



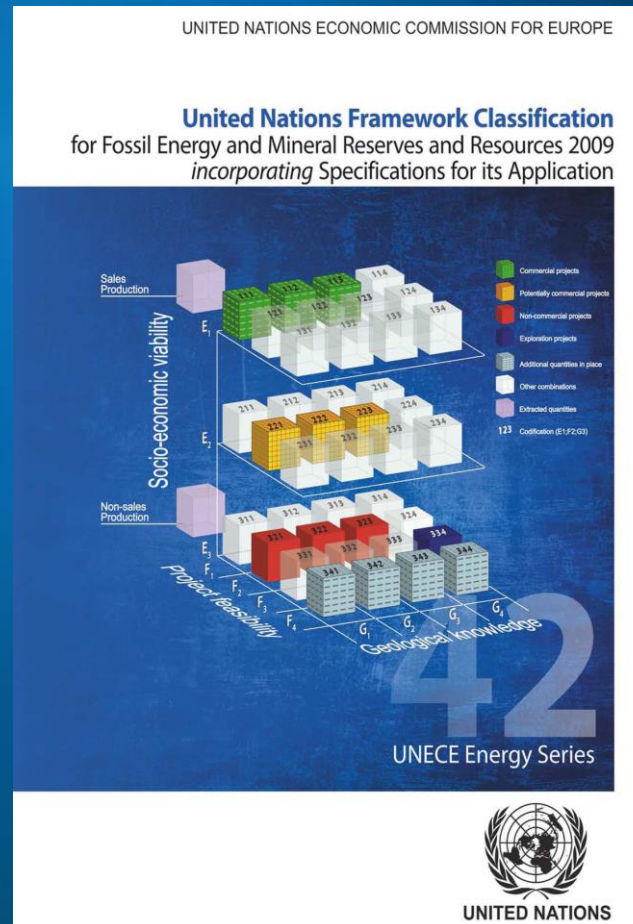
# **Application of Bridging Document between RF2013 and UNFC for comparison of Russian classification of reserves and PRMS**

**Tyumen**

**A.V. Shpilman**

**17 September 2019**

# United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 incorporating Specifications for its Application



Bridging document between the Oil and Gas Reserves and Resources Classification of the Russian Federation of 2013 and the United Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 has been endorsed at the 25 th session of the Committee on Sustainable Energy on Комитета по устойчивому развитию энергетики ЕЭК ООН утвержден связующий документ между Рамочной классификацией ООН и Российской классификации запасов и ресурсов нефти и газа



UNECE

## Bridging Document

between

the Oil and Fuel Gas Reserves and Resources  
Classification of the Russian Federation of 2013

and

the United Nations Framework Classification for Fossil  
Energy and Mineral Reserves and Resources 2009  
(UNFC-2009)

Done in Geneva, 30 September 2016



# Bridging Document between UNFC-2009 and RF-2013.

## Adapting to national or local needs

### Comparison of RF2013 and UNFC-2009 in geological knowledge

	UNFC-2009 Categories	RF-2013 Categories
<b>G1</b>	Quantities associated with a known deposit that can be estimated with a high level of confidence	A, B1, C1, A*, B1* A**, B1**, C1**
<b>G2</b>	Quantities associated with a known deposit that can be estimated with a moderate level of confidence	B2, C2, B2*, B2**, C2**
<b>G3</b>	Quantities associated with a known deposit that can be estimated with a low level of confidence	
<b>G4</b>	Estimated quantities associated with a potential deposit, based primarily on indirect evidence	D0, DL, D1, D2 D0**, DL **, D1**, D2**

Reserves are also defined for the unprofitable parts of deposit, which is denoted by “\*” symbol (A\*, B1\*, B2\*). The profitability factor has no effect on the geological confidence scale, thus, A\* and B1\* estimates have a high level of confidence while B2\* has a lower level of confidence.

The same logic is applied to technically unrecoverable quantities A\*\*, B1\*\*, B2\*\*, C1\*\* and C2\*\*.

# Mapping of RF2013 and UNFC-2009 Classes and Categories

RF2013 Categories		UNFC-2009 “minimum” Categories			UNFC-2009 Class
Discovered	A, B1, B2	E1	F1	G1,G2,G3	Commercial Projects
	A*, B1* B2* C1, C2	E2	F2	G1,G2,G3	Potentially Commercial Projects
	C1, C2	E3	F2	G1,G2,G3	Non-Commercial Projects
	A**, B1**, B2**, C1**, C2** (Non-recoverable)	E3	F4	G1,G2,G3	Additional Quantities in Place
Undiscovered	D0, DL, D1, D2	E3	F3	G4	Exploration Projects
	D0**, DL**, D1**, D2** (Non-recoverable)	E3	F4	G4	Additional Quantities in Place



# Mapping of the E-F Matrix to RF2013 classes and categories

	F1.1	F1.2	F1.3	F2.1	F2.2	F2.3	F3.1	F3.2	F3.3	F4
E1.1	1	2	3	4						
E1.2	1	2	3							
E2			4	4	5					
E3.1	12	12	12	12	12	12				
E3.2			6	6	6		8	9	10	
E3.3			7	7	7	7				11

Class	Sub-class	Code	RF2013 Category
Commercial Projects	On Production	1	A
	Approved for Development	2	B1
	Justified for Development	3	B2
Potentially Commercial Projects	Development Pending	4	A*, B1*, B2* C1, C2
	Development on Hold	5	A*, B1*, B2* C1, C2
Non-Commercial Projects	Development Unclassified	6	C1, C2
	Development Not Viable	7	C1, C2
Additional Quantities in Place		11	A**, B1**, B2** C1**, C2**
Exploration Projects	Prospect	8	D0
	Lead/High Risk Prospect	9	DL
	Play	10	D1, D2
Additional Quantities in Place		11	D0**, DL**, D1**, D2**
Produced Not Sold		12	

In many cases, RF2013 categories map to more than one location in the E-F matrix

# Comparison of RF 2013 – UNFC 2009 – PRMS

Bridging Document allows to map RF-2013 to UNFC-2009, as well as to PRMS as an aligned system

	F1.1	F1.2	F1.3	F2.1	F2.2	F2.3	F3.1	F3.2	F3.3	F4
E1.1	1	2	3	4						
E1.2	1	2	3							
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E3.1	12	12	12	12	12	12				
E3.2			6	6	6		8	9	10	
E3.3			7	7	7	7				11

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	Lead/High Risk Prospect	9	DL
	Play	10	D1, D2
Additional Quantities in Place		11	D0**, DL**, D1**, D2**
Produced Not Sold		12	

RF 2013 – UNFC 2009

Discovered	Reserves	On Production		1
		Approved for Development		2
		Justified for Development		3
	Contingent Resources	Development Pending		4
		Development Unclassified or On Hold	On Hold	5
			Unclassified	6
		Development Not Viable		7
		Unrecoverable		
Undiscovered	Prospective Resources	Prospect		8
		Lead		9
		Play		10
	Unrecoverable			11
Special Cases		Defined but not classified in PRMS		12
		Less Common Mappings		

PRMS – UNFC 2009

# Case Studies development and recommendation by TAG / PWG

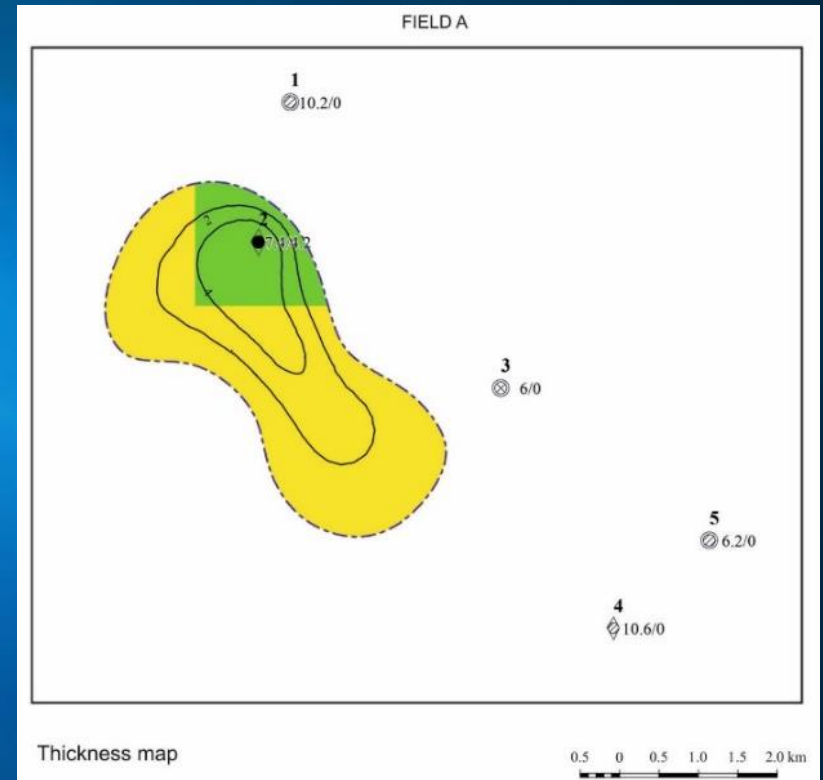
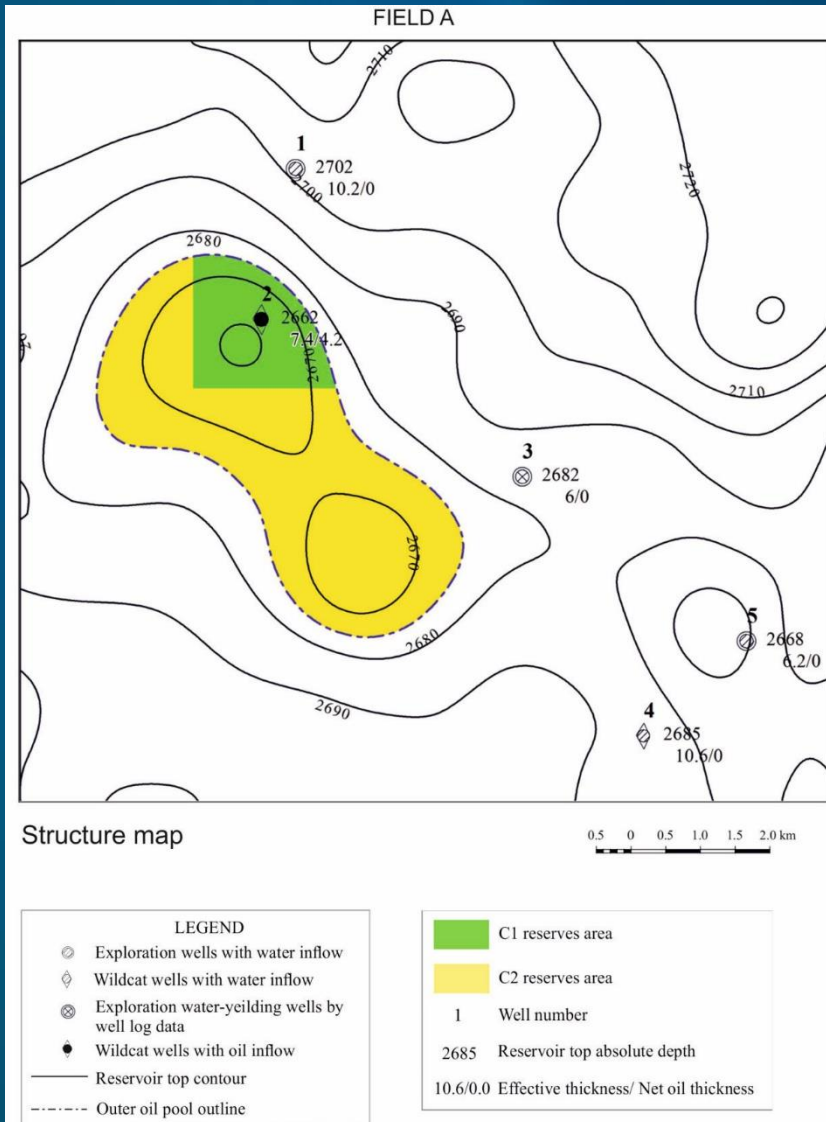
- **Petroleum Case Study 1 - Field A in West Siberia**
- **Petroleum Case Study 2 - Structure S in West Siberia**
- **Petroleum Case Study 3 - . . .**

*The full TAG has completed its review of the first petroleum case study (CS#1) developed by a TAG sub-group and recommended it to the Bureau and for publication on the EGRC website.*

*CS#1 explains the thought process for the UNFC and RFC classifications. The proposed E & F & G classifications were recognized to be consistent with UNFC and the RFC bridging document.*




# Top structure depth map of discovery / Net oil thickness map



# Mapping of the UNFC E-axis to RFC classes and categories

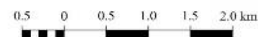
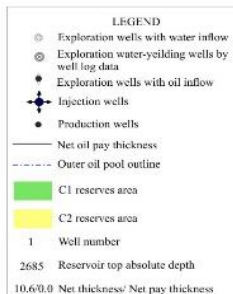
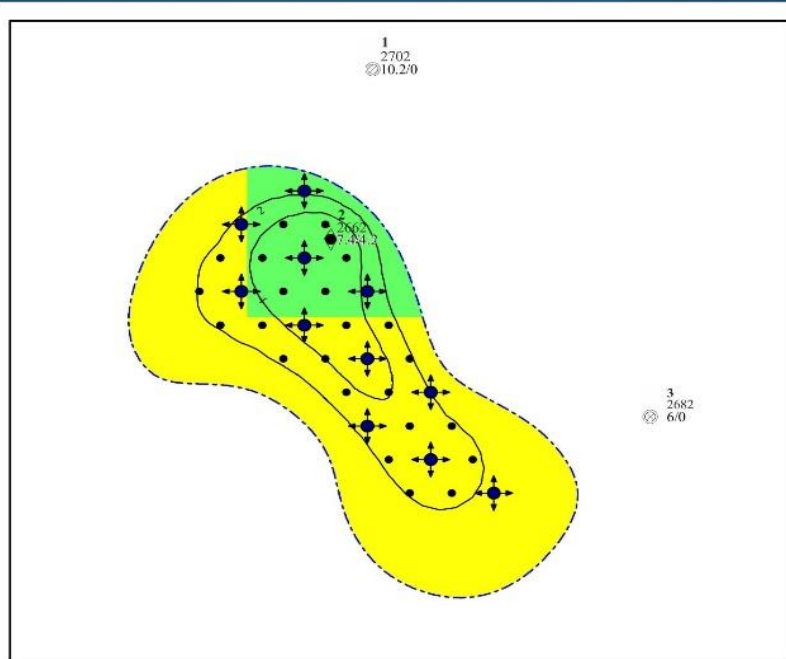
**E - axis**



	F1.1	F1.2	F1.3	F2.1	F2.2	F2.3	F3.1	F3.2	F3.3	F4
E1.1	1	2	3	4						
E1.2	1	2	3							
E2			4	4	5					
E3.1	12	12	12	12	12	12				
E3.2			6	6	6		8	9	10	
E3.3			7	7	7	7				11

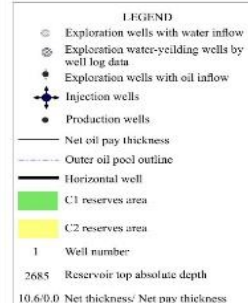
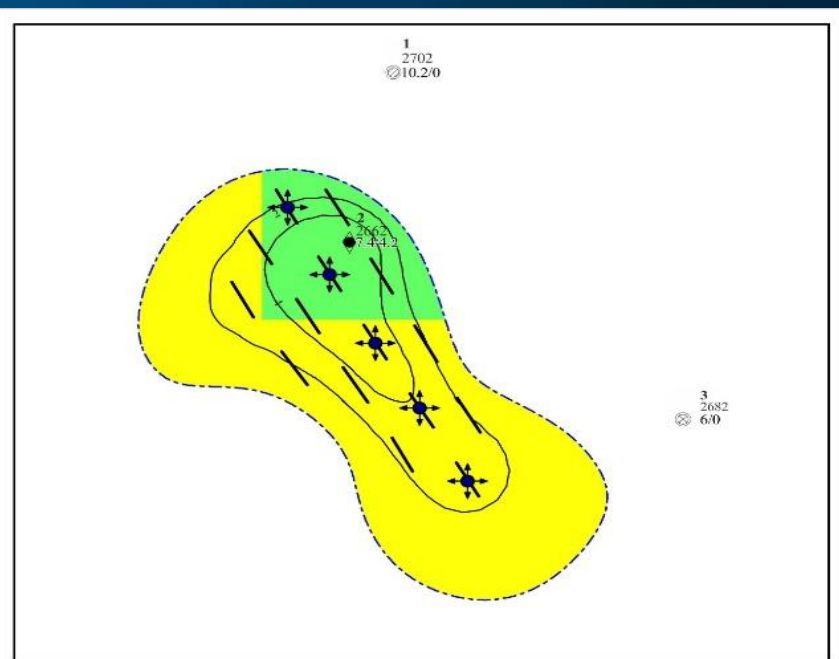
- ✓ The discovery is not in a licensed area and no owners have committed themselves to any development. The project should currently be placed in the maturity class “Non-Commercial Projects”.
- ✓ The information from analogous fields indicates that a future field development project could potentially be made economically and socially viable. This supports the assertion that the project should not be mapped as Code 7
- ✓ E3.2 has the definition: Economic viability of extraction cannot yet be determined due to insufficient information (e.g. during the exploration phase).
- ✓ The project is at the exploration stage, consequently **E3.2** is the most preferable

# Potential future field development schemes with either vertical or horizontal wells



Well spacing = 500 m

ORF = 0.3 m



# Mapping of the UNFC F-axis to RFC classes and categories

**F - axis** 

	F1.1	F1.2	F1.3	F2.1	F2.2	F2.3	F3.1	F3.2	F3.3	F4
E1.1	1	2	3	4						
E1.2	1	2	3							
E2			4	4	5					
E3.1	12	12	12	12	12	12				
E3.2			6	6	6		8	9	10	
E3.3			7	7	7	7				11

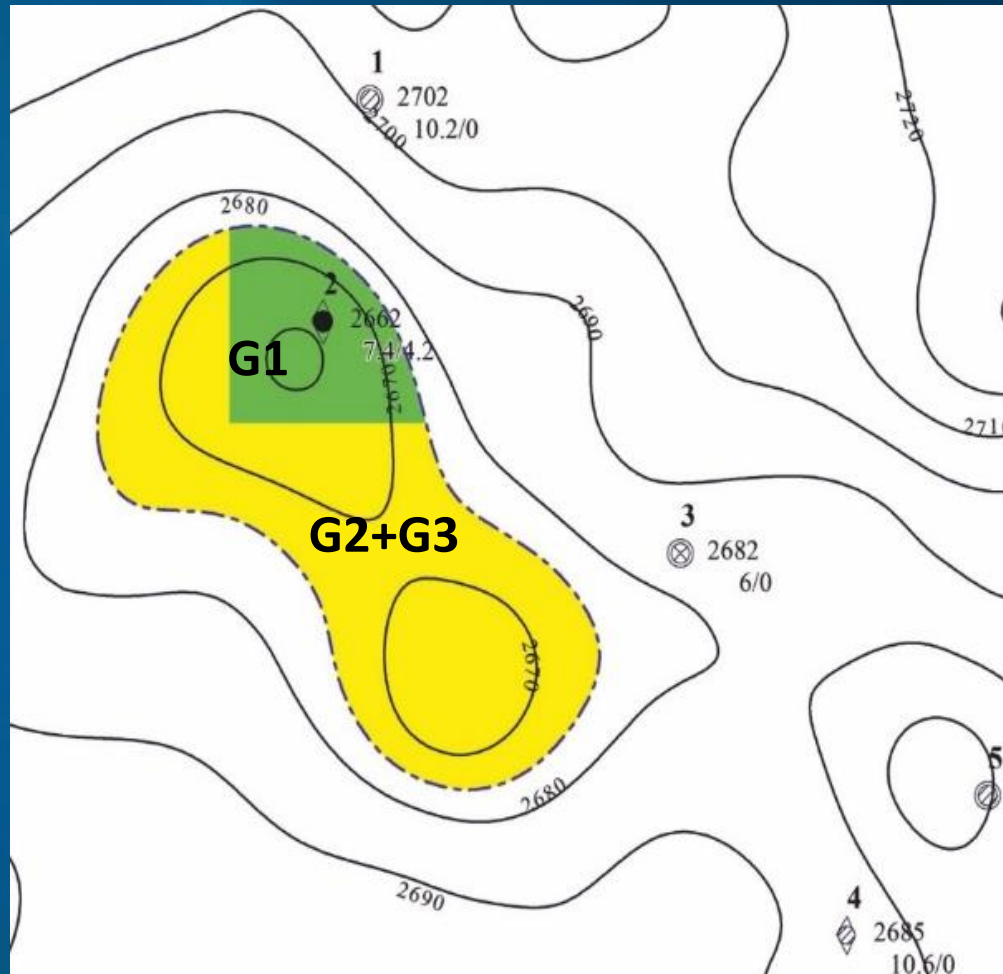
- ✓ Currently there is no confirmed development project. Project definitely does not qualify for Category F1
- ✓ There is no available information, that any activities to justify development are ongoing. The project should not be qualified as Sub-Category F2.1
- ✓ The most suitable Sub-Category currently appears to be **F2.2** (Project activities are on hold and/or where justification as a commercial development may be subject to significant delay)

# Mapping of the UNFC E-F Matrix to RFC classes and categories

	F1.1	F1.2	F1.3	F2.1	F2.2	F2.3	F3.1	F3.2	F3.3	F4
E1.1	1	2	3	4						
E1.2	1	2	3							
E2			4	4	5					
E3.1	12	12	12	12	12	12				
E3.2			6	6	6		8	9	10	
E3.3			7	7	7	7				11

Class	Sub-class	Code	RF2013 Category
Commercial Projects	On Production	1	A
	Approved for Development	2	B1
	Justified for Development	3	B2
Potentially Commercial Projects	Development Pending	4	A*, B1*, B2* C1, C2
	Development on Hold	5	A*, B1*, B2* C1, C2
Non-Commercial Projects	Development Unclarified	6	C1, C2
	Development Not Viable	7	C1, C2
Additional Quantities in Place		11	A**, B1**, B2** C1**, C2**
Exploration Projects	Prospect	8	D0
	Lead/High Risk Prospect	9	DL
	Play	10	D1, D2
Additional Quantities in Place		11	D0**, DL**, D1**, D2**
Produced Not Sold		12	

# G-axis





# Mapping of the UNFC E-F Matrix to RFC classes and categories for associated petroleum gas

Class	Sub-class	Code	RF2013 Category
Commercial Projects	On Production	1	A
	Approved for Development	2	B1
	Justified for Development	3	B2
Potentially Commercial Projects	Development Pending	4	A*, B1*, B2* C1, C2
	Development on Hold	5	A*, B1*, B2* C1, C2
Non-Commercial Projects	Development Unclassified	6	C1, C2
	Development Not Viable	7	C1, C2
Additional Quantities in Place		11	A**, B1**, B2** C1**, C2**
Exploration Projects	Prospect	8	D0
	Lead/High Risk Prospect	9	DL
	Play	10	D1, D2
Additional Quantities in Place		11	D0**, DL**, D1**, D2**
Produced Not Sold		12	

	F1.1	F1.2	F1.3	F2.1	F2.2	F2.3	F3.1	F3.2	F3.3	F4
E1.1	1	2	3	4						
E1.2	1	2	3							
E2			4	4	5					
E3.1	12	12	12	12	12	12				
E3.2			6	6	6		8	9	10	
E3.3			7	7	7	7				11

Depending on the details of the future field development plan, the produced gas volumes might be flared, used towards electricity production, or used directly as fuel, etc. Thus, the recoverable associated gas volumes should be mapped to Code 12. The E-axis Category E3.1 has been applied to the RFC C1 and C2 gas volumes.

# UNFC Resource volume estimates

The development of Field A is regarded as one project and only the processed oil could be sold.

Cumulative values (oil volumes):

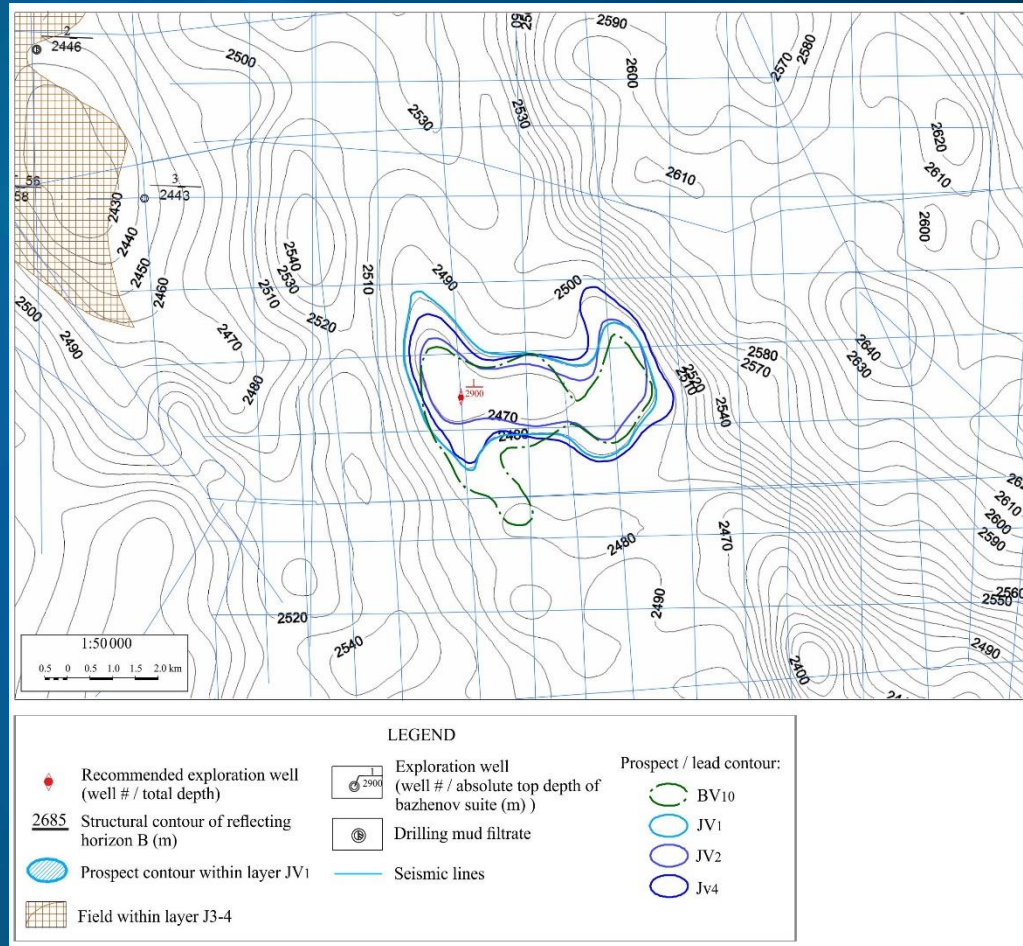
	Classification	Oil (1000 tons)
Recoverable	E3.2, F2.2, G1	259
Recoverable	E3.2, F2.2, G2+G3	596
Total Recoverable	E3.2, F2.2, G1+G2+G3	855
Non-recoverable	E3.3, F4, G1+G2+G3	1996

Cumulative values (gas volumes):

	Classification	Gas (GSm <sup>3</sup> )
Recoverable	E3.1, F2.2, G1	13
Recoverable	E3.1, F2.2, G2+G3	30
Total Recoverable	E3.1, F2.2, G1+G2+G3	43
Non-recoverable	E3.3, F4, G1+G2+G3	99

# Case Studie 2

## Structural map with 4 traps



## Case Study 2.

	F1.1	F1.2	F1.3	F2.1	F2.2	F2.3	F3.1	F3.2	F3.3	F4
E1.1	1	2	3	4						
E1.2	1	2	3							
E2			4	4	5					
E3.1	12	12	12	12	12	12				
E3.2			6	6	6		8	9	10	
E3.3			7	7	7	7				11

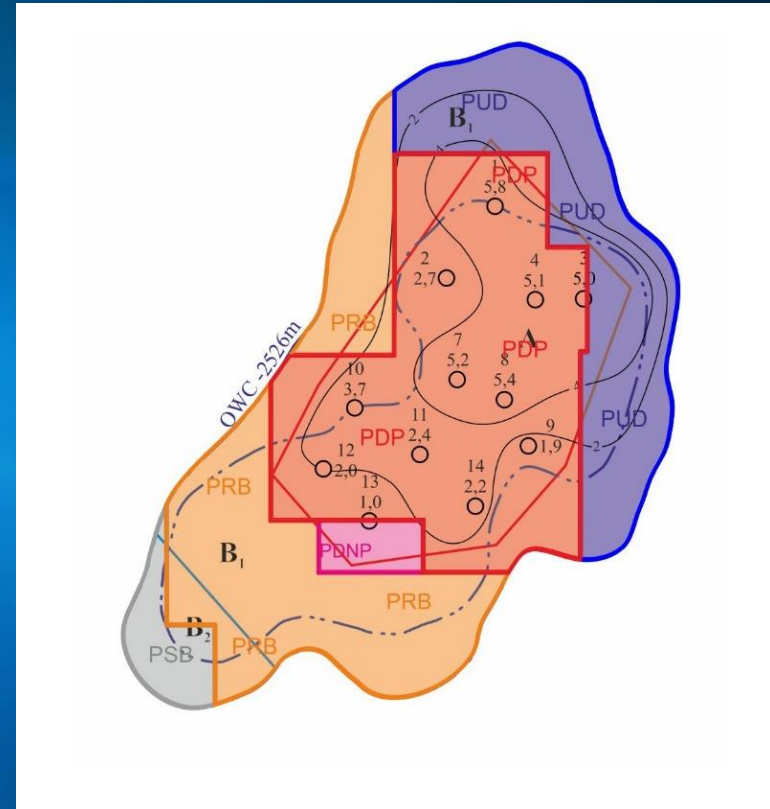
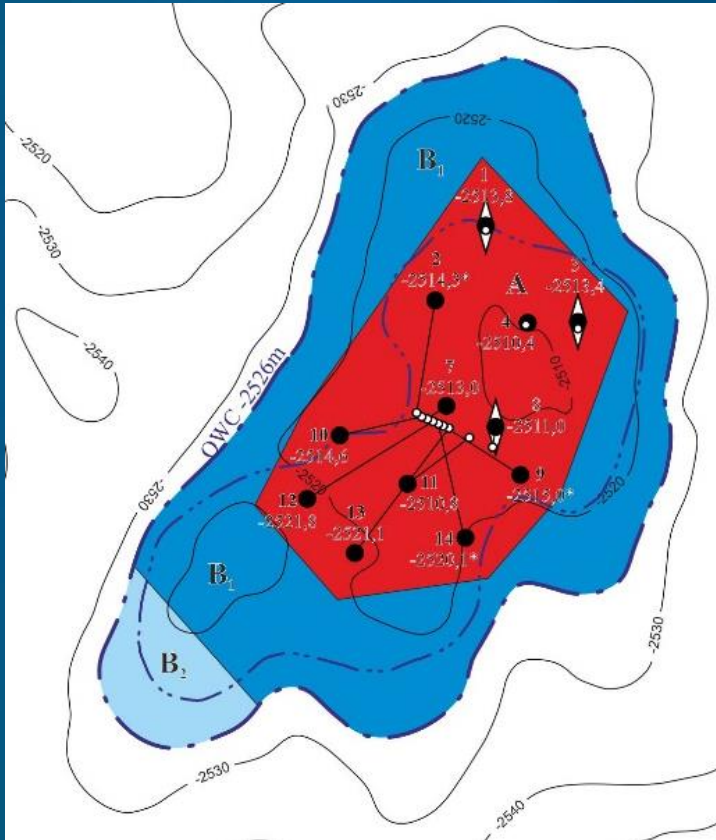
Класс	Подкласс	Код	Категория РФ2013
Коммерческие проекты	В разработке	1	A
	Утвержденные к разработке	2	B1
	Обоснованные для разработки	3	B2
Потенциально коммерческие проекты	Разработка ожидается	4	A*, B1*, B2* C1, C2
	Разработка задерживается	5	A*, B1*, B2* C1, C2
Некоммерческие проекты	Разработка не выяснена	6	C1, C2
	Разработка нежизнеспособна	7	C1, C2
Дополнительные количества в пласте		11	A**, B1**, B2** C1**, C2**
Геологоразведочные проекты	Готовый к открытию перспективный объект	8	D0
	Вероятный поисковый объект	9	Dл
	Возможный поисковый объект	10	D1, D2
Дополнительные количества в пласте		11	D0**, Dл**, D1**, D2**
Добыто, не продано		12	

### Estimation or resources(oil)

	Классификация	Нефть (1000 тонн)
Извлекаемые	E3.2, F3.1, G4	2310
Неизвлекаемые	E3.3, F4, G4	6775

# Case Studies

## PRMS – RF 2013

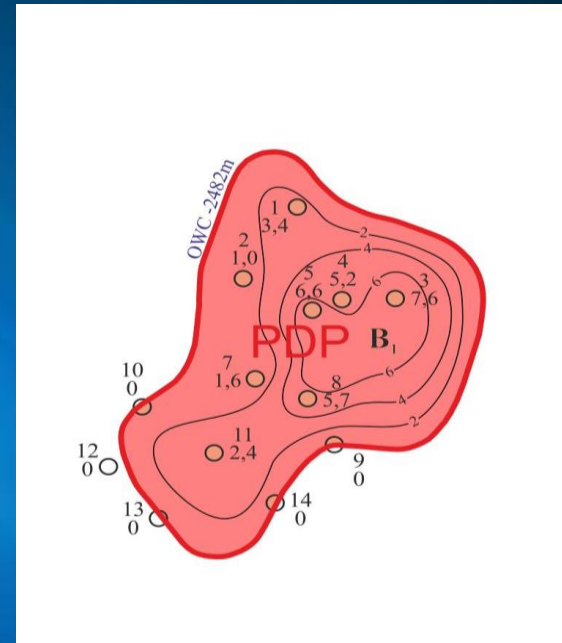
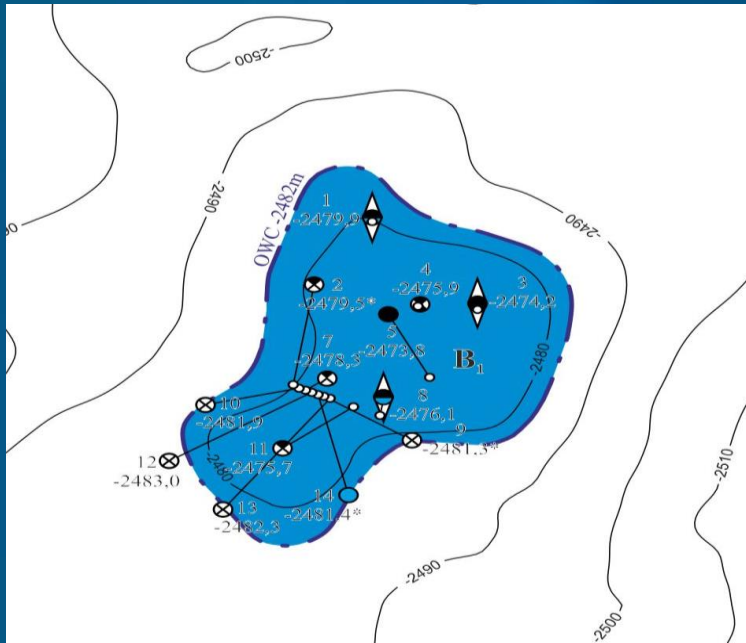


PDP – Proved Developed Producing  
 PDNP – Proved Developed Non-Producing  
 PUD – Proved Undeveloped  
 PRB – Probable  
 PSB – Possible



# Case Studies

## PRMS – RF 2013

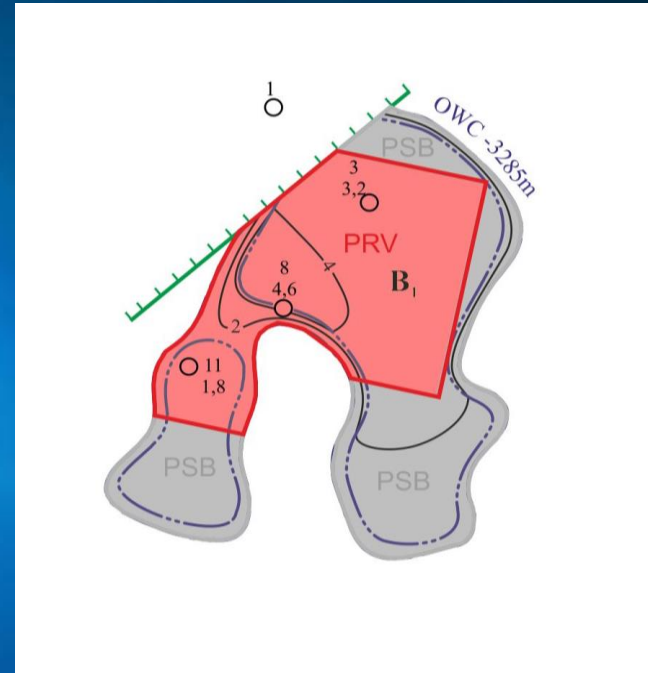
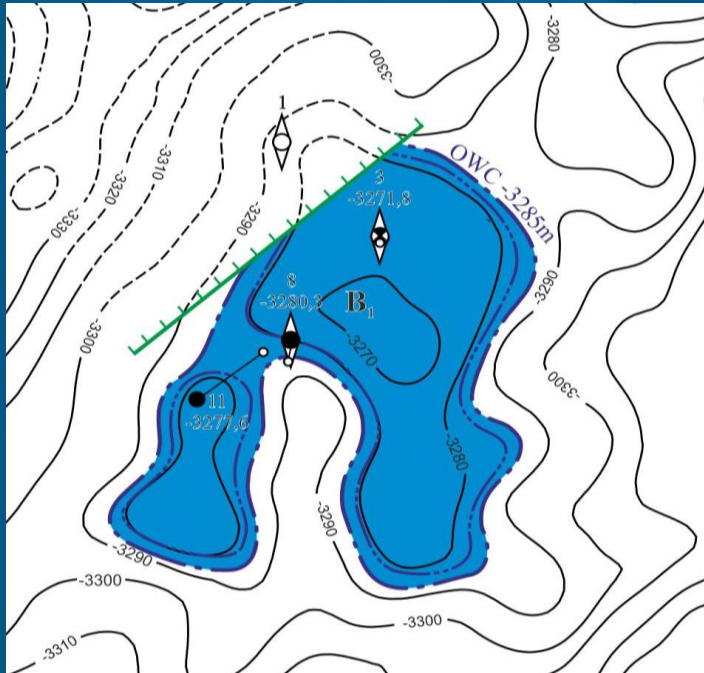


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# Разработка Case Studies

## PRMS – RF 2013



PDP – Proved Developed Producing  
 PDNP – Proved Developed Non-Producing  
 PUD – Proved Undeveloped  
 PRB – Probable  
 PSB – Possible

**Thank you for your attention!**