

# Corporate Presentation

4 September 2012



## ASX ANNOUNCEMENT

Carnarvon Petroleum Limited ("Carnarvon") (ASX:CVN) is pleased to provide shareholders with the attached Corporate Presentation given by Mr Philip Huizenga, Carnarvon's Chief Operating Officer, at the Good Oil Conference in Fremantle, Western Australia, on Tuesday 4 September 2012 at 3.00pm.

For this presentation and further information on the Company please visit the CVN website at: [www.carnarvon.com.au](http://www.carnarvon.com.au)

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Yours faithfully

A handwritten signature in black ink, appearing to read "A. Cook", is positioned above the printed name and title.

**Adrian Cook**  
**Managing Director**  
**Carnarvon Petroleum**

Good Oil Conference 2012

## Phetchabun Basin Producing Oil Fields



How much difference can a new operator make?



Presented by  
Philip Huizenga  
Chief Operating  
Officer

Hello and welcome. Today I am going to concentrate my talk on our production assets onshore Thailand in the Phetchabun basin. Recently our partner, Pan Orient, sold their 60% operating share to ECO investments, a subsidiary of US\$20 billion Hong Kong listed Hong Kong and China Gas Company Ltd, or Towngas as they are known. ECO, which was established around 2000, focuses on the development of new energy projects for the corporation. What I will be attempting to convey today is how much a change of operator can make to a producing asset.

#### Disclaimer

The information in this document, that relates to oil exploration results and reserves, is based on information compiled by the Company's Chief Operating Officer, Mr Philip Huizenga, who is a full-time employee of the Company. Mr Huizenga consents to the inclusion of the reserves and resource statements in the form and context in which they appear.

This presentation contains forward looking statements which involve subjective judgment and analysis and are subject to significant uncertainties, risks and contingencies including those risk factors associated with the oil and gas industry, many of which are outside the control of and may be unknown to Camarvon Petroleum Limited.

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This is our usual disclaimer. I would like to emphasise the “forward looking statements” clause as essentially I will be talking about the future potential rather than on the historical results.

## Carnarvon snapshot



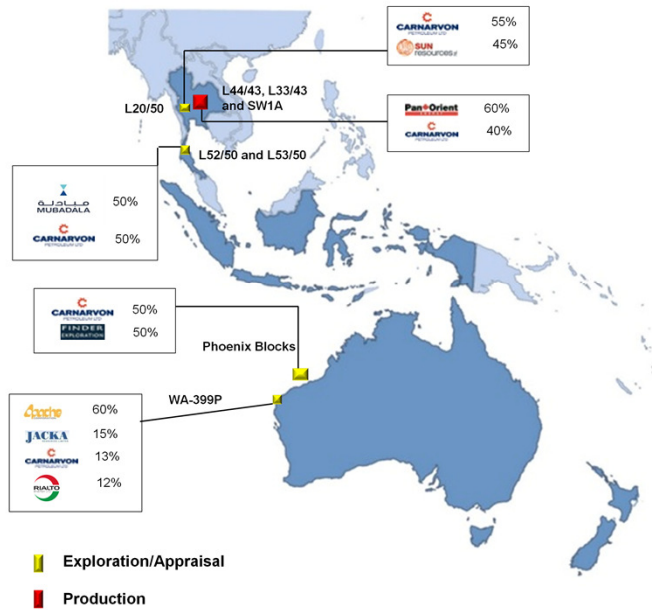
### Significant re-rating potential from focused strategy and active exploration and production program

- ASX code “CVN”
- Proven explorer with material permit interests
- Experienced and aligned board and management
- Predominantly retail shareholder base
- Board and management holding around 10%

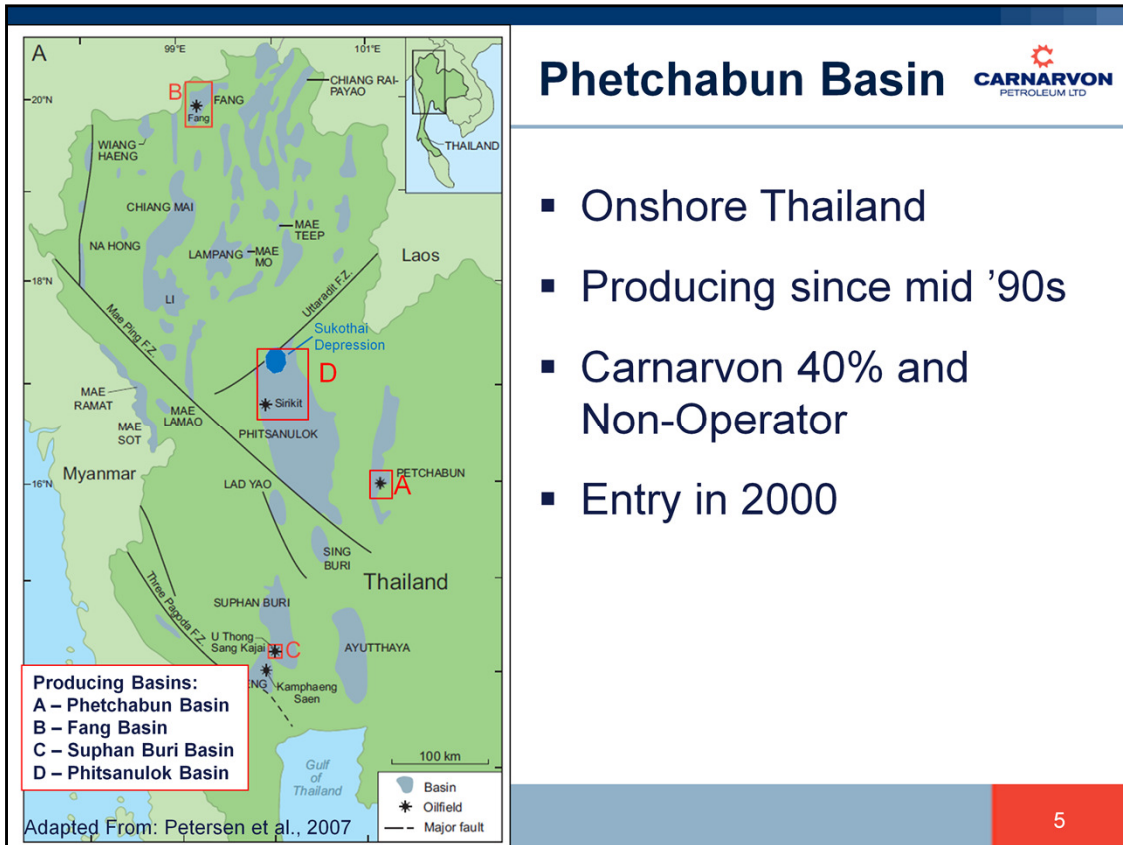
Facts at a Glance	
Share price (03 Sept 2012)	\$0.091
Shares on Issue	693.3 m
Market Capitalisation	\$63 m
Average daily volume (3 months)	1.9 m
Cash (30 June 2012)	\$7.1 m
Debt	Nil
2P Reserves (certified)	12.1 million bbls

By way of background, Carnarvon Petroleum is listed on the Australian Stock Exchange, with a share price ranging from 9 to 11c recently resulting in a market cap of around \$70 million. We have around \$7 million in the bank, no debt and operating cash flow from the production in Thailand.

# Carnarvon Overview



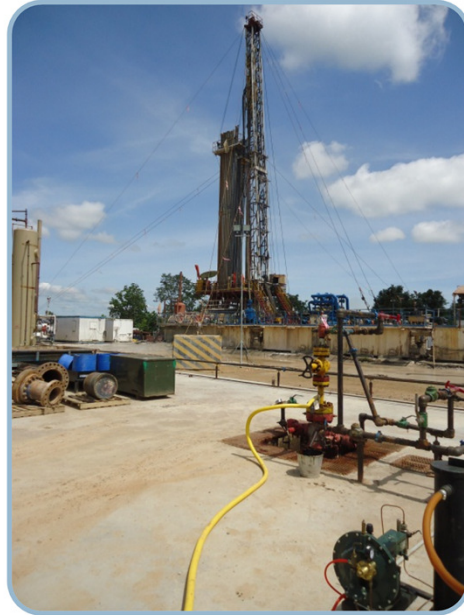
While Carnarvon has world class assets in the Phoenix blocks in the North West of Australia, today I will focus on our producing assets onshore Thailand.



Carnarvon is currently active in three basins onshore Thailand, however our producing fields are all located within the Phetchabun basin, which is located around 200km north of Bangkok.

## A reminder about these assets

- **Stacked reservoirs**
  - Shallow (sub 1,200 m) depth
- **Low cost operating and drilling environment**
  - Wells drilled and completed \$1 million to \$1.5 million
- **Multiple oil fields**
  - conventional sandstone
  - unconventional fractured igneous

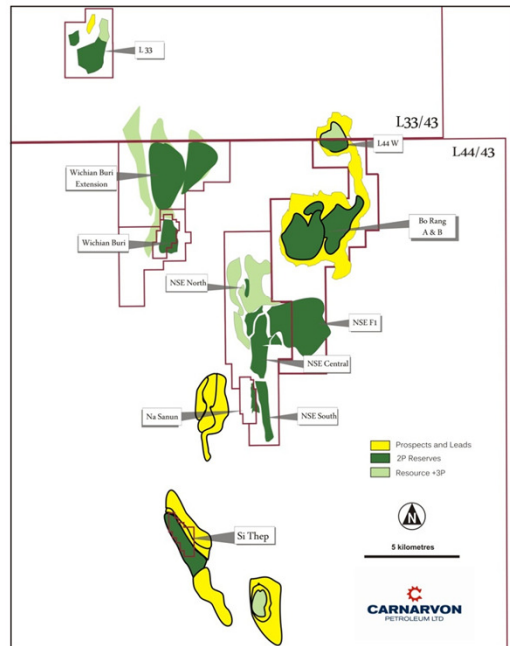


Just a reminder about the operational aspect of these assets. There are currently some 15 producing oil fields consisting of stacked reservoirs that range in depth from around 1,200 m to as shallow as 250m. The sweet spot for production is in the 500 to 700 m range. Operating onshore Thailand is relatively mild, with costs to drill and complete these wells averaging in the range of \$1 million to \$1.5 million on a trouble-free basis. Ongoing operational costs are in the vicinity of \$10-\$20 per barrel. The fixed cost component is generally scalable with production volumes and the key variable costs are trucking and government royalties and taxes.

# Significant discoveries to date

31-Dec-11	Reserves <sup>1</sup>	
	Proved + Probable 2P (million bbls)	Reservoir Type
NSE Central	2.0	Igneous
NSE-F1	3.9	Igneous
Bo Rang - B	5.2	Igneous
Bo Rang - A	3.5	Igneous
L44-W	1.0	Igneous
NSE South	1.8	Igneous
Wichian Buri - SST	3.0	Sandstone
Si Thep - SST	1.2	Sandstone
WBEExt - Volc	2.4	Igneous
WBEExt - SST	4.3	Sandstone
L33 - Volc	0.9	Igneous
Other	1.2	Various
<b>Total (gross)</b>	<b>30.5</b>	
<b>Total (Net Carnarvon)</b>	<b>12.1</b>	

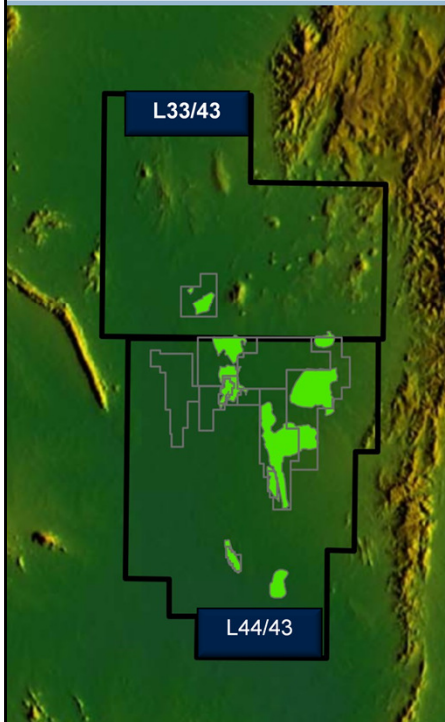
<sup>1</sup> Gaffney Cline, Dec 31, 2011



While there has been production in this basin since the mid 90's, and Carnarvon has been a 40% partner in these blocks since the year 2000, the real excitement commenced with the POE-9 fractured igneous discovery in 2007 which flowed at rates of around 350 bopd. Since that period another 12 fractured igneous oil fields have been discovered, along with an extension of the original Wichian Buri sandstone, resulting in independently certified 2P reserves as of Dec 2011 of 30 million bbls gross or 12 million net to Carnarvon.



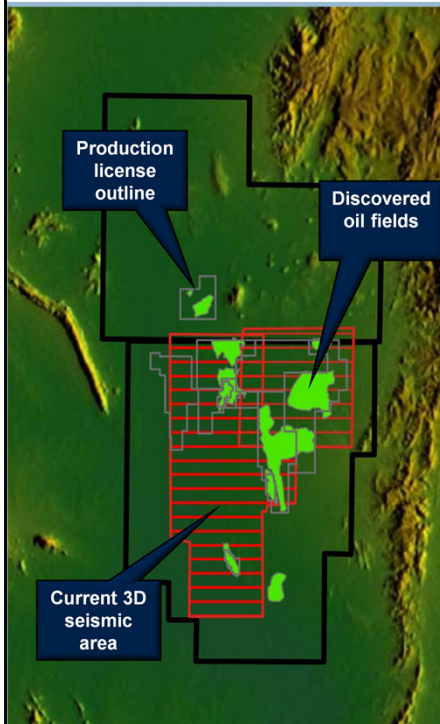
## Long exploration period



- **5 year** exploration period commenced as of July 2012
- Exploration area covers **central, oil proven** section of basin

As of July this year we renewed the next phase of exploration for these blocks in the Phetchabun basin with a new 5 year exploration program. The area for exploration covers the central, oil prone section of the basin.

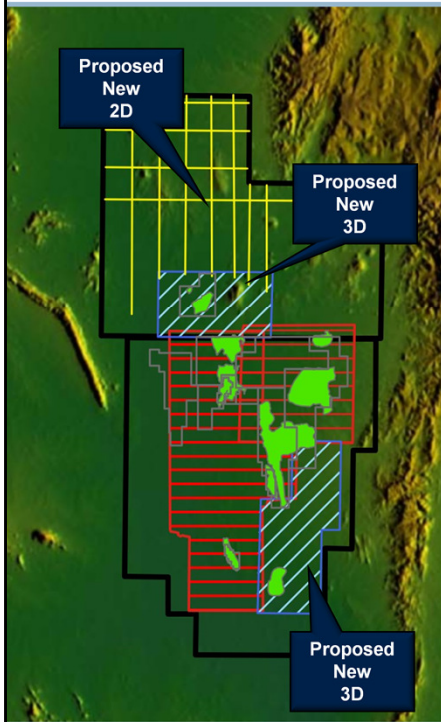
## Large area outside production license



- Total area for exploration around **1,000 km<sup>2</sup>**
- Current production area of around **100 km<sup>2</sup>**
- **Current 3D seismic covers only 365km<sup>2</sup>**

The remaining exploration area, after some relinquishments, still totals a large area of around 1,000 km<sup>2</sup>. This remaining exploration area is all outside the current production area of 100 km<sup>2</sup>. To put this into perspective, the 100km<sup>2</sup> of production licence areas originally contained an independently assessed 400 million bbls of oil in place, of which around 10 million bbls has been produced and current indications are of at least 30 million bbls remaining. 3D seismic acquired to date totals 365 km<sup>2</sup> over two acquisitions in 2006 and 2007.

## New data to enhance prospectively



- **Proposed 3D** extends coverage by up to a further **200km<sup>2</sup>**
- **Proposed 2D** extends data cover to the north where no data currently exists
- **Minimum 8 exploration wells** over the next 5 years outside of production license areas

Along with the new 5 year exploration period we proposed to the government of Thailand a new 5 year exploration program. The exploration program consists of an additional 200 km<sup>2</sup> of 3D data as highlighted in the dashed blue, and some new 2D to the North. The 3D in the area in the south of L33 is planned to cover an extension of the WBEXT field to the north to L33 and also the discoveries in L33. Incredibly the L33 discoveries, which flowed at original rates of 1,000 and 2,000 bopd, were on fairly sparse 2D seismic data and now require 3D seismic data to properly exploit the resource. The 100km<sup>2</sup> 3D in L33 is in the late stages of planning and is tentatively scheduled for late this year. The 2D to the north will extend our data coverage beyond current levels it what is essentially an unexplored area of the basin.

## Tremendous potential remains

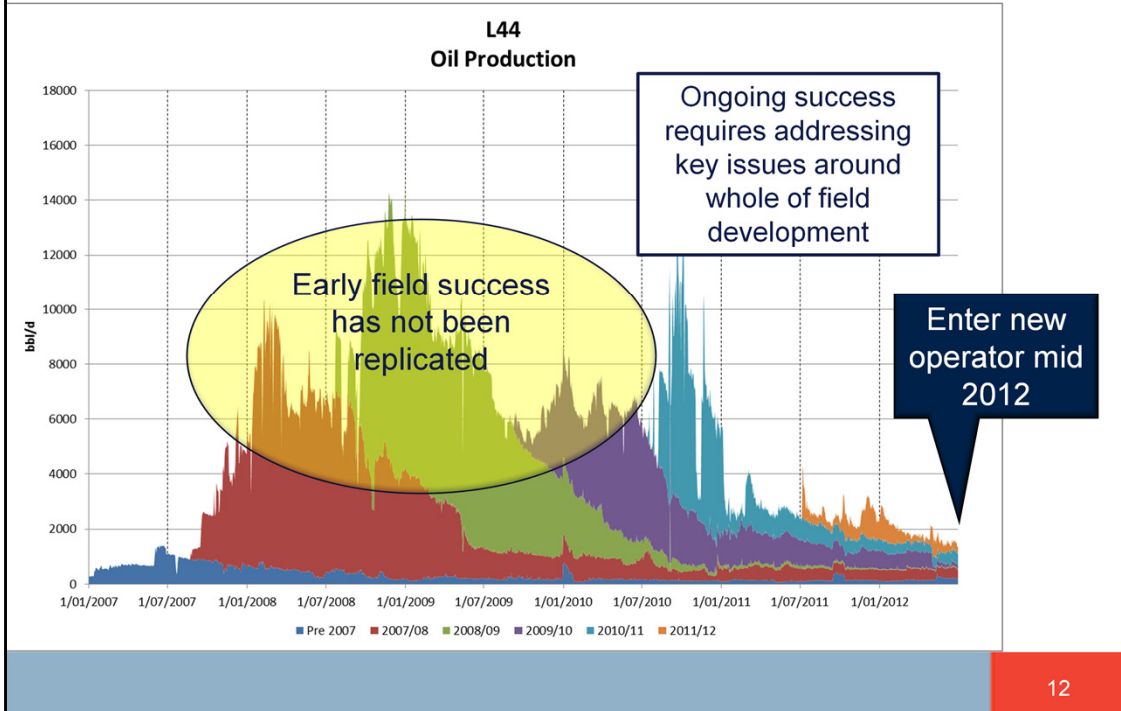
- 8.5 million bbls (gross) of 2P sandstone reserves  
+ 25 million bbls (gross) prospective sandstone  
exploration
- 22 million bbls (gross) of 2P igneous reserves  
+100 million bbls (gross) of prospective igneous  
exploration
- Plus new potential outside current 3D areas

### So how do we optimise the program?

- Sandstone development
- Igneous exploration

So with extensive exploration acreage with significant exploration upside, proved and probable reserves exceeding 30 million barrels, sandstone and fractured igneous reservoirs, our question for ourselves and our partners is how do we optimise our exploration and development program?

# Initially igneous developments



Initially, exploration, appraisal and development activities were focussed on the high flow rate potential fracture igneous reservoirs. Since the 2007 POE-9 well flowed in excess of several hundred bbls of oil per day, the joint venture has been concentrating on these reservoirs. And while initial field rates were very impressive, early field success has not been replicated in the past couple years. It is now felt that ongoing success requires addressing key issues around whole of field development, and this is more likely now that we have a new partner and operator since June of this year.

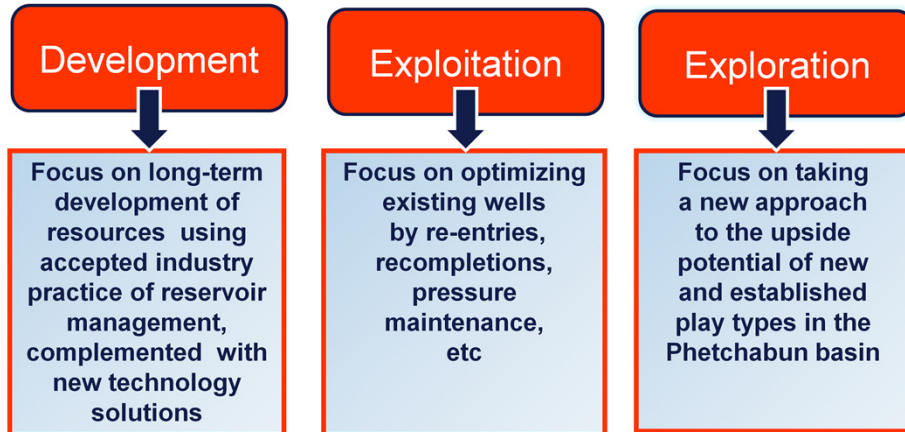
## New operator ....

- **ECO** purchased 60% interest mid 2012
  - Subsidiary of Towngas (SEHK: 0003) with significant market capitalisation on Hong Kong Stock Exchange
- ECO focuses on the **development of new energy projects**
  - resource exploitation in coal
  - conventional oil & gas
  - unconventional gas
  - coal-based chemicals
  - gas to liquids technology (in coalbed methane)
- Operates projects onshore China and **international**

As I touched on earlier, our new partner, and operator of the Phetchabun assets is a company called ECO. ECO are a wholly owned subsidiary of Hong Kong and China Gas Company Ltd, a substantial US\$20 billion Hong Kong listed company. ECO, which was established early 2000, focuses on the development of energy projects for the corporation.

# New operator, new strategy

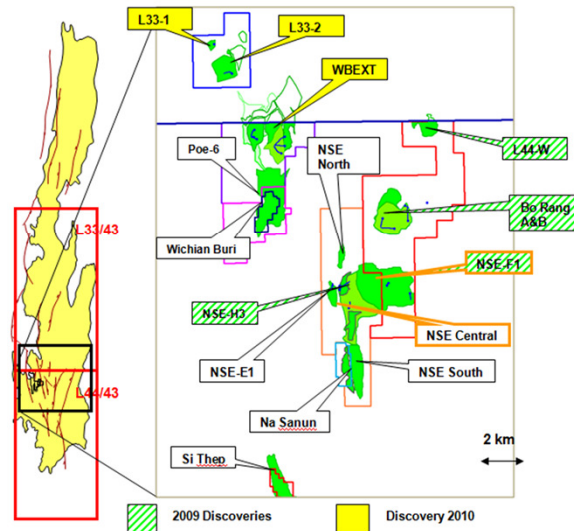
- **Integrated teams** analysing all aspects of Exploration and Production
  - Multiple disciplines including reservoir engineers, geologists and geophysicists
- Currently developing an **overall asset Oil Development Plan** (“ODP”) incorporating:



ECO intend to introduce a whole new approach to the exploration, exploitation and development of the Phetchabun basin fields and extended exploration acreage. This incorporates, for the first time in the joint venture, multi-disciplined teams reviewing not only all the existing fields and wells, but also potential from yet to be discovered resources. ECO intends to develop an all encompassing oil development plan that is scheduled for delivery to the Joint Venture sometime early next year.

## Example area of study: Fractured igneous – The unconventional prize in Carnarvon's portfolio

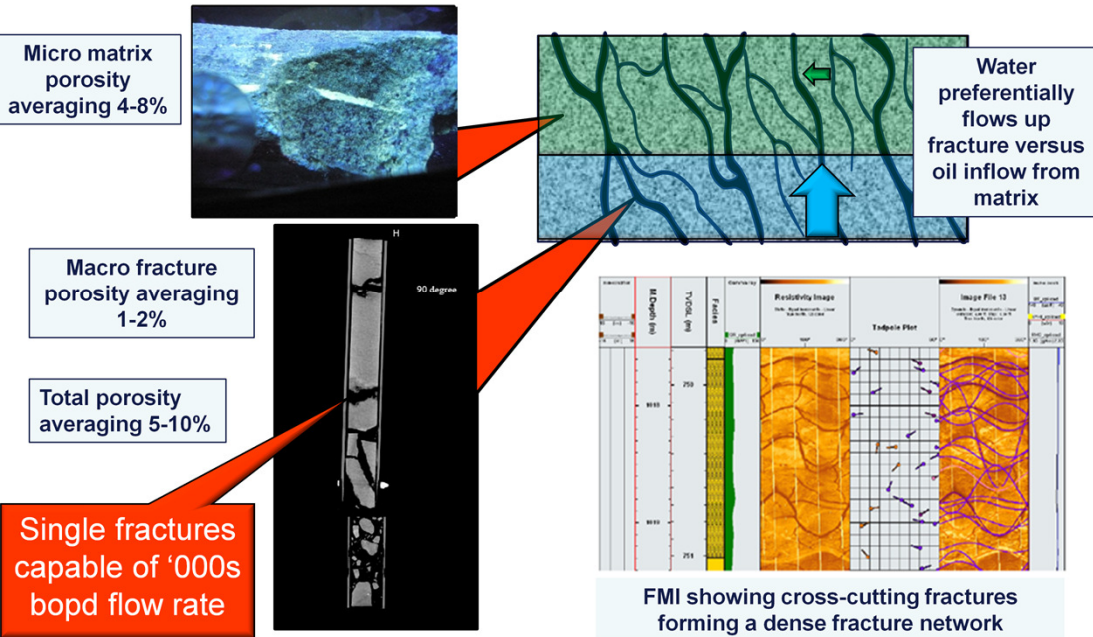
- Discovered in 2007 by the drilling of POE-9
- Prolific flow potential from minor fractures
- Significant oil reserves certified by independent experts



What will be the difference between what has been done before and what is proposed now? Let me give you an example, and also that will lead into an example on what is the potential from a change of operator. Without doubt, the fractured igneous reservoir is the unconventional prize in Carnarvon's current portfolio of assets. As mentioned previously, discovered in 2007 and capable of prolific flow rates, Individual wells have flowed 2000, 3000 , 4000 even 5000 bopd, albeit not for extended periods.



# Igneous Reservoir Model



A bit more detail in what we mean by these fractured igneous reservoir. Essentially it is a combination of micro matrix porosity and macro fracture porosity. The macro fractures are literally sections where the rock is cracked and missing, and there have been instances where we have drilled through this reservoir and the drill bit has literally dropped down. These are centimetres to tens of centimetres. To date, the bulk of the production from the igneous reservoirs has been from these macro fractures, which allows for the prolific flow rates we have seen. However flowing from the very high permeability macro fractures leads to the common instance of early water ingress. The fractures are initially filled with oil, and as we flow this oil at high rates there is insufficient time for recharge from any micro fractures or matrix porosity, leading to preferential flowing of water from the resident aquifer, resulting in significant oil being left behind in the micro fractures and matrix porosity. The ICD technology, introduced late last year, is one means of reversing this trend, but the implementation of this technology requires a multi-discipline team effort.

## All the necessary ingredients are there



- Significant oil in place
- Prolific flow rate potential
- Extensive exploration acreage
- New data being acquired
- New operator in place

**So where to next?**

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So all the necessary ingredients are now in place. Significant oil (circa 400 million bbls oil in place), prolific flow rate potential, exploration acreage and new data being acquired, a new operator in place. But where to next?

# Development requires a shift from statistical to technology-driven approach

Old approach:  
statistical model



- Minimum data utilized
- Accept variations in well performance
- Drilling was focused on producing the highest potential rate wells
- Compensate by drilling more wells

“Brute Force”

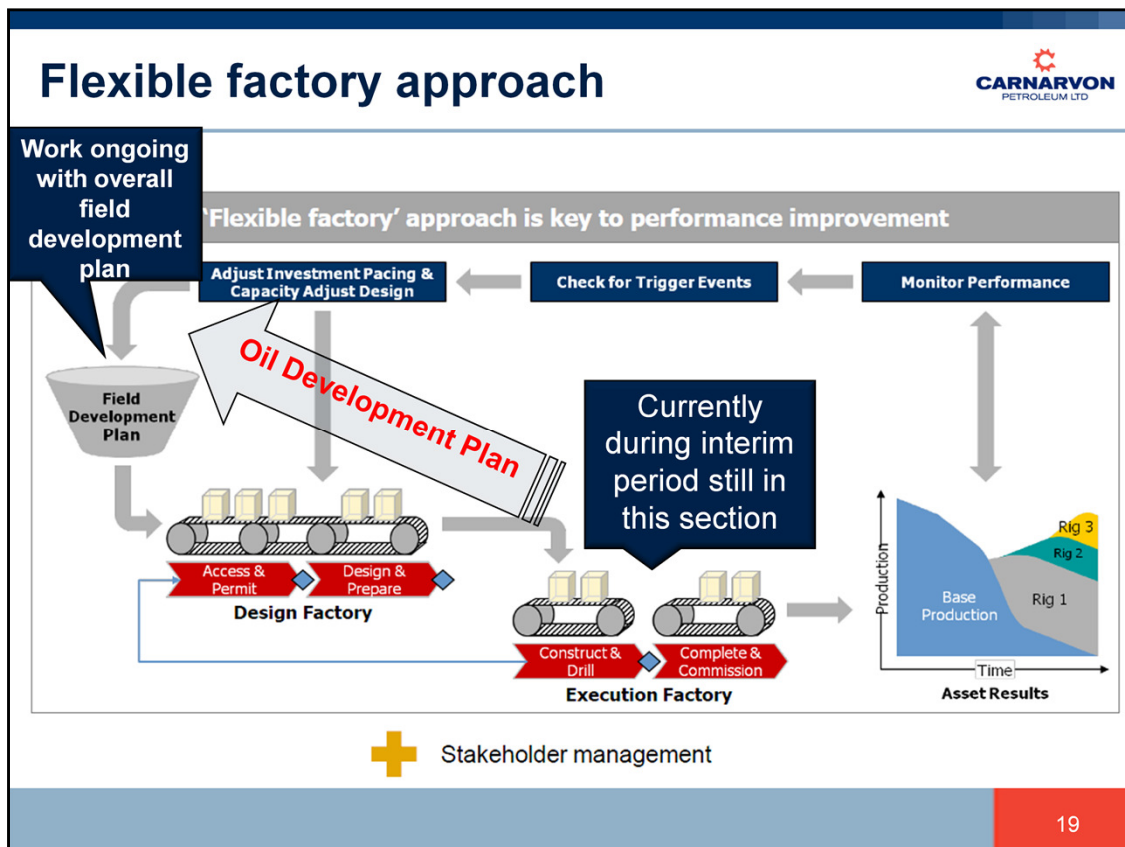
New approach:  
technology-driven model



- Collect optimum data
- Understand the Reservoir
- Drilling is focused on a reasonable certainty of some return on investment
- Targeted well placement
- Use technology for efficiency
- Production team's focus is on maintaining production while minimizing lifting costs

“Technology Focused Development”

The development requires a shift from a statistical model to a technology driven model. What was a good execution project but lacked some feedback used a “ventilate the earth” approach to reservoir development. This was successful in the early days but we struggled through the latter period of 2011 and through this year. What is needed is a whole of field, multi-disciplined team and technology driven approach. In this case drilling is focussed on targeted well placement where wells are drilled with certainty of return on investment rather than the highest flow rate possible.



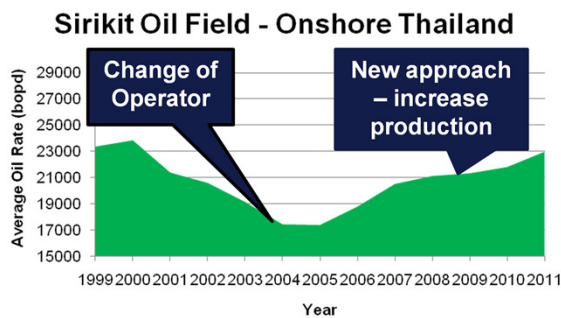
I have borrowed this slide from an approach to unconventional shale gas development – but the concept to fractured igneous is similar. Previously we had been predominantly operating in the Execution Factory. Our execution phase, that is to drill and complete wells, has always been what I would consider world class. These wells have been going down, often horizontal, to +/- 1500 m, completed with a nodding donkey or submersible electrical pump, for a cost of \$1 to \$1.5 million with around 10 days to drill and complete on a trouble-free basis, and online and pumping within another 3-6 days. However what has been missing is the feedback loop from Asset Results back to the Execution Factory. And that is where the Field Development Plan fits in - taking us to the front of this loop – with the technology driven Design Factory through the same Execution Factory – but monitor back for revision of the ODP.

## Change Operator Example

- Sirikit oil field **discovered 1990** in Phitsanulok basin
- Shell operator until end 2003
- PTTEP (**new operator**) takeover operations  
Jan 2004 – new development from Oct 2004
- Current (2012) **production rates are record** for the field 20 years after initial production



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So far all this is has been theoretical – so let me show you an example from just to the West of our producing fields of what is possible. The Sirikit field onshore Thailand in the Phitsanulok basin is an excellent example of what is possible with a change of operator. The Sirikit oil field was discovered back in 1990 and was operated and developed by Shell until the end of 2003. This graph has been truncated to highlight recent history and the upper end of production, but you can see the trend of decreasing flow over the prior 4-5 years. The field was taken over by PTTEP in Jan 2004, and they implemented a new development plan around 10 months later incorporating reservoir management principles. Since then production has steadily increased and, as I heard when I attending an oil managers meeting last week in Bangkok, current production is at record levels for the field.

## Work ongoing while waiting on ODP




- WBEXT sandstone development
- Ongoing well workovers
- Selected igneous appraisal and development
- Continue exploration

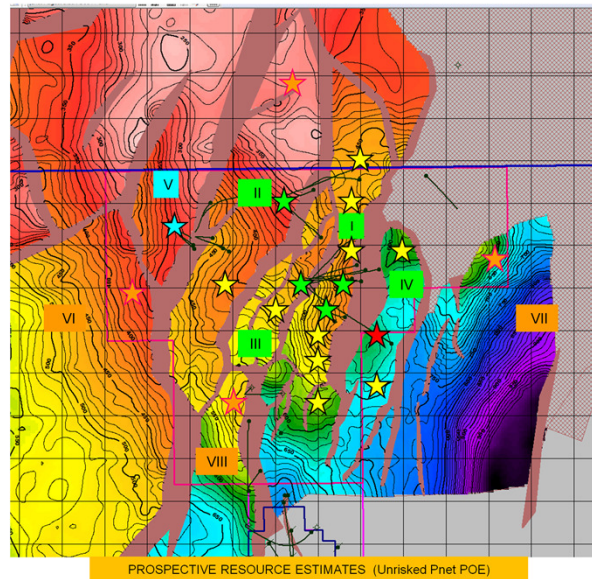
Carnarvon is working closely with the new operator ECO to develop an overall oil development plan. However, we are continuing work on the field to increase production while waiting for the ODP. The WBEXT sandstone development program has commenced. We are undertaking a few obvious well workovers. There are also a few selected fractured igneous infill wells planned and at least one promising exploration well. Note that most of this work is combination of targets identified by the previous operator but refined with the new team with input from Carnarvon.

# WBEXT Sand Development has commenced

- 60 well production EIA approved late June 2012
- Drilling commence July
- Anticipate 7-10 development wells in 2012
- Still exploration upside in WBEXT SST

Area name	Low MMbbls	Mid MMbbls	High MMbbls
I +II+III	0.301	4.278	14.203
IV new discovery estimate	0.300	0.480	.720
VI	0.840	1.500	2.580
VII	0.420	0.780	1.440
VIII	0.420	0.720	1.200
Total	1.680	3.000	5.220

-  Reserves
-  Contingent Resources
-  Prospective Resources

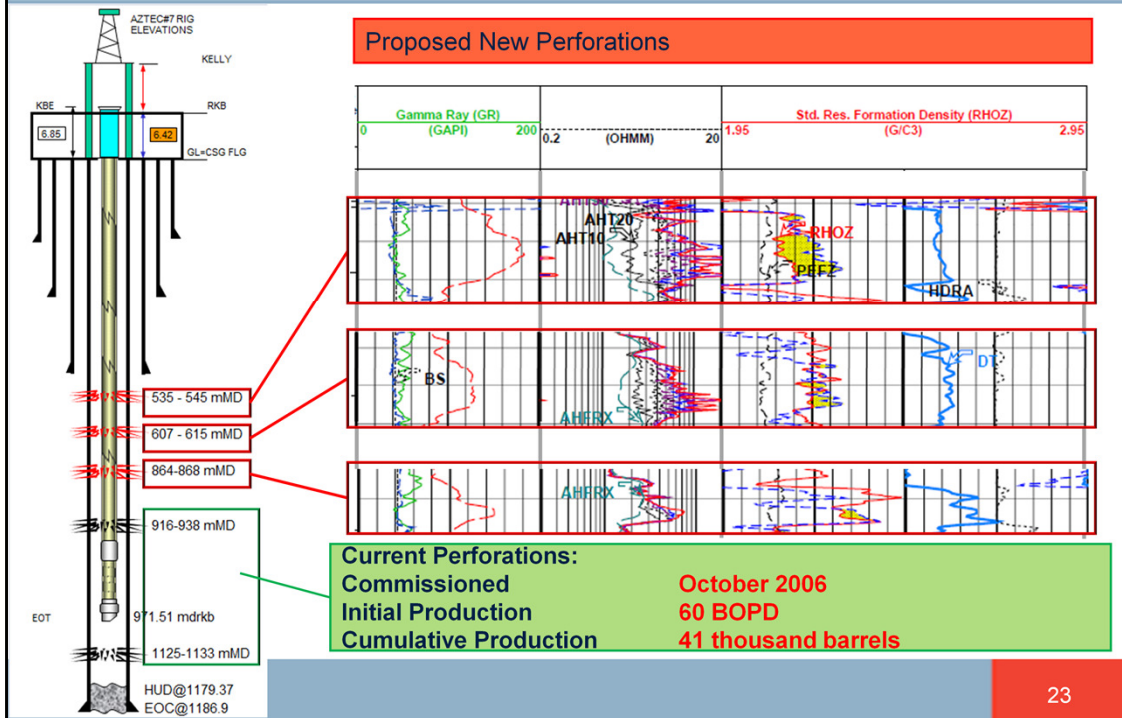


-  Gas
-  Oil
-  Location
-  Wet
-  Exploration

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The WBEXT sandstone development has commenced. If I recall – this time last year I was up here saying that environmental approvals for the 60 odd production wells were imminent. Well the Environmental Impact Assessment, or EIA, that was submitted around this time last year was finally approved in late June of this year and the program commenced late July. While the sandstone development was initially planned by the previous operator, the new team has had input already. In fact, the downhole location of the first well was altered around 300 m and the results were on prognosis at around 120 bopd. The schedule is to drill around 7-10 of these wells through the rest of this year while the ODP is being developed, and then I anticipate the rest of the approved 60 well locations will be rolled into the ODP.

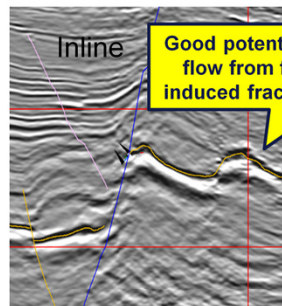
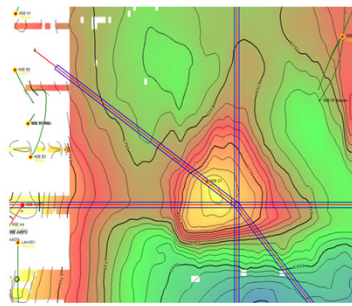
# Example well workover



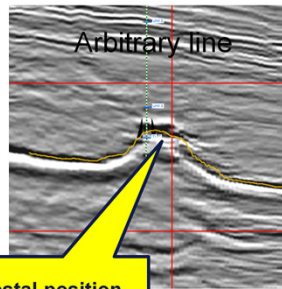
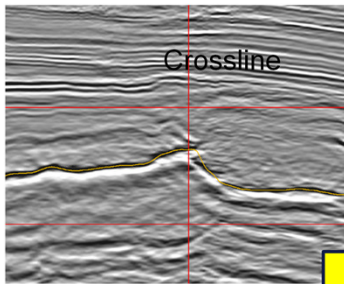
Here we see an example of what is possible from an overall review of all wells. This is a well that was drilled back in 2006 as part of the original sandstone redevelopment of Wichian Buri. It originally flowed around 60 bopd and has cumulative production of just over 40,000 barrels. At realised oil prices this well has paid off the initial half million dollar investment. With the previous operator, the focus was on the bigger, high impact fractured igneous wells and this well has just been pumping oil at modest rates with no lookback at it in the past 5 years. However, with the current larger multi-disciplined team in place and looking at everything, it can be seen from the logs that further potential is available from three additional zones – and these will be perforated as well as reperforating the original production zones with larger, more powerful guns that ECO are importing.



## Example igneous infill well



Good potential for flow from fault induced fracturing

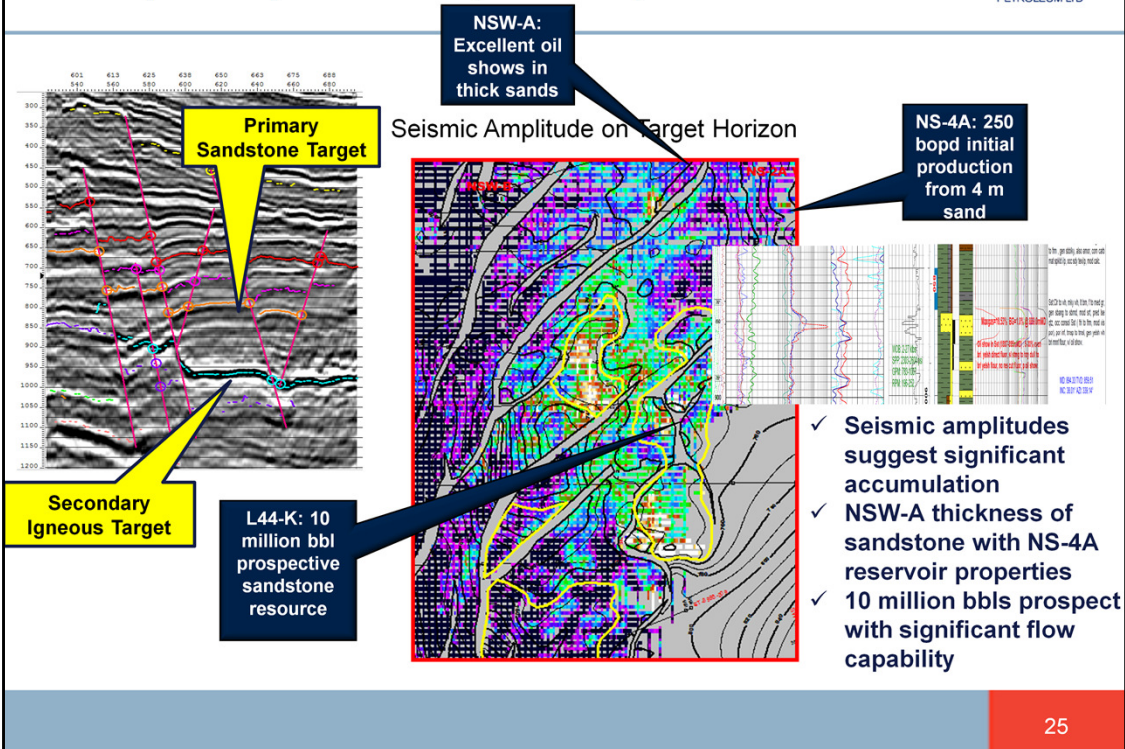


Crestal position

- Targeting wells with high chance of production add
- Mandate to technical team is wells with highest chance to add 500 bopd
- Subject to continuous change as ODP matures

There are still infill fractured igneous locations. As mentioned earlier, the overall plan for these wells has gone from looking for the biggest hitters, with associated high risk, to more sure wells albeit potentially lower rates, but still in the range of 200-500 bopd. This is an example well updip from a producer that we are still working with ECO to determine if this, or one of the other 3-4 candidates, should be included in the 2012 program.

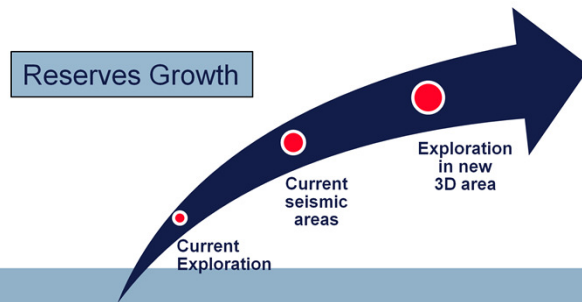
# Example exploration (L44K-D)



Exploration is still part of the mix and this well, due to be completed soon, is a good example of where we have multiple targets. This has both sandstone and igneous targets. The sandstone is intriguing as the sand was first targeted in the Na Sanun West well that unfortunately had drilling issues and was not completed. From mud logs we had oil shows through what is interpreted to be a 20-30 m sand. Also in the vicinity we have the sands from NS-4A which flowed up to 250 bps from a 4 m sand. So in this area we have a prospective resource of 10 million barrels (gross) within sandstones that have good quality, supported by seismic amplitudes, with potential for good rates. Additionally lower down, and these are not significant depths with the sandstone at around 700m, is a potential igneous that, by nature of the proximity to significant faults, is interpreted to be fractured and hence capable of reasonable flows.

# Near term production growth

Area of production	Gross Anticipated production
Base production	1,400 bopd
ALRO temporary shut in	500 bopd
2012 Sandstone campaign	800 bopd
2012 Workover campaign	100 bopd
2012 Igneous redevelopment	200 bopd
2012 Exploration activities	Risked Exploration
Dec 2012 exit rate	3,000 bopd



So, while we are waiting for the ODP which will give us a road map of how to develop the 30 million barrels of gross 2P reserves, the joint venture continues to work on increasing production. From our current rate of around 1,400 bopd, we see near term increases from bringing the ALRO shut-in wells online, continued success from the ongoing WBEXT sandstone development, workover campaign, sensible igneous redevelopment and of course exploration (which is risked). At this time we are planning for a 2012 exit rate of around 3,000 bopd.

## So how much difference can a new operator make ?

### Positive initial signs

- Sandstone development within prognosis
- Sensible igneous development
- Planning for future 3D acquisition

### Confidence in the future

- Oil Development Plan in progress
- Planning for significant production increase
- Significant acreage for testing exploration

In conclusion, the title of my talk was how much difference can a new operator make. Initial signs are very positive with sandstone development commenced and on prognosis, and as I mentioned the new operator did change downhole location of first well, sensible igneous program and preparing for additional 3D acquisition this year. All positive which gives Carnarvon, as non-operator with 40% equity, confidence in the future as the oil development plan is first rolled out and then implemented, which should lead to significant production increase. And combined with that is significant exploration acreage with plenty of running room and time to explore.

# THANK YOU

