NAFTOGAZ
UKRGASVYDOBUVANNYA

UGV Technology Day

Hydro Fracturing, Workover, Coil Tubing

UGV's key strategic project for 2019

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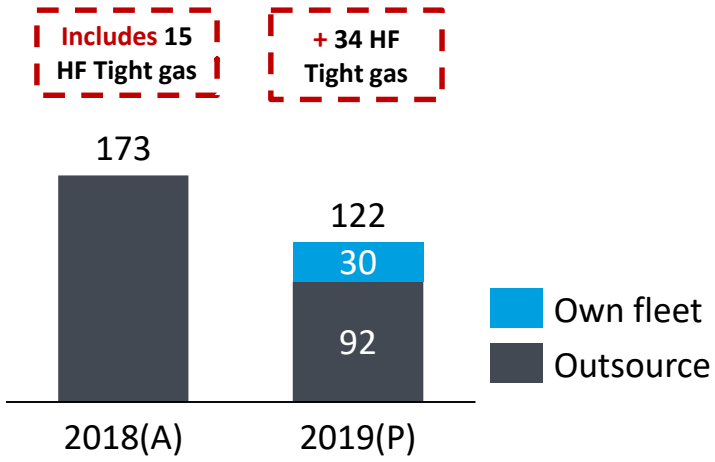
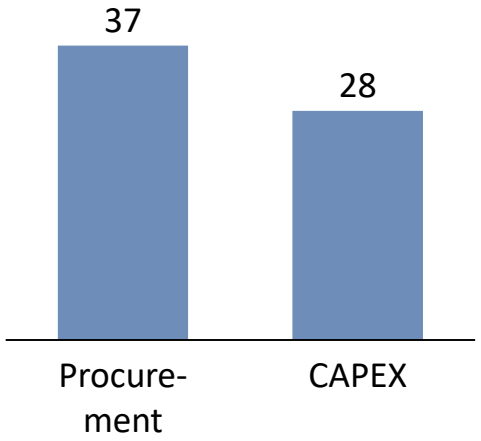
Baku

Hydraulic fracturing operations, procurement and CAPEX scope for 2019

Number of HF operations,



2019 Procurement plan and CAPEX program, mln $



Detailed procurement plan

Services:

- 100 HF operations — 2000 t

Goods:

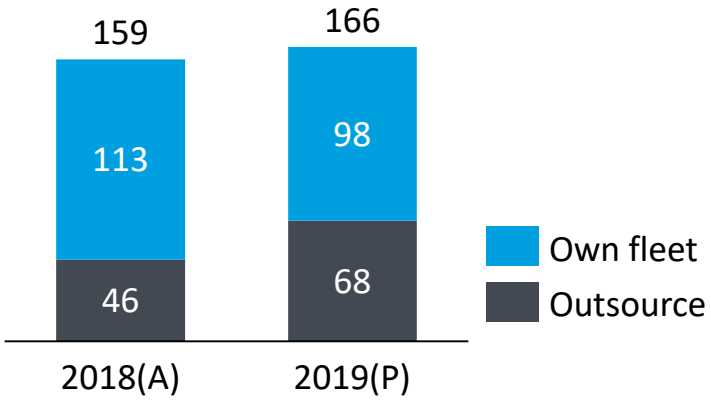
- Proppant (own) — 2500 m3
- Gel for HF (own): — 10 000 m3
- Pumps 2 500 h.p. — 4 ea
- Block of manifolds — 1 ea
- Service Packers — 10 ea

Summary

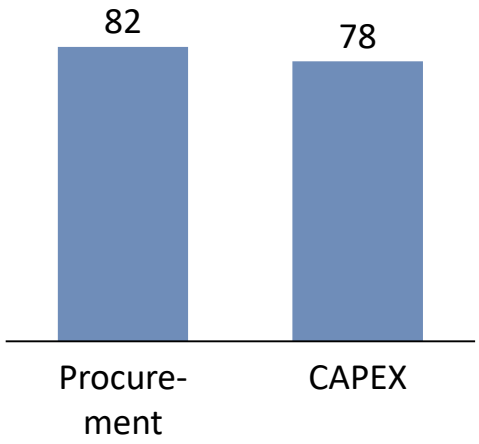
- HF Procurement in 2019 shall make ~$37 mln
- Purchasing of 5 mentioned items (goods) will enable HF service execution with own fleet
- Procurement of HF services (100 operations) from external contractors
- 34 HF tight gas operations are expected in 2019

Workover operations, procurement and CAPEX scope for 2019

Number of WO operations,



2019 Procurement plan and CAPEX program, mln $



Detailed procurement plan

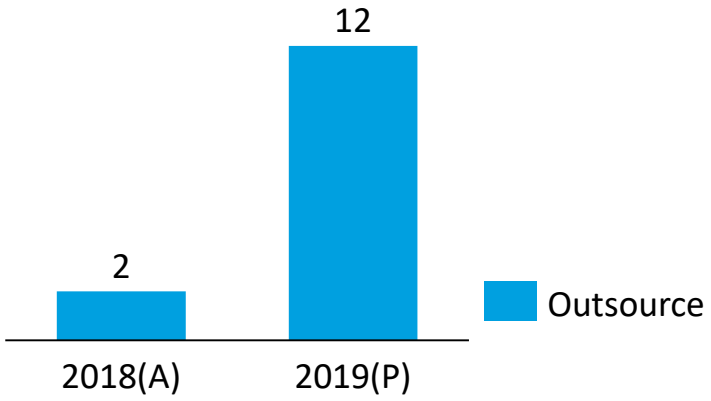
- Fishing & stimulation services
- Completion services
- Drilling and Fishing JARs services
- Fishing tools rental
- Other services

Summary

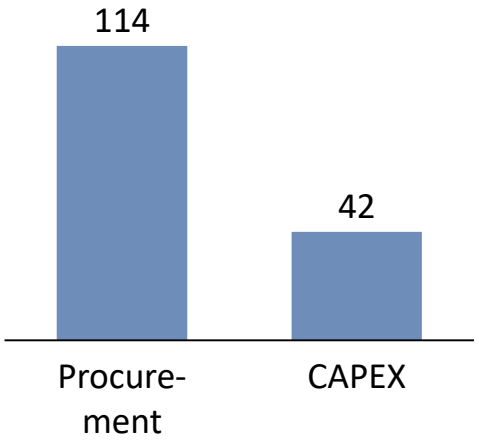
- Increase of WO operations in 2019 vs 2018
- Procurement in 2019 shall make ~$82 mln
- Fishing & stimulation services is the main priority
- Outsourcing contributes a crucial portion of UGV's OFS in terms of number of operations performed

Sidetrack operations, procurement and CAPEX scope for 2019

Number of Side-track operations,



2019 Procurement plan and CAPEX program, mln $



Detailing procurement plan

Service:

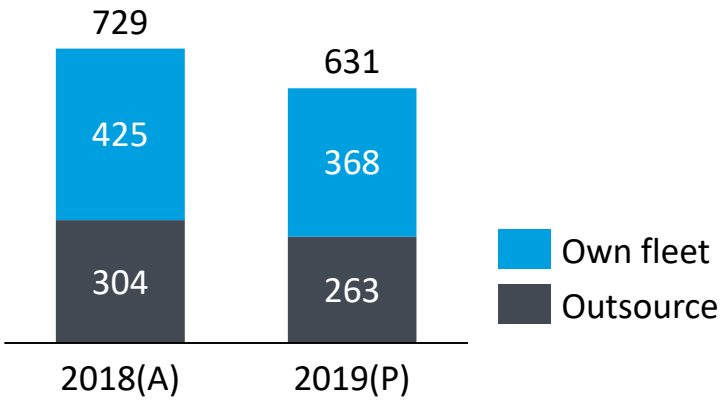
- Sidetrack operations turnkey — 32 ops

Summary

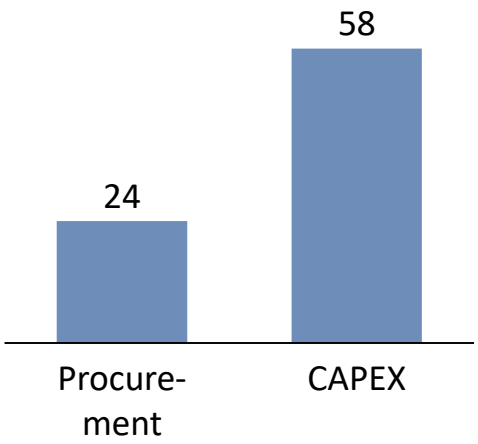
- Procurement in 2019 shall make ~$114 mln
- Significant increase in 2019 vs 2018 due to involvement Big 4 OFSC into sidetrack operations

Coiled-tubing operations, procurement and CAPEX scope for 2019

Number of CT operations,



2019 Procurement plan and CAPEX program, mln $



Detail procurement plan

Goods:

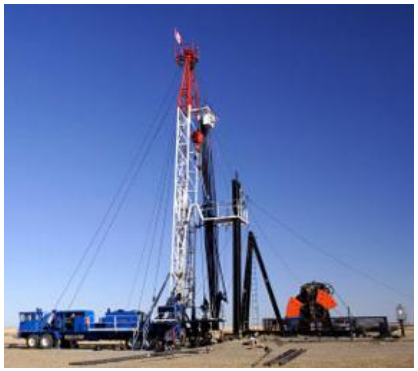
- Nitrogen unit — 8 ea
- Extreme-line pipe — 13 ea
- Cryogenic tank — 5 ea
- Parts for CT and Nitrogen unit
- Rotary tools

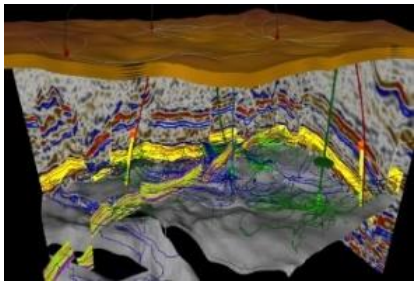
Summary

- Procurement in 2019 shall make ~$24 mln
- Procurement of 5 key goods types will ensure CT operations execution without technical losses and technological NPT

Case study: cooperation with Schlumberger

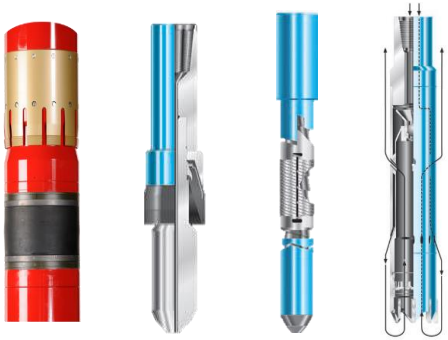
Schlumberger





- Schlumberger and UGV **started cooperation in Q1 2018**, and it has ramped up significantly since then
- **Multi-Service Agreement (MSA)** was signed in March 2018, and currently has **16 service lines** under it
- UGV and Schlumberger signed **Memorandum of strategic cooperation** in October 2018
- 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 was **the first world-leading OFSC**, which UGV began cooperation with in 2017
- **Bundle service contract** for Fishing tools & services was signed in 2017
- **Multi-Service Agreement (MSA)** was signed in May 2018, and currently has **8 service lines** under it
- 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 Workover, Fishing and Artificial-lift programs in 2017-2018
- Weatherford is currently implementing pilot **Artificial-lift** project at 16 UGV wells
- Weatherford is key UGV's provider of **Liner Hangers**, **Artificial-lift systems and Fishing tools & services**

UGV's key strategic objectives for service projects

Strategic objective	Corresponding strategic projects
Maximize P/R ratio at mature brownfields with low remaining pressures, but high remaining reserves	1 Production optimization through Artificial lift solutions 2 Underbalanced sidetrack drilling with coiled tubing 4 Production enhancement contract (PEC)
Maximize economical return (ROIC) from outsource contracts	1 Production optimization through Artificial lift solutions 4 Production enhancement contract (PEC)
Get access to the latest technological expertise and "know-how"	3 External frack fleet for customized fracking operations at exploration & appraisal wells 2 Underbalanced sidetrack drilling with coiled tubing

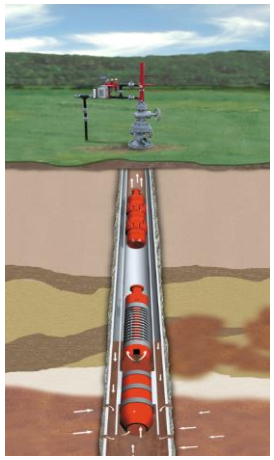
#1 Production optimization through Artificial lift solutions

Strategic context

- UGV has many **fields with depletion rate of 80%+** and 2 500+ working wells, 90% of which cumulatively contribute only 30% of total production
- Most of the **wells produce below its potential** due to constant water-breakthrough
- **Artificial lift could be an efficient solution** to increase production from these wells, and it has many advantages over other techniques (autonomous, economical, resultative)

Scope of work

- **Identify 150-200 well-candidates** for application of Artificial lift technologies
- Agree on **baseline production** from identified well-candidates
- Develop **job programs** for each well and identify customized **Artificial lift solutions** (plunger lift, capillary string, gas lift etc.)
- Apply identified technologies and **increase production** from the wells above the baseline



Objectives & requirements to OFSC

- **Highly-experienced** in Artificial lift technologies (proven track-record) with **immediately available equipment & tools** to Ukraine
- **Available engineering resources** to perform the analysis and make recommendations for customized technologies
- **Willing and able to put capital at risk**
- Willing to **get paid out of incremental production** – take responsibility for the final production results (production risk)

2

Underbalanced sidetrack drilling with coiled tubing

Strategic context

- UGV has many **fields with depletion rate of 80%+** and **very low remaining pressures**
- UGV has ~2 000 idle wells (due to lost tubing etc.) or wells with low production rates due to **damaged formation**
- During conventional sidetrack on such wells, we experienced drill **mud losses and formation damage (high skin)**
- UGV considers possibility to perform **underbalanced sidetrack drilling** of such wells with coiled tubing

Scope of work

- Identify at least **20-30 well-candidates** with high-enough post-sidetrack production rates
- Wells with TD of **1000-2500 meters**
- Perform **turnkey sidetracking** (CTU + all the required services) of the identified wells with **underbalanced drilling technology**
- Perform **testing** while drilling

Objectives & requirements to OFSC

- **Avoid formation damage** (keep skin within 0-2 range)
- **Minimize mud losses damage**
- **Maximize** post-sidetrack **production** from a well
- Make project economical through **lowering cost** of turnkey sidetrack operation (below $1.5 mln/operation)

#3 External frack fleet for customized fracking operations at exploration & appraisal wells

Strategic context

- UGV is drilling over **50+ exploration & appraisal wells each year**, many of them require fracking to be producers
- UGV **currently has 60+ exploration & appraisal wells**, which could be finished **with frack**
- Each such well **requires customized approach** to frack design, chemicals selections and frack implementation
- Some of the wells target tight-gas reservoirs, and conventional **reservoirs with high pressures**

Scope of work

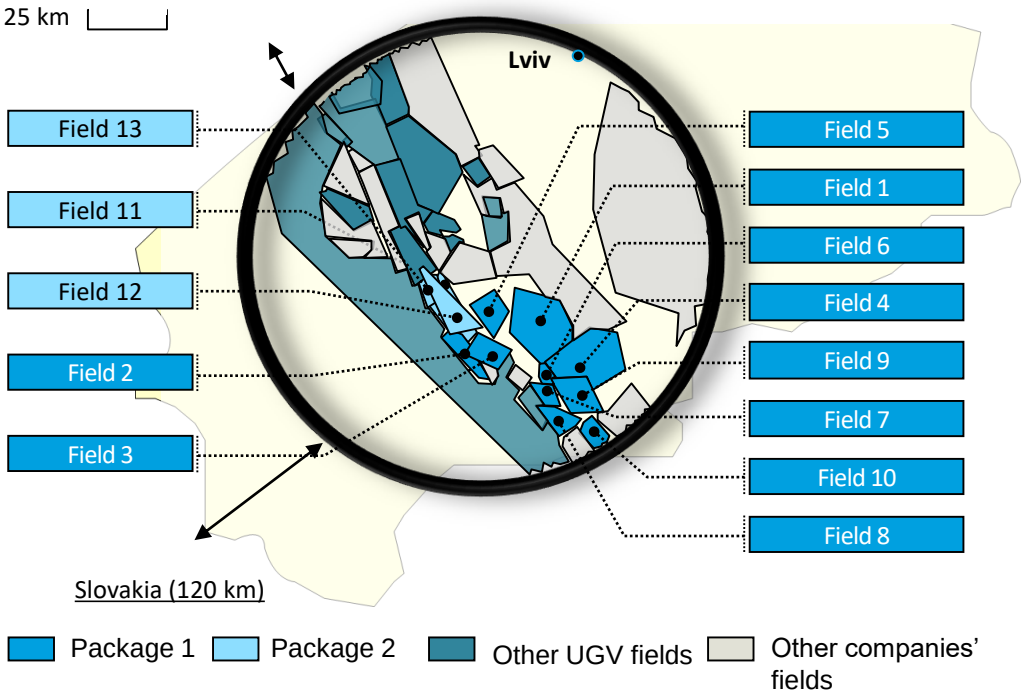
- **60+ well-candidates for frack in 2019-2020**
- What's needed from contractor: **(i) High pressure frack fleet with the crew**; **(ii) Significant engineering & implementation experience**; (iii) Wide-range of **chemicals, materials**, and patented frack **technologies**
- Contractor will have **turn-key operational control over fleet** and **technological process** (incl. logistics, 3rd parties, job planning and implementation)
- **Customized frack design and implementation**

Objectives & requirements to OFSC

- **Attract frack fleet & services from an experienced frack service company** with wide range of frack chemicals, technologies, engineering capabilities, and access to data centers to study collected data
- **Open new fields & increase resource base** through successful application of new frack technologies
- **Lower the risk** of frack operations at greenfields

4 Production enhancement contract (PEC): Brownfield partnership opportunity snapshot

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

4 Redevelopment of brownfields via PEC: selected fields for pilot

#	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

#4 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

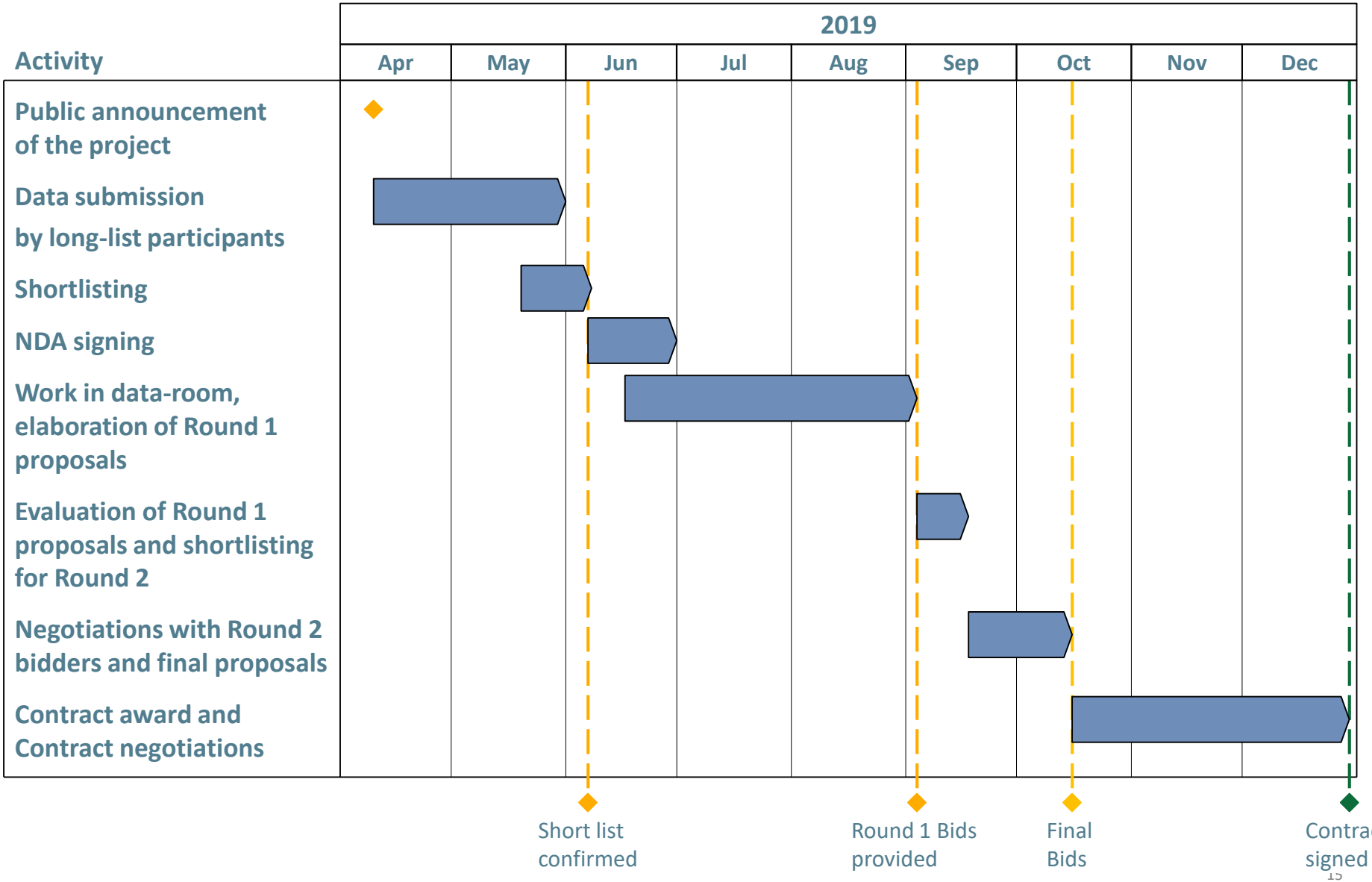
- Environmental audit materials
- Licenses
- Permits
- Policies, procedures, standards
- Manuals
- Incidents reports
- Authorities inspections reports

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

4

PEC partnership project timeline



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PEC partner short-listing criteria

Experience

- PEC-type relevant partnerships (including risk-based service contracts) at least for 3 years 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 provide bank guarantee for minimum of 5% 5y capex obligation (preliminarily US$30-60m depending on the field)

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

5 PEC project contact details and link to the press-release

Link to the press-release at UGV's website:
http://ugv.com.ua/uk/page/grupa-naftogaz-ogolosue-pro-zminu-proektu-pec-ta-zaprosue-potencijnih-partneriv-do-spivpraci

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