The 2017 Offshore Acreage Release Areas: Petroleum Geological Overview

Tom Bernecker

Leader, Acreage Release & Petroleum Promotion, Resources Division
Bonaparte Basin

- Mainly shallow water exploration
- Bayu-Undan approaching depletion
- Development of gas fields in northeast mooted
- Darwin developing into energy hub
Bonaparte Basin: Main Operators

- Arafura Oil
- Bounty Oil & Gas
- Carnarvon Petroleum
- ConocoPhillips
- Engie Bonaparte
- Eni Australia
- Finder
- Finnis Offshore Exploration
- Goldsborough Energy
- Magellan Petroleum
- Murphy Australia
- Northern Oil & Gas Australia
- Origin Energy
- PTTEP
- Santos
- Shell Australia
- Sinopec
- Total
- Vulcan Exploration
- Woodside Energy
Calder Graben: NT17-1 (closing 19 October 2017)

- Shallow water depths (80-400 m)
- Considered lightly explored, no well drilled in area
- Adjacent to Barossa, Caldita, Evans Shoal and Evans Shoal South gas accumulations
- Plover Formation (Early-Middle Jurassic) is main target
- Various oil- and gas-prone source rocks identified in northern depocentres
NT17-1, Palaeogeography

Flamingo Group (Late Jurassic – Early Cretaceous)

- Upper shoreface to open shelf
- Incised distributary channels
- Lowstand submarine fan system

Lynedoch-1-ST1
- Flamingo target
- Shows in younger fractured carbonates
- Unknown potential of Perm/Carb.
Petrel Sub-basin: NT17-2, W17-1 and W17-2
(closing 22 March 2018)

- Existing gas production, further development planned
- Shallow water exploration (< 100 metres)
- Paleozoic source and reservoir facies (oil and gas)
- Uncertainties dominated by porosity-permeability characteristics
- Salt-tectonism
"Boundary" between Bonaparte and Browse basins

Access to oil and gas prone petroleum systems

Australia's Offshore Acreage Release - 2017

Vulcan Sub-basin: AC17-2 and W17-3 (closing 19 Oct 2017)
AC17-4 (closing 22 March 2018)
Browse Basin: AC17-2 and W17-3 (closing 22 March 2018)

- Next producing hydrocarbon province on NWS
- Prelude FLNG and Ichthys condensate production from 2018 onwards
- Heywood Graben offers new opportunities
- GA’s new study highlights distribution of petroleum systems
Browse Basin: Main Operators

- Bounty Oil & Gas
- ConocoPhillips
- Cornea Resources
- Eni Australia
- Finder
- INPEX
- IBP WA
- Karoon Gas
- Murphy Australia
- Pathfinder Energy
- Santos
- SGH Energy
- Shell Australia
- Sinopec
- Total
Potential Jurassic and Cretaceous plays in the Heywood Graben with access to charge from Jurassic and Cretaceous source rocks.

1. Extension fault blocks, rollover anticlines
   - eg. Brewster-1A, Brecknock-1, Crux-1

2. Miocene inversion anticlines
   - eg. Bassett-1A, Lynher-1

3. Drape folds
   - eg. Caswell-2-ST2, Focus-1, Psepotus-1

4. Submarine fan sandstones and mudstones
   - eg. Discorbis-1, Carbine-1, Braveheart-1

5. Stratigraphic pinchout
   - eg. Cornea-1
Roebuck Basin: W17-4 (closing 19 October 2017)

- New oil discovery by Phoenix South-1
- Follow-up wells Roc-1, Roc-2 and Phoenix South-2 confirm prospectivity
- At least two operating petroleum systems identified (oil and wet gas)
- Source rocks not understood (stratigraphy, facies)
- Reservoir quality variable across sub-basin
- Early Triassic (and older?) section offer new exploration opportunities
- Recent award of WA-527-P
- Continued strong industry interest
Roebuck Basin: Main Operators

- 3D Oil Limited
- BHP Billiton Petroleum
- Carnarvon Petroleum
- Pathfinder Energy
- Quadrant Northwest
- Woodside Energy
Northern Carnarvon Basin

W17-5: Dampier SB
Closing 19 October 2017

W17-6: Dampier SB
Cash bid area
Pre-qualification: 5 October 2017
Auction: 8 February 2018

W17-7:
Eastern Exmouth Plateau
Closing 22 March 2018

W17-8:
Western Exmouth Plateau
Closing 19 October 2017
### N. Carnarvon Basin: Main Operators

- AWE (Carnarvon)
- BHP Billiton Petroleum
- BP Developments Austr.
- Carnarvon Petroleum
- Chevron Australia
- Cue Exploration
- Eni Australia
- Esso Australia
- Exmouth Exploration
- Finder Exploration
- Flow Energy
- Goshawk Energy
- Hess Australia
- Hydra Energy
- Jadestone Energy
- Lightmark Enterprises
- Mobil Australia
- Murphy Australia
- Oil Basins
- Pilot Energy
- Quadrant Oil Australia
- Santos
- Shell Australia
- Statoil Australia
- Tap Oil Limited
- Vermilion Oil and Gas
- Woodside Energy
Houtman Sub-basin: W17-9 and W17-10 (closing 22 March 2018)

- Large areas (>300 graticular blocks) covering one of Australia’s remaining offshore frontiers

- New regional 2D seismic survey acquired by Geoscience Australia to fill data gap between Perth and Southern Carnarvon Basin

- Prospectivity study indicates that petroleum systems identified in Abrolhos Sub-basin may continue northwards

- Strong industry interest expressed during nomination process
Otway, Bass and Gippsland Basins

V17-1: Gippsland Basin
Closing 19 October 2017

V17-2 and V17-3: Otway Basin
Closing 19 October 2017

T17-1 and T17-2: Bass Basin
Closing 19 October 2017
Otway Basin

- 3D Oil Limited
- BHP Billiton Petroleum
- Loyz Oil Australia
- Origin Energy Resources
- Santos
- WHL Energy Ltd
Otway Basin

- Proven commercial gas province
- Ready access to infrastructure and growing southeast Australian energy market.
- Close to the producing Minerva, Casino and Halladale–Speculant gas fields
- Shallow water depths less than 80 m
- Good coverage with 2D and 3D seismic
- Migration pathways and fault/seal integrity major uncertainties
Intracratonic rift basin

Shallow water depths, less than 80 m

Cape Wickham Sub-basin is gas producing

Yolla gas production since 2006

Rockhopper, latest gas discovery (2010), includes minor condensate and oil

Origin Energy is only operator in the basin
- Gas shows in Tilana-1 (TD 3,900 m)
- Coal bearing intervals in Bass MS (includes Eastern View Formation) most likely source
- Presence of volcanics may have influenced maturity
Australia's Offshore Acreage Release - 2017

Durroon Sub-basin only lightly explored

- Only two wells drilled
- Numerous untested structural and stratigraphic plays
- New seismic needed
• Potential source rocks in the Otway Megasequence (includes coal horizons)

• Unknown potential in the lacustrine facies of the Durroon Megasequence
Gippsland Basin

- World class producing petroleum province

- **V17-1:**
  - Shallow water depths, 50-75 m
  - Full 3D seismic coverage
  - Access to multiple petroleum systems
  - Rapidly thinning prospective section towards the north
Gippsland Basin

- Basin Oil P/L
- Bass Strait Oil Company
- Carnarvon Hibiscus P/L
- Cooper Energy
- Esso Australia Resources
- Liberty Petroleum Corp.
- Llanberis Energy P/L
- Oil Basins Ltd
- SGH Energy VICP54 P/L
Central Deep:
- Top- and intra-Latrobe plays (including Golden Beach SG, eg Kipper)
- Oil and gas

Northern Terrace:
- Intra-Latrobe plays (Emperor SG, eg Longtom)
- Gas
- ? Contribution from Strzelecki Group
Welcome to NOPIMS 2017

Geoscience Australia has developed the National Offshore Petroleum Information Management System (NOPIMS) as an online data discovery and delivery system for all Australian offshore petroleum wells and survey information.

Data Access

Acreage Release
21/04/2017


National Archives Awards for Digital Excellence
04/05/2017

Geoscience Australia has won with NOPIMS, the National Archives of Australia’s Award for Digital Excellence.
• Improved user interface; cross multi-browser compatibility, new higher quality maps with ArcGIS integration

• Well header metadata: 3426 items

• Survey header metadata: 1975 items

• Well documents: 15,432 items

• Survey documents: 16,356 items

• Robotic Data Store Library: 2.37 Petabytes

• Physical Cores and samples curated: 16,000 kilometres

• Total number of curated database items: 1.3 million items
• Access to publicly available information about offshore petroleum titles and applications

• Portal access for the online payment of fees

• Lodgement and tracking of applications
Further Information

Acreage Release process, how to obtain acreage, petroleum geological information

Access to offshore petroleum data (seismic surveys, well logs, well completion reports etc.)

Information about existing offshore petroleum titles and applications

Information about Geoscience Australia’s role and activities