Licence 61 - Field Development Infrastructure
**Licence 61 Development Plan**

**2010 programme:**
- Construction of 60 km pipeline, oil processing/storage facilities completed
- 9 oil production wells drilled in 2010, commenced pipeline production in August

**2011 programme:**
- Hydraulic Fracturing programme on 9 wells on Pad 1, 10 wells on Pad 2
- 12 new production wells drilled on Pad 2
- Process facilities expanded to ±14,800 bpd

**2012 programme:**
- Construction of 10 km pipeline to Arbuzovskoye and commence drilling of 10 to 15 new production wells at Pad 1
- Possible Sibkrayevskoye delineation well

**Future Plans**
- Incremental addition based on NPV analysis of Sibkrayevskoye, Kondrashevskoye, Tungolskoye, N. Varyakhskoye and other discoveries
Licence 61 Facilities Development

**Lineynoye Oil Field**
- **Lineynoye Central Processing Facility**
  - Capacity - 14,800 bfpd
  - Storage Capacity – 37,740 bbls
  - Gas Power Generation - 3.350 MW
  - Diesel Backup Power Generation – 1.0 MW
  - Export Pipeline Capacity - 20,000 bopd
    - Length 60 km – Diameter 273 mm
  - Lineynoye Camp – up to 60 people

**Arbusovskoye Oil Field**
- **Arbusovskoye Pad 1 Facilities**
  - Transformer Station
  - ESP Control Modules
  - Well Test Separator Module
  - Water Injection Manifold Module
  - Pipeline to Lineynoye
    - Length 10 km – Diameter 273 mm
  - Camp – up to 16 people

**Kondrashevskskoye Oil Field**

Base Bazhenov Horizon Structure Map
March 2012 – contour interval 10 m
**Central Processing Facility Schematic**

**Current Design Capacity**

740,000 tons/year

14,800 bfpd

**Notes**

1. No gas dehydration
2. Oil stabilisation
3. Oil storage 4 days
4. Pumping 2 X 50%
5. No gas compression
6. Power supply - gas piston engine generators

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**Diagram Details**

- **Pad 1 Wells**
- **Well Test Separator**
- **Slug Catcher**
- **Primary Separator**
- **Secondary Separator**
- **Heater**
- **Fuel Gas Filter**
- **Gas Separator**
- **Boiler**
- **Vaporizer**
- **High & Low Pressure Flares**
- **Oil Storage Tanks**
  - P1: 1000 m³
  - P2: 2000 m³
  - P3: 1000 m³ (2011 Expansion)
  - P4: 2000 m³
- **Settling Tanks 50 m³**
- **Water Storage Tank 700 m³**
- **Water Injection Manifold**
- **Filter**
- **Meter**
- **P1 1000 m³**
- **P2 2000 m³**
- **P3 1000 m³**
- **P4 2000 m³**
- **2011 Expansion**
- **60 m³/hr 9,000 bpd**
Additional Primary Separator - 2011
New 2011 Oil Heater Treater and Storage Tanks
New 2011 CAT Gas Generators in Foreground
Generators and Chemical Lab
Chemical Analytical Laboratory
Storage Tanks - 2012
Flow Lines
Flow Lines
Well Test Separator
Data Collection – Well Test Module
Lineynoye Camp – May 2011
Lineynoye Camp – January 2012
**Licence 61 Facilities Development**

**Lineynoye Central Processing Facility**
- Capacity - 14,800 bfpd
- Storage Capacity – 37,740 bbls
- Gas Power Generation - 3.350 MW
- Diesel Backup Power Generation – 1.0 MW
- Export Pipeline Capacity - 20,000 bopd
  - Length 60 km – Diameter 273 mm
  - Lineynoye Camp – up to 60 people

**Arbuzovskoye Pad 1 Facilities**
- Transformer Station
- ESP Control Modules
- Well Test Separator Module
- Water Injection Manifold Module
- Pipeline to Lineynoye
  - Length 10 km – Diameter 273 mm
  - Camp – up to 16 people

**Base Bazhenov Horizon Structure Map**
March 2012 – contour interval 10 m
Licence 61 – Arbuzovskoye Facilities Construction and Drilling Status

- Production rig moved from Lineynoye Pad 3 and assembled
  - Drilling Tubulars in place for 10 wells
  - Cement, mud and chemicals in place for 10 wells
  - Diesel in place for 10 wells
- Pipeline Construction – 10 km
  - Construction and Commissioning completed in Mid April
  - Operations commenced 16th April
- Utilities Line Construction – 10 km
  - Construction and Commissioning completed 10th March
- Transformers, test separator and water injection manifold moved from Pad 3
- Arbuzovskoye Pad 1 drilling commenced 6th August
Q1 2012 Winter Mobilisation and Construction

- Production rig moved from Lineynoye Pad 3 and assembled
  - Drilling Tubulars in place for 10 wells
  - Cement, mud and chemicals in place for 10 wells
  - Diesel in place for 10 wells (400 tons)
- New ESP cables for 8 wells
- Arbuzovskoye Pad 1 drilling commenced 6th August
Arbuzovskoye Rig Construction
Arbuzovskoye Pipeline Construction
Arbuzovskoye Pad 1
Oil Fields / Prospects / Potential Prospects

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**Initial Focus on Northern Area**
- Well 370 (1972) showed by-passed pay
- Well 372 (2011) confirmed 12.43 m net pay
- 2P Reserves of 49.8 million bbls
- Needs further delineation

**Emtorskaya High**
- Extension of Lineynoye Field
- Huge unbooked reserve potential
- Needs further delineation

**Tungolskoye Oil Field**
- Comprehensive Study underway
- Future tie-in to Lineynoye

**Followed by Southern Area**
- Log Reinterpretation shows missed pay in multiple horizons – C, UJ, M/LJ
- Cretaceous and Lower Jurassic pay confirmed by well tests in immediately adjacent blocks
- Exploration delayed due to focus on cash flow from Northern Developments

**Arbuzovskoye New Oil Field Discovery**
- Quick tie-in to Lineynoye Facilities
- 2P Reserves 13.3 million bbls
- Under development

**North Sea Block**

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**Legend**
- **Oil Field**
- **Prospect ready for drilling**
- **Prospect identified**
- **Potential Prospect**
- **Wells**
- **Base Bazhenov**
- **Seismic Horizon**
- **< 2460 m depth**
- **> 2600 m depth**

**Horizons Key:**
- **Cretaceous** C
- **Upper Jurassic** UJ
- **Middle/Lower Jurassic** LJ
Arbuzovskoye Pad 1