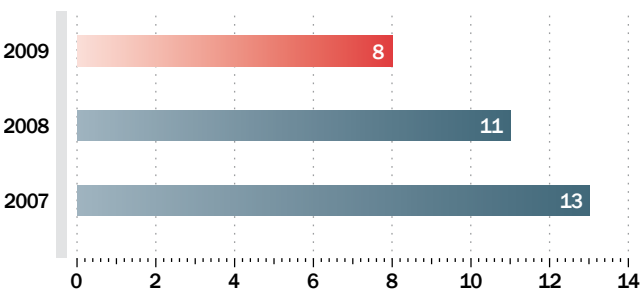
Growth of output was due mainly to operations at the Yuzhnaya Khylchuya field, which was commissioned in mid-2008 and also to international projects. Lower production at fields in Western Siberia had negative impact on the output trend and was due primarily to objective changes in the structure of recoverable reserves. The Company intends to reduce negative impact of these factors on production in Western Siberia by use of the latest enhanced recovery technologies. Meanwhile, LUKOIL has successfully addressed the problem of electricity supply shortages in Western Siberia. The Company is steadily building and commissioning its own power generating capacities at fields, and electricity supply shortages have now been almost completely overcome.

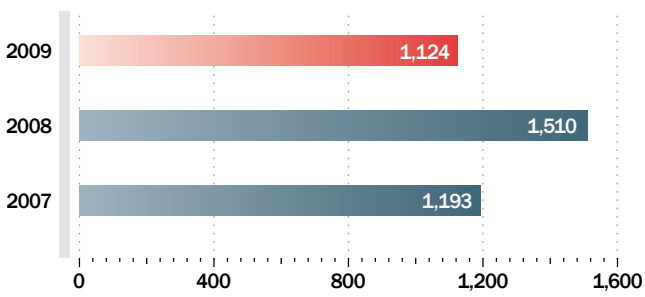
The Company expended much effort in the reporting year on preparation and construction of field facilities in the Northern Caspian. A fixed ice-resistant offshore platform with drilling unit was built at the Yu. Korchagin field, together with living quarters and transport infrastructure. The field will be developed using extra-long horizontal production wells (up to 5 km in length). This will be the first time that such technology has been used in Russia. **First oil at the Yu. Korchagin field was obtained in the second quarter of 2010.** Peak annual output at the field will be about 2.5 million tonnes of oil and 1 billion cubic meters of gas. Yu. Korchagin is the first field to have been brought into operation by the Company out of a whole group of fields in Russian territorial waters of the Caspian Sea.

Abrupt decline of oil prices in 2008–2009 encouraged the Company to work on improvement of field development efficiency and reduction of

COMISSIONING OF NEW FIELDS, FIELDS



OIL PRODUCTION WELL LAUNCHES, WELLS



operating costs. LUKOIL production companies carried out a range of measures to raise well productivity and oil recovery rates in order to achieve oil production targets for 2009. Spending on field development in 2009 was $4,421 million, which is about 40% less than in 2008.

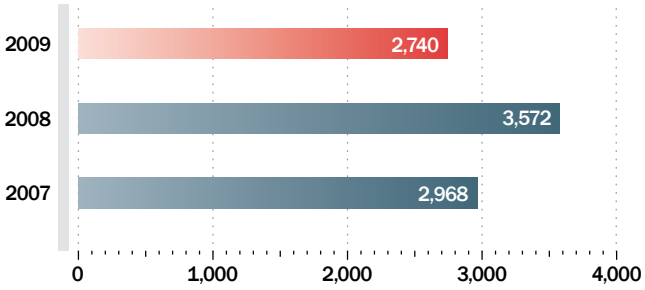
LUKOIL subsidiaries and equity affiliates produced hydrocarbons at 375 fields in 2009, and there were 8 new field launches: Aprelskoye, Bolshoye, Olkhovskoye and Longyuganskoye (Western Siberia), Nirmalinskoye and Pyzhelskoye (Timan-Pechora), Viktorinskoye and Bortomskoye (Urals). Peak annual production of liquid hydrocarbons from new fields launched in 2009 will be nearly 1 million tonnes. There were production increases of more than 50,000 tonnes of oil at 14 Group fields in 2009. The biggest increases (in excess of 200,000 tonnes) were achieved at 3 fields, which accounted for more than 6 million tonnes of oil production growth. These were the Yuzhnaya Khylchuya field in Timan-Pechora and the Kechimovskoye and Urevskoye fields in Western Siberia.

The Company had 29,760 oil production wells as of January 1, 2010, of which 25,380 were actually in use, and the number of water injection wells was 9,910, of which 7,630 were under pressure. The number of oil production wells was 3.7% higher than in 2008. The share of idle wells was almost unchanged in comparison with the end of 2008 at 14.7% of the total. Average daily oil flow from wells in projects with Company participation was 14.7 tonnes, which is 3.5% more than in 2008, due mainly to launch of the Yuzhnaya Khylchuya field.

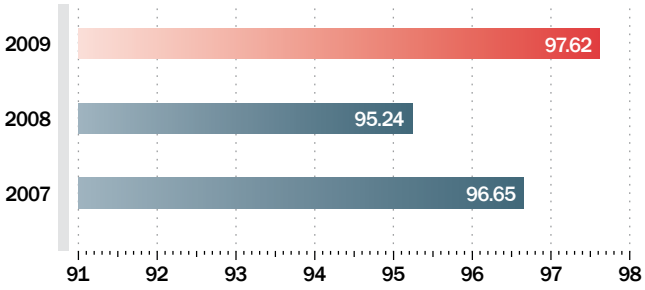
Amounts of production drilling declined in the reporting year, because a large part of drilling was in regions where difficult geological conditions slowed progress. Also LUKOIL decided to reduce financing of its drilling program in the context of the economic crisis and low prices for oil. As a result, production drilling in 2009 was 2,740 thousand meters, which is 23% less than in 2008. The number of new production wells brought into operation was 1,124, of which 91 were horizontal. High efficiency of horizontal well drilling has persuaded the Company to increase numbers of such wells in the medium term. Average daily flow from new wells in projects, in which the Group is a participant, was 34.8 tonnes, including 78.2 tonnes from horizontal wells. Flow rates at new wells were slightly lower than in 2008, reflecting overall lowering in quality of extracted reserves. However, flow rates at horizontal wells rose substantially (by a third). Progress reflected improving quality of geological and hydrodynamic models and extensive use of such models in organization of production drilling, as well as further work to improve technologies in well completion and initial and secondary penetration of productive formations.

The Company further increased drilling of sidetracks in 2009: a total of 264 wells with sidetracks were drilled and they gave average daily flow increase of 16.8 tonnes. Increase of flow rates at some fields was significantly higher than the average for the Company. For example, a multiple-bore well (two boreholes), drilled at the Kechimovskoye field in Western Siberia gave a flow rate of 103 tonnes per day.

OIL PRODUCTION DRILLING, THOUSAND METERS



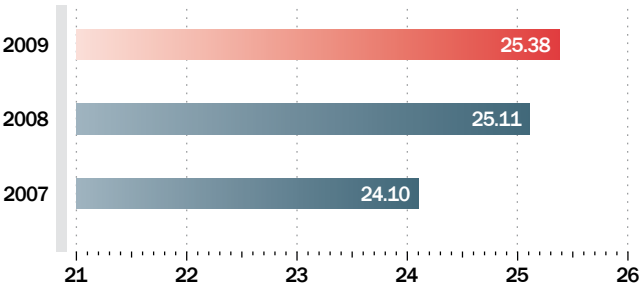
OIL PRODUCTION, MILLION TONNES



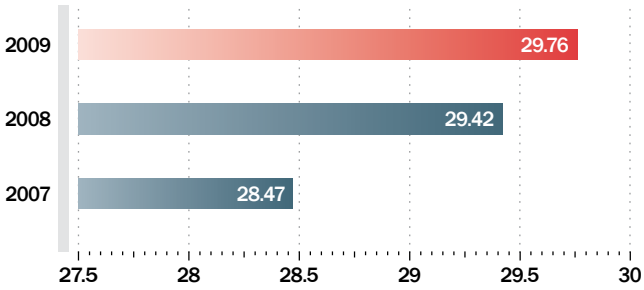
A total of 604 new injection wells were put under pressure in 2009 to optimize field development systems and maintain reservoir pressure. Injection wells pumped 510 million cubic meters of water into productive formations, which is 5% more than in 2008. The Company was able to halt growth in the water cut, which had been growing at an average rate of 1.5 percentage points annually for the previous five years. This was thanks to production of almost water-free oil at the Yuzhnaya Khylchuya field and measures to limit associated water and unproductive pumping at other Company fields in Russia. The Company plans further improvement of its systems for maintaining reservoir pressure at fields under development. The Company also continued the program, which it has been pursuing for several years, to install small power generation units at fields in order to achieve independence from electricity suppliers (see 'Power Generation' on page 64).

The Company took further action in 2009 to increase well productivity. In Russia a total of 1,141 operations were carried out to optimize functioning of mechanized wells, 57 wells were transferred to mechanized production, and 567 idle wells were brought into production. The Company continued to make extensive use of enhanced oil recovery techniques at oilfields. A total of 5,098 operations were carried out on productive

OIL PRODUCTION WELLS IN USE, THOUSAND WELLS



OIL PRODUCTION WELLS, THOUSAND WELLS



formations using physical, chemical, hydrodynamic and heat techniques (see 'Exploration and Production Technologies' on page 80). Additional oil output in Russia thanks to application of enhanced oil recovery techniques was 23 million tonnes, or 25% of total oil production by the Group in Russia.

Russia

Oil production by LUKOIL in Russia during 2009 was 91.868 million tonnes, of which 91.560 million tonnes were produced by Group subsidiaries. Production in Russia rose by 2.1% compared with 2008.

Subsidiaries and equity affiliates of LUKOIL produced hydrocarbons at 348 fields in Russia in 2009. Production drilling was 2,385 thousand meters, which is 20% less than in 2008. The number of production wells at the end of 2009 was 28,240, of which 24,040 were actually in use. There were 854 new wells brought into operation in 2009.

Fields in **Western Siberia** accounted for 57.7% of LUKOIL's Russian oil production in 2009. Production in the region was somewhat lower than in 2008 at 52.96 million tonnes. Stabilization of output levels in Western Siberia is one of the main challenges for the Company. It is complicated by gradual natural exhaustion of the resource base, due to the long period of production at most Company fields in Western Siberia, which has depleted their reserves. LUKOIL is combating output decline by use of the latest technologies, which enable substantial increase of the oil recovery rate and production of oil from reservoirs with difficult access. Another problem is shortage of electric power supply in the region, which leads to losses in the production process and makes it difficult to pump in sufficient

Opinion Column

Matta Maya Alberto Jose, Specialist of technological equipment repair division of central oil treatment office at the Vateganskoe field, LUKOIL-Kogalym-neftegaz.

Alberto came to Russia from Spain. He has been working in LUKOIL-Western Siberia since 2007 after graduating from Gubkin Russian State University of Oil & Gas.

– What made you decide to leave warm Spain for a cold land with about 40 degrees of frost?

– As with the others, my affection for oil & gas industry. I wanted to work for a big company where I could successfully put my knowledge to practice and gain priceless experience. And it's well known that companies of LUKOIL Group located in Western Siberia are a forge for the best oil & gas specialists, and the experience gained here is highly valued both in Russia and all over the world.

– Are you pleased with the results of your decision?

– I see the result of my work and feel that I get to know something new every day. That's why I cannot but be glad. I highly appreciate the help and experience my friends and colleagues share with me and in my turn try to work even better.

– What are your plans for the future?

– I'd like to gain experience so that I could be helpful to the Company. Another cherished wish of mine is to have six children and two dogs. I think I won't be truly happy without them.

volumes of water to maintain reservoir pressure. The Company is successfully dealing with power shortages at its own fields by construction of small power stations, fuelled mainly by associated gas (see 'Power Generation' on page 64).

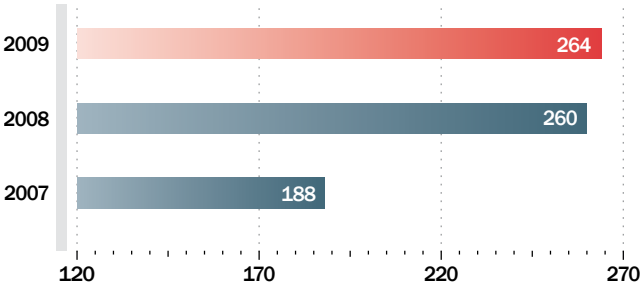
Despite long periods of exploitation, some of the Company's fields in Western Siberia have significant potential for production growth. In particular, the Kechimovskoye and Urevskoye fields showed strong oil production growth in 2009.

Oil production at the Kechimovskoye field, which was launched in 1995, grew by 63.9% in 2009 compared with 2008 to 1.59 million tonnes thanks to new production drilling: a total of 92 new wells were brought into production with average daily flow rates of 28.6 tonnes, including 27 horizontal wells with average daily flow rate of 42.9 tonnes. A multi-bore well (two boreholes) was also drilled at the field in 2009 and gave daily flow rate of 103 tonnes. High flow rates from wells that were launched in 2008 and were in operation throughout 2009 also had positive effect (79 wells with average daily flow of 28.8 tonnes). A total of 5 sidetracks were drilled at the field in 2009 and each gave average increase of daily flow rates by 27.2 tonnes. Work continued on a system to maintain reservoir pressure: 36 new injection wells were put under pressure during the reporting year. The Kechimovskoye field is one of the Company's biggest investment projects in Western Siberia. As of January 1, 2010, a further 512 wells remained to be drilled in accordance with the field development plan (402 oil wells and 110 injection wells). LUKOIL will maintain high rates of production drilling at the field in the immediate future in order to further increase levels of oil production.

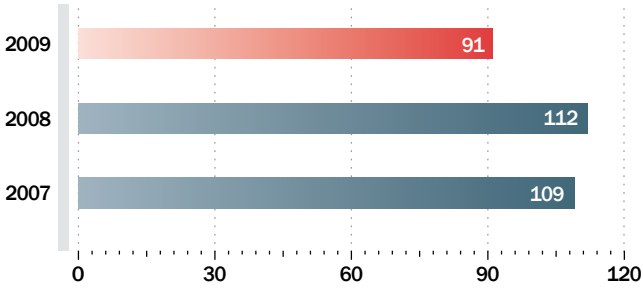
Oil production at the Urevskoye field, which was brought into production in 1978, rose by 9.4% to 2.62 million tonnes in 2009. The increase was achieved thanks to production drilling: 83 new wells were launched with average daily output of 28 tonnes, including 4 horizontal wells with daily flow of 75.5 tonnes. A total of 19 sidetracks were drilled at the field in 2009 in order to maintain output levels at wells, and 48 injection wells were put under pressure in order to optimize the reservoir pressure system and to compensate fluid extraction by water injection. A further 1,161 wells remained to be drilled in accordance with the field development scheme as of January 1, 2010. LUKOIL's development program for the Exploration & Production segment includes maintenance of high production drilling rates at the Urevskoye field and achievement of higher oil output rates.

The **Timan-Pechora** oil & gas province contributed 5 million tonnes to the Company's oil production growth in 2009. Oil output in the region was 21.66 million tonnes. As a result, the share of the region in total oil production by the Company in Russia rose from 19% to 24%. Growth of the share continued thanks to rapid development of the Yuzhnaya Khylchuya field, which was commissioned in mid-2008 jointly with

DRILLING OF SIDETRACKS, SIDETRACKS



DRILLING OF HORIZONTAL WELLS, WELLS



ConocoPhillips. Output at the field in 2009 rose by 3.5 times compared with 2008 to reach 7 million tonnes (about 140,000 barrels per day). The field reached its planned long-term oil output level of 7.5 million tonnes per year in July 2009. A total of 10 new production wells with average daily output of 602 tonnes were commissioned at the field in 2009, bringing the number of production wells in operation to 30 by the start of 2010. A system for maintenance of reservoir pressure is being developed, with 7 new injection wells put under pressure during 2009 (19 injection wells were in place by the start of 2010). Peak production should be achieved in 2010 with completion of production drilling (2 production and 3 injection wells will be brought into production during the year).

Timan-Pechora will be the main area of oil production growth by LUKOIL in the medium term, and the Company is making every effort to ensure rapid development of main reserves in the region (production started at 2 new fields in 2009). This progress will help to compensate natural decline of output in the Company's traditional operating regions.

Production of oil by LUKOIL in the **Urals region** increased to 12.04 million tonnes in 2009, or by 3.6%, thanks to use of new technologies, such as sidetracks, radial drilling and acid hydro-fracturing.

The Company started production at a new group of fields in Perm Territory during 2009, attached to the unique Verkhnekamskoye potash-magnesium salt field. Development rights at this area were obtained by the Company in 2008. This license area has several specific features: hydrocarbon fields are located underneath potash-magnesium salt deposits, which are already in the process of industrial development, and there are various environmental constraints (nature conservation zones, protected water spaces, settlements, etc.). Oil field development will therefore use a multi-column well-construction technique, unique in Perm Territory, in order to address all of these industrial and environmental safety issues:

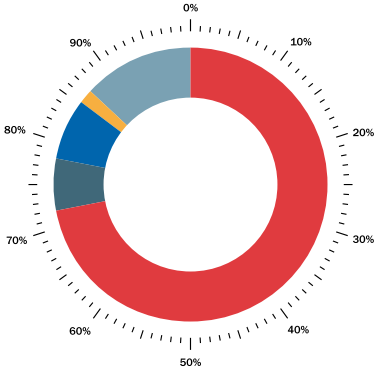
displacement from vertical will be up to 2 km, salt formations will be separated off using magnesium-phosphate tamping material with an expansion cement bond, and a system for constant monitoring of surface deformation. Forecast annual output of oil at the fields is 1.3 million tonnes.

Oil production in the **Volga** region in 2009 was 3.07 million tonnes, representing a slight decline compared with 2008. The Company is working to improve field development efficiency in the region in order to increase the oil recovery rate and maintain output at current levels, despite considerable depletion of reserves.

The Company put much emphasis in 2009 on preparation for development of fields on the **Caspian Sea shelf**. Development of these fields will be the main factor in oil production growth by the Company in the mid-term. The Yu. Korchagin and V. Filanovsky fields will be the first to be commissioned and will be the main sources of increase in oil output.

Following preparatory work in 2009, first oil was obtained in the second quarter of 2010 at the Yu. Korchagin field. Peak annual output at the field will be 2.5 million tonnes of oil and 1 billion cubic meters of gas. The Company began operations at sea for construction of the Yu. Korchagin field in April 2009, when the main block of a fixed ice-resistant offshore platform was towed to the site from the port of Astrakhan. Living quarters were built onto the block in May. In August work was completed on a jetty for loading of oil from an underwater pipeline into a floating reservoir and onto shuttle tankers. In September a floating reservoir was installed at the field for loading of shuttle tankers and transportation of oil produced at the field. A fixed ice-resistant offshore platform with drilling unit has thus been installed for drilling of wells with maximum borehole length of 7,400 meters. The field will be developed using exceptionally long horizontal wells (in excess of 5 km), which is a unique approach in Russia. The Yu. Korchagin field is the first of a whole group of fields in Russian territorial waters of the Caspian Sea to be brought into production by the Company. Development is on a zero-discharge basis, which ensures minimal impact on the natural environment of the Caspian Sea.

PRODUCTION DRILLING BY REGIONS (2009)



72.2%	Western Siberia (including Bolshekhetskaya Depression)
5.9%	Urals
7.3%	Timan-Pechora
1.6%	Other
13.0%	International projects

International Projects

LUKOIL's share of production in international projects was 5.747 million tonnes, which is 8.5% more than in 2008. The growth was mainly due to the Tengiz, KarakudukMunai and Karachaganak projects in Kazakhstan.

Production drilling in the Company's international projects was 355,000 meters, which is 40% less than in 2008. The reduction is explained by lower levels of financing for drilling programs, but rates of progress were maintained in priority development projects (Karachaganak, Kumkol and Condor). The number of oil production wells was 1,522, of which 1,345 were actually in use. A total of 270 new production wells were commissioned as part of international projects, in which the Company is a participant. Average daily oil flow from these wells was 43.4 tonnes.

The largest increase in oil production growth was from the **Tengiz** project in **Kazakhstan**. Crude oil production from the project (Company share) grew by 37.8% to 642,000 tonnes. The expansion was due to organic growth and also to purchase in December 2009 from a BP subsidiary of a 46% stake in the LUKARCO B.V. joint venture, which is developing the Tengiz and Korolevskoye fields in Kazakhstan.

The Group share in production of oil and gas condensate as part of the **Karachaganak** project in **Kazakhstan** rose by 4.1% to 1.63 million tonnes in 2009. A further 10 production wells (of which 8 had horizontal end sections) were drilled and connected to the main collector system as part of implementation of the investment program in the reporting year, and gave an average daily flow of 572.9 tonnes. Work continued to expand capacity at the Karachaganak refining complex.

Rapid development work continued at the **Kumkol** field in **Kazakhstan** during the reporting year. LUKOIL's share in crude production in this project during 2009 was 1.59 million tonnes. 66 wells were drilled with penetration of the productive horizon using polymer agents with overlapping of the production liner pipe. This technology enables maximum preservation of reservoir qualities of formations. Average flow from new wells was 36.7 tonnes per day, and 11 sidetracks were drilled. A project for further field development was designed and approved. The first stage of the gas utilization program was carried out in 2009 and a unit for complex gas preparation, with 150 million cubic meters annual capacity, was put into operation.

The Company's share in production from the **KarakudukMunai** project in **Kazakhstan** grew by

12.3% to 714,000 tonnes. A central oil preparation unit with 1.8 million tonnes annual capacity was brought into operation during the reporting year, as well as 33 new production wells with average daily flow rates of 20.8 tonnes. Pilot test work was also carried out on large-scale hydrofracturing of formations: two operations were executed and gave average increase of flow by 58 tonnes per day using a free-flow production method.

Intensive development work continued at the **North Buzachi** field in **Kazakhstan**, where LUKOIL's share of production grew by 11.9% to 479,000 tonnes, and 130 new production wells were commissioned giving average daily flows of 10.6 tonnes. Work began on drilling of horizontal wells, technological scheme for gas utilization was designed and approved, and gas utilization program was implemented. The program for expansion of capacity of the oil preparation and pumping facility to 40,000 barrels per day was completed.

A total of 8 new production wells with average daily flow rates of 44.4 tonnes were brought into operation at the **Alibekmola and Kozhasai** fields (the **Kazakhoil Aktobe** project in **Kazakhstan**). The Group share in production at the fields was 234,000 tonnes, which is 23.2% more than in 2008. A geological and hydrodynamic models of the Alibekmola field were created in the reporting year, and recommendations were prepared for further development of the field. A contractor was chosen for construction of gas utilization facilities as part of the program for gas utilization. The project is in the planning stage now and should be completed by June 1, 2011.

Production in the **Shakh Deniz** project in **Azerbaijan**, which was launched in December 2006, declined by 2% in 2009 following rapid growth in 2007–2008, due to limited demand from Azerbaijani and Turkish customers. The Group share in gas condensate output was 139,000 tonnes, compared with 147,000 tonnes in 2008. A new well was completed and launched, giving daily flows of 1,450 tonnes of condensate and 6.2 million cubic meters of natural gas, supporting future growth of output in the project.

The Company's share of gas condensate production at the **Khauzak-Shady** area in Uzbekistan (developed as part of the **Kandym** – **Khauzak** – **Shady** project), which was commissioned in 2007, remained unchanged from 2008 at 12,000 tonnes. A further 5 production wells were commissioned in the course of the year. An integrated health, safety and environment system was installed at the field in 2009 and certified in compliance with the ISO 14001 international standard and the OHSAS 18001 specification.

Production at the **South-West Gissar** project in **Uzbekistan**, acquired in 2008, rose by over 5 times to 38,000 tonnes (the Group share). A further 12 production wells were put into operation in the reporting year and their average daily flow rates were 22.7 tonnes.

Substantial increase of output (+68.1%) was obtained in **Egypt** as part of the **Meleiha** project thanks to efficient drilling and commissioning of 18 new production wells with average daily flows of 67.6 tonnes. One new production well was launched in the Egyptian **WEEM** project and gave average daily flow of 53.6 tonnes. A sidetrack was also drilled at one well in order to maintain production efficiency. LUKOIL's share in production as part of the Egyptian projects rose by 30% compared with 2008 to a level of 247,000 tonnes.

The West Qurna-2 Project in Iraq

In 2009 a Consortium of LUKOIL and the Norwegian company Statoil won a tendering competition for rights to develop the West Qurna-2 field. The field is one of the largest in the world, which are not currently being developed, and is located in the southern Iraq, 65 km north-west of the large port city of Basrah.

Recoverable reserves at the field are close to 13 billion barrels. The main productive horizons are Mishrif, Yamamah, Hasib, Maudud, and Zubair. More than 90% of reserves are concentrated in Mishrif and Yamamah reservoirs. The field was discovered in 1973. Geological exploration (2D seismic and drilling of exploration wells) was carried out by Soviet geologists and service organizations.

Project History

The Company initially obtained a 68.5% share in the project through a production sharing agreement, which was signed in 1997. However, commercial development of the field was not possible at that time due to sanctions, which the UN had imposed on Iraq. Subsequently, after the conflict between the USA and Iraq, LUKOIL entered talks with the new Iraqi government about commencement of the project.

In 2009 LUKOIL and Statoil presented the best tender offerings and won field development rights at West Qurna-2. The remuneration fee per barrel will be $1.15 at a daily production level of 1.8 million barrels. In January 2010 the President of LUKOIL, Vagit Alekperov, signed a service contract for development and production at West Qurna-2, and the contract was ratified by the Iraqi Cabinet of Ministers.

Features of the Project

The contract is for 20 years with the possibility of 5-year extension. The contract parties are the Iraqi state oil company, South Oil Company, and the Contractors Consortium consisting of North Oil Company (an Iraqi state company, 25%), LUKOIL (56.25%) and Norwegian Statoil (18.75%).

The agreement calls for drilling to begin at West Qurna-2 in 2011. Within three years from the date of approval of the Initial Development Plan the Consortium must carry out a specified minimum geological exploration program, consisting of 450 km^2 of 3D seismic, and drilling of 2 appraisal wells to the Najmah formation and of one exploration well to the Khuff formation.

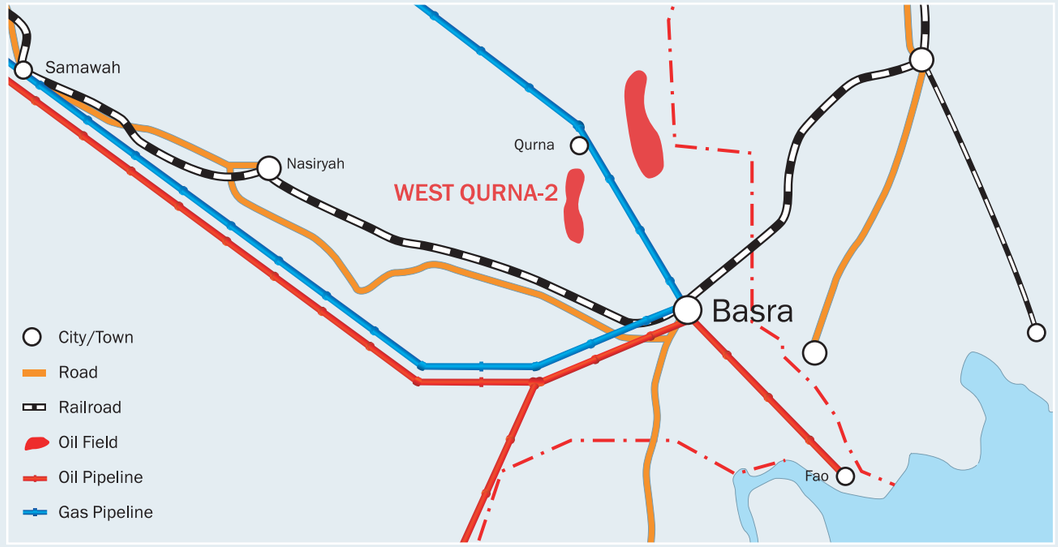
Production should begin at the end of 2012 at a minimum daily rate of 120,000 barrels. Target production level of 1.8 million barrels per day is to be achieved in 2017. The field is to be developed using over 500 wells, of which 120 will be injection wells.

According to preliminary estimates, investments by LUKOIL at West Qurna-2 in 2010 will be about $300 million and will total $4.5 billion dollars over the next 4–5 years.

The mechanism for return of investments will be based on distinction of two oil streams in the project: one of them owned and sold by the Iraqi marketing company, SOMO, and the other transferred to ownership of the Consortium as profit oil. Profit oil can be substituted by cash payment. It is seen as reasonable that costs will be reimbursed in the form of profit oil, intended for sale.

Pricing of export oil will be based on a market principle using FOB at point of delivery.

PROJECT GEOGRAPHICAL POSITION



«We have continued to fight for the Iraqi project over a number of years, delivering on the promise, made by us to shareholders. Today we have won a well-earned victory and intend to carry out, together with our Norwegian partners, all of the obligations, which we have assumed for development of the West Qurna-2 field in the interests of the Iraqi people and our shareholders. This project has strategic importance for our Company.»

VAGIT ALEKPEROV
President of LUKOIL

KEY FACTS ABOUT IRAQ:

- Iraq is a federal parliamentary republic, based on consensus between the three main ethno-religious communities, which constitute the Iraqi people: Shiite Arabs, Sunni Arabs and Kurds.
- The armed conflict, which began in March 2003, brought an end to the rule of Saddam Hussein. The country's economy was destroyed in the course of the conflict.
- Export of hydrocarbons accounts for 95% of central government budget revenues.
- The Iraqi state oil companies, North Oil Company (NOC) and South Oil Company (SOC), have a monopoly right to develop oil fields in the country.
- Iraq's proved oil reserves are 115 billion barrels (3rd largest in the world after Saudi Arabia and Iran).
- Current oil production is 2.5 million barrels per day.
- Less than a third of the country's 80 explored oil fields are in development.
- Combined peak production of fields allocated by auction in 2009 is about 10 million barrels per day.