ACHIMGAZ

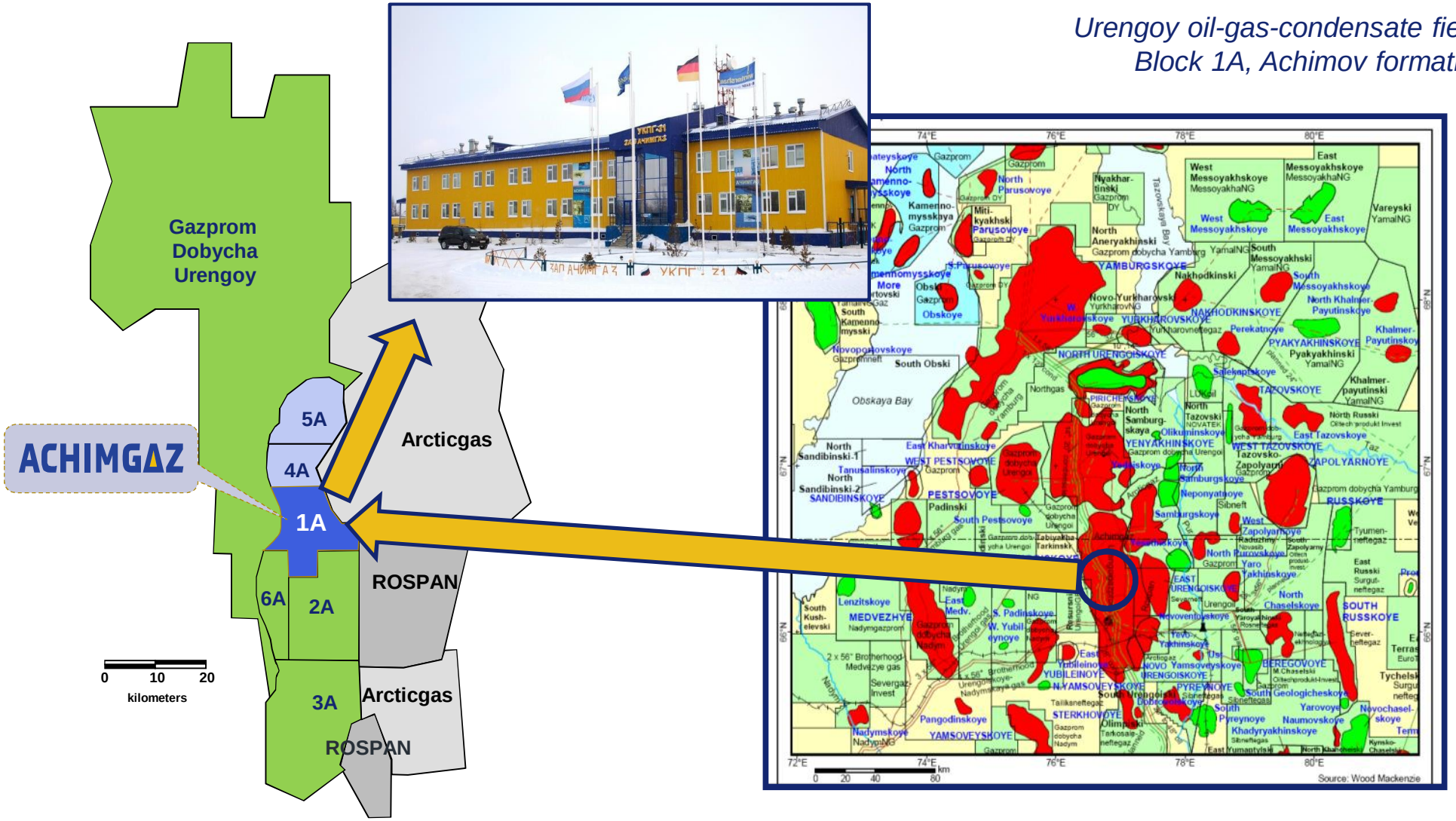
AO ACHIMGAZ -
STORY OF COOPERATION

Oleg Valerievich Osipovich – General Director

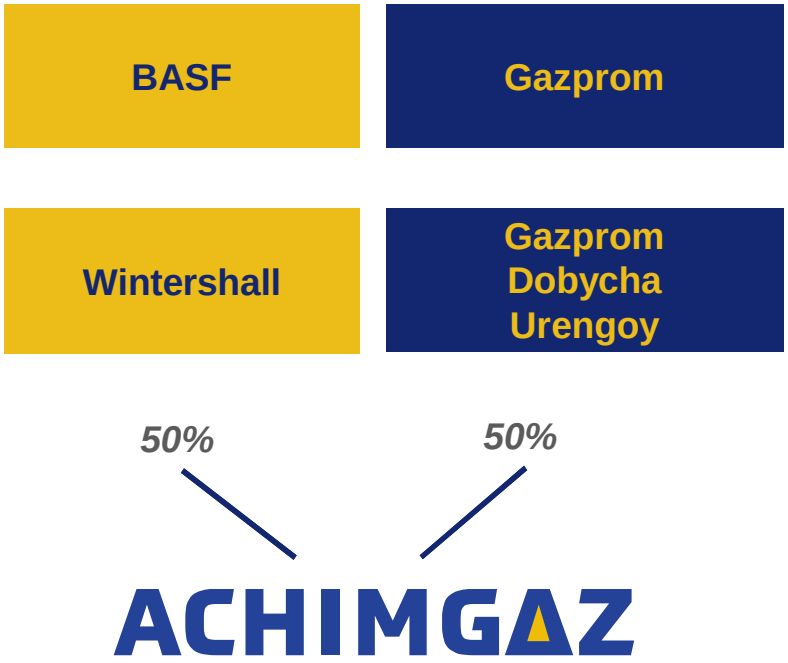
Novy Urengoy, 06 July 2017

Location

Urengoy oil-gas-condensate field,
Block 1A, Achimov formation



Ownership structure. Stages of development



2003	Project launch.
2006	Pilot phase construction.
2008	Pilot production phase (6 wells).
2011	Final Investment decision (full field development).
06/2017	- **82** wells/ **5** trains at GTP*-31; - produced (in 2016): **6,4 bln cbm** gas **2,9 mln t** condensate - produced (cumulated**) (since 2008): **25,3 bln cbm** gas **11,4 mln t** condensate - revenues (in 2016): **28 bln** RUR

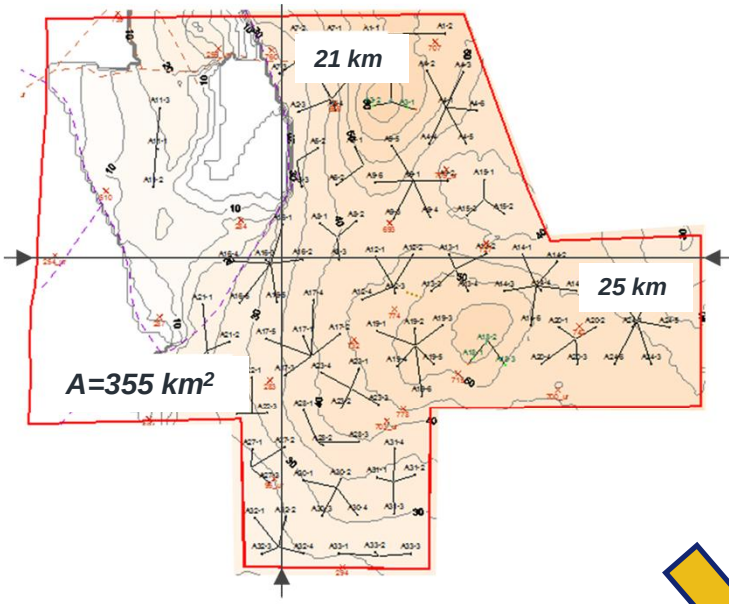
**) gas treatment plant*

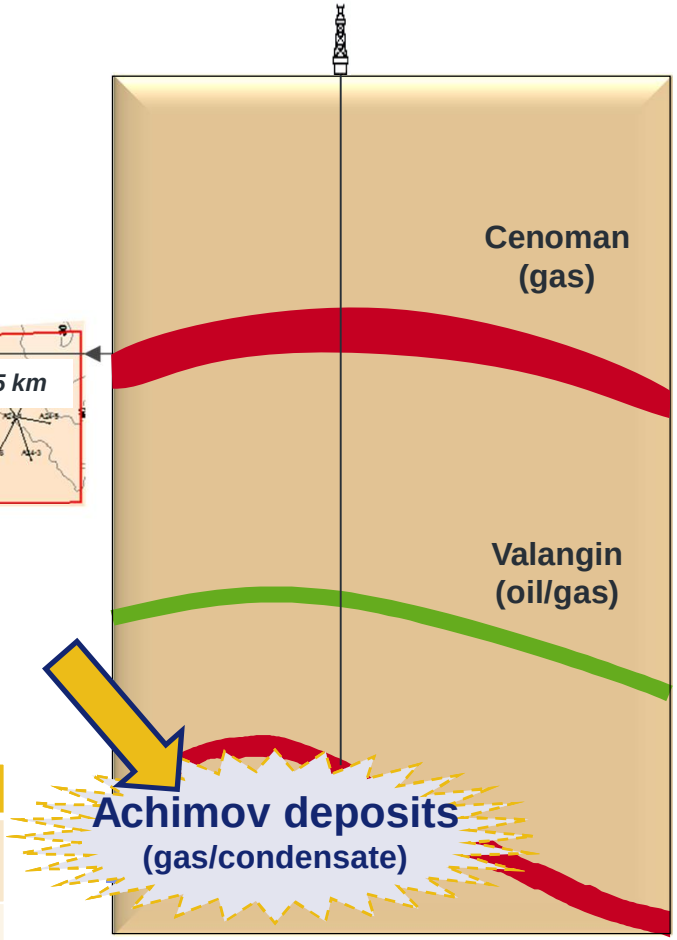
***) as of 01 June 2017*

Russian-German success story in Siberia

Production increase 2012-16: more than fivefold	Cumulative production: **25 bln cbm** – natural gas, **11,3 mln t** – condensate
Project completely within **budget**, **investment** and **production plan**	**1,1 bln EUR** invested since 2011
Profitable. **Debt free**. Provides **dividends**	**10 bln Russian Roubles** dividends paid in 2016
Verified compliance with international **HSE standards**	**Accident-free** operation. No **environmental incidents**
Respected and recognized by partners**.** **Reliable partner for the region**	Cooperation with **YNAO** administration**.** Support of **~20 social projects.** Support of regional **education and sport** projects

Achimov formation, Block 1A





Reserves of Achimov Formation

Category	A+B1
Gas (bln cbm)	406
Condensate recoverable (mln t)	75,7

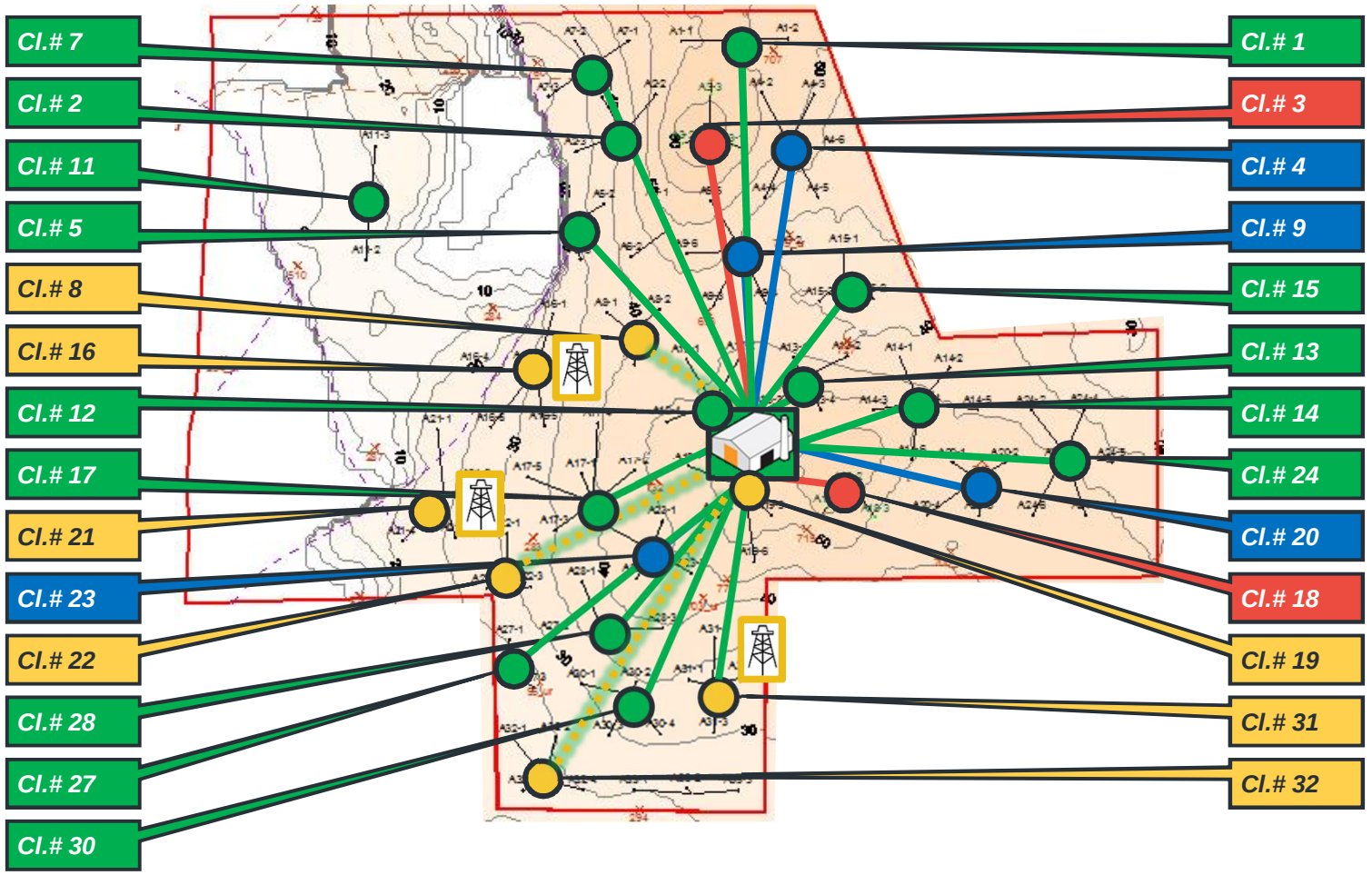
Achimov deposits are characterized by:

- Low permeable reservoir
- Depth of 3700m
- Formation temperature of 105ºC
- Abnormally high formation pressure of 620atm
- Potential C5+ content of 310g/cbm

Key targets

- **111** wells, **28** clusters, **82 km** of roads
- **230 km** infield pipelines
- **38 km** condensate export pipeline
- **GTP-31** (gas and gas condensate processing plant)
- **112 MW** gas compressor
- **>10 bcm** gas + **3,8 mln t** condensate - peak production (p.a.)
- **~ 326 bcm gas / 92 mln t condensate** - cumulated production (until 2069)

Timeline



06/2017

3 rigs

Pilot phase

Start-up Complex

Full Field Development

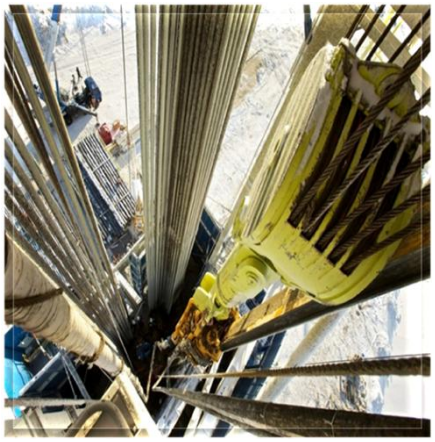
Current activities

Well construction

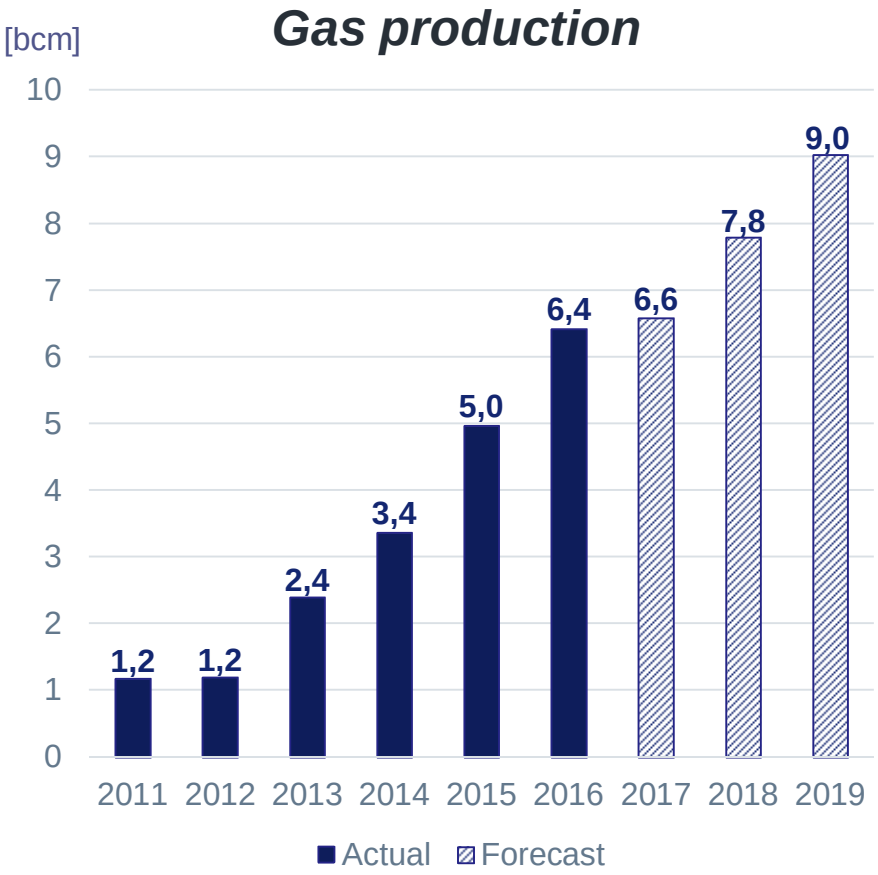
06/2017

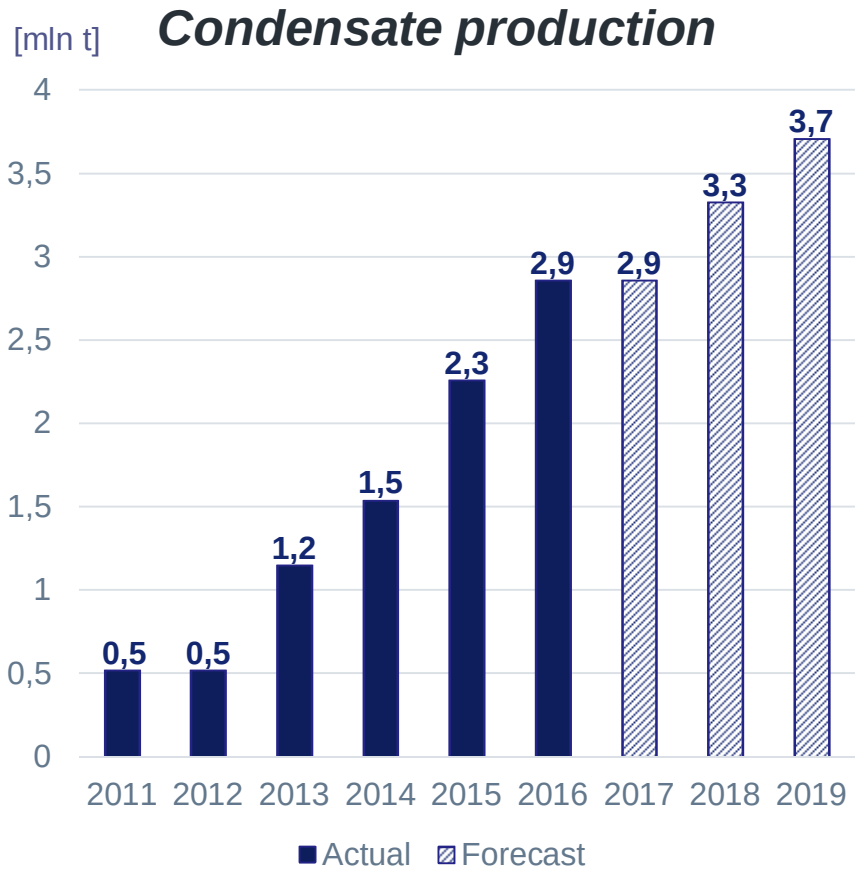
- **3** rigs operate within Block 1A
- **88** wells drilled (**356** km rocks)
- **4 045** m – average well depth
- **245,000** cbm/day – average gas production rate
- **105** t/day – average condensate production rate
- **23** wells are to be constructed in 2017-2019



Production performance and forecast



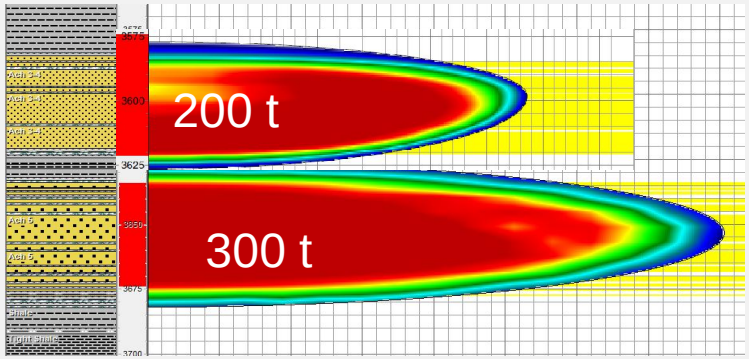


Modern technologies

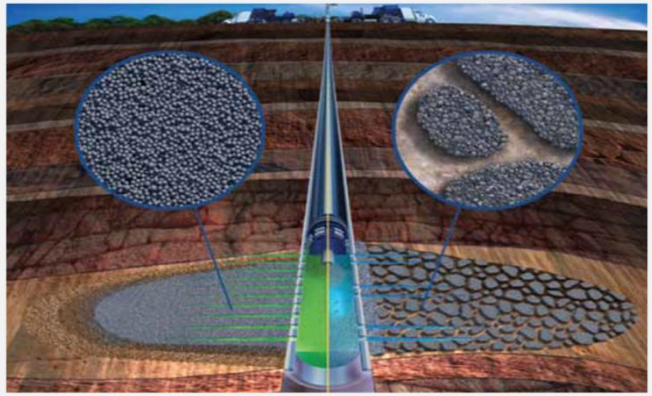
- ‘Light-weight’ s-shaped well design with vertical entry, in order to increase drilling rate and to reduce drilling risks and cost of works.
- Efficient drilling techniques and mud composition.
- Vertical entry to improve hydrocarbons recovery from low permeable formations Ach3-4 and Ach5 with subsequent FRAC (hydraulic fracturing of formation).
- Improved well clusters layout to reduce construction cost of roads, sites, clusters, flowlines and to reduce drilling time.
- Three-stage low temperature separation with enhanced product recovery from gas-condensate mixture.
- Centralized supply of Keroflux 6404 depressor additive from depressors and dispersants storage and distribution unit.

New hydraulic fracturing technologies used at AO Achimgaz wells to increase well productivity:

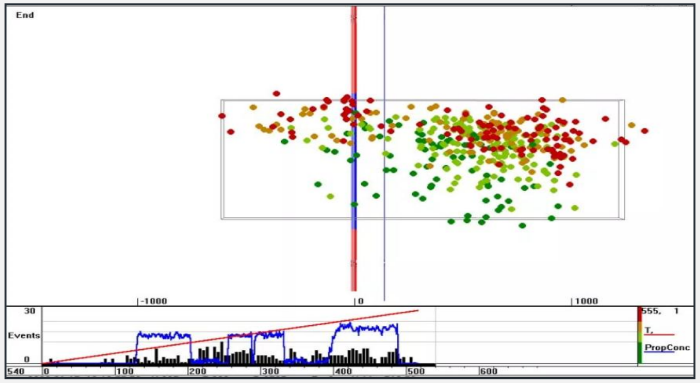
Fracturing with linear pad and increased pumping rate



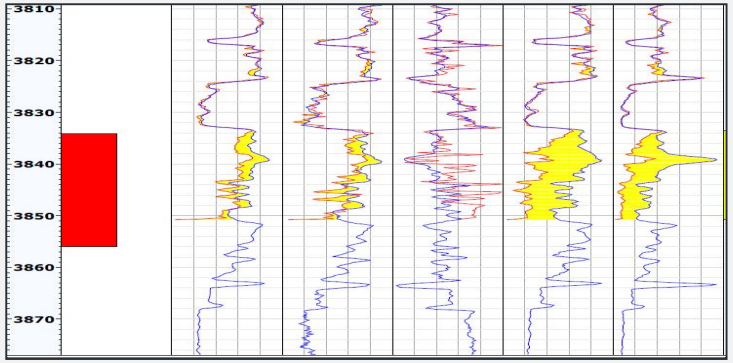
HiWay technique (Schlumberger)



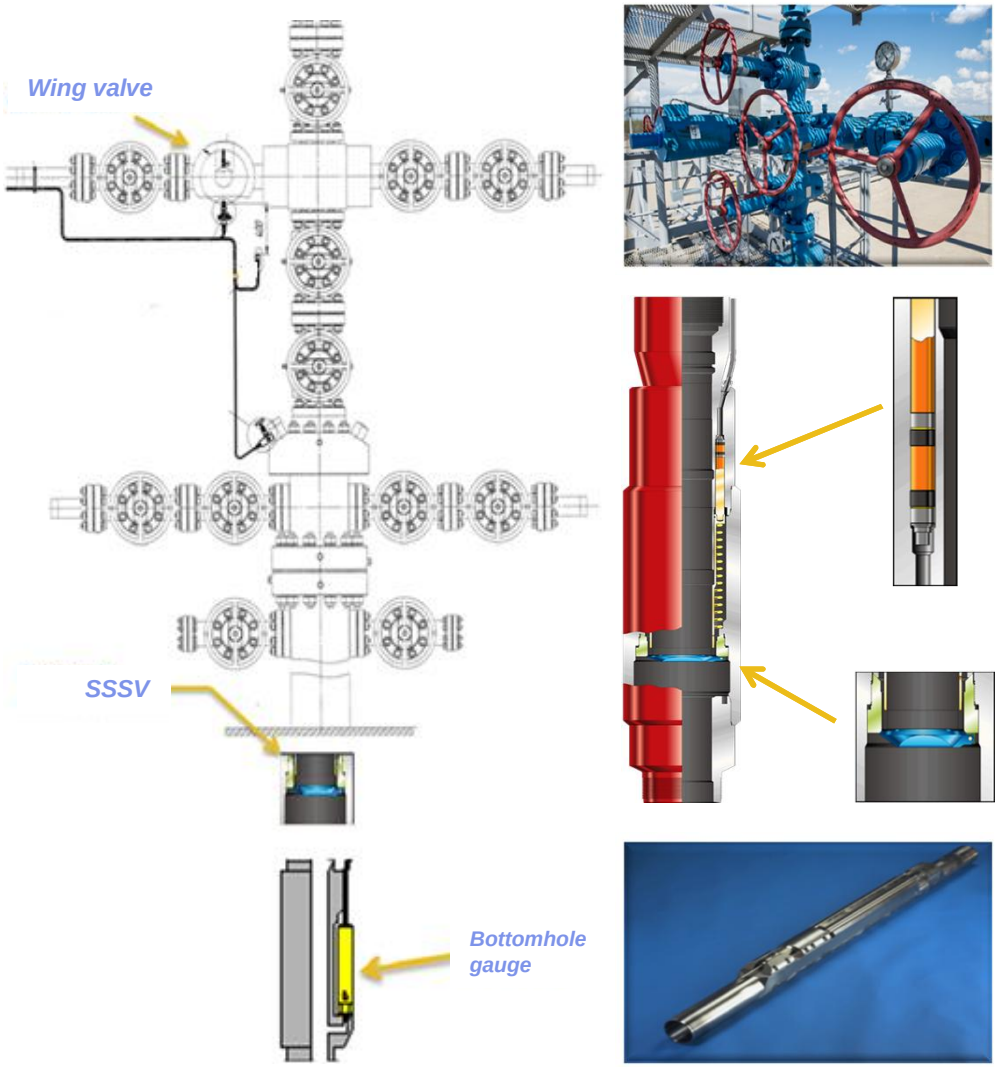
Microseismic hydraulic fracturing monitoring to control fracture propagation



Use of NRT tagged proppant to control fracture height



Modern production technologies



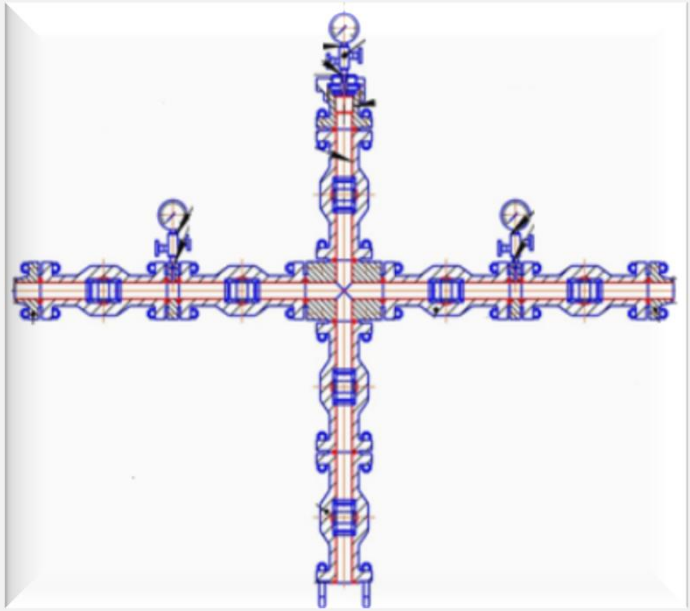
- **HYDRAULIC WING VALVE**
  installed on the X-mas tree (surface) and ensures automatic shut-in of gaseous fluid in case of emergency situation.

- **SUBSURFACE SAFETY VALVE (SSSV)**
  installed inside production casing at the depth of 450-500m; ensures wellhead shut-in in case of breakdown of wellhead equipment and piping, and in case of fire.

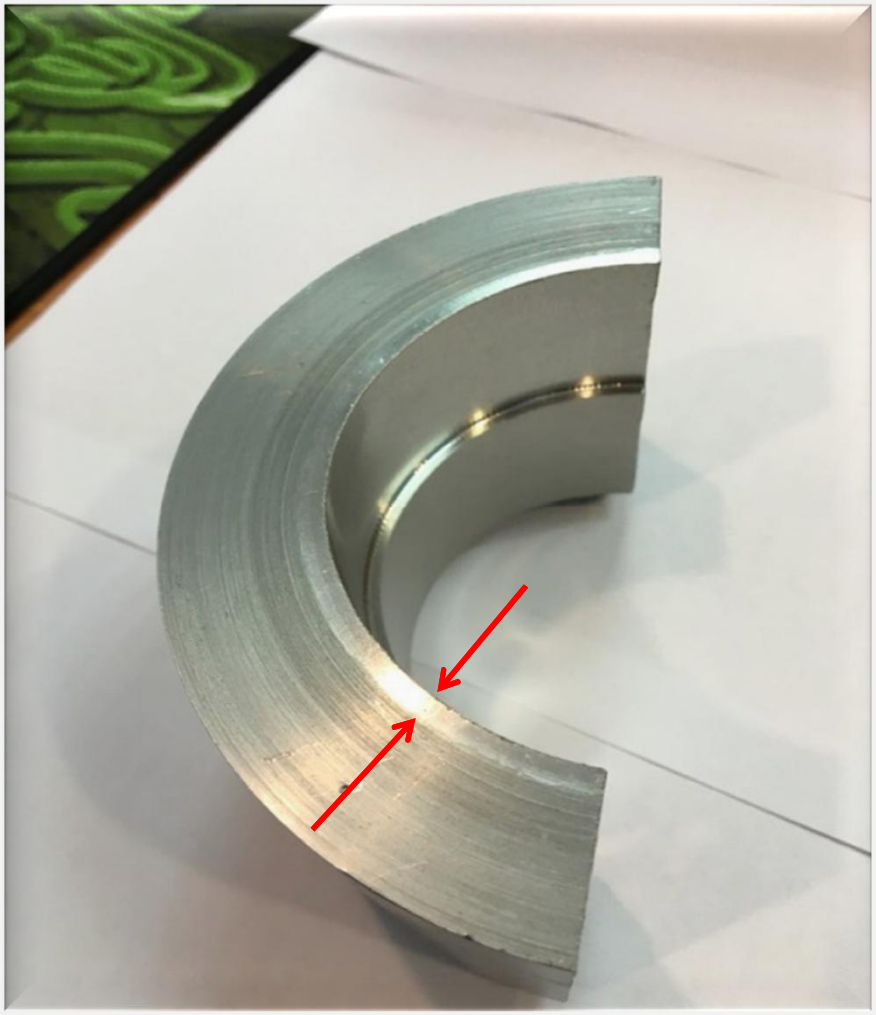
- **BOTTOMHOLE PRESSURE AND TEMPERATURE GAUGE**
  installed on tubing. Gauge depth is within 3600-3800m, at the distance of 50m from liner head; ensures pressure and temperature control at the bottom hole and transmission of readings to the control room of GTP.

Modern production technologies

Inconel Alloy 625



In order to protect well equipment against corrosion and erosion, AO Achimgaz uses monoblock wellhead equipment with Inconel Alloy 625 for internal surfaces which contact with working fluid.

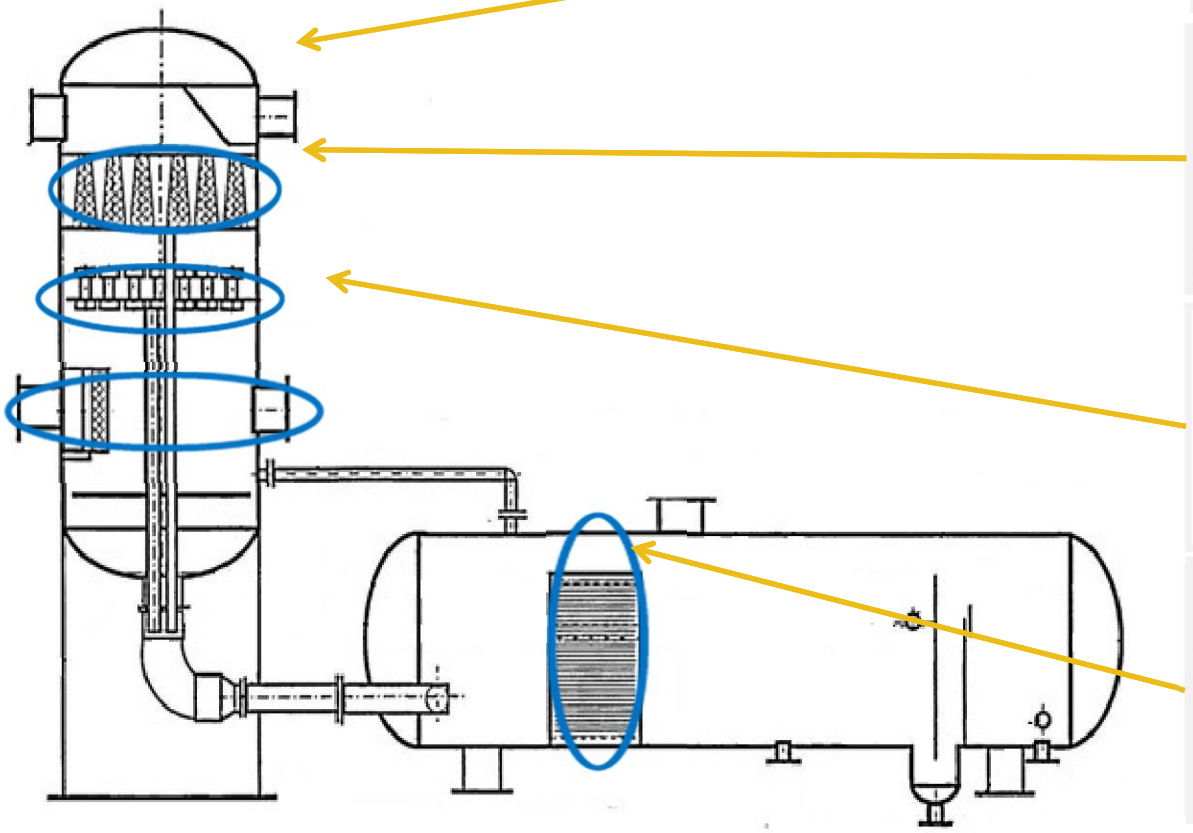


Modern gas processing technologies

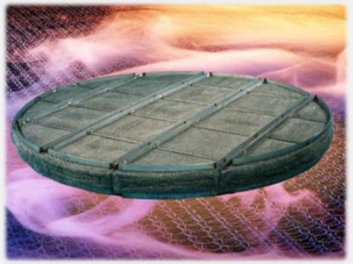
X-mas tree control station

Intended to control subsurface safety valve and hydraulic valve of one well and provide for automatic shut-in in emergency situations to ensure protection of the environment.

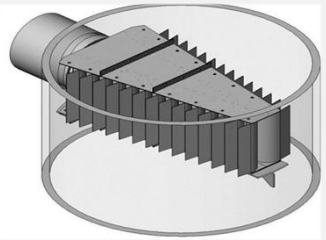
Modern gas processing technologies



Separation element – flow turbulizer



Wire mesh mist eliminator – coagulation of dropping liquid



Input device– initial separation of gas-liquid mixture stream

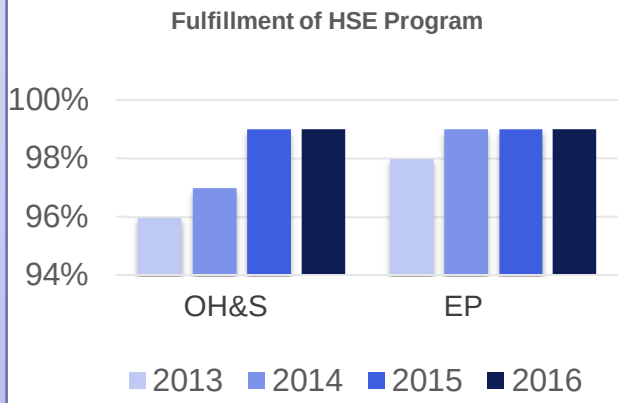
Coalescer – separation of water-methanol mixture from condensate stream

Safety first

- Certified HSE-MS **ISO 14001:2015, OHSAS 18001:2007**
- Environmental/Social Impact Analysis (**ESIA**)
- Hazard and Operability Study (**HAZOP**)
- **IFC Compliance/ Equator Principles** verified

Results (example: **Environment**)

- No environmental incidents.
- Revegetation of lands disturbed during construction.
- No gas flaring.
- Treated waste water disposal.
- Environmental quality improvement (constantly monitored).
- Waste management.



THANK YOU
FOR YOUR ATTENTION