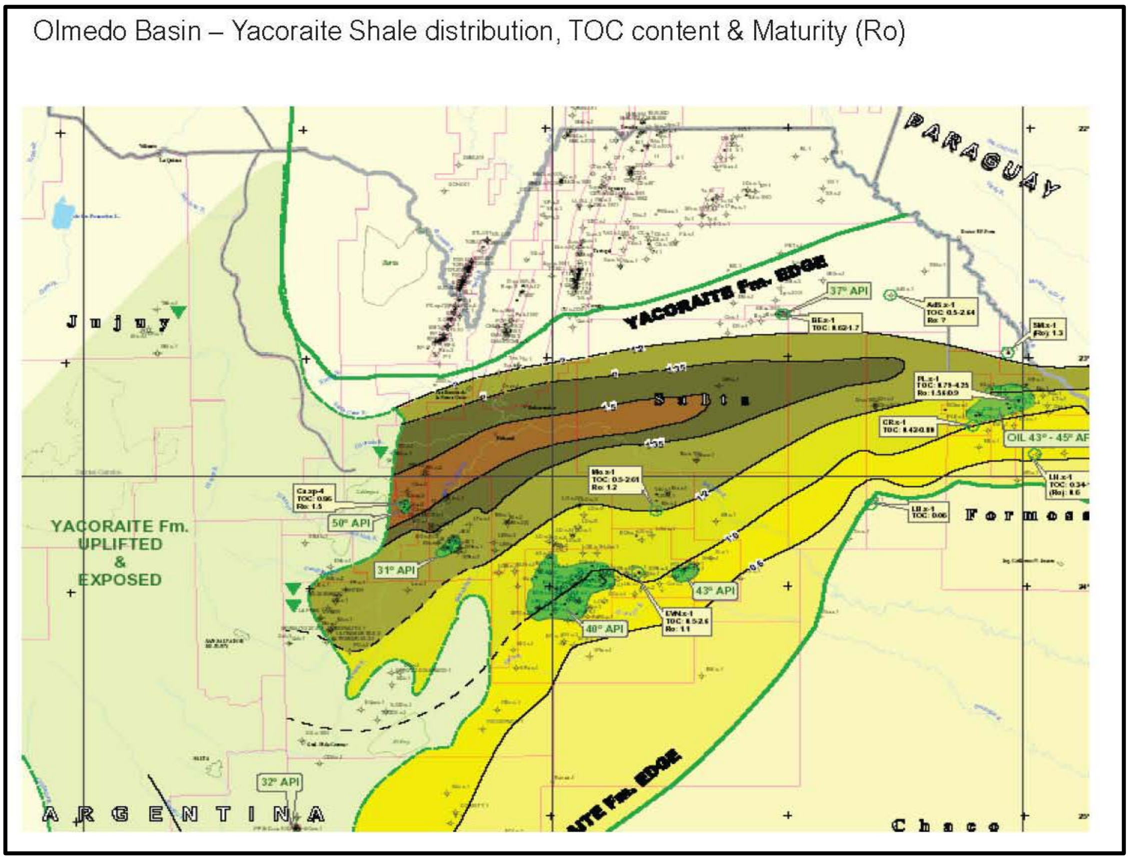
Middle Yacoraite source rock parameter maps suggest the large area of the President prospects and leads in the Pirity and the Palmar Largo fields in the Olmedo sub-basin lies within the poor to fair source areas shown in Figure 6.2.4.

Within the Argentina Olmedo basin area in Argentina, the Yacoraite shale produces 31API to 50 API light crude with 40-43 API in the Palmar Largo fields. Ro ranged from 0.6 to about 1.5 in the basin center. TOC ranged from about 0.5-2.65 as reflected in Figure 6.2.5.



Source: President Energy

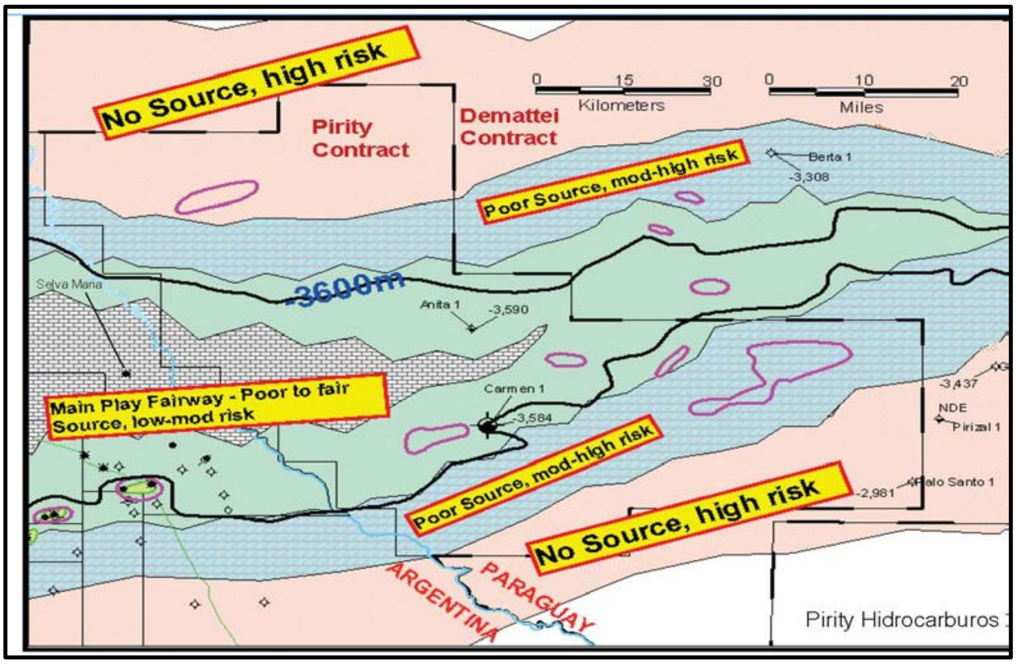
Figure 6.2.4: Middle Yacoraite – source rock parameter distribution



Source: President Energy

Figure 6.2.5: Olmedo sub-basin-Yacoarite Shale distribution, TOC and Maturity (Ro)

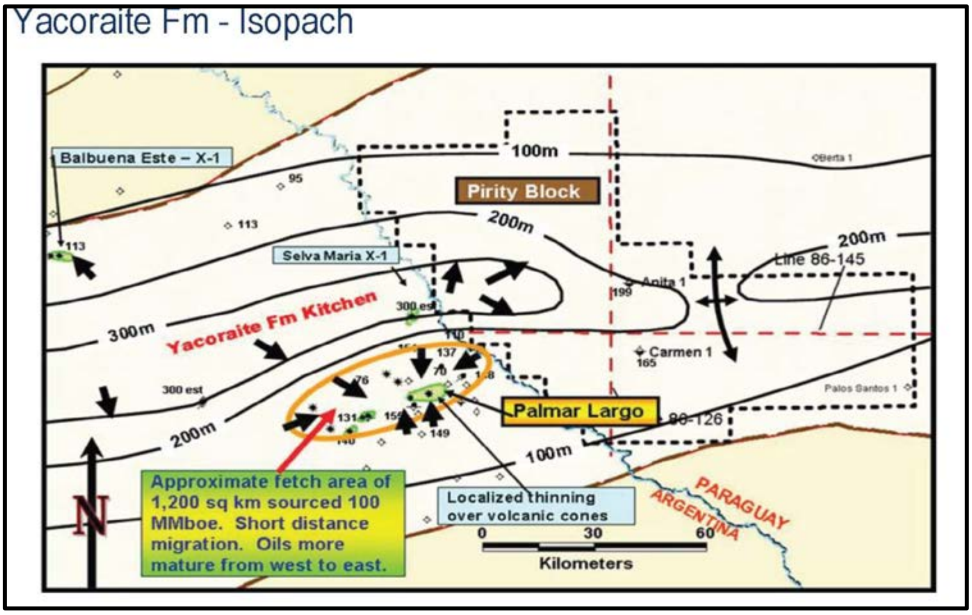
Figure 6.2.6 maps a distribution of source rock potential and risk. The Palmar Largo field and the Yacare prospect lie in the poor to fair source potential and low-mod risk (Figure 6.2.6), whilst and Jurumi complex prospects lie in the poor source mod-high risk area and Jacaranda is slightly further away from the kitchen to the north.



Source: President Energy

Figure 6.2.6: Facies – Yacoraite Facies and Risk Map

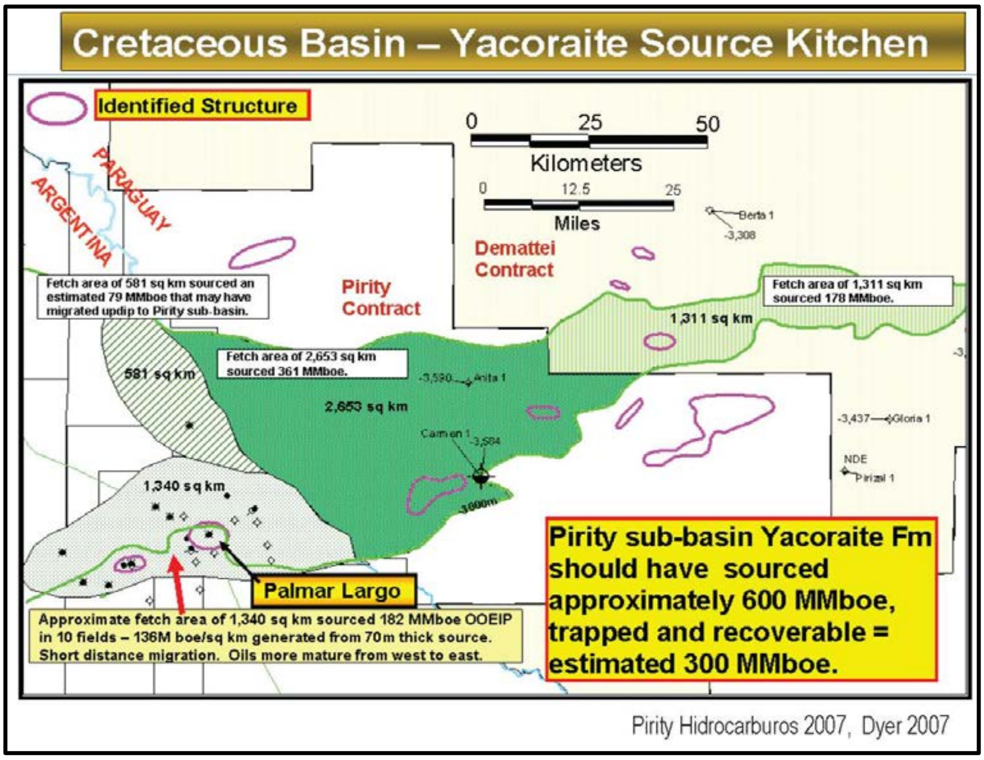
The Yacoraite formation isopach thickness ranges from about 100m to 300m in the Pirity/Olmedos sub-basin with the thickest in the basin center kitchen area (Figure 6.2.7)



Source: President Energy

Figure 6.2.7: Yacoraite Isopach map, Pirity/Olmedo sub-basins

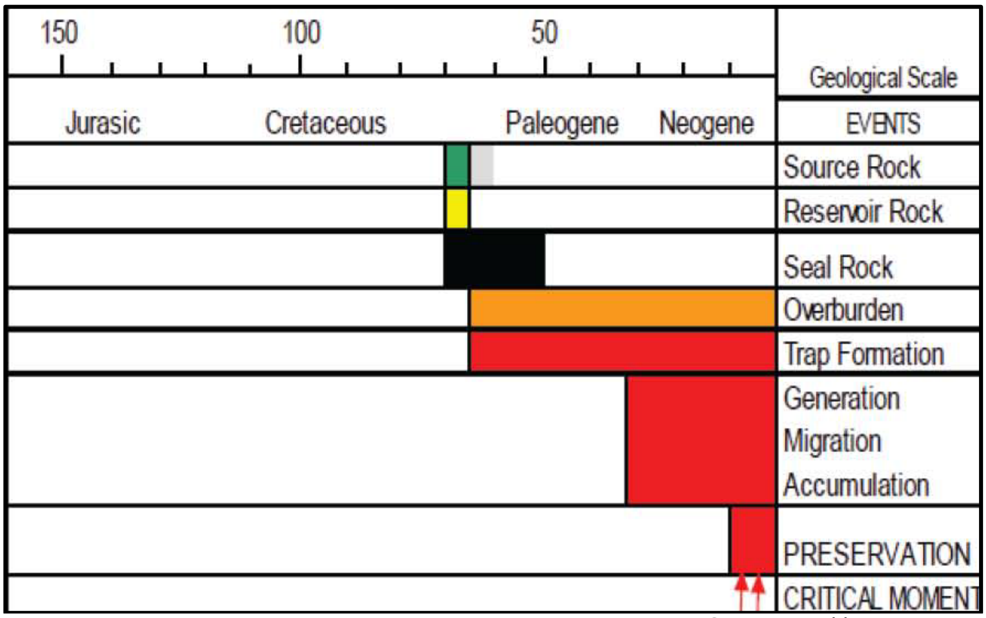
The Yacoraite Fetch area covers the largest part of Pirity sub-basin in the Pirity concession (Figure 6.2.8) and potentially has generated significant oil.



Source: President Energy

Figure 6.2.8: Cretaceous Basin – Yacoraite source kitchen

The petroleum system for the Cretaceous Yacoraite has been interpreted to have generated, migrated and accumulated during approximately Tertiary Eocene time (Figure 6.2.9)



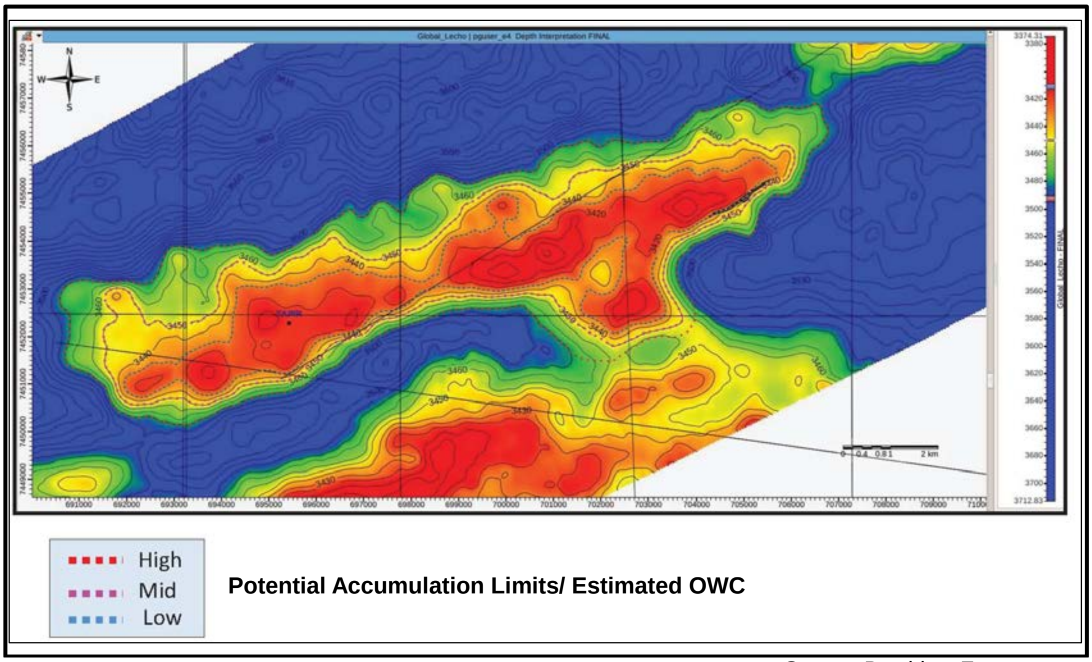
Source: President Energy

Figure 6.2.9: Olmedo sub-basin Petroleum Systems

7 INDICATIVE VOLUMETRIC ASSESSMENTS

7.1 Resource Volumetrics

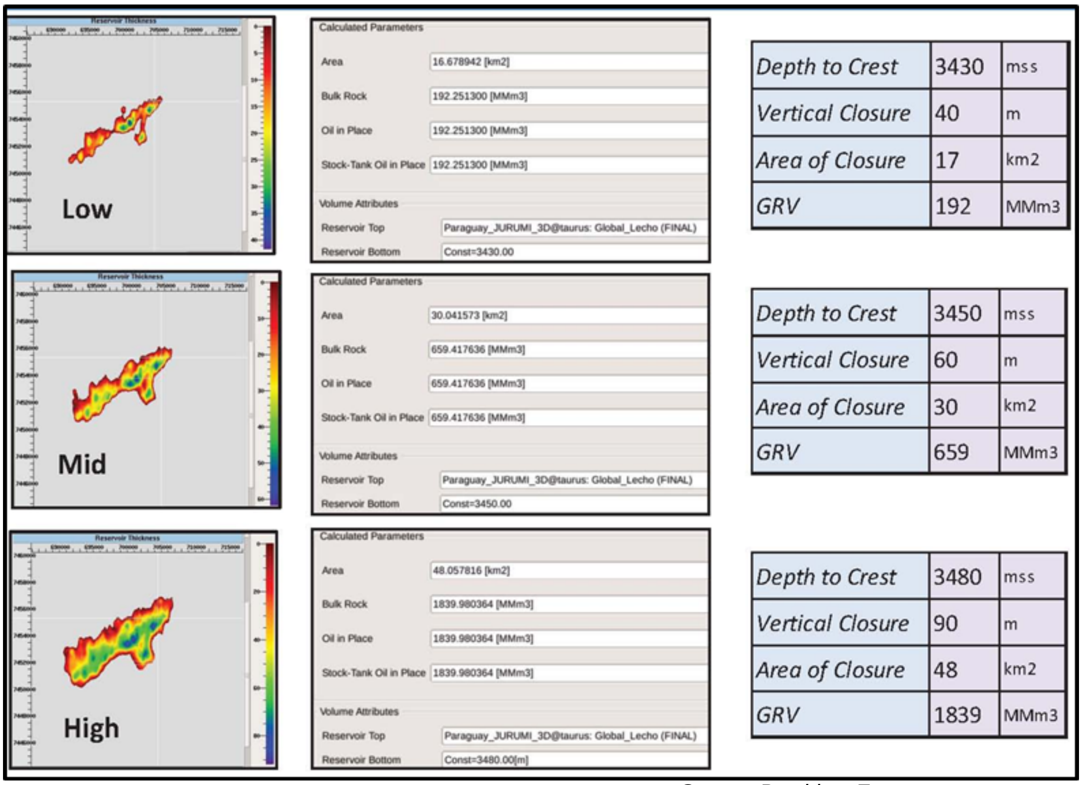
Prospect resources have been estimated by President based on Gross Rock Volume (GRV) volumetrics; well log petrophysical parameters, reservoir parameters from well control and fluid parameters from the Palmar Largo fields. The Cretaceous Lecho, Pirgua and Paleozoics are the targets reservoirs for which volumetrics have been provided. The volumetric approach for determination of Gross Rock Volume (GRV) is the same for the Yacare, Jurumi complex (Including Tapir) and the Jacaranda prospects. The Tapir prospect will be used to explain this approach, which is a standard for the industry. A top of Lecho depth structure map was prepared by President based on 3D seismic interpretations, see Figure 7.1.1. Using a Paradigm workstation, the prospect crestal depth was subtracted from the Low, Mid and High estimated OWC surface to calculate a vertical closure (relief) and GRV. The High case is near the lowest closing contour, “spill point”, the Mid case is about 67% of the High vertical closure and the Low case is about 45% of the High vertical closure. The Area of closure is calculated for each potential accumulation limit or estimated OWC. The GRVs are input into the @RISK Monte Carlo simulation along with other reservoir parameters and a range of recovery factors to generate a resource distribution resulting in a P10, P50, P90 and mean unrisked Resource for each prospect reservoir. Each target reservoir is considered independent and does not rely on each other for success.



Source: President Energy

Figure 7.1.1: Top Lecho Depth Structure showing potential accumulation limits / estimated OWCs

RPS checked the areas of closure for the Tapir Lecho and concluded that the GRVs are reasonable.



Source: President Energy

Figure 7.1.2: Calculated GRV using the Tapir Prospect Potential Accumulation Limits/ Estimated OWCs using the Paradigm Workstation

The Table 7.1.3 summarizes the values which the Company presented as input parameters used in its @Risk Monte Carlo simulation to generate the range of resources including the Pmean resource volumes which are used in the economic models. RPS performed comparative Monte Carlo simulations using the input parameters from Table 7.1.3 on the REP™ Monte Carlo simulation program. RPS utilized the value in the table labeled "Low" or "Pmin" as P90 of the indicated "distribution" and the value in the table labeled "High" or "Pmax" as the P10 of the indicated "distribution". The unrisked prospect potential mean resource calculated by RPS using REP™ in most cases exceeded the resource volumes calculated by President and are therefore considered reasonable by RPS.

Prospect/Lead	Input Parameter	Distribution	Low	Medium	High
Yacare Prospect-Lecho	Area – km^2	Paradigm	1.4	3	7.2
	Thickness - m	Paradigm	30	55	95
	Gross Rock Volume-MMm^3 [1]	Lognormal	23	79	274
	Monte Carlo Input Parameter	**Distribution**	**Pmin**	**Mean**	**Pmax**
	NTG (%)	Lognormal	50	77	100
	Porosity - %	Normal	10	15	20
	S_w - %	Normal	12	35	50
	Bo – vol/vol	Normal	1.2	1.3	1.4
	GOR (scf/stb)	Normal	500	650	1000
	Rec. Factor - %	Trigen	19	35	50
Jurumi Prospect-Lecho	**Input Parameter**	**Distribution**	**Low**	**Medium**	**High**
	Area – km^2	Paradigm	17	35	56
	Thickness - m	Paradigm	40	60	80
	Gross Rock Volume-MMm^3 [1]	Lognormal	286	795	1718
	Monte Carlo Input Parameter	**Distribution**	**Pmin**	**Mean**	**Pmax**
	NTG (%)	Lognormal	55	80	100
	Porosity - %	Normal	10	15	20
	S_w - %	Normal	12	35	50
	Bo – vol/vol	Normal	1.2	1.3	1.4
	GOR (scf/stb)	Normal	500	650	1000
	Rec. Factor - %	Trigen	19	35	50
Tapir Prospect-Lecho	**Input Parameter**	**Distribution**	**Low**	**Medium**	**High**
	Area – km^2	Paradigm	17	30	48
	Thickness - m	Paradigm	40	60	90
	Gross Rock Volume-MMm^3 [1]	Lognormal	192	659	1839
	Monte Carlo Input Parameter	**Distribution**	**Pmin**	**Mean**	**Pmax**
	NTG (%)	Lognormal	55	80	100
	Porosity - %	Normal	10	15	20
	S_w - %	Normal	12	35	50
	Bo – vol/vol	Normal	1.2	1.3	1.4
	GOR (scf/stb)	Normal	500	650	1000
	Rec. Factor - %	Trigen	19	35	50
Pecari Prospect-Lecho	**Input Parameter**	**Distribution**	**Low**	**Medium**	**High**
	Area – km^2	Paradigm	9	21	48
	Thickness - m	Paradigm	40	60	100
	Gross Rock Volume-MMm^3 [1]	Lognormal	158	466	1983
	Monte Carlo Input Parameter	**Distribution**	**Pmin**	**Mean**	**Pmax**
	NTG (%)	Lognormal	55	80	100
	Porosity - %	Normal	10	15	20
	S_w - %	Normal	12	35	50

	Bo – vol/vol	Normal	1.2	1.3	1.4
	GOR (scf/stb)	Normal	500	650	1000
	Rec. Factor - %	Trigen	19	35	50
	1 Fact Note-GRV is calculated directly in Paradigm based on top and base reservoir. Area and thickness are not used in volumetrics but shown for reference purpose.				
Jacaranda Prospect-Lecho	**Input Parameter**	**Distribution**	**Low**	**Medium**	**High**
	Area – km^2	Paradigm	16	34	60
	Thickness - m	Paradigm	100	150	200
	Gross Rock Volume-MMm^3 [1]	Lognormal	613	2100	4194
	Monte Carlo Input Parameter	**Distribution**	**Pmin**	**Mean**	**Pmax**
	NTG (%)	Lognormal	55	80	100
	Porosity - %	Normal	10	15	20
	S_w - %	Normal	12	35	50
	Bo – vol/vol	Normal	1.2	1.3	1.4
	GOR (scf/stb)	Normal	500	650	1000
	Rec. Factor - %	Trigen	19	35	50
Tapir Prospect-Paleozoic	**Input Parameter**	**Distribution**	**Low**	**Medium**	**High**
	Area – km^2	Paradigm	17	33	44
	Thickness - m	Paradigm	100	200	300
	Gross Rock Volume-MMm^3 [1]	Lognormal	939	3366	7252
	Monte Carlo Input Parameter	**Distribution**	**Pmin**	**Mean**	**Pmax**
	NTG (%)	Lognormal	20	31.6	60
	Porosity - %	Normal	5	8.5	12
	Sg - %	Normal	60	75	90
	Bg – vol/vol	Normal	250	350	450
	Condensate Yield (bbl/MMcf)	Normal	20	30	40
	Rec. Factor - %	Trigen	50	75	90
Jacaranda Prospect-Paleozoic	**Input Parameter**	**Distribution**	**Low**	**Medium**	**High**
	Area – km^2	Paradigm	42	68	134
	Thickness - m	Paradigm	200	320	480
	Gross Rock Volume-MMm^3 [1]	Lognormal	3677	10031	27092
	Monte Carlo Input Parameter	**Distribution**	**Pmin**	**Mean**	**Pmax**
	NTG (%)	Lognormal	10	23.5	50
	Porosity - %	Normal	5	8.5	12
	Sg - %	Lognormal	60	75	90
	Bg – vol/vol	Normal	200	300	400
	Condensate Yield (bbl/MMcf)	Normal	20	30	40
	Rec. Factor - %	Trigen	50	71	90
Jacaranda Prospect-Pirgua	**Input Parameter**	**Distribution**	**Low**	**Medium**	**High**
	Area – km^2	Paradigm	9	22	31
	Thickness - m	Paradigm	50	100	150

	Gross Rock Volume-MMm^3 [1]	Lognormal	281	1043	1707
	Monte Carlo Input Parameter	**Distribution**	**Pmin**	**Mean**	**Pmax**
	NTG (%)	Lognormal	60	78	100
	Porosity - %	Normal	10	16	23
	Sg - %	Normal	60	75	90
	Bg – vol/vol	Normal	150	250	350
	Condensate Yield (bbl/MMcf)	Normal	20	30	40
	Rec. Factor - %	Trigen	50	71	90
	1 Fact Note-GRV is calculated directly in Paradigm based on top and base reservoir. Area and thickness are not used in volumetrics but shown for reference purpose.				

Table 7.1.3: President's Input parameters for indicative volumetrics

The resulting indicative volumetric outcomes are shown in Tables 7.1.4 and 7.1.4a below. The In-Place Condensate Volumes and In-Place Gas volumes (Lecho oil prospect only) for the prospects shown in Table 7.1.4 are nominal volumes and are not expected to exist in this phase in the reservoir.

Prospects	In-Place Oil Volumes (MMbbl)			In-Place Condensate Volumes (MMbbl)			In-Place Gas Volumes (Bcf)			GPoS %
	Low	Medium	High	Low	Medium	High	Low	Medium	High	
Yacare-Lecho	15.79	25.71	64.00				10.53	17.14	42.00	23.0
Jurumi-Lecho	210.53	265.71	388.00				136.84	177.14	264.00	26.8
Tapir-Lecho	142.11	214.29	372.00				94.74	142.86	258.00	26.8
Pecari-Lecho	121.05	208.57	376.00				78.95	140.00	258.00	26.8
Jacaranda-Lecho	378.95	548.57	978.00				242.11	374.29	654.00	16.8
Tapir-Paleozoic				12.00	20.00	41.11	414.00	678.67	1394.44	13.4
Jacaranda-Paleozoic				18.00	36.00	88.89	576.00	1210.67	3007.78	19.2
Jacaranda-Pirgua				12.00	18.67	34.44	390.00	601.33	1134.44	17.3

Table 7.1.4: Summary of President's Unrisked In-place Volumetrics (GPoS adjusted by RPS)

Prospects	Recoverable Oil Volumes (MMbbl)				Recoverable Condensate Volumes (MMbbl)				Recoverable Gas Volumes (Bcf)			
	Low	Med	High	Mean	Low	Med	High	Mean	Low	Med	High	Mean
Yacare-Lecho	3	9	32	14					2	6	21	9
Jurumi-Lecho	40	93	194	106					26	62	132	71
Tapir-Lecho	27	75	186	95					18	50	129	64
Pecari-Lecho	23	73	188	93					15	49	129	62
Jacaranda-Lecho	72	192	489	241					46	131	327	162
Tapir-Paleozoic					6	15	37	19	207	509	1255	642
Jacaranda-Paleozoic					9	27	80	38	288	908	2707	1262
Jacaranda-Pirgua					6	14	31	16	195	451	1021	547

Table 7.1.4a: Summary of President's Unrisked Prospective Resources

7.2 Geological Risks

Based on the RPS Volumetrics, Risk and Aggregation Guidelines, geological chance is the probability that the prospect is as described in the technical evaluation, specifically as characterized in the volumetric model. The geological chance or probability of success (GPoS) is the probability that a prospect will be successful and contain volumes of hydrocarbons. The GPoS does not apply directly to the GRV and other input parameters used in the volumetric evaluation, but does apply to the volumetric range derived from them. The GPoS is the chance that applies to the entire volumetric expectation curve for that geological model. It is the chance that you will get on the hydrocarbon distribution curve (P0 to P100). The risking takes place after a prospect has been modelled and a volumetric range has been calculated for the model.

Both Play and Prospect Specific elements are considered in the risking process. The Chance of Discovery = the Play Chance x Prospect Chance. Play chance is concerned with a relatively broad view as to whether the key elements of source, reservoir and seal are present and effective over a broad geographic area. For the Paraguay prospects the Play chance is considered to be 1.0 as the President Energy targets are proven productive and probably economic in Argentina and Bolivia to the west within the Chaco and Olmedo sub-basins. Basically the play is proven to work.

Prospect specific chance related to the local conditions at the prospect location associated model and volumetric parameters in computing the volumetric range for the prospect. Trap, seal, reservoir and charge presence, maturity and migration are used in calculating the prospect GPoS. Table 7.2.1 shows the numerical benchmarking for the individual risk elements in terms of “possible”, “probable”, “likely”, “very likely” etc.

Chance	Description
100%	Proven
>90%	Very likely (very low risk)
70%-90%	Likely (low risk)
50%-70%	Probable (moderate risk)
30%-50%	Possible (medium risk)
10%-30%	Unlikely (high risk)
<10%	Very unlikely (very high risk)

Table 7.2.1: Risking Description Summary

Otis and Schneidermann[1], 1997 provide an extremely useful benchmark for GPoS in conventional hydrocarbon prospects based on Chevron drilling experience which allowed the definition of five broad categories of risk. The appropriate risk range for "Prospect" is shown on Figure 7.1.1 and ranges from 12% to 25%. As shown below the Paraguay prospects have been assigned RPS risks of 13.4 to 26.8% and are considered reasonable by RPS.

RPS Energy — RPS Volumetrics, Risk and Aggregation Guidelines

	GPoS		Risk setting	Commentary
Very low risk	50%-99%	Better than 1:2	**Appraisal**	All factors are favourable. Proven plays <5km from existing production.
Low risk	25%-50%	1:4 to 1:2		All factors are encouraging to favourable. Proven plays 5-10km from existing production.
Moderate risk	12%-25%	1:8 to 1:4	**Prospect**	2 or 3 risk factors are encouraging to favourable, one or two are encouraging to neutral. New plays in producing basins, or proven plays > 10km from production.
High risk	5%-12%	1:20 to 1:8	**Play**	1 or 2 risk factors are encouraging, 2 or 3 factors are neutral. New plays in producing basins > 20km from production or proven plays in an unproved area.
Very high risk	1%-5%	Worse than 1:20	**Hydrocarbon system**	2 or 3 risk factors are no better than neutral and 1 or 2 are questionable or unfavourable. New plays in unproved areas.

Source: RPS

Figure 7.1.1: Tabulation of Risk Categories for Conventional Hydrocarbon Prospects (adapted from Otis and Schneidermann, 1997)

The following is a summary of the prospect risks by key elements plus a seismic line showing the prospect setting. Target opportunities are considered to be independent (success at one target is not dependent on other targets)

[1] 'Rules of Thumb' for Geological Risk Assessment: Otis and Schneidermann, 1997

Jacaranda Prospect (NW Flank of the Pirity Sub-basin)

Paleozoics (Includes Santa Rosa sand, Devonian sand, Carboniferous sand potential)

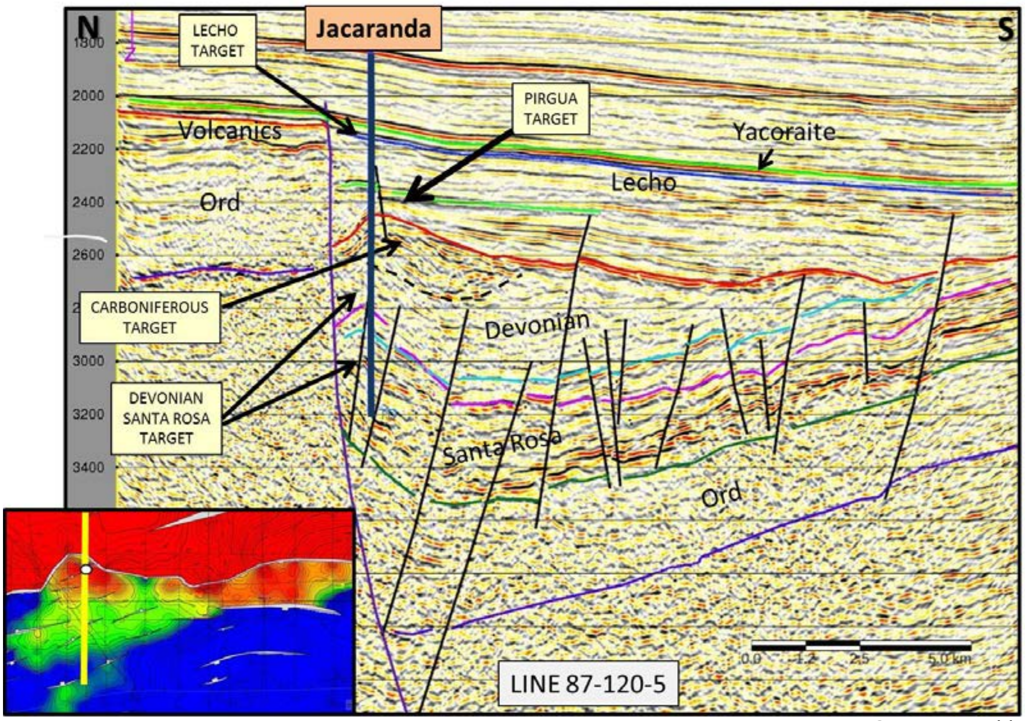
Trap	0.8 (2D seismic dataset)
Reservoir	0.5
Seal	0.6
Migration/charge	0.8 (assumes Devonian Los Monos shale primary source)
GPoS	**0.192 (1 in 5.2 chance of success)**

Trap – The Paleozoic (unconformity) structure is defined by 2D seismic lines that have a density of 1.5 to 3 km E-W and about 1.5 km N-S for the Jacaranda Prospect-Paleozoic target, see Figure 7.1.2. This structure has been used in the estimation of the potential Paleozoic volumetrics. The reflectors below the Paleozoic unconformity show distinct dip and are interpreted to be tilted fault blocks that preserve Paleozoic sediments, possibly Devonian or younger. As above, the closure of these tilted faults blocks is provided by the overlying unconformity and therefore relies on sealing cap rocks being present immediately above the unconformity. However, there seems to be ample "structure" that may set up a trap. The current seismic data is restricted to 2D and therefore there remains some risk that the trap may not be fully mapped.

Reservoir – Uncertainty exists regarding the presence of reservoir, reservoir quality, lateral distribution and trap at the faulted basin edge of the Pirity sub-basin. The wells (ref SV-1, SV-2 are shown approximately as the eastern well symbol in Figure in 5.1.2.1) in Santa Victoria in Argentina 110 km west of the Jacaranda location penetrated the whole reservoir sequence and represents the closest analog which reportedly tested the Devonian. The Don Quixote-1 well is 100 km north and only had reservoirs in the Santa Rosa (50-70m) but is located in the Boqueron High with unknown paleogeography. The faulting could create natural fractures enhancing permeability in reservoirs present, but may also create lost circulation drilling problems. Occurrence of higher seismic reflection amplitudes packages, especially in the prospective intervals of the Carboniferous and Santa Rosa might indicate the possibility of reservoir occurrence. Whilst the possible Carboniferous amplitudes are mapped at the currently targeted prospect, the Santa Rosa amplitudes are mainly mapped away (to the south) from the currently targeted prospect crest. These may make a secondary target later in the exploration of the license.

Seal – Paleozoic Reservoirs (and younger) may be side-sealed via juxtaposition across the main fault against older tight Paleozoics and Basement providing some seal potential (Figure 7.1.2) with interbedded shales also providing internal seals. The faulting intensity may provide natural fracturing that could result in some leakage and reduction in seal capacity. The Paleozoic unconformity is considered to have a have red beds above and the seal potential is unknown. The Carboniferous is reported to have self-sealing packages of interbedded shales/siltstones/mudstones in Argentina and Bolivia.

Migration – Dependent on the presence of the Devonian Los Monos. If the Devonian is present, there is a good probability of Los Monos source rock. The presence of the faulting would provide potential migration pathways for the Upper Devonian Los Monos shale source rock for gas/condensate which have been the primary source in Argentina and Bolivia to the west.



Source: President Energy

Figure 7.1.2: Jacaranda Prospect N-S 2D seismic line across the proposed location

Jacaranda Prospect

Intra Pirgua

Trap	0.8	(2D seismic dataset)
Reservoir	0.6	
Seal	0.6	
Migration/charge	0.6	(assume Devonian Los Monos shale primary source)
GPoS	**0.173**	**(1 in 5.8 chance of success)**

Trap – Cretaceous Intra Pirgua 2D seismic amplitude reflections have been interpreted by President to represent potential gas bearing sand accumulations but RPS notes that this is uncalibrated by well data and could equally be a response to water-filled porosity or high cementation. The 2D seismic lines have a density of 1.5 to 3 km E-W and about 1.5 km N-S for the Jacaranda Prospect-Pirgua target, see Figure 5.1.2.10. The north boundary trap fault is clearly shown on the seismic data such that the Pirgua sediments may be side-sealed via juxtaposition across the main fault against older tight Paleozoics and Basement providing some seal potential (Figure 7.1.2). **Reservoir** – Well petrophysical analysis for the Pirgua is shown in Figure 6.1.1 for the Carmen-1, Anita-1 and Berta-1, which are located up to 170 km away but are thought to be representative for resource estimates. However, the depositional characteristics of the red-beds are such uncertainty of the presence of reservoir, reservoir quality and lateral distribution at the faulted basin edge of the Pirity sub-basin remains. The overall interval is clearly identified on seismic, and are interpreted by President to be reservoirs within the red beds filling the Pirity rifted based above the Paleozoic unconformity. As above, President also interprets the relatively high amplitude section to be potentially indicative of gas-bearing sands but RPS notes that this is uncalibrated by well data and could equally be a response to water-filled porosity (good for reservoir chance of success) or high cementation (bad for reservoir chance of success).

Seal – Reservoirs may be juxtaposed across the fault against older tight Paleozoics and Basement enhancing seal potential (Figure 7.1.2) with interbedded shales also providing internal seals. The faulting intensity may provide natural fracturing that could result in some leakage and reduction in seal capacity. The presence of faulting could create natural fractures enhancing permeability in reservoirs present, but may also create lost circulation drilling problems.

This risk is shared with Jacaranda Lecho.

Migration – The presence of the faulting may provide migration pathways for the Upper Devonian Los Monos shale source rock for gas/condensate which have been the primary source in Argentina and Bolivia to the west. Migration through the unconformity is considered to have a higher risk than the Jacaranda Paleozoics.

Jacaranda Prospect

Lecho

Trap	0.8	(2D seismic dataset)
Reservoir	0.7	

Seal	0.5
Migration/charge	0.6 (assumes Yacoraite primary source)
GPoS	**0.168 (1 in 6 chance of success)**

Trap – The Lecho is a good seismic reflection and has been mapped by President No 4-way dip closure is evident and so trap geometry relies on basin-ward dip against the major fault that sets up the paleo-high and/or stratigraphic closure against volcanics of unknown fabric. The 2D seismic lines have a density of 1.5 to 3 km E-W and about 1.5 km N-S for the Jacaranda Prospect-Lecho target, see Figure 7.1.3.

Reservoir – Well petrophysical analysis for the Lecho is shown in Figure 6.1.1 for the Carmen-1, Anita-1 and Berta-1, which are located up to 170 km away but are thought to be representative for resource estimates. The Don Quixote-1 well shows the Lecho to be absent but it is accepted as being outside of the basin and on the paleo-high. The Lecho is identifiable on seismic and all of the wells in the Cretaceous basin have the Lecho sand present. It typically has a thickness of 60m net and good reservoir properties, unless it has been locally replaced by volcanics reservoirs such as in Palmar Largo field in Argentina. RPS maintains that there is more risk as you go to the highs and there is evidence for a pinch-out somewhere, probably north of Jacaranda, but it is not possible to locate it precisely at this time. We consider that this thinning could also have a deleterious effect on reservoir quality towards the paleo-highs. Consequently, RPS believes the Lecho in the Jacaranda prospect area carries slightly more risk than toward the basin centre in the Jurumi Complex prospects.

Seal – The Lecho appears to onlap or abut volcanics at the trap edge and depending on the fabric of the volcanics, which act as reservoirs elsewhere in the area, the seal may be at risk. Reservoirs may be juxtaposed across the fault against older tight Paleozoics and Basement enhancing seal potential (Figures 5.2.1.15 & 5.2.1.16) but some risk remains.

Migration – A primary source for oil is interpreted to be the Yacoraite shale which overlies the Lecho but is a longer distance to the kitchen than the more basin centric prospects. Migration to the Lecho reservoir is therefore considered higher risk at Jacaranda than at Jurumi.

Jurumi Complex (South Flank of the Pirity Sub-basin)

Includes Jurumi, Tapir and Pecari Prospects- All three prospects have a Lecho primary target with the Tapir containing a secondary Paleozoic target that has been evaluated at this stage.

Lecho – **Jurumi, Tapir and Pecari** – The Tapir, Pecari and Jurumi prospects and NE-SW trending, with Tapir and Pecari mapped as 4-way dip closure and Jurumi a 3-way fault closure bounded on the south flank by a high angle-south dipping normal fault (Figures 5.2.1.25 & 5.2.1.26). A volcanics equivalent to the productive zone in the Palmar Largo field in Argentina has been interpreted as being present under the prospect. Thin to minor Olmedo Salt seal is interpreted for the Jurumi complex. Velocity changes and faulting in the saddles of the prospects may result in independent fields, not in communication. Structurally up-dip from the Yacare prospect.

Trap	0.8 (3D seismic dataset)
Reservoir	0.8
Seal	0.6
Migration/charge	0.7 (assumes Yacoraite shale overlying is the primary source)
GPoS	**0.268 (1 in 3.7 chance of success)**

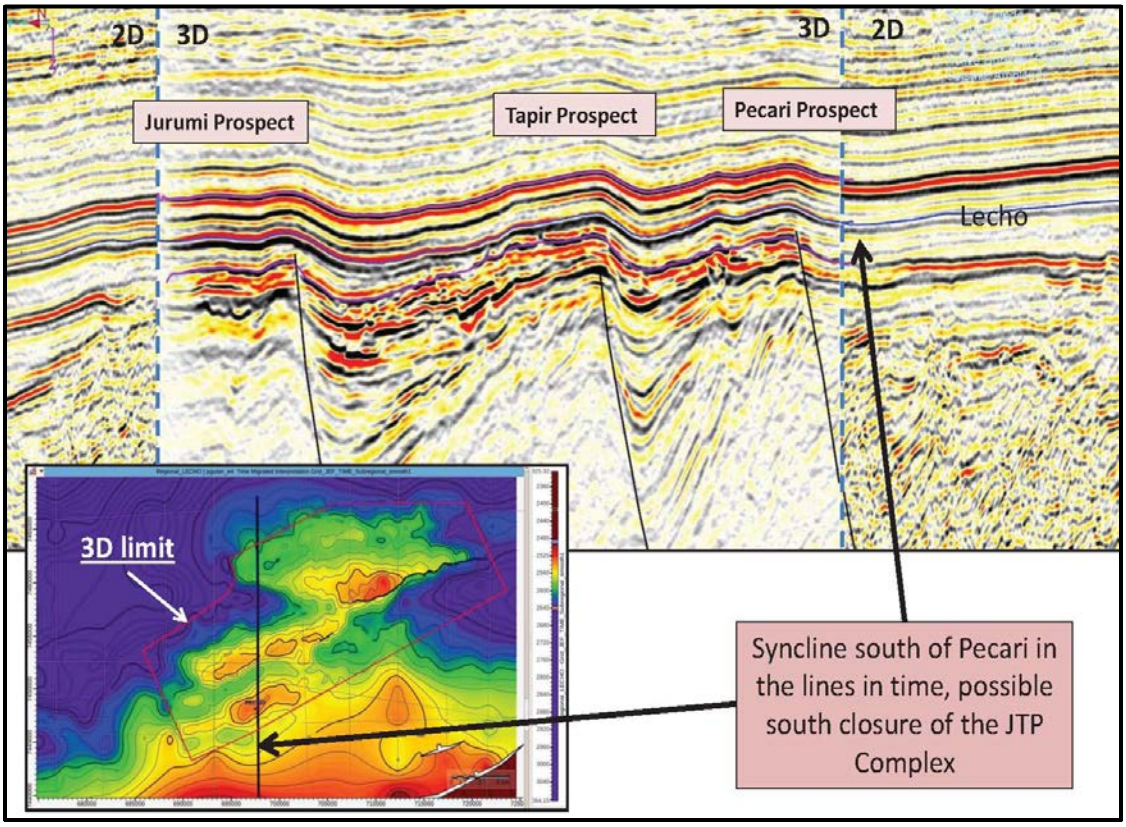
Trap – The 3D seismic data as shown in Figure 7.1.3 indicates that the Lecho is a good reflection. The Tapir, Pecari and Jurumi prospects are NE-SW trending are largely 4-way dip closures draped over highs each bounded on the south flank by a high angle-south dipping normal fault (Figure 7.1.3). It is possible that the there may be an element of faulting in the trap geometry which may impacts the size of the accumulation in the event of discovery. No apparent thinning occurs on the structure during Yacoraite deposition, structure development occurred post deposition. The prospects' south boundary may be an extension, at the Lecho flexure, of the deep-seated normal faults seen on Figure 7.1.3. It is on trend and to the NE from the Palmar Largo Productive Lecho reservoir in Argentina.

Reservoirs – The Lecho has been seen in the nearby wells and is identifiable on seismic. Well petrophysical analysis for the Lecho is shown in Figure 6.1.1 for the Carmen11 and is expected to be representative of the reservoir. The Lecho is a widespread eolian sand deposit in the Pirity sub-basin with a typical thickness of 60 m and good reservoir properties. At deeper levels in the Jurumi prospect, Lecho is probably onlapping volcanics, as in Palmar Largo fields, so it may be absent and replaced by volcanic reservoirs.

Seal – The Yacoraite shale overlays the Lecho is considered a seal and source (top seal). It the Upper Devonian Los Monos shale source is present at depth in the

Paleozoic, it may be a secondary source potential. The Olmedo Salt, which may act as a secondary seal, is likely to be thin to not present raising doubts as to its integrity to seal a significant hydrocarbon accumulation with associated energy and pressure. Nonetheless, the combination of possibilities means that RPS considers a seal as probable.

Migration – The south flank of the Pirity Sub-basin prospects are structurally located along trend to the NE from the Palmar Largo field in Argentina. The Jurumi complex is closer to the Yacoraite shale thermal kitchen than the Jacaranda prospect but not as close as the Yacare prospect. The migration risking has been set accordingly.



Source: President Energy

Figure 7.1.3: Jurumi Complex N-S 2D/3D Seismic Lines with Lecho Time Depth Structure

Tapir-Paleozoic Target

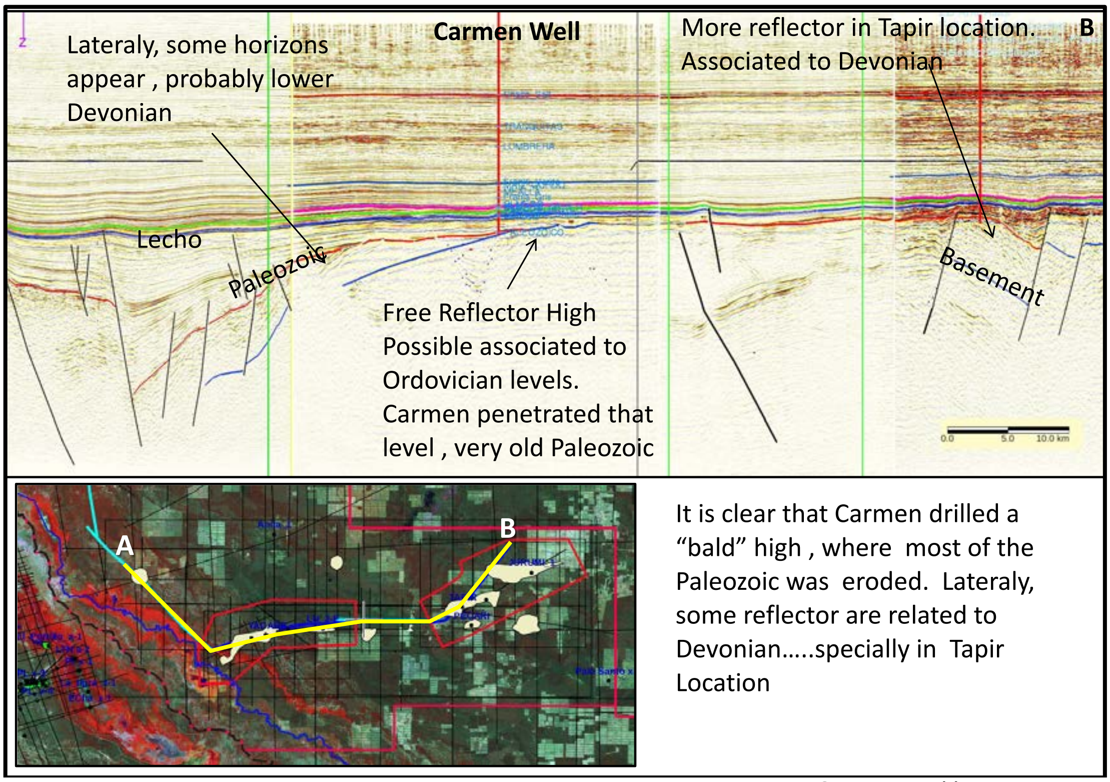
Trap	0.8	(3D seismic dataset)
Reservoir	0.4	
Seal	0.7	
Migration/charge	0.6	(assume Devonian Los Monos shale primary source)
GPoS	**0.134 (1 in 7.4 chance of success)**	

Trap – The Paleozoic horizon (unconforminty) structure has been used for the volumetrics and GRV for the prospect. Dipping strata seen on the seismic data with closure shown on the Paleozoic structure. The Carmen-1 well to the SW of the prospect penetrated Silurian/Ordovician shales at TD with no shows, Figure 7.1.4. President has mapped 3D seismic potential accommodation space that suggests the Devonian/Santa Rosa reservoirs and source rocks may be present. There is fair to good evidence on the seismic that structural dip exists within the Paleozoic reflectors under the unconformity such that trap geometry appears likely assuming good overlying seal and fault seal is appropriate, Figure 7.1.5.

Reservoir – Dipping beds have an unknown nature. Uncertainty of the presence of reservoir, reservoir quality, lateral distribution and trap at the faulted basin edge of the Pirity sub-basin exists. Only Ordovician and Silurian have been penetrated in drilled wells beneath Paleozoic unconformity in the Cretaceous Pirity sub-basin, therefore reservoir quality projections are extrapolated from significant distance such that RPS considers the likelihood of Reservoir presence and effectiveness as possible. The steep dip of interbedded prognosed sands also means the risk of finding reservoir from any given well location is higher than the more gently dipping Paleozoic targets at Jacaranda for instance.

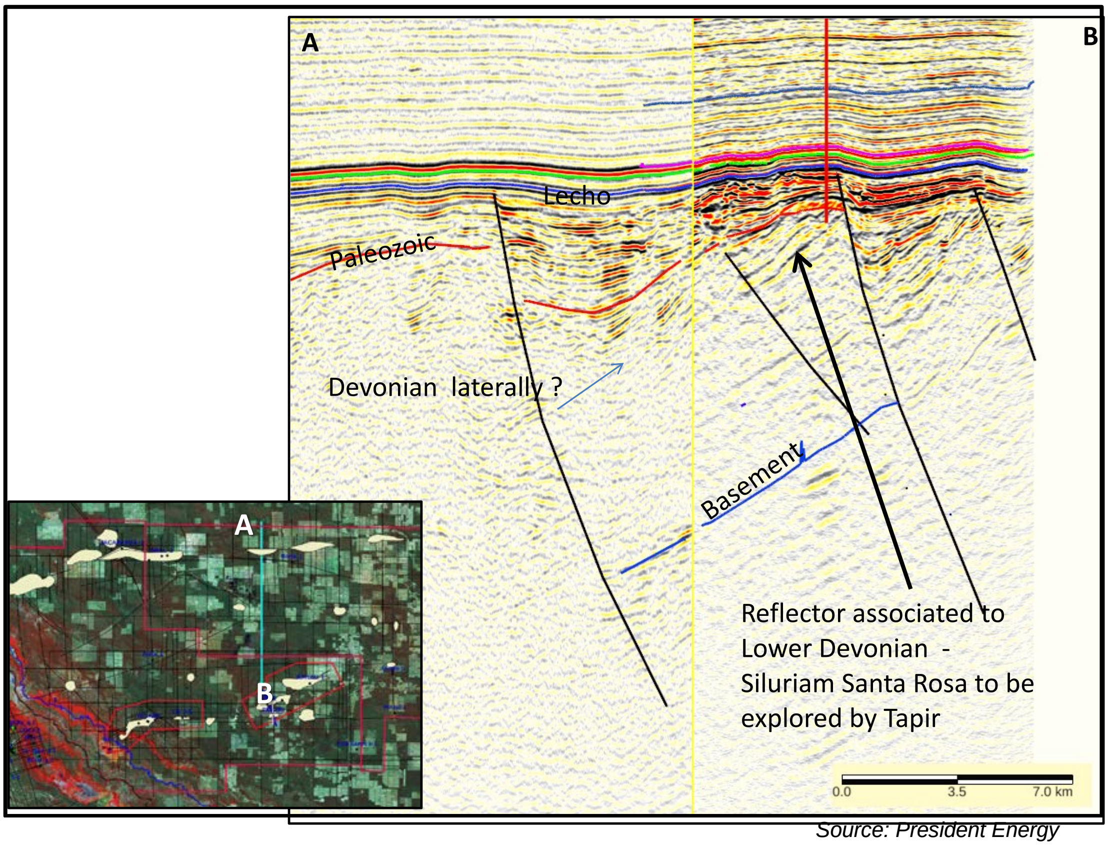
Seal – The top seal is prognosed by President to be provided by thick basal volcanics, which may have leakage if porous. Interbedded shales may provide internal seals. The faulting intensity may provide natural fracturing that could result in some leakage and reduction in seal capacity.

Migration – If present, the Upper Devonian Los Monos shales is a proven productive gas/condensate source rock to the west in Argentina and Bolivia and could make a good source rock, generating gas/condensate. The steeply dipping beds are not an ideal geometry for charging for all but the most adjacent sands to any generating shale.



Source: President Energy

Figure 7.1.4: Tapir Prospect – W-E Arbitrary Seismic Line between the Carmen-1 and the Tapir Prospect showing possible Devonian accomodation space



Source: President Energy

Figure 7.1.5: Tapir Prospect – N-S 3D Seismic line showing the proposed well location and possible accommodation space for Devonian.

Yacare Prospect

Lecho Target

Trap	0.6 (3D seismic dataset)
Reservoir	0.8
Seal	0.6
Migration/charge	0.8 (assumes Yacoraite shale overlying is the primary source))
GPoS	**0.23 (1 in 4.4 chance of success)**

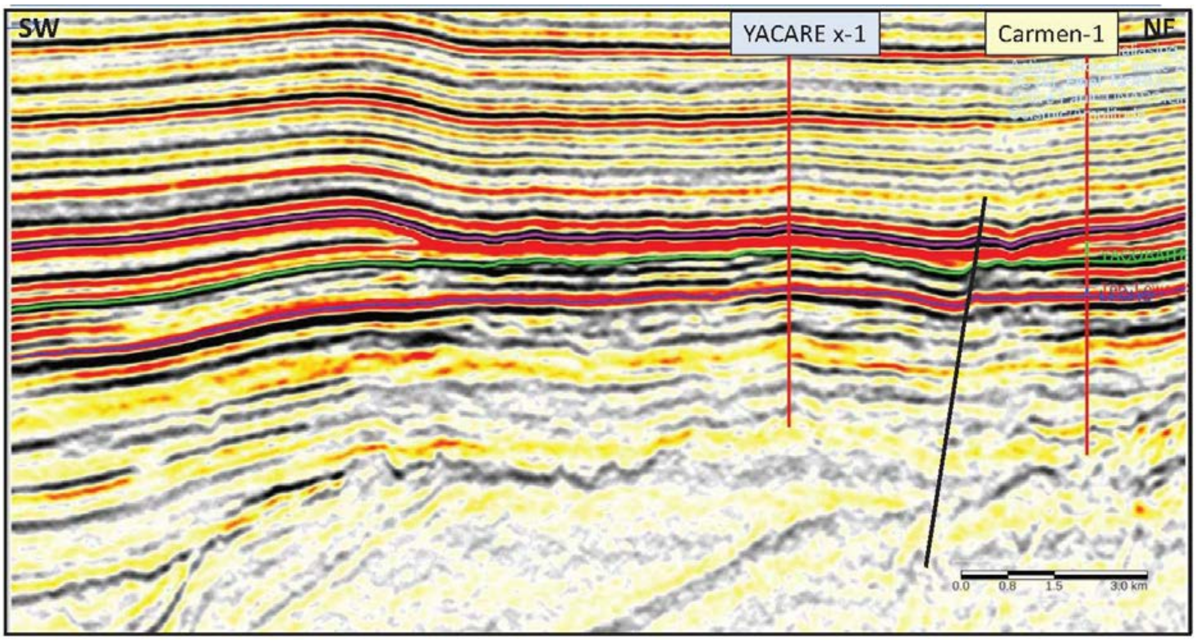
Trap – The 3D seismic data as shown in Figure 7.1.6 indicates that the Lecho is a good reflection. No apparent thinning occurs on the structure during Yacoraite and Lecho deposition, indicating that structure development occurred post-deposition. The prospects south and partial north boundary is considered to be an extension of the deep-seated normal faults seen on Figure 7.1.7 (see structure map). It is on trend and to the NE from the Palmar Largo Productive Lecho reservoir in Argentina. There is an element of 4-way dip mapped but the larger mapped potential areas depend on fault seal to disconnect the prospect from the up-dip Carmen-1 well. The 4-way dip is subtle and the Company is conducting PSDM to try to confirm the closure.

Reservoir – Well petrophysical analyses for the Lecho from a previous study is shown in Figure 5.2.3.1 for the Carmen-1, 5 km away, and is expected to be representative of the reservoir and is identifiable on seismic. The Lecho is a widespread eolian sand deposit in the Pirity sub-basin.

Seal – The Olmedo Salt seal present in the Palmar Largo fields above the Yacoraites is also present in the Yacare prospect based on seismic interpretation and data in the Carmen-1 well. The faulting separating the Yacare and Carmen-1 is assumed to be sealing (Figures 7.1.6 & 7.1.7).

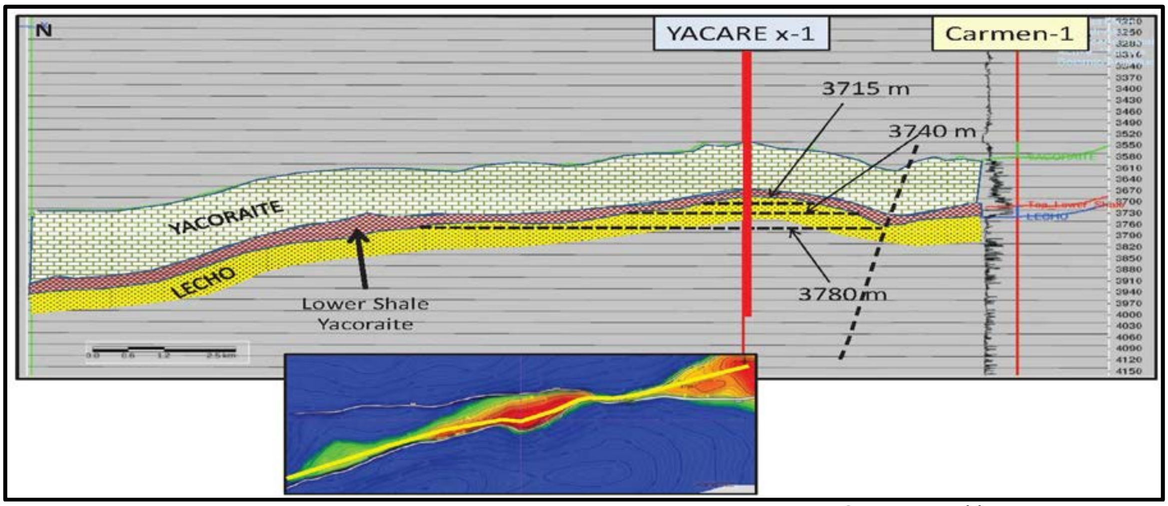
If no fault-seal and/or dip-closure is present, the Carmen-1 may have tested the Yacare prospect location although, no closure to the east is seen on seismic for the Carmen-1 well to have tested a valid structure. The volcanics productive zones in the Palmar Largo field are not present

Migration – The south flank of the Pirity Sub-basin prospects are structurally located along trend to the NE from the Palmar Largo field in Argentina and is indicted to be closer to the basin Yacoraite shale thermal kitchen.



Source: President Energy

Figure 7.1.6: Yacare Prospect – NE-SW 3D Seismic Arbitrary Line, green/Yacoraite; blue/Lecho/purple/Olmedo Salt



Source: President Energy

Figure 7.1.7: Yacare Prospect Model 3D Seismic NE-SW Arbitrary Line

8 DEVELOPMENT PLAN AND INDICATIVE SUCCESS CASE ECONOMICS

Based on the potentially recoverable volumes as reviewed by RPS, the Company has run some indicative economics to establish whether, in the event of discovery, the mean success case outcomes are likely to be commercially attractive. The indicative economics are unrisked for geologic chance of success (GPoS).

RPS has reviewed economic models provided by the Company in the form of an individual spreadsheet for each resource prospect. The Company has also provided documents that detail various commercial development assumptions inclusive of capital costs, operating costs, product prices, taxes, tariffs, etc., which RPS has reviewed and does not find them to be unreasonable. RPS has not undertaken to prepare or independently determine the commercial development assumptions proposed by the Company. The Company has represented that estimated costs are 2013 US $ and reflect a Class III estimate (-10% + 50% accuracy). All contingency costs are represented to be part of the estimated costs as prepared by the Company and not modelled independently.

The economic models were audited by RPS and revised by the Company as result of queries submitted by RPS during its review.

The Company's assumptions are set out in Appendix A, which is a summary of field development cost estimate for a generic 100MMB resource as presented in a report prepared by Rocky Mountain Limited for President Energy Paraguay titled "Preliminary Field Development Cost Estimate", dated November 3, 2013. An assumed oil price of $100 per barrel was used in the preparation of the indicative economics and was represented by the Company as equivalent to the export price and expected product price mix from an initial Topping plant as part of the early field development. A gas price of $6.50 per MCF is assumed, based on gas sales in nearby Bolivia and Argentina. RPS has not reviewed or assessed the feasibility of hydrocarbon sales in the country of Paraguay.

The following Fiscal terms have been set forth by the government of Paraguay for Oil and Gas Operations in Paraguay. The country has set forth a simple royalty calculation based on the volume of oil and gas produced and is shown in Table 8.2 below.

Royalty Calculation based on Revenue before Operating Costs		
Oil	0 **<** bopd **<=** 5,000	10 %
	5,000 **<** bopd **<=** 50,000	12 %
	bopd **>** 50,000	14 %
Gas		12 %

Table 8.2: Government of Paraguay Fiscal Terms for Oil and Gas Operations

The five (5) oil prospects which will develop resources in the Lecho reservoir, initiate production and sales by construction of a Topping plant with a processing capacity of 10,000 bopd. Full prospect development, in the event of discovery, is implemented by construction of one to four Central Processing Facilities, each with a processing capacity of 20,000 bopd, dependent on the prospect resource size. The proposed development of each prospect consists of a Topping plant and associated Central Processing Facilities as determined by the resource accumulation. No synergy or cost sharing benefit has been included in the individual prospect development analysis which may present a conservative tone to the economic models as reviewed herein.

The three (3) gas prospects which will develop resources in the Paleozoic and Pirgua reservoirs, initiate production and sales using a similar methodology as described for the oil prospects above.

The results of the economic analysis are set out in Table 8.3 below.

Prospect	**Reservoir**	**Prospective Resource, 100%**	**Discounted @ 10% NPV, $ (000)**	**Prospective Resource, 59%**	**Discounted @ 10% NPV, $ (000)**
Tapir	Lecho	95.0 MMbo	2,409.722	56.1 MMbo	1,421.736
Tapir	Paleozoic	642.0 Bcf[1]	1,444.175	378.8 Bcf	852.063
Jacaranda	Lecho	241.0 MMbo	6,019.750	142.2 MMbo	3,551.653
Jacaranda	Paleozoic	1,262.0 Bcf[1]	3,016.912	757.2 Bcf[2]	1,810,147[2]
Jacaranda	Pirgua	547.0 Bcf[1]	1,431.895	322.7 Bcf	844.818
Jurumi	Lecho	106.0 MMbo	2,647.885	62.5 MMbo	1,562.252
Pecari	Lecho	93.0 MMbo	2,416.985	55.9 MMbo	1,426.021
Yacare	Lecho	14.0 MMbo	379.214	8.3 MMbo	223.736

[1] please see item 8c and item 12 in the discussion of Indicative economics.

[2]Values at 60% as a large portion of the prospective area falls within the Demattei License area.

Table 8.3: Summary of Indicative Mean Success Case Economics

The economic models present a 20 year time period, from January 2014 through December 2033. The production well forecast in some cases extend beyond December 2033. Any future revenues, capital and/or expenses beyond December 2033 are not included in the NPV values.

During the review/audit of the economic models presented by the Company, RPS submitted various queries of its observations to the Company for clarification. A detailed discussion of some of the inquiries and the Company's responses is contained in our work files. Following are some of the important assumptions that describe the scope of the economic models and, where necessary, highlight any remaining potential shortcomings:

1. The oil and gas volumes projected are based upon accepted industry methodology.
2. The effective date for the economic models is January 1, 2014.
3. Drilling costs are assumed to reduce over time from \$17mln for the initial exploratory well to \$10mln beginning in the third year of the development in the case of a major discovery.
4. Every fifth well (20% of wells) is assumed to be a "dry hole" and some are converted into water disposal wells.
5. The development of some of the oil resource prospects, a water disposal is drilled in lieu of trucking produced water.
6. The gas volumes for the oil resource prospects are calculated with GOR of 672 ft^3 per barrel.
7. The Formation Volume Factor, Bo, which is applied to adjust the oil volume from reservoir conditions to surface conditions and therefore oil sales volumes, is included in the monte carlo model to generate the resource volumes of each prospect. No shrinkage for transportation losses has been included but these are expected to be minor.
8. The shrinkage of gas volumes to adjust produced volumes for compressor fuel, other use or field losses, has been assumed by the Company to be included in the 6.5 MMcf per day gas volume deducted for E-gen for own use, compressors etc inclusive. Early in the development of the prospect and later in the life of the prospect, when gas volumes are less than 6.5 MMcf per day, additional operating costs may need to be included.
    a. The Company has projected gas revenue for four (4) of the five (5) oil prospects for daily gas volumes in excess of 6.5 MMcf per day which is forecast for electrical generation and for field use. No further gas shrinkage to account for fuel, field use or losses has been deducted.
    b. The Company has not forecast gas revenue from gas sales for the Yacare oil prospect – Lecho reservoir as there is insufficient gas. Additional operating costs may need to be included for compressor and E-gen.
    c. The Company has projected gas revenue for the three (3) gas prospects for volumes in excess of 6.5 MMcf per day which is forecast for electrical generation, for own use, compressors etc, inclusive. No further gas shrinkage to account for fuel, field use or losses has been deducted.
9. The company has projected condensate volumes for the three (3) gas prospects using a constant 30 barrels per MMcf for the life of the projection. It should be

noted that the projected reserve volumes contemplate an anticipated recovery factor of more than 70%, which is indicative of a volumetric (depletion) drive gas reservoir and the typical condensate yield profile for a volumetric depletion reservoir is not constant over the producing life of the field.

10. The models assume that the drilling and completion time will be 2 months in the case of a major discovery with a 90 day drilling and completion for the exploration wells. In most cases, 2 drilling rigs are assumed in an individual prospect's development. However, the Jacaranda – Lecho prospect has a well development schedule based on four (4) drilling rigs for most of its development. RPS notes that undertaking the simultaneous development of multiple prospects precludes any additive methodology to the results of the individual economic models, risked or unrisked.
11. The economic models include $250,000 per well for P&A costs and $3,750,000 for each Central Processing Facility. It assumes that the Topping plant and sales pipelines would be government-industry joint ventures with ultimate ownership residing with the government after license expiry and therefore, no P&A costs associated with either the Topping plant or the sales pipelines.
12. The Company has projected three (3) gas volumes for prospects. The gas projection profiles are prepared by field development plans of 7, 12 or 16 wells. The individual well recovery volumes are related to expected reservoir size, and vary from 50-80 Bcf/well with initial well production rates of 25 - 37.5 MMscf/d. The Tapir prospect, while projected to be the deepest of the three targets, has the lowest initial production rate and lowest per well ultimate. While the Company references initial well producing rates of 150 MMscf/d in the deeper fractured paleozoic reservoirs in Bolivia and Argentina, a comparative basis has not been provided as part of this review.
13. The oil well projections extend the producing life of the oil prospect and will produce large volumes of water over the well life with considerable operating cost. The Company is projecting water injection wells early in the prospect development to handle the large volumes of water forecast during the producing life of the prospect. The Company is scheduling injection well recompletions based on the oil prospect resource size. The Company represents that the initial fraccing of the injection well during its recompletion will meet the water disposal requirements of the individual oil prospects and will require the handling at maximum water production volumes of as much as 17,000 barrels of water per day per injection well. The Company is not including future capital and operating costs for either the oil well production maintenance or injection well maintenance. The costs for both production well maintenance and injection well maintenance to handle the large volumes of water production will be considerable.

For the oil cases, the average productivity of the wells is based on 2,000 barrels per day with an ultimate recoverable of 2.0 MMbbls per well.

RPS concludes that whilst there remain short-comings in the individual prospect economic models reviewed, the economic models are meant to be a standalone snap-shot of each prospect and, in that context, demonstrate that, in the event of discovery, the prospects are likely to be commercially robust. This is due in no small part to the world class terms (simple tax and royalty) that currently prevail in Paraguay. The models are based on the mean success case recoverable volumes for each prospect and as such are a single point "valuation" not adjusted for risk and do not demonstrate the range of potential outcomes. In addition, as observed above, the fact that each is based on exploration, appraisal and development within the same time-frame implies that the NPVs, even for the mean success case outcomes, are in no way additive, risked or unrisked. Nonetheless, the economics for the mean success case outcomes for every prospect appear to be robust.

APPENDIX A: OVERALL ASSUMPTIONS USED FOR COST EVALUATION

"Preliminary Field Development Cost Estimate", Paraguay, South America, dated November 3, 2013, **Report Commissioned by President Energy Paraguay**

Scheme for Development President Energy Paraguay November 2013
Resource Development Assumptions

The overall assumptions that have been used for the cost evaluation are:

1. 100MMB discovered resource. To illustrate a higher cost scenario it is assumed that this is is made in two discoveries; one on the south flank and one on the north flank.
2. Only one (1) of the discoveries will be developed with facilities in early phase.
3. Second discovery has single well early production via trucking only. Both fields are developed into a full field production scheme
4. Well performance is based on 2000 bopd total fluid, with two (2) MM barrels of oil cumulative production per well
5. Water cut approaches 80% for the purposes of water handling facilities
6. Capital Cost of the continued development will reduce with increased infrastructure
7. All permits and approvals are easily obtained and will not be on critical path
8. Phased Development/Exploration Drilling Programme starts in 1st Quarter 2014
9. Phase 1, early production scheme 1 year after declaration of commerciality
10. Phase 2, full field development in year 4.
11. Distances between fields, to sales transfer points and infill infrastructure lengths are reflected the Figure below

Phase 1 Field Development

The attached costs estimate for the first phase of field development is based on the following assumptions:

1. First oil with delivery and commissioning of topping plant in the Chaco (near Trans-Chaco highway or roadhead near Neuland).
2. Commitment for 10,000 bpd capacity Topping unit at declaration of commerciality (FID)
3. On one of field discoveries, produce discovery and 2 appraisal/development wells to get to 5,000 bpd initial production.
4. 2 Additional wells are drilled in early production phase to maintain 5,000 bpd production.
5. Field 1 Central Processing Facility (CPF) will be designed for 20,000 bopd total fluid, 10 MMscfd offgas for fuel and flare
6. Water disposal well to be drilled in third quarter of year 1 (or convert unsuccessful well from drilling campaign) to dispose of produced water.
7. Water to be trucked to third party disposal until disposal well is commissioned;
8. First Phase will see offgas treatment and generation of electricity
9. GOR at 650 ft3/barrel
10. Initial access to drilling locations, lease construction and tie-in is included in drilling costs
11. Upgrading road to occur on proof of production
12. Assume 1 disposal well is capable of handling water production; Second well to be converted or drilled as water cut increases to serve as backup or to meet water production from Field 2
13. Crude Sales buried pipeline and high quality road to be constructed from Field 1 to Chaco Topping unit.
14. Any early production from Field 2 will be test unit and tanks only

Phase 2 Field Development

With completion of the aforementioned activities, the second phase will be initiated which includes additional facilities, infrastructure and additional wells in both fields. The activities would include:

1. Full field pipeline from Chaco Topping unit to Asuncion (and refinery) will dictate timing on 2nd phase as local markets will not support topping unit products>10,000bpd. That is to say, Field 2 will not be developed with facilities until infrastructure allows for crude sales to Asuncion or export
2. Field 1: 1 rig continuous drilling from date of pipeline commissioning to achieve plateau
3. Field 2 will witness five (5) Wells pre-drilled before 1st production
4. One (1) rig in continuous use thereafter to achieve plateau for Field 2. Main pipeline will dictate

Second CPF commissioning. Construction of pipeline and facilities will be executed to meet main pipelines installation.
5. Central Processing Facility costs assumed the same as for Phase 1 Field, except gas lines would be tied into existing lines.
6. Additional conversion /drilling of disposal well as backup/additional capacity as required.
prior to first production (after confirmation of successful early production)
8. Gas Volumes from Phase II will be exported unless locally developed markets allow otherwise (assumed sold into line at Villamontes (250km). Gas Treatment, Compression and Transport will be based on production from both fields (sized for 6-20 MMscfd)
9. Assume pipeline pressure is 300-400 psig.
10. Hydrocarbon and Moisture dewpoint required.

A. CAPITAL Expenditures

1.0 Description – Central Processing Facilities (1 field)	Costs ($)	Comments
Total Central Processing Facility	**$49,540,000 [update total]**	**Cost for engineering, procurement and construction for each location (includes pipeline/Flowline)**
Electrical Generation and Distribution (1st Phase)	$7,900,000	7 MW total power generation, assuming 2 MW local electrical and energy requirement. Includes 150 km of electrical line installation and substation .
Gas Sales line (to be added in 2nd Phase as gas production increases)	$20,500,000	4" 700 psig line to Villamontes (250 km), block valves etc. This is subject to market alternatives locally (Gtl, Gas to Power) and flaring parameters; Assume pipe is purchased off the line at fabrication facility resulting in discount
Gas Compression (to be added in 2nd Phase as gas production increases)	$1,700,000	Assume excess gas is 60% of production at 6.5 MMscfd Compression required to take offgas at approximately 80 psig to 400 psig, through liquid recovery, and to delivery point 250 km away in Villamontes (750 HP). Gas Compression to sales to occur after installation of sales line expected late in phase I development and prior to Phase II. Payment is phased with initial downpayment for engineering and critical items of $500k in late Phase I. (750 HP)

2.0 Description – Drilling	Costs ($MM)	Comments
Drilling, Completion and Testing and tie-in Per Well (Year 1-2) Year 3+	$13.0 $10	Includes 20% uplift for 2Paraguay" as well as engineering, project management, Minimum access road etc It is assumed that Drilling costs will be reduced by 30% for later phases of development once basic infrastructure has been completed and services established in Paraguay.
Dry Hole Costs (Year 1-2)) Year 3+	$9.0 $6	See item above
Injection Well (or Conversion)	$3.400	Cost for shallow Well or conversion of a dry well drilled with upgrade to lease and roads for permanent operation

3.0 Description – Topping	Costs ($)	Comments
Total Costs (10,000bpd)	**$31,000,000**	

B. Fixed Operating Costs Per Year

a. Central Facilities, 1 field

1.0 Description	Costs ($)	Comments
Total - Central Facilities, 1	**$4,535,000**	Per annum

b. Topping Plant

1.0 Description	Costs ($)	Comments
Total - Topping Plant	**$2,370,000**	Per annum

C. Variable Costs and assumptions basis

Trucking and Transport Sales (oil) $10 per barrel directly to market by truck. This is only relevant when the flowline is postponed and initial oil is trucked.

Trucking and Disposal Water $25 per barrel water produced; Only relevant if prior to commissioning a disposal well. Reduced to $3 per barrel with disposal well and pumping facilities.
Pipeline costs

- infield Included in fixed costs
- Pipeline tariff $5.50 (See Project Financing Note below)

D. Project Financing Estimates for Tariffs (High Level)

Estimate of Pipeline tariff calculation

Oil line from Neuland to Asuncion- 475 km at estimated costs of $90 MM (includes pumping stations and 30% uplift for unidentified civils/crossings) for covered line. Note that the pipeline right of way is assumed to be adjacent to road and does not cross any major rivers, highways or floodplains that will restrict trucking or require extensive civils support other than standard weights and standard engineered crossings. Time value of neither money nor interest is not included in this calculation.

i) Capital $90 MM
ii) Annual Production 365,000 barrels oil
iii) Opex estimate $5 MM per year

Tariff assuming 10 year life for the line

i) Capital component $2.65 per barrel
ii) Opex component $1.90 per barrel
iii) Return on investment 20%
Total Pipeline tariff $5.50 per barrel estimated

APPENDIX B: GLOSSARY OF TECHNICAL TERMS

AAPG	American Association of Petroleum Geologists
AIM Guidelines	Guidance covering the preparation of documentation for Disclosure purposes for Mining, Oil and Gas Companies dated June 2009 (the “AIM Guidance Note”)
AVO	Amplitude variation with offset
B	Billion
bbls	Barrels
DHI	Direct hydrocarbon indicator
EAGE	European Association of Geoscientists and Engineers
EI	The Energy Institute
Km	Kilometre
m	metres
M	Thousand
MM	Million
Mstb	Thousand stock tank barrels
MMstb	Million stock tank barrels
MMscf/d	Millions of standard cubit feet per day
MMstb	Million stock tank barrels
sq km	Square kilometres
stb	Stock tank barrels
scf	Standard cubic feet
SPE	Society of Petroleum Engineers
SPEE	Society of Petroleum Evaluation Engineers
TD	Total Depth
TVD	True vertical depth
TVDSS	True vertical depth (sub-sea)
WPC	World Petroleum Council