



Naftogaz Group Upstream Partnering Opportunities in Ukraine

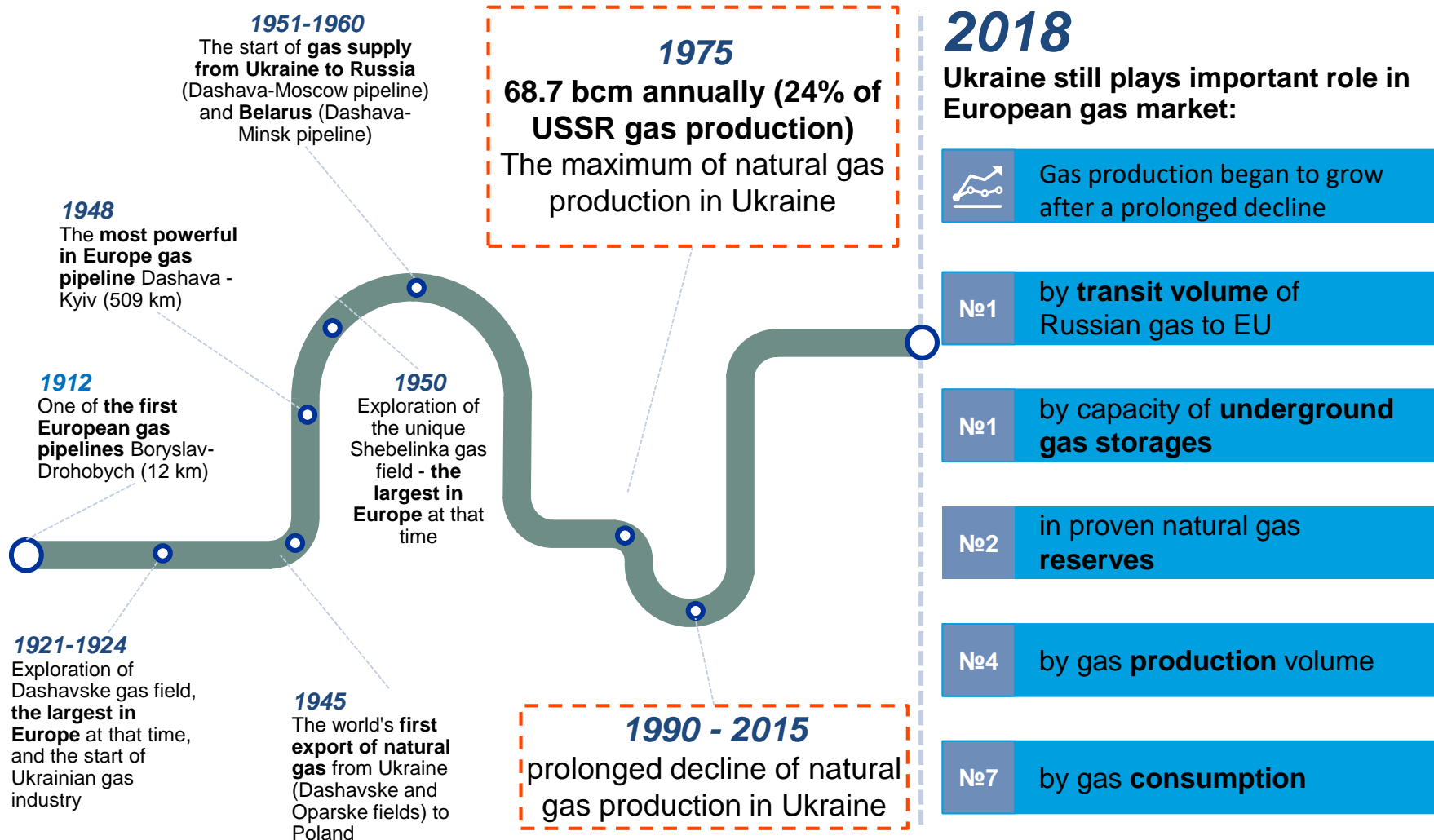
March, 2019
Houston



Naftogaz Group and Integrated Gas business overview

Upstream partnership opportunities

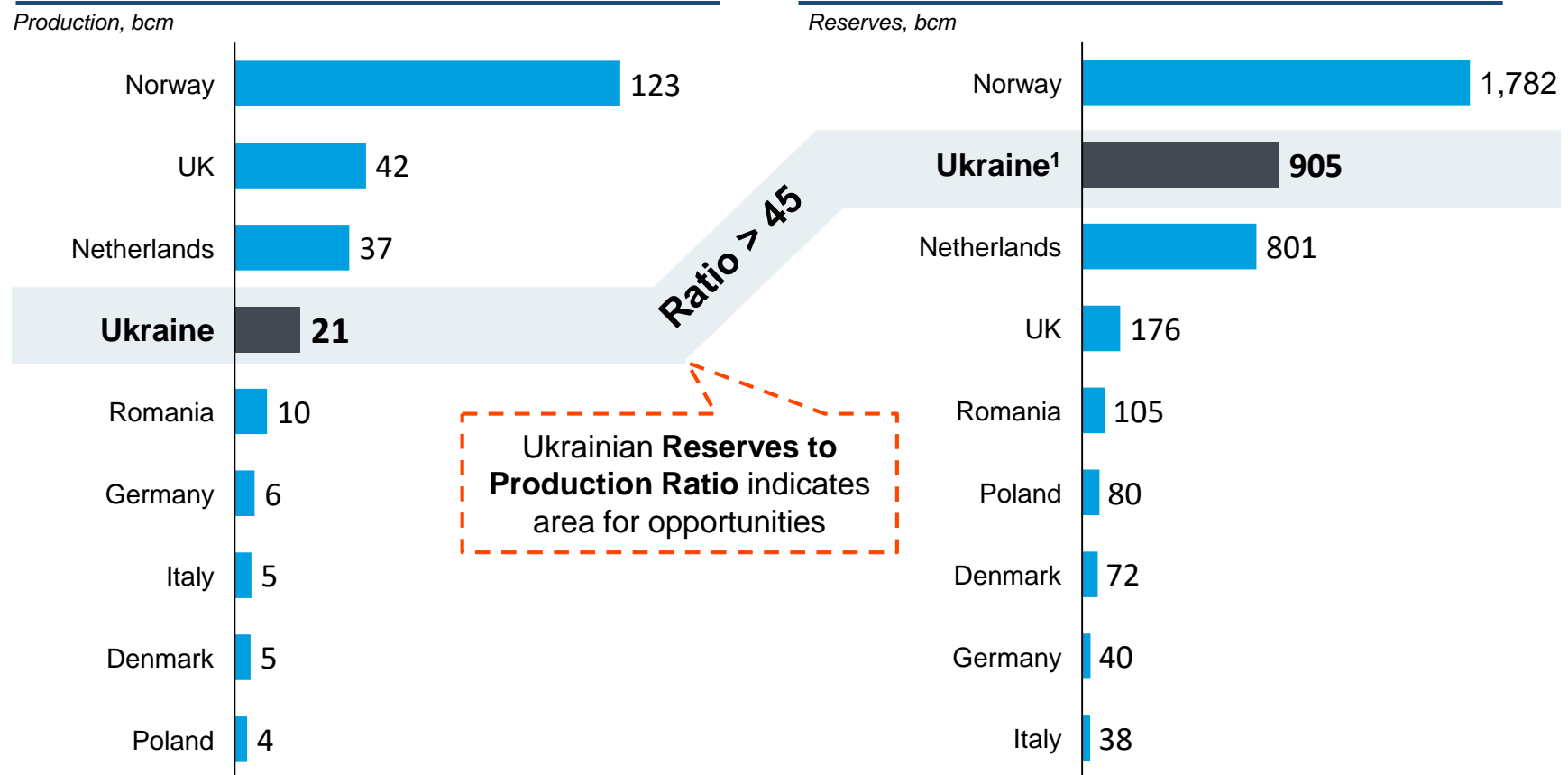
Ukraine was a pioneer of the oil and gas industry in Europe



Ukraine today: a major player in European natural gas market with huge potential

One of the major producing countries in Europe ...

...with huge reserves



Source: BP Statistical Review of World Energy 2018, U.S. EIA, Danish Energy Agency, AGPU

Notes: 1. State balance of mineral resources of Ukraine, 2017

Naftogaz is a national integrated energy incumbent with four key operational business units



Integrated Gas

72% of exploration
in Ukraine

140 fields
under operations (UGV)

265bcm
of 2P reserves (UGV)

15.5bcm natural gas
production in 2018

450kt of oil and
condensate production
(UGV)

7,0bcm of natural gas
imports in 2018

Over 21bcm of gas sales
& supply in 2018

Transmission & Storage

146bcm of natural gas
transit capacity

87bcm transit volume in
2018 under operations

Gas transportation
system with total
pipeline length of 36k km

Largest underground
storage system in Europe
with 31bcm capacity

12,3bcm of Naftogaz gas
in storages as of 1 Jan
2019

Oil Midstream & Downstream

National oil pipeline
network with total
length of 3,507km

2018 oil transportation
volume of 15,4mt, of
which 13,3mt was
transit volume

600kt per year
installed capacity

Production of diesel (1%
market share), gasoline
(7% market share), LPG
(10% market share),
bitumen, fuel oil etc.

Euro 5 fuel quality

Technical

Largest OFS and
midstream technology
base in the country

Own drilling
fleet of 65 drill rigs

14 drill rigs of outsource
contractors

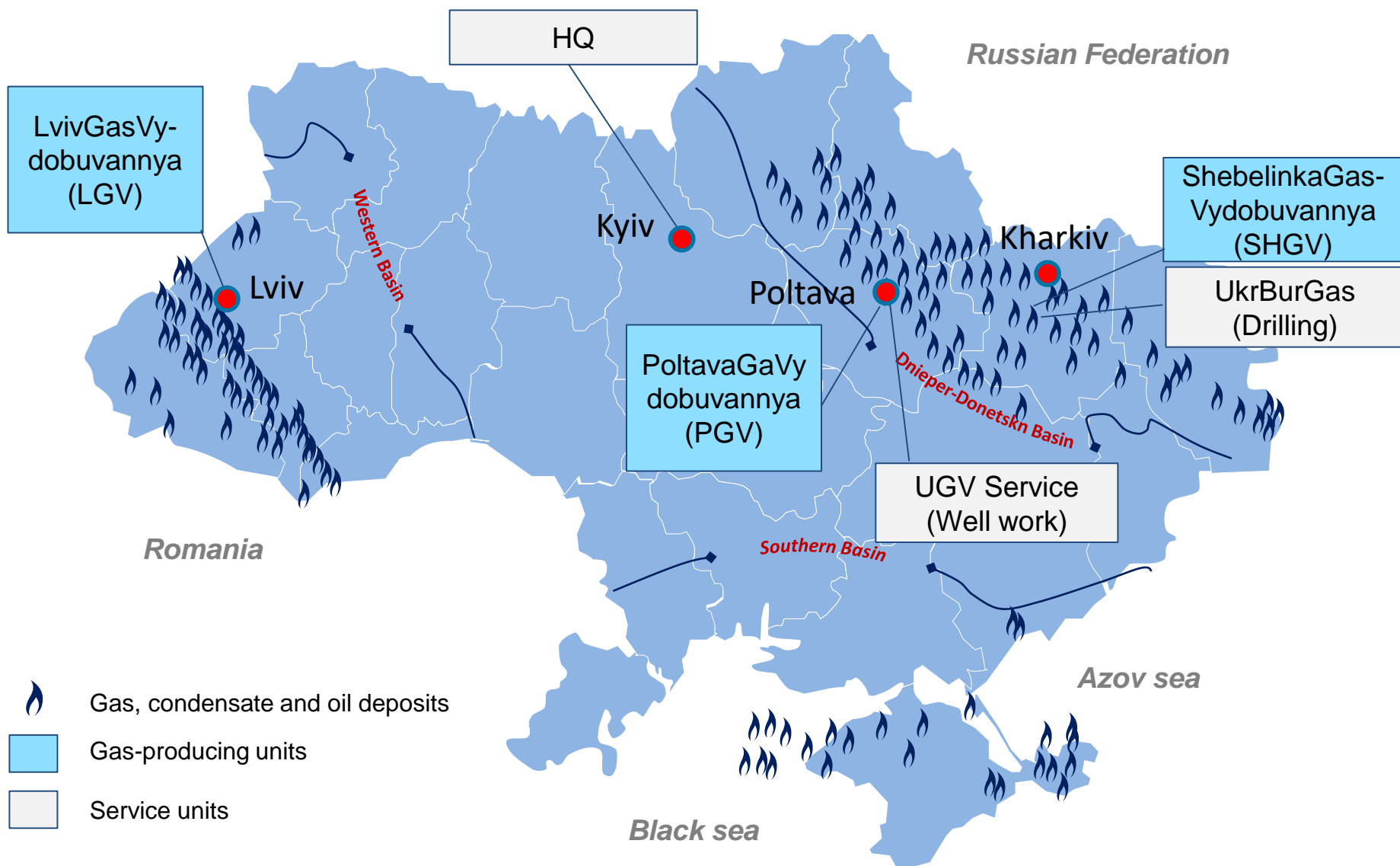
114 new wells to be
drilled in 2019

330 hydro fracking
operations performed
since 2016

~700 coil-tubing and
over 150 WO operations
annually

Naftogaz' UGV upstream operations cover all

Ukraine's oil & gas regions with significant reserves

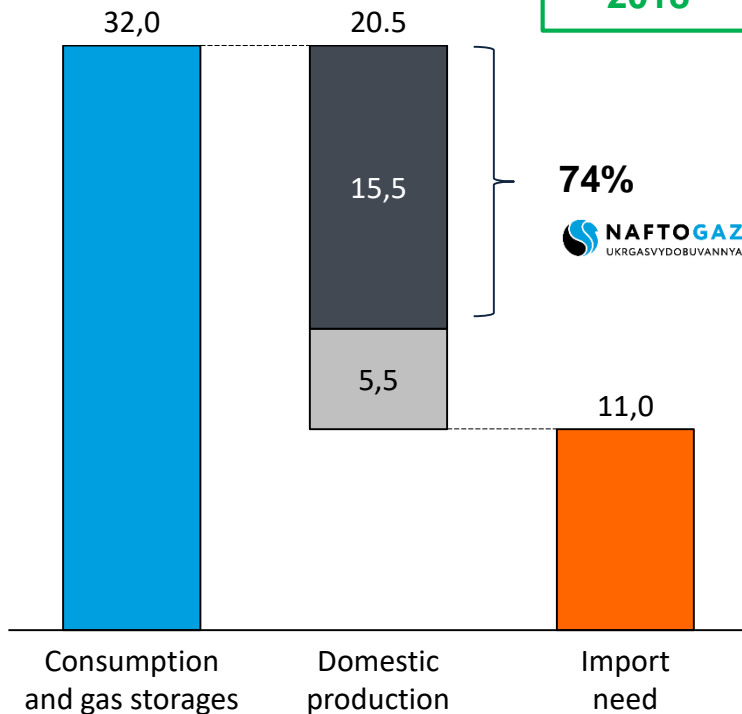


Naftogaz' UGV has the largest reserve base amongst Eastern European companies

UGV accounts for 74% of domestic natural gas production

Gas market balance, bcm

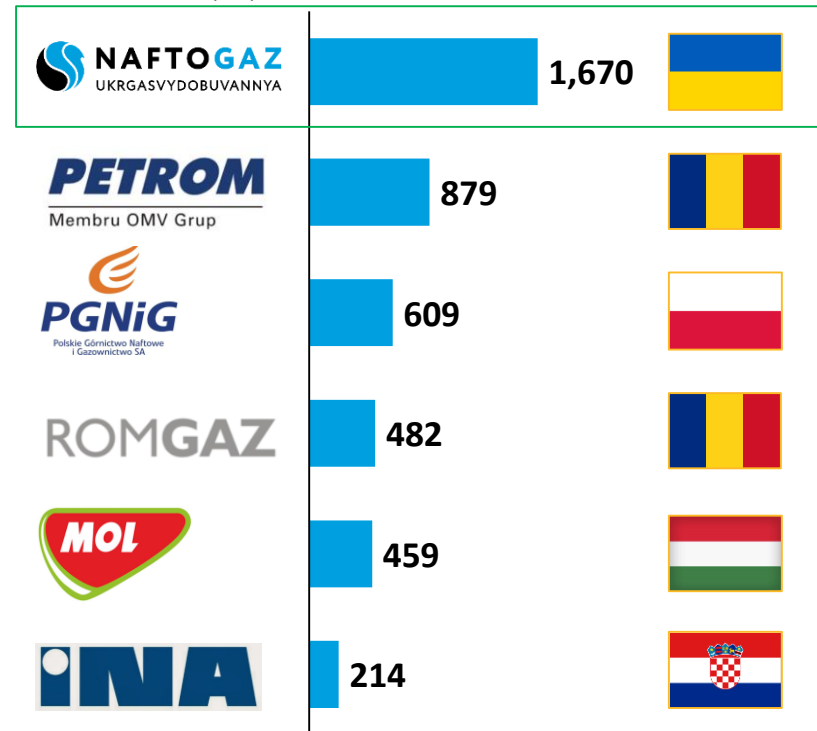
2018



Consumption UGV Other players

UGV has the largest reserve base among Eastern European players

Gas reserves (2P), MMboe¹



Naftogaz' UGV has demonstrated some significant results over the last three years



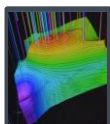
Production

25-year record of production achieved – 15.5 bln m³ in 2018

+970 mln m³ (+6.7%) of annual production increase since 2015

+5.35 bln m³ of cumulative incremental production in 2016-2018

9-year record of daily production achieved – 43.9 mln m³ in 2018



G&G

+38.6 bln m³ of resource base increase since 2015

3.6x increase in 3D seismic volume since 2015 (2 894 km² in 2016-2018)

8 new greenfields discovered in 2016-2018



Well services

330+ Hydraulic Fracturing operations performed since 2015

1 500+ Coiled tubing operations performed since 2015

400+ Workover operations performed since 2015

4 world-leading OFSC involved in cooperation



Drilling

+123% of commercial drilling speed increase since 2015 (313k meters in 2018)

+20 new own drilling rigs procured since 2015

14 rigs of international drilling companies have been contracted

Naftogaz Group / UGV has already launched international cooperation on multiple dimensions

1 Suppliers of goods and services



Solar Turbines
A Caterpillar Company



HALLIBURTON

Schlumberger



Weatherford
tacrom



2 International professional associations and governments



U.S. DEPARTMENT OF
ENERGY



PETRAD



**NORWEGIAN MINISTRY
OF FOREIGN AFFAIRS**

3 International Financial Institutions



**European
Investment
Bank**

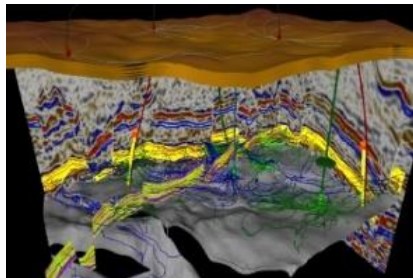
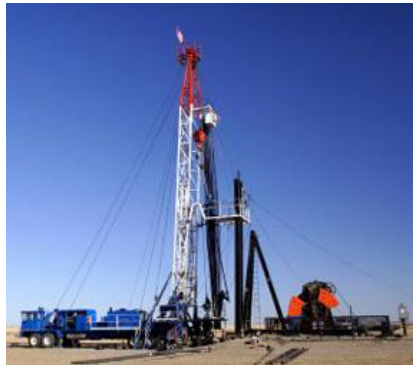


European Bank
for Reconstruction and Development



Case study: cooperation with Schlumberger

Schlumberger

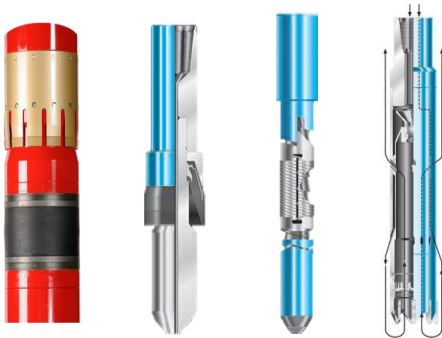


- Schlumberger and UGV **started cooperation in Q1 2018**, and it has ramped up significantly since then
- UGV and Schlumberger signed **Memorandum of strategic cooperation** in October 2018
- **Multi-Service Agreement (MSA)** was signed in March 2018, and currently has **16 service lines** under it
- Long-term (3-year) **Coiled Tubing services contract** for 4 fully-equipped CT units and advanced downhole tools and technologies was signed in October 2018
- **Schlumberger is currently the key supplier of high-tech services & products** to UGV, including drilling (cementing, mud, MWD, drill bits), well-intervention (CT), engineering and G&G (software, wireline logging)
- In 2018 alone UGV has contracted Schlumberger for **\$120+ mln** across **15+ different service lines and products**

Case study: cooperation with Weatherford



Weatherford®



- Weatherford was **the first world-leading OFSC**, which UGV began cooperation with in 2017
- **Bundle service contract** for Fishing tools & services was signed in 2017
- UGV has already obtained **over 150 mln m3 of gas** through Weatherford services
- Weatherford provided UGV **engineering services** on well candidates selection and design for Work Over, Fishing and Artificial-lift programs in 2017-2018
- **Multi-Service Agreement (MSA)** was signed in May 2018, and currently has **8 service lines** under it
- Weatherford is currently implementing pilot **Artificial-lift** project at 15 UGV wells
- Weatherford is key UGV's provider of **Liner Hangers, Artificial-lift systems and Fishing tools & services**



Naftogaz Group and Integrated Gas business overview

Upstream partnership opportunities

PEC partnership for brownfield redevelopment

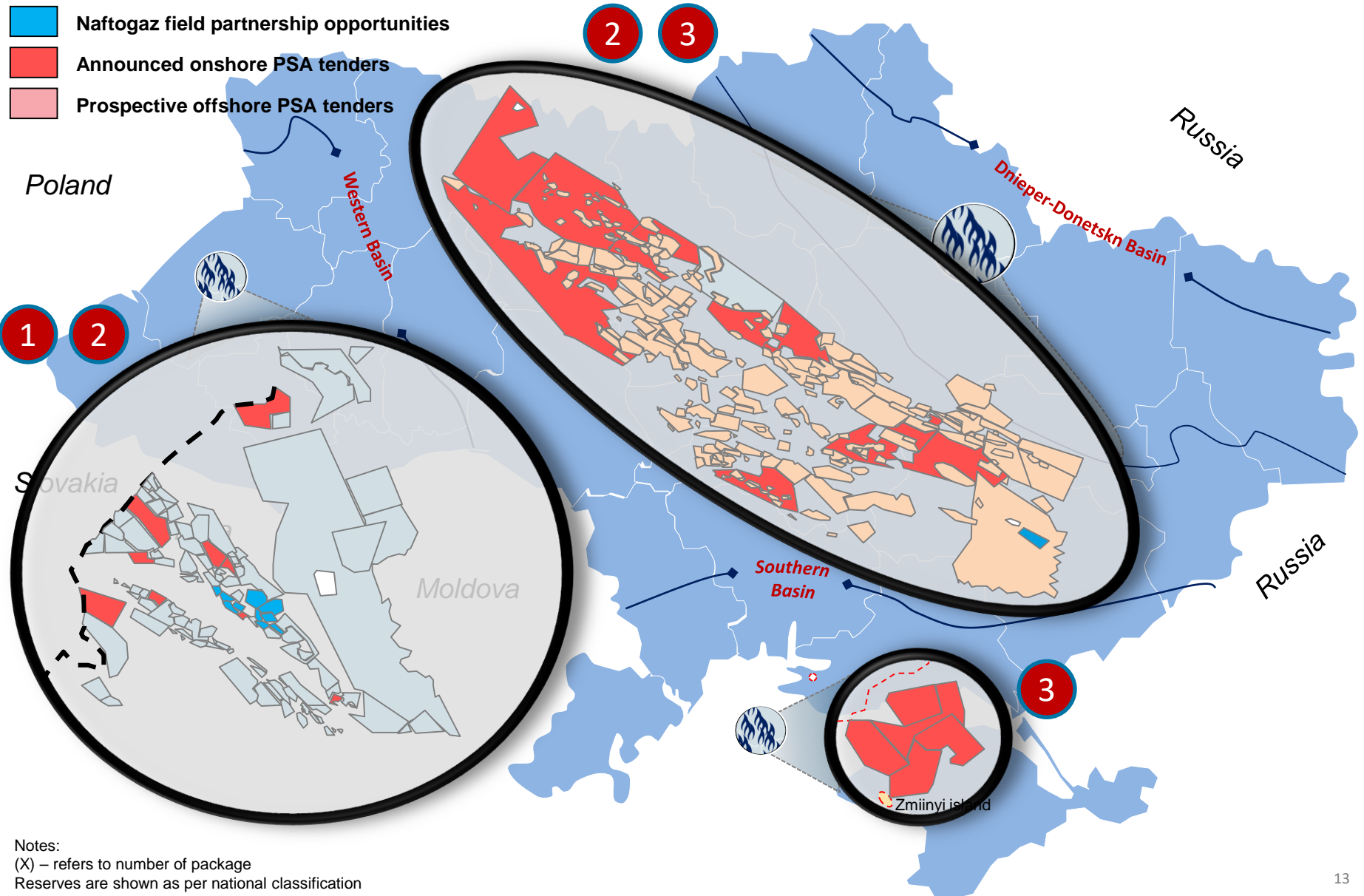
IPM partnership for tight gas theme


PSA partnership opportunities review

Three major partnership areas in upstream for Naftogaz Group

	Naftogaz objectives	Partnership considerations
1 Brownfield redevelopment	<ul style="list-style-type: none">• <i>Maximize value of depleted brownfield reserves</i>• <i>Optimize costs and increase profitability</i>	<ul style="list-style-type: none">• <i>Partner requirements - proven track record, operational efficiency excellence, willingness to invest</i>• <i>Contact type – Production Enhancement (PEC)</i>
2 Unconventional resources	<ul style="list-style-type: none">• <i>Commercialize Naftogaz' and Ukraine's tight gas resources</i>• <i>Efficiently scale up</i>• <i>Build technological capability</i>	<ul style="list-style-type: none">• <i>Partner requirements - proven track record, technological excellence, readiness and ability to scale in Ukraine</i>• <i>Contract type – Integrated Project Management (IPM)</i>
3 New exploration effort	<ul style="list-style-type: none">• <i>Share risks and invest in resource base development</i>• <i>Ensure sustainable production increase through greenfield development</i>• <i>Optimize capital commitment</i>	<ul style="list-style-type: none">• <i>Partner requirements - proven track record, significant capital exposure, readiness to scale up in Ukraine, readiness to share risks and invest</i>• <i>Contract type – Production Sharing Agreement (PSA)</i>

Naftogaz considers several partnership opportunity areas in Ukraine





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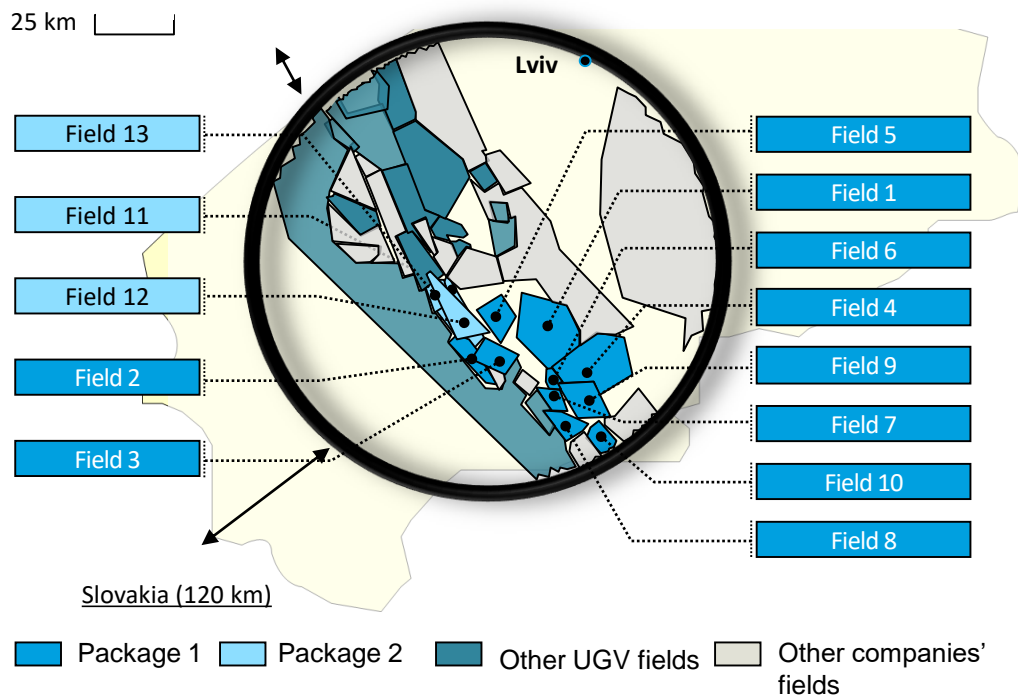
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Production enhancement contract (PEC):

Brownfield partnership opportunities

Field location



Key field parameters	Package 1	Package 2	Total
# of fields	10	3	13
Reserves, bcm	6.9	7.9	14.8
Production, mcm	176	114	290
# of wells (incl. liquidated)	179	90	269
# of non-liquidated wells	94	56	150
Area, km2	275	111	386
Average depth, m	794	1 167	880
% of depletion (weighted)	33%	51%	42%

Contractual framework: PEC

Short description: Development and operation (provision of the technical and managerial expertise) of the brownfields with the purpose of decreasing production costs (\$ / tcm) and increasing production levels and reserves

Contract term: 15+ years

Title to reserves and production: Naftogaz / UGV

Fixed Assets: No transfer of assets title to Contractor, all assets created during the contract duration to be transferred to the Operator

Operational Control: Contractor

Management: Joint-management committee

Compensation mechanism:

- Service fee: 2-stage \$/tcm tariff (baseline and incremental); incremental > baseline
- Service fee covers CAPEX, profit share, OPEX and other reasonable fees

CAPEX:

- 100% financed by Contractor
- MWO approved every 5 years

Objectives: Rejuvenate brownfields that Naftogaz / UGV does not intend to direct capital or resources

Tendering & proposal evaluation criteria

- Open tender with decision made by Naftogaz Group
- Winner defined based on highest NPV to Naftogaz
- Baseline production profile and tariff level, and min capex obligation is provided by Naftogaz and is not negotiable
- Bidders submit their proposed tariffs for incremental production and incremental production profile

Redevelopment of brownfields via PEC: selected fields for pilot

1

#	Field title	⚓*	Area, km2	Avg depth, m	# of wells ¹	Production, mcm	Reserves, bcm	Gas recovery factor 18, %	P/R 18, %	% Depletion ²
1	Field 1	✓	91	780	46	85	3.9	38%	2%	25%
2	Field 2		26	1 375	9	17	0.2	89%	7%	84%
3	Field 3		22	630	3	7	0.6	70%	1%	70%
4	Field 4		11	810	5	9	0.5	14%	2%	20%
5	Field 5		28	1 095	5	13	0.7	18%	2%	17%
6	Field 6		7	866	4	12	0.1	39%	8%	43%
7	Field 7		12	630	2	5	0.1	41%	4%	38%
8	Field 8		19	945	5	7	0.2	18%	3%	16%
9	Field 9		34	320	3	0	0.0	83%	2%	79%
10	Field 10		25	490	12	23	0.4	67%	5%	67%
Package 1			275	794	94	176	6.9	53%	3%	33%
11	Field 11	✓	48	1 350	25	61	5.3	36%	2%	36%
12	Field 12		47	600	26	51	2.2	78%	2%	92%
13	Field 13		16	1 550	5	3	0.4	16%	1%	16%
Package 2			111	1 167	56	114	7.9	58%	2%	51%

1) Does not include abandoned and suspended wells; 2) Weighted depletion

PEC partner short-listing criteria

Experience

- PEC-type relevant partnerships (including risk-based service contracts) over last 10 years
- (or)
- Average annual production of minimum 100mcm (or boe equivalent) over the past 3 years

Financial conditions

- Readiness to submit the US\$1M bid bond
- Readiness to prove and provide parent or bank guarantee for minimum 5y capex obligation of preliminarily US\$30-60m

Personnel

- Main domain functions covered in-house. Availability of experienced professionals in key functions – G&G, reservoir management, production engineering, workovers, well interventions, drilling, etc. with substantial job record in the company

Reputation

- No current litigation for HSE law violation

Final decision on partner qualification will be made by Naftogaz Board of Directors

Data room will be provided for shortlisted companies for elaboration of commercial proposal

Technical

- Well stock data
- Well completion diagrams
- Well logs
- Record of well interventions/work overs
- Drilling reports
- Reservoir data
- Core data
- Water salinity reports
- Petrophysical data
- Pressure measurements
- Fluids properties
- Stimulation operations record
- Workovers record
- Incidents reports
- Infrastructure data

Financial

- Cost model
- Audited financial statements
- Cost accounts breakdowns
- Commercial agreements for hydrocarbons sales
- FA registers
- Annual budgets
- Management reports
- Accounting manuals, policies and procedures
- Own gas consumption reports
- Insurance data

HR

- Organizational charts
- Payroll / benefits / disciplinary data
- CLA
- Agreements with trade unions
- HR department structure
- Policies, procedures, manuals
- Information on pending litigation
- Certifications requirements
- Retirement plans

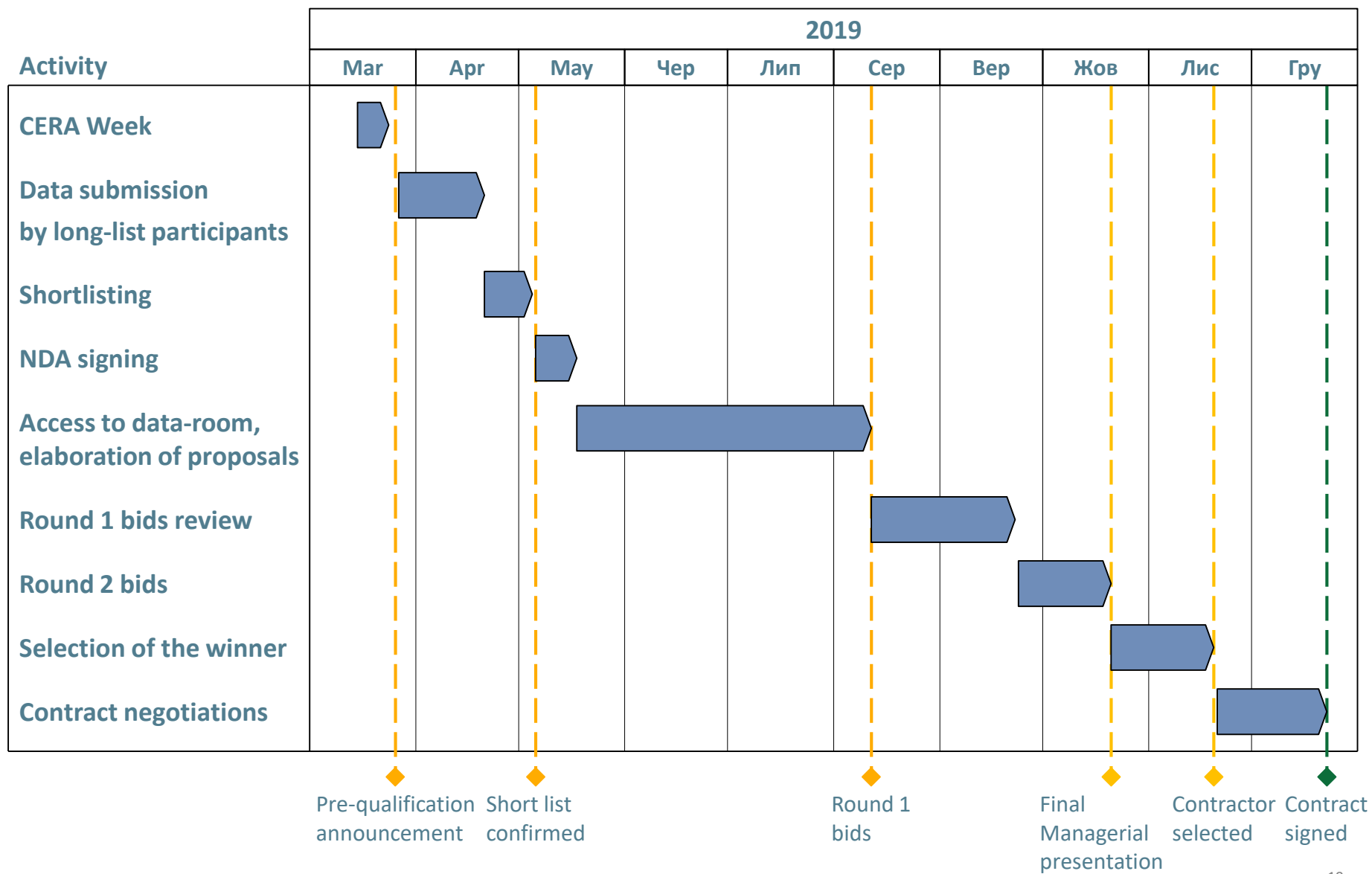
HSE


- Environmental audit materials
- Licenses
- Permits
- Policies, procedures, standards
- Manuals
- Incidents reports
- Authorities inspections reports

IT

- IT organization layout
- Applications map
- List of servers and key network equipment
- IT providers and contractors list
- Network diagram
- IT spending for the last 2 years and the 2019 budget
- Policies and procedures
- Brief description of IT users equipment

PEC partnership preliminary project timeline





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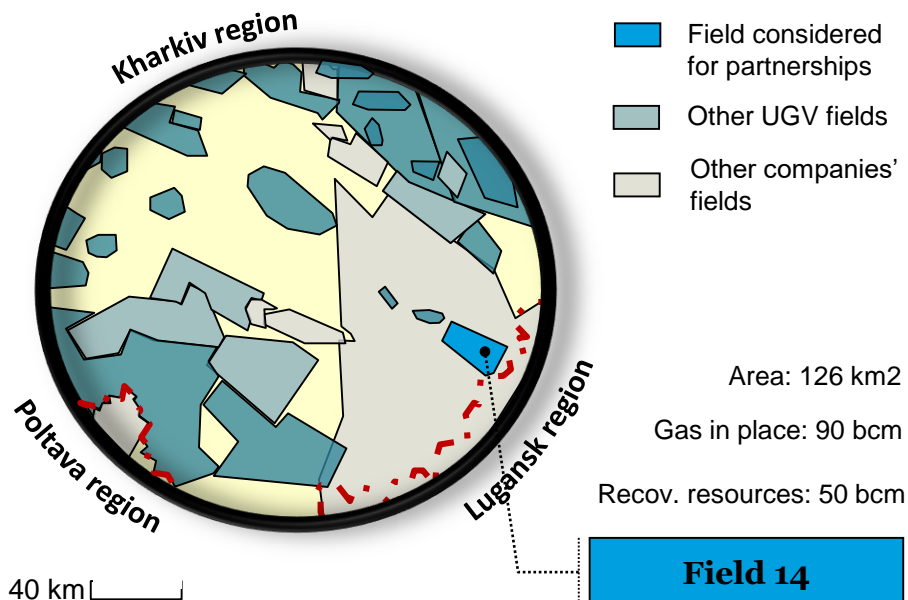
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Integrated Project Management (IPM):

Tight gas development opportunities

Field location



Field properties & comparison	Field 14	Pinedale
Pressure gradient, bar / 10 m	1.6 – 1.7	1.61 - 1.7
Net pay, m	>60 m	>60 m
Porosity (Phi), %	4 – 7%	7 – 9%
Permeability (K_g) range, mD	0.1 – 0.001	0.1 – 0.01
Brittleness, %	>60%	>60%
Resources, bcm	> 50 bcm	> 100 bcm
Depth range, km	4 – 5 km	2 – 5 km
Life cycle	Appraisal	Production

Scope of work

Drilling & completion

# of new wells drilled	60
# of rigs involved	8
# of fracks performed	360

Infrastructure

Integrated oil & gas treatment units	2
Km of pipeline	~200
Transfer metering stations	3
Booster compressor stations	2

Contractual framework: IPM

Short description: *Integrated Project Management contract.* Contractor acts as an integrated project manager and can perform a range of activities – from planning and engineering to execution and abandonment. Covers both exploration and operations on existing wells/infrastructure

Contract term: Midterm (3-5 years)

Title to reserves and production: Naftogaz

Operational Control: Naftogaz (UGV)

Management: Naftogaz (UGV)

Compensation mechanism: turnkey service fee + KPI-tight mechanism (i.e. for well cost reduction, time-goals etc.)

CAPEX: No investment by Contractor, 100% financed by Naftogaz (UGV)

Objectives: Cost reduction; Ability to quickly execute complex projects with many different services and providers

Naftogaz has gained intangible benefits, valuable for unconventional reservoirs development

2

3D seismic & interpretation

- Wide angle and wide angle 3D seismic performed
- Processing and interpretation by Schlumberger ongoing (to be finished by July 2019)

Completions technology

- Multistage fracturing in vertical well
- Select various completion technologies for multistage fracturing

Unconventional fracking technology used

- 3 Idle wells were reactivated, 15 fracks were performed according to new technology and frack design
- Barree&Associated was involved in process of fracture modeling

Knowledge about reservoir

- Obtained knowledge about permeability, porosity and pressure of the reservoir
- PLT analysis of a fracked well performed
- 3 wells are in cleaning-up phase and produce gas, but still pumping water

Tendering approach & contract template

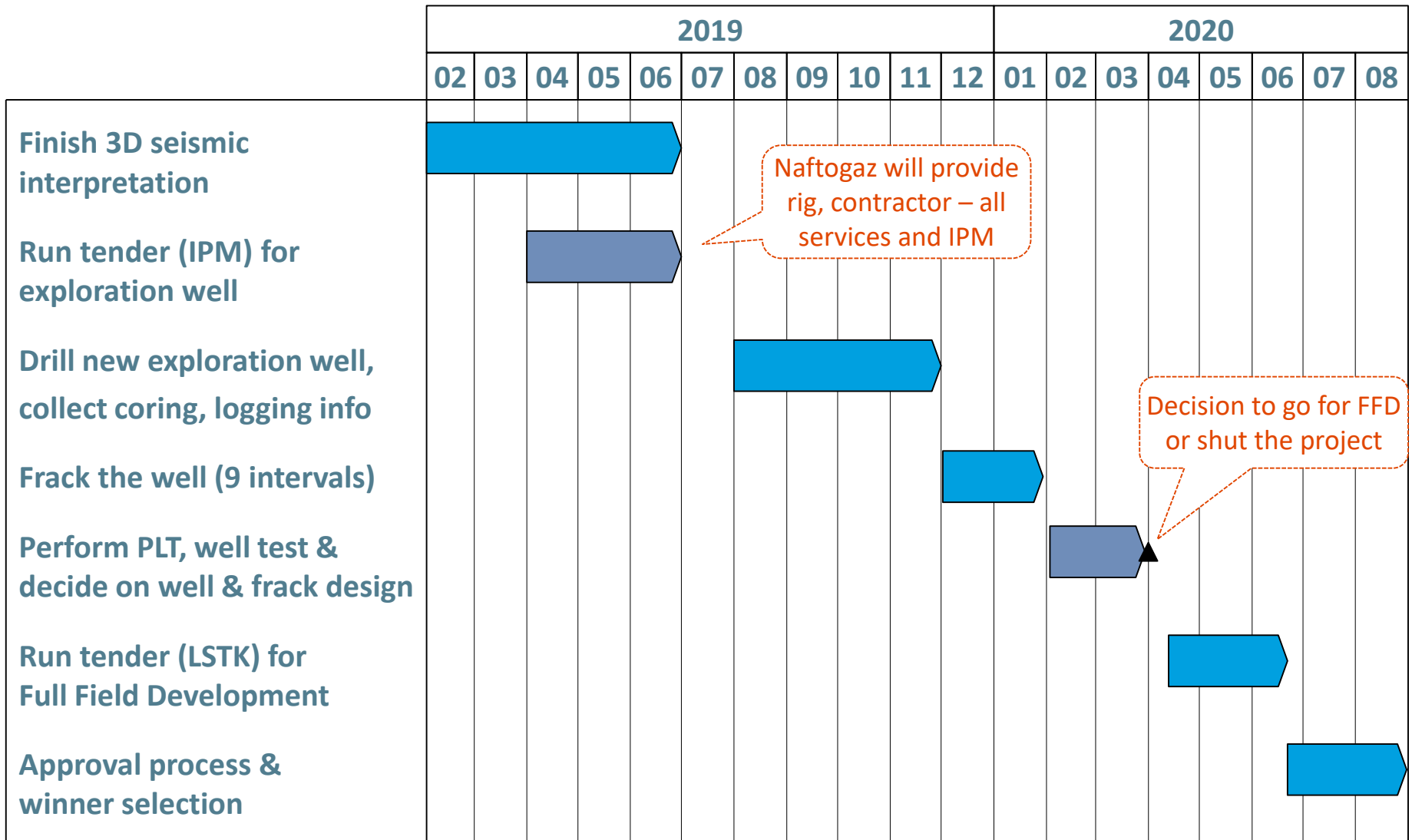
- Tender amongst 4 world-leading OFSC was carried (decision was made not to go into FFD due to low production rate of pilot well)
- Preliminary economical model used for cost cutting
- Commercial model and contract draft were developed

Surface infrastructure/ Facilities

- Proposed EPIC contracting strategy:
 - Engineering
 - Procurement
 - Installation
 - Commissioning

Naftogaz is considering FFD for 60 wells after collecting all the necessary information, which might take one year

2



In addition to Field 14, UGV has 12 other fields with overall tight-gas resource estimate of 240 bcm

UGV's fields with tight gas potential

#	Field title	Area, km2	Tight gas zones	Gas in place, bcm	Recoverable resources*, bcm
1	Field 14	126	C2m, C2b	90	50
2	Field 15	223	C1s2	134	80
3	Field 16	212	C2m	64	38
4	Field 17	23	C2b, C1s2	12	7
5	Field 18	350	C2m, C2b	22	16
6	Field 19	108	P1, C3	5	3
7	Field 20	55	C2m	22	13
8	Field 21	273	C2m, C2b	24	8
9	Field 22	483	C2m, C2b, C1s2	18	5
10	Field 23	87	C2b, C1s2	5	3
11	Field 24	496	C2m, C2b	22	9
12	Field 25	196	C2m, C2b	20	12
13	Field 26	4	P1, C3	1	0.5
TOTAL				436	240

Tight gas zones legend:

C2m – Moscovian P1 – Sakmarian, Asselian
 C1s2 – Serpukhovian C3 – Gzelian, Kasimovian
 C2b – Bashkirian


Pilot program phases** :  Phase 1  Phase 2

UGV tight gas resources of **240 bcm** are almost as large as its current 2P conventional reserves of **276 bcm**

Notes:

* – Mixture of unrisks discovered and undiscovered volumes with different resource categories

** – Pilot phasing is dictated by existing well availability & resource potential



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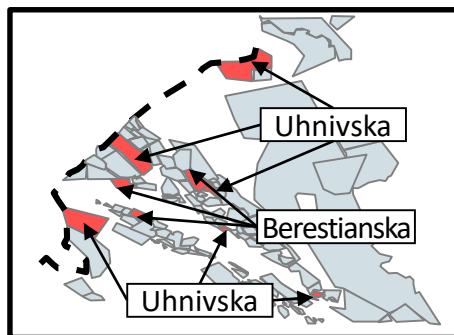
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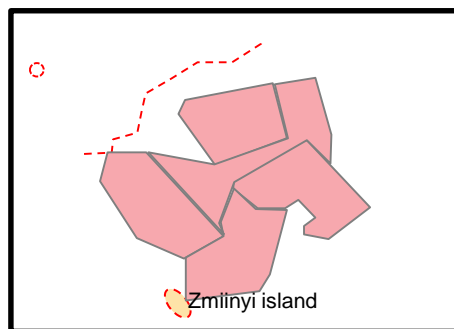
Production Sharing Agreement (PSA):

Ukraine onshore and offshore opportunities

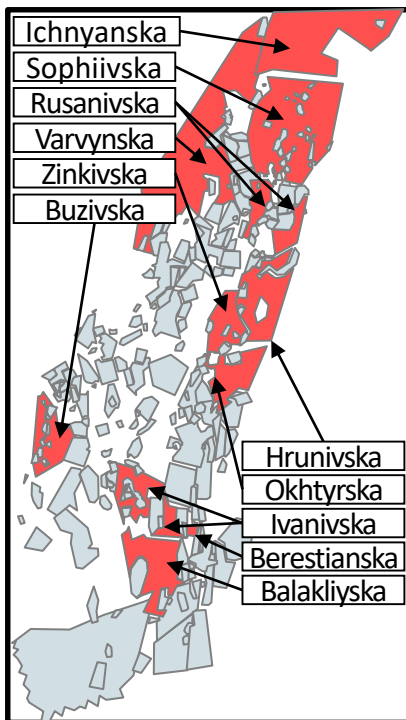
Western Basin



Southern Basin (offshore)



Dnieper-Donets Basin



Blocks specification

Key field parameters	Morozivsko-Savynska
Gas type	C + U
Area, km ²	>11 379,5
Wells data	185+160 (abandoned)
Resources (C3+D), kboe	>303 394
Geological information	>377 reports
Seismic data, liner km	N/A

Contractual framework for greenfield: PSA

Short description: 3-party contract between UGV, Investor and the State. UGV transfers its license into PSA with Investor and the State. The State grants Investor and UGV an exclusive right to develop a gas field, and an Investor undertakes to develop such a field using its own resources and at its own risk in return for the share of production

Contract term: 50 years

Split of shares: 50% / 50% (UGV / Investor)

Title to reserves and production: State, UGV and Investor

Operational Control: Investor

Management: CMU, Investor and UGV make proposals

Personnel: 50-60% of Ukrainians during exploration, 70-80% - during Production; trainings for UGV's personnel

Compensation mechanism

- Compensation to Investors for CAPEX and OPEX comes from production, once it is obtained
- Right to sell production in Ukraine or abroad at market prices
- R factor, which increases Government's take (from 70 to 85%) over time simultaneously with compensating Investor's expenses

CAPEX

- Signing bonus (+ other bonuses subject to bid proposals)
- Initial CAPEX commitment (MWO) for 5 years of Exploration
- CAPEX, OPEX and bonuses are 100% financed by Investor
- Investor is compensated for incurred expenses out of production, in case of commercial discovery (with annual cap)

Tendering & proposal evaluation criteria

- Open tender with decision made by joint committee
- Open competition held by Cabinet of minister of Ukraine
- Proposal eval. criteria: Investment, Signing Bonus, Capabilities, HSE

Objective: Attract investment to risky prospects while gaining partners with strong technical and financial capabilities

PSA tenders timeline

The PSA tenders will be performed under the following procedure in accordance with the *Resolutions and the Law of Ukraine No. 1039-XIV On PSAs* dated 14 September 1999:

DAY X	The Cabinet of Ministers of Ukraine (the 'CMU') takes a decision on holding of the PSA tender and approves essential terms of the tender	≤2 months
Stage 1	Interagency Commission prepares the detailed tender terms and publishes the official tender announcement	3 months
Stage 2	Period for submission of applications to the PSA tender; Evaluation of applications and issuance of recommendations on the PSA tender winner by Interagency Commission to the CMU (≤1 month)	≤3 months
Stage 3	Determination of the tender winner by the CMU and publishing of the PSA tender results	≤3 months
Stage 4	Preparation by the tender winner of the PSA draft and its registration with the Interagency Commission	≤3 months
Stage 5	Review and commenting on the PSA draft by the Interagency Commission	≤6 months
Stage 6	Further negotiations and execution of the PSA	<div>(with possible extension for another 6 months upon application of the tender winner)</div>
Finish	Execution of the PSA between the tender winner and Ukraine	

Contacts for further information

Procurement policies and issues



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Production partnerships and PEC



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