

**SESSIONAL COMMITTEE
ON THE NORTHERN TERRITORY'S ENERGY FUTURE**

11 OCTOBER 2013

QUESTIONS ON NOTICE

No 1

Question:

How much money is allocated for exploration initiatives under the CORE program? Mr Perkins undertook to provide a written brief on how all of the money in the CORE program is split up.

Answer:

CORE budget attached
CORE initiative attached

No 2

Question:

Mr Perkins undertook to provide the Committee with a copy of the presentation given by Alan Holland to the Cattlemen's Association on fracking at the recent APPEA onshore conference in Adelaide.

Answer:

Presentation attached.

No 3

Question:

In relation to the number of exploration licences, can you break them up into companies and whether they are overseas investors or whether they are Australian investors?

Answer:

Petroleum Title holders - attached

CORE Projects – October

CORE PROJECT	BUDGET	COMMENT
Geophysical Surveys		
Southern McArthur Basin gravity survey	302,000	NTGS costs \$302,000, industry contribution of \$116000
Western Amadeus gravity survey	190,000	
Regional Geoscience Programs and Prospectivity Assessments		
Update of the Onshore Petroleum Resources and Potential of the NT	88,000	Preparation and writing of report.
HyLogger scanning of drillcore in the Amadeus and McArthur basins	275,000	Some revenue from industry offsets cost. Includes interpretation of data
Geoscience mapping in the Jervois area of the Arunta Region	173,000	
Geoscience mapping in the Amadeus Basin	107,500	
Other geoscience projects	32,900	Including collaborative project on hydrocarbon prospectivity in the Georgina Basin and COBRA (in kind contribution by NTGS)
East Arnhem/McArthur Basin resource assessment including Black Shales	82,400	
Geochronology - age dating of rock collected through the geoscience mapping projects	113,000	
Negotiation of land access for geoscience programs including gravity surveys	79,800	
Personnel costs for geoscience staff involved in CORE projects	899,000	
Improved Information systems (online delivery)		
Online delivery of company exploration reports	51,000	
Promotions and Investment attraction		
Promotions and investment attraction	733,900	Including personnel, domestic and foreign promotional activities
AGES	102,000	Revenue covers most costs
Industry Grants		
Drilling and geophysics collaborations - 9 projects	638,950	
Geology and Resources of the NT		
Printing of Geology and Resources of the NT book	87,000	Some costs will be offset by revenue
TOTAL	3,955,450	

CORE INITIATIVE: Geophysics and Drilling Collaborations Program

- Nine projects from eight companies received funding in 2013-14; totalling nearly \$740 000. One geophysics project (\$100,000) and eight drilling projects (totalling \$638,947) were funded. These projects are widely distributed across regional areas of the NT.
- Most programs are being undertaken between September and November this year, and all results and drill core will be made publicly available within six months. 7 programs are yet to be completed.

Drilling Projects

Applicant	Area	Commodity	Project Name	Grant \$
CKA Resources Pty Limited	Southern Barkly	Copper-gold	Ooratippra Iron Oxide Copper Gold Exploration in Covered Terrain	\$100,000
Western Desert Resources Limited	Roper	Geothermal energy	Roper Bar Geothermal	\$100,000
Alligator Energy Ltd	Western Arnhem	Uranium	Mamadawerre Project EL 24992	\$55,841
May Drilling Pty Ltd	Daly	Base Metals	Giants Reef Conductor East	\$43,106
MMG Limited	Gulf Country	Zinc	Matchbox Project, McArthur Basin	\$100,000
MMG Limited			Matchbox Project, McArthur River	\$100,000
Uranium Equities Limited	Western Arnhem	Uranium	West Arnhem Joint Venture Project	\$100,000
Davenport Resources Limited	Alice Springs	Copper-gold	Southern Cross Bore	\$40,000
<u>Geophysics Projects</u>				
Areva Resources Australia Pty Ltd	Barrow Creek	Uranium	Davenport Project	\$100,000

Total: 738,947

Results to date

- Two of the project activities under the Geophysics and Drilling Collaborations program have now been completed.
 - Areva Resources have completed the EM geophysical survey in the Barrow Creek area. Data processing has commenced. \$50,000 DUE FOR PAYMENT
 - MMG have completed the drilling at Mt Sandford in the Victoria River district. Results are not yet available but some core has been submitted. \$50,000 DUE FOR PAYMENT
 - Drilling of the deep hole through the Georgina Basin by CKA has been suspended at 440m due to rig capability. Completion awaiting larger rig to mobilise to site in late October.
 - Geothermal hole by WDR cancelled as costs prohibitive for petroleum drilling rig - \$100,000 will not be expended
 - Johnnies Reward drilling (Arunta Resources) had technical problems – still to submit revised program

Petroleum Title Holders

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EP134	TriStar Energy Company	Tri Star US & Aus	Tri-Star - group of exploration companies formed in Texas USA - owned by James H. Butler family. Includes: Tri-Star Petroleum Company Tri-Star Coal Company Tri-Star Energy Company Tri-Star Australia Holding Company West Texas Oil and Gas Corporation	26-Feb-08		25-Feb-14	\$ 2,165,000.00	\$ 574,052.00	\$ 1,700,000.00
EP115	Frontier Oil and Gas Pty Ltd	Santos Pty Ltd	Australian	17-Aug-07		16-Apr-14	\$ 2,900,000.00	\$ 38,530,415.00	\$ 2,400,000.00
EP103	Texalta Australia Pty Ltd	Statoil	Texalta - Calgary based company. Wholly owned subsidiary is Texalta Australia Pty Statoil - Norwegian State Oil Company Ltd	21-Nov-06		20-May-14	\$ 2,100,000.00	\$ 25,018,185.00	\$ 500,000.00
EP104	Texalta Australia Pty Ltd	Statoil	As above	21-Nov-06		20-May-14	\$ 2,100,000.00	\$ 17,867,796.00	\$ 500,000.00
2015									
EP163	Tamboran Resources Limited	Total	Privately held Australian company	14-May-10		13-May-15	\$ 640,000.00	\$ 134,173.00	\$ 550,000.00
EP105	Merlin Energy Pty Ltd	Santos Pty Ltd	Australian	28-Sep-07		27-May-15	\$ 2,600,000.00	\$ 202,533.00	\$ 13,500,000.00
EP106	Merlin Energy Pty Ltd	Santos Pty Ltd	Australian	28-Sep-07		27-May-15	\$ 2,850,000.00	\$ 122,058.00	\$ 13,620,000.00

EP128	PetroFrontier (Australia) Pty Ltd	Statoil	PetroFrontier Headquartered - Calgary, Alberta, Canada, Statoil - Norwegian State Oil Company	14-Dec-07		13-Jun-15	\$ 3,930,000.00	\$ 27,755.00	\$ 3,800,000.00
EP112	Frontier Oil and Gas Pty Ltd	Santos Pty Ltd	Australian	21-Jul-05		20-Jul-15	\$ 1,885,000.00	\$ 1,307,588.00	\$ 4,000,000.00
EP127	PetroFrontier (Australia) Pty Ltd	Statoil	PetroFrontier Headquartered - Calgary, Alberta, Canada, Statoil - Norwegian State Oil Company	14-Dec-07		13-Dec-15	\$ 3,930,000.00	\$ 6,427,755.00	\$ 2,000,000.00
2016									
EP97 (R1)	Rawson Resources Limited	Santos Pty Ltd	Australian	21-Oct-01	23-May-11	22-May-16	\$9,000,000.00	\$847,300.00	\$ 7,600,000.00
EP171	Armour Energy Pty Ltd	Armour NT & Qld	Australian	29-Jun-11		28-Jun-16	\$1,730,000.00	\$5,764,839.00	\$ 1,650,000.00
EP176	Armour Energy Pty Ltd	Armour NT & Qld	Australian	29-Jun-11		28-Jun-16	\$7,080,000.00	\$7,305,146.00	\$ 7,000,000.00
EP156	Oilco Pty Ltd	Oilco	Australian	7-Nov-11		6-May-14	\$4,250,000.00	\$ 89,455.00	\$ 4,175,000.00
2017									
EP200	Wiso Oil Pty Ltd	Rod Illingworth	Australian	16-Feb-12		15-Feb-17	\$ 2,100,000.00	\$ 33,559.00	\$ 2,066,000.00
EP205	Wiso Oil Pty Ltd	Rod Illingworth	Australian	16-Feb-12		15-Feb-17	\$ 2,050,000.00	\$ 85,346.00	\$ 2,000,000.00
EP207	Wiso Oil Pty Ltd	Rod Illingworth	Australian	16-Feb-12		15-Feb-17	\$ 2,100,000.00	\$ 77,785.00	\$ 2,000,000.00
EP161	Tamboran Resources Limited	Santos QNT Pty Ltd	Privately held Australian company	21-May-12		20-May-17	\$ 590,000.00	\$ -	\$ 590,000.00
EP126	Territory Oil and Gas Pty Limited	Beach Energy Limited	Australian companies	15-Jun-11		14-Jun-17	\$ 5,550,000.00	\$ 46,278.00	\$ 5,500,000.00
EP189	Tamboran Resources Limited	Santos QNT Pty Ltd	Privately held Australian company	21-Aug-12		20-Aug-17	\$ 580,000.00	\$ -	\$ 580,000.00

EP162	Tamboran Resources Limited	Santos QNT Pty Ltd	As above	21-Aug-12		20-Aug-17	\$ 590,000.00	\$ -	\$ 590,000.00
EP135	Territory Oil and Gas Pty Limited	Beach Energy Limited	Australian companies	28-Aug-12		27-Aug-17	\$ 5,300,000.00	\$ -	\$ 5,300,000.00
EP138	Territory Oil and Gas Pty Limited	Beach Energy Limited	Australian companies	23-Aug-12		22-Aug-17	\$ 5,260,000.00	\$ -	\$ 5,260,000.00
EP136	Sweetpea Petroleum Pty Ltd	Sweetpea	Sweetpea, a wholly-owned subsidiary of PetroHunter Energy Corporation, Denver Colorado	28-Aug-12		27-Aug-17	\$ 2,900,000.00	\$ -	\$ 2,900,000.00
EP143	Sweetpea Petroleum Pty Ltd	Sweetpea	As above	28-Aug-12		27-Aug-17	\$ 2,800,000.00	\$ -	\$ 2,800,000.00
EP222	Wiso Oil Pty Ltd	Rod Illingworth	Australian	22-Aug-12		21-Aug-17	\$ 3,150,000.00	\$ -	\$ 3,100,000.00
EP231	Paltar Petroleum Limited	Paltar	Australian	5-Sep-12		4-Sep-17	\$ 1,298,000.00		\$ 1,298,000.00
EP234	Paltar Petroleum Limited	Paltar	Australian	5-Sep-12		4-Sep-17	\$ 1,053,000.00	\$ -	\$ 1,053,000.00
EP237	Paltar Petroleum Limited	Paltar	Australian	5-Sep-12		4-Sep-17	\$ 2,832,000.00	\$ -	\$ 2,832,000.00
EP174	Armour Energy Pty Ltd	Armour	Australian	11-Dec-12		10-Dec-17	\$ 1,780,000.00	\$ -	\$ 1,780,000.00
EP190	Armour Energy Pty Ltd	Armour	Australian	11-Dec-12		10-Dec-17	\$ 2,180,000.00	\$ -	\$ 2,180,000.00
2018									
EP198	Pangaea (NT) Pty Ltd	Pangaea (NT) Pty Ltd	Australian	10-Jan-13		9-Jan-18	\$ 8,900,000.00	\$ -	\$ 8,900,000.00
EP167	Pangaea (NT) Pty Ltd	Pangaea (NT) Pty Ltd	Australian	10-Jan-13		9-Jan-18	\$ 5,100,000.00	\$ -	\$ 5,100,000.00
EP168	Pangaea (NT) Pty Ltd	Pangaea (NT) Pty Ltd	Australian	10-Jan-13		9-Jan-18	\$ 5,100,000.00	\$ -	\$ 5,100,000.00
EP82 (R1)	Helium Australia	Santos Pty Ltd	Australian	2-Sep-05	30-Jan-13	29-Jan-18	\$ 19,250,000.00	\$ -	\$ 19,250,000.00
EP93 (R1)	Merlin Energy Pty Ltd	Santos Pty Ltd	Australian	1-Nov-04	30-Jan-13	29-Jan-18	\$ 14,600,000.00	\$ -	\$ 14,600,000.00
EP169	Pangaea (NT) Pty Ltd	Pangaea (NT) Pty Ltd	Australian	4-Apr-13		3-Apr-18	\$ 5,100,000.00	\$ -	\$ 5,100,000.00

EP300	Tom Oates	Tom Oates	Australian	17-Apr-13		16-Apr-18	\$ 5,400,000.00	\$	-	\$	5,400,000.00
EP301	Tom Oates	Tom Oates	Australian	15-May-13		14-May-18	\$ 5,400,000.00	\$	-	\$	5,400,000.00
EP144	Conarco Minerals Limited	Conarco Minerals Limited	Australian	21-May-13		20-May-18	\$ 4,400,000.00	\$	-	\$	4,400,000.00
EP153	Minerals Australia Pty Ltd/Jacaranda Minerals Limited	Minerals Australia Pty Ltd/Jacaranda Minerals Limited	Australian	1-Jul-13		30-Jun-18	\$ 5,000,000.00	\$	-	\$	5,000,000.00
EP165	Tamboran Resources Limited	Tamboran Resources Limited	Privately held Australian company	15-Jul-13		14-Jul-18	\$ 349,000.00	\$	-	\$	349,000.00
EP309	Tamboran Resources Limited	Tamboran Resources Limited	As above	15-Jul-13		14-Jul-18	\$ 349,000.00	\$	-	\$	349,000.00
EP164	Tamboran Resources Limited	Tamboran Resources Limited	As above	23-Aug-13		22-Aug-18	\$ 590,000.00	\$	-	\$	-
EP166	Tamboran Resources Limited	Tamboran Resources Limited	As above	23-Aug-13		22-Aug-18	\$ 590,000.00	\$	-	\$	-
EP191	Armour Energy Pty Ltd	Armour Energy Pty Ltd	Australian	3-Oct-13		2-Oct-18	\$ 1,740,000.00	\$	-	\$	-
EP192	Armour Energy Pty Ltd	Armour Energy Pty Ltd	Australian	3-Oct-13		2-Oct-18	\$ 1,740,000.00	\$	-	\$	-
EP232	Paltar Petroleum Limited	Paltar	Australian	3-Oct-13		2-Oct-18	\$ 946,000.00	\$	-	\$	-
							\$ 202,877,000.00	\$ 158,236,758.51		\$ 210,772,000.00	
Retention Leases											
RL1	Onshore Energy Pty Ltd		Australian subsidiary of Advent Energy Limited	8-Feb-90	9-Jul-13	8-Jul-18					

RL2	Magellan Petroleum (NT) Pty Ltd	Magellan	Australian subsidiary of Magellan Petroleum Corporation (Overseas Investor)	25-May-92	4-Feb-09	3-Feb-14		
RL3	Helium Australia Pty Ltd	Central Petroleum Limited	Australian	6-Mar-13		5-Mar-18		
RL4	Helium Australia Pty Ltd	Central Petroleum Limited	Australian	6-Mar-13		5-Mar-18		
Production Leases (Granted) Petroleum (Prospecting & Mining) Act (Repealed)								
OL3	Magellan Petroleum (NT) Pty Ltd	Magellan	Australian subsidiary of Magellan Petroleum Corporation (Overseas Investor)	9-Nov-82	6-Nov-03	7-Nov-24		
OL4	Santos Limited/Santos QNT Pty Ltd	Santos	Australian	18-Nov-81	6-Nov-12	17-Nov-23		
OL5	Santos Limited/Santos QNT Pty Ltd	Santos	Australian	18-Nov-81	6-Nov-12	17-Nov-23		
Production Licences (Applications) Petroleum Act								
L6	Frontier Oil and Gas Pty Ltd	Central Petroleum	Australian					

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DEPARTMENT OF MINES AND ENERGY



Regulation of Unconventional Oil and Gas Exploration - Northern Territory.

Alan Holland – Director Energy

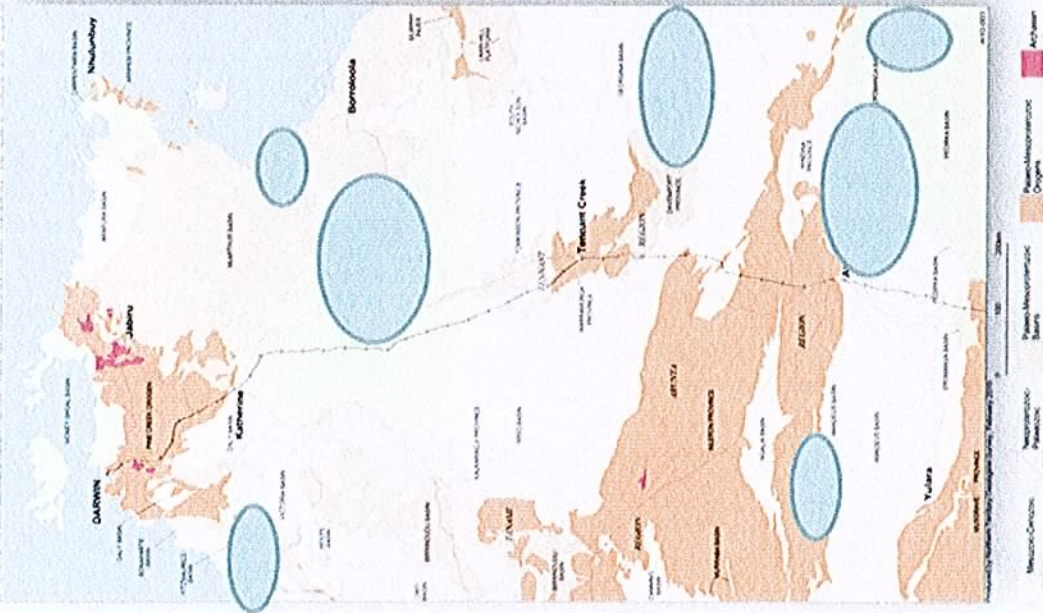
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Regulation of Unconventional Oil and Gas Exploration in the Northern Territory

GEOLOGICAL REGIONS OF THE NORTHERN TERRITORY



DEPARTMENT OF MINES AND ENERGY

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Regulation of Unconventional Oil and Gas Exploration in the Northern Territory

Legislation and Regulation

- Oil and gas exploration in the Territory is regulated under the *Petroleum Act* and associated Regulations. The Department of Mines and Energy (DME) is the responsible Government Agency.
- Included in the legislation is a *Schedule (Guidelines) of Onshore Petroleum Exploration and Production Requirements 2012*, that is based on Commonwealth requirements and is consistent with neighboring jurisdictions.
- Due to the new technologies and direction of Industry to now explore for unconventional oil and gas; the NTG initiated a review of the existing Petroleum legislation on how it applies to unconventional.
- Legislation was reviewed by an Independence legal expert from the Bond University in Qld, specifically as it applies to unconventional oil and gas. Same expert also reviewed the WA legislation.
- The outcome of the review was that although the existing legislation did adequately regulate these new exploration techniques, further recommendations were provided which the NTG has accepted and acted upon.



Regulation of Unconventional Oil and Gas Exploration in the Northern Territory

Legislation and Regulation

- One of the main recommendation was to move the Schedule of Requirements into Regulations, and mirror the Commonwealth and WA regulations, which is underway.
- Another was to provide more prescriptive requirements in legislative Guidelines for well integrity, water management, chemical usage and disclosure, independent environmental assessments, this has also been achieved.
- Under existing regulations, operators must submit an Environment Management Plan (EMP) before being approved for any type of exploration or production activity. This includes aerial survey, land seismic survey and all types of drilling.

Assessments of operators EMP's takes into account five major considerations for approvals.

1. Well integrity designs (leading oil field practices)— life cycle of a well.
2. Water usage – waster water disposal methods – as required by Water Division of Government.
3. Drilling composition and additives used for drilling and fracturing.
4. Land Access , multiple land use
5. Heritage / cultural considerations



Regulation of Unconventional Oil and Gas Exploration in the Northern Territory

Legislation and Regulation

- All oil and gas activities are also assessed by the Environment Protection Agency (EPA) under the NT Environment legislation Guidelines before approvals to start work can be provided by DME.
- Although at this time oil and gas activities are exempt from the Water Act, that will soon change, it is worth noting that DME places higher levels of requirements on operations with respect to water management than that prescribed in the Water Act.
- These include testing schedules, water usage, waste water management and construction of water bores.
- All “unconventional” oil and gas exploration in the Territory is for resources in shale rather than coal seams (CSG) as in Eastern States of Qld and NSW.
- Some significant differences between shale exploration and coal seam exploration are that exploring for shale does not produce water or waste water other than what is used for drilling and if required fracturing, plus, generally shale is found much deeper than coal seam ie 1-2 klms from surface, where as coal can be found above of just below potable aquifers.

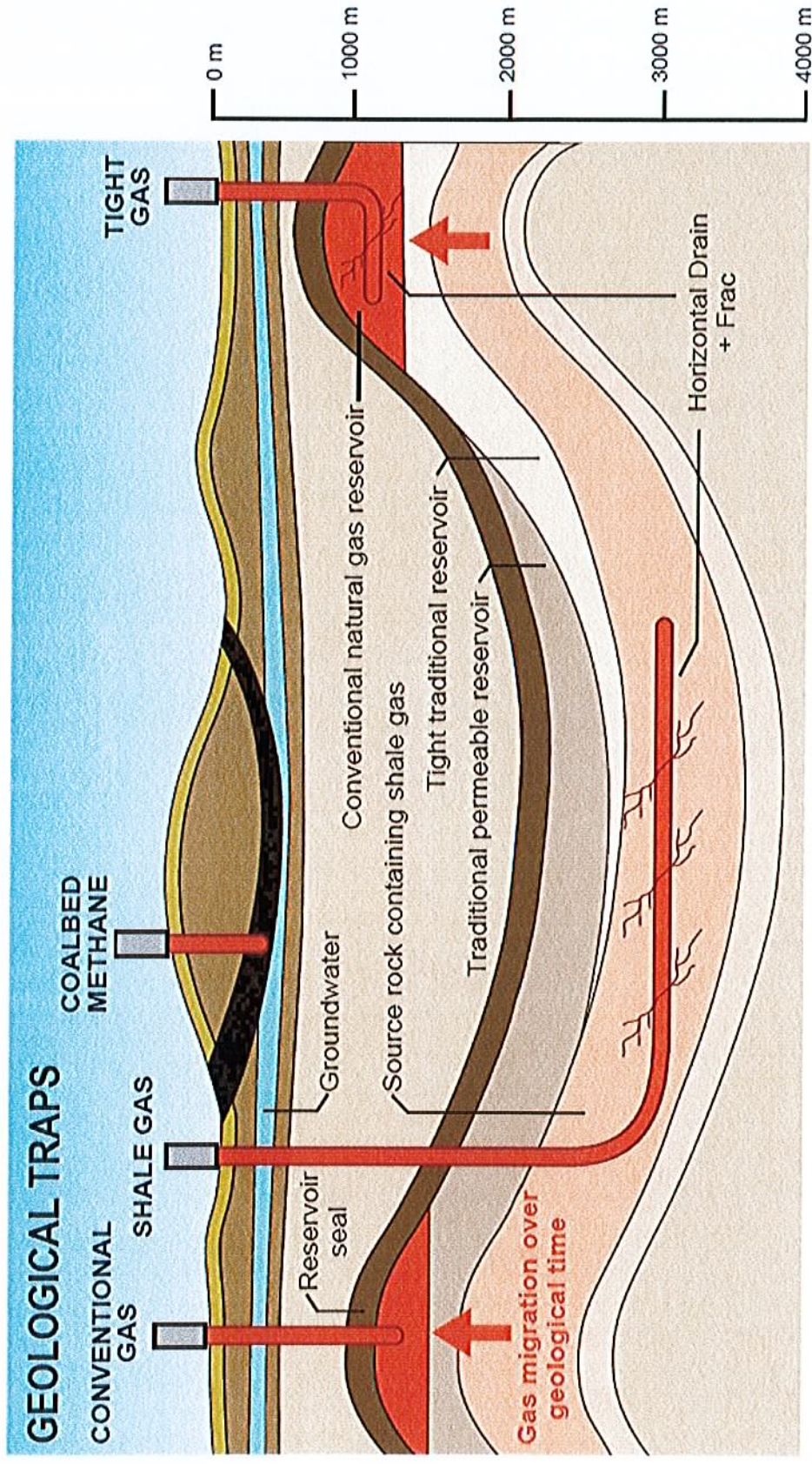
Conventional / Unconventional gas.

- There is no basic difference between conventional gas and unconventional gas other than the type of technology that is used to recover the gas.
- Conventional gas is largely extracted through the drilling of a vertical well from surface into the gas reservoirs. The gas is under pressure which is released through the drilling of the well and the gas flows through the pore spaces in the rock, then into the well bore to surface.
- Gas that is trapped in formations that are less porous and permeable are unable to flow readily and require **stimulation** to enable the pores to connect and gas to flow. These types of accumulations are usually shale or coal seams.
- To access this “**unconventional**” gas, the well is first drilled vertically, then horizontally through the target area, exposing as much of the gas-bearing rock to the well bore as possible.
- Horizontal wells may extend for hundreds of metres and can also be oriented so that they intersect natural fracture systems resulting in increased flow rates without fracturing.
- Hydraulic fracture stimulation may then be used to **microfracture** the rock around the well bore and connect the pore spaces in the rock and further enable the flow of gas into the well bore.



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Regulation of Unconventional Oil and Gas Exploration in the Northern Territory

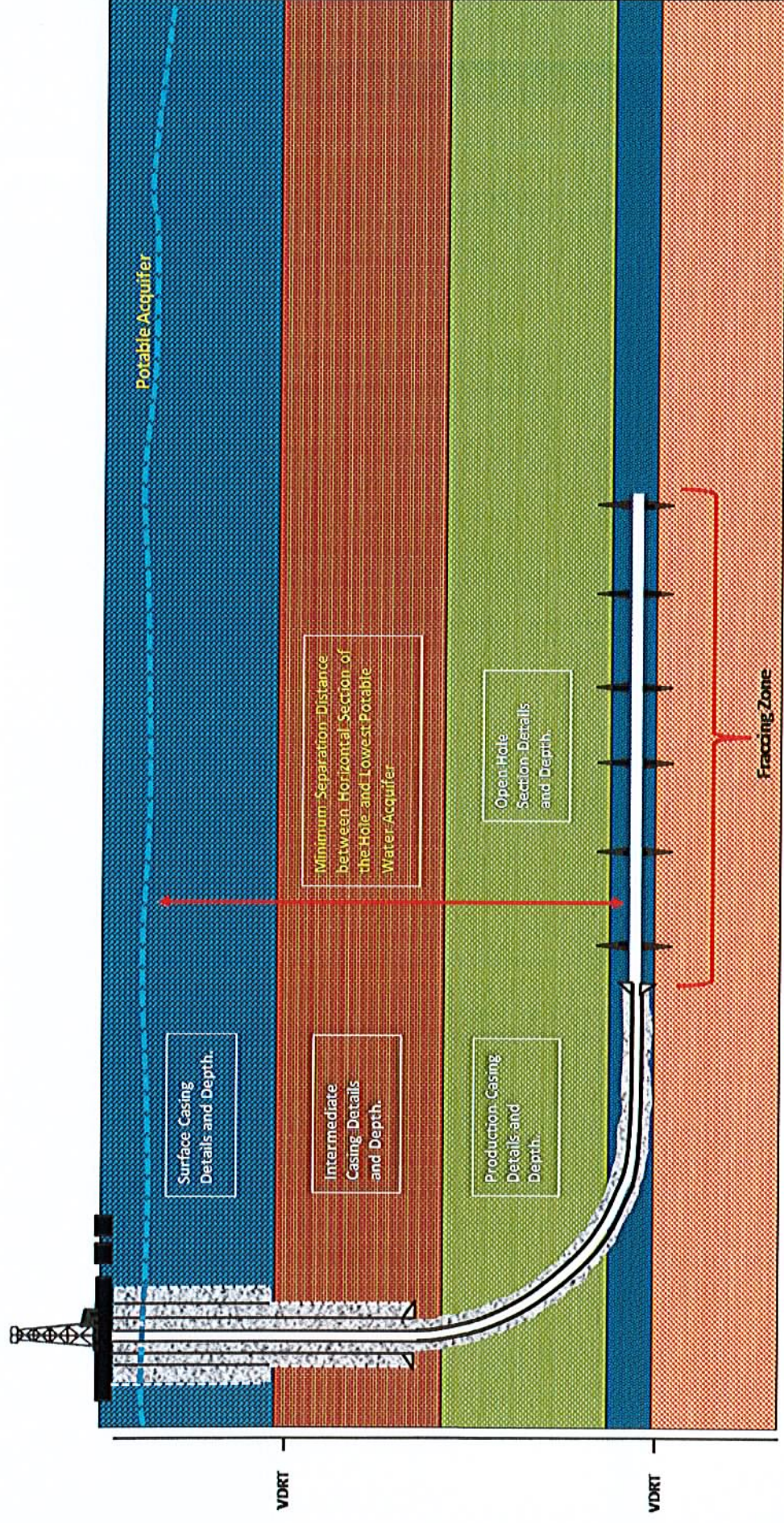




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Typical exploration well construction.



**Alan Holland
Director Energy
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