INVITATION TO JOINT VENTURE IN LAKKI EXPLORATION BLOCK, KHYBER PAKHTUNKHWAS, PAKISTAN.

KHYBER PAKHTUNKHWAS OIL & GAS COMPANY LIMITED
(KPOGCL)

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Objective

KPOGCL, as an operator invites international and national E&P companies to farm-in upto 20% working interest in the Lakki Block (3270-9) situated in high prospectivity areas of Khyber Pakhtunkhwa, located in North Western Pakistan. This petroleum concession block is situated just south of Tal Block, which has been rated as one of the high 1P.

Asset Highlights

1. Situated adjacent to the proven oil basin of Pakistan i.e. Kohat basin which is contributing over 50% of oil to the overall country daily production.
2. Favorable royalty and concession terms from a ministry encouraging international investment.
3. Daily production of Oil is 49000 BOP/day, 380 MMCFD of Gas and 390 TPD of LPG at Khyber Pakhtunkhwa.
4. Recoverable reserves of Nashpa and Tal Blocks are 189.617 million barrels of Oil and 2043.349 BCF of Gas.
5. Oil and gas infrastructure in place and a new refinery, capable of handling 50,000 barrels of oil per day, to be built in the area in 2016.
6. KPOGCL being a Provincial Holding Company will facilitate the Exploration and Production activities whether technical or non-technical at every stage.
7. Khyber Pakhtunkhwa possess rich Oil/Gas resources but due to the security reasons in past, E&P companies hesitate to work here. With the Establishment of (KPOGCL), exploration companies will be guaranteed with fool proof security and will be facilitated with the logistics support.
8. Overall success rate is 1:2.96
9. Khyber Pakhtunkhwa Province offers low risk opportunity for Oil and Gas exploration coupled with 30% IRR in the region.

10. Over 15% of Gas & 25% of LPG are produced by Khyber Pakhtunkhwa alone.

11. Gas well-head price in Khyber Pakhtunkhwa is set at US$ 6.60 per million BTU at US$110/BBL.

Oil / Gas Reserves in Southern Districts of Khyber Pakhtunkhwa

The southern districts of Khyber Pakhtunkhwa province possess significant Oil/Gas reserves (Table-1 & 2) which form an integral part of economy of Pakistan. KPOGCL is aiming to explore the underexplored areas of Khyber Pakhtunkhwa especially the southern parts as much of these areas are not fully explored in terms of Oil/Gas.

Table-1(Oil reserve of Nashpa and Tal Blocks, as of June 30th 2014 (Millions of Barrels))

<table>
<thead>
<tr>
<th>OFF-SET FIELD</th>
<th>DISCOVERY DATE</th>
<th>ORIGINAL RECOVERABLE</th>
<th>CUMULATIVE PRODUCTION</th>
<th>REMAINING RECOVERABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chanda</td>
<td>1999</td>
<td>34.567</td>
<td>14.741</td>
<td>19.826</td>
</tr>
<tr>
<td>Nashpa</td>
<td>2009</td>
<td>57.610</td>
<td>17.080</td>
<td>40.530</td>
</tr>
<tr>
<td>Mela</td>
<td>2006</td>
<td>22.440</td>
<td>11.651</td>
<td>10.789</td>
</tr>
<tr>
<td>Makori</td>
<td>2005</td>
<td>11.000</td>
<td>4.000</td>
<td>7.000</td>
</tr>
<tr>
<td>Makori East</td>
<td>2011</td>
<td>43.000</td>
<td>5.000</td>
<td>38.000</td>
</tr>
<tr>
<td>Manzalai</td>
<td>2002</td>
<td>8.000</td>
<td>6.000</td>
<td>2.000</td>
</tr>
<tr>
<td>Maramzai</td>
<td>2009</td>
<td>10.000</td>
<td>3.000</td>
<td>7.000</td>
</tr>
<tr>
<td>Mamikhel</td>
<td>2008</td>
<td>3.000</td>
<td>2.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>189.617 MMB</td>
<td>63.472</td>
<td>126.145</td>
</tr>
</tbody>
</table>
**Table-2 (Gas reserve of Nashpa and Tal Blocks, as of June 30th 2014 (Billions of Cubic Feet)**

<table>
<thead>
<tr>
<th>OFF-SET FIELD</th>
<th>DISCOVERY DATE</th>
<th>ORIGINAL RECOVERABLE</th>
<th>CUMULATIVE PRODUCTION</th>
<th>REMAINING RECOVERABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chanda</td>
<td>1999</td>
<td>68.879</td>
<td>31.149</td>
<td>37.730</td>
</tr>
<tr>
<td>Nashpa</td>
<td>2009</td>
<td>277.470</td>
<td>60.954</td>
<td>216.516</td>
</tr>
<tr>
<td>Mela</td>
<td>2006</td>
<td>185.000</td>
<td>39.101</td>
<td>145.899</td>
</tr>
<tr>
<td>Makori</td>
<td>2005</td>
<td>221.000</td>
<td>52.000</td>
<td>169.000</td>
</tr>
<tr>
<td>Makori East</td>
<td>2011</td>
<td>278.000</td>
<td>20.000</td>
<td>258.000</td>
</tr>
<tr>
<td>Manzalai</td>
<td>2002</td>
<td>570.000</td>
<td>397.000</td>
<td>173.000</td>
</tr>
<tr>
<td>Maramzai</td>
<td>2009</td>
<td>363.000</td>
<td>72.000</td>
<td>291.000</td>
</tr>
<tr>
<td>Mamikhel</td>
<td>2008</td>
<td>80.000</td>
<td>47.000</td>
<td>33.000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>2043.349 BCF</strong></td>
<td><strong>719.204</strong></td>
<td><strong>1324.145</strong></td>
</tr>
</tbody>
</table>

*Source:* [www.ppisonline.com](http://www.ppisonline.com)

**Process**

KPOGCL is inviting parties to negotiate a joint venture or farm out agreement with the intention of G&G studies and drilling in 2016. KPOGCL is looking for a Joint Venture Partner to assist in the funding of a 2D/3D Seismic program, drilling and engineering study and a 1-2 exploratory well program in the Lakki Block. Full program costs are estimated at US $ 100 Million.

For more information and to discuss terms, contact

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Introduction to Lakki Block

Proven and potentially viable plays at Kohat Basin range in age from Infra-Cambrian to Miocene rocks. Lakki Block (3270-9) is surrounded by Wali in the west, Karak North in the North, Latambar and Bannu West in the North West, Marwat Block in the south west and lies in Prospectivity Zone-I (Fig. 1). The Block has an area of 1084 sq.km and lies in Lakki Marwat, Karak and Bannu districts of Khyber Pakhtunkhwa province of Pakistan (Fig. 2).

Petroleum interest in this area was first stimulated by the oil seeps around the edges of the Salt Range and Bannu Trough. Based on surrounding discoveries in Kohat basin i.e. Chanda, Mela, Nashpa, Makori, Maramzai and Mamikhel etc. the block is considered to be prospective. Oil production from the adjacent and proven Nashpa oil field is currently producing over 20,000 bbls/day, while the Manzalai, Makori and Chanda oil fields similarly contributed to the oil bearing province that now produces the majority of the oil in Pakistan.

Fig. 1. Lakki Block and its surrounding Petroleum Concessions
Fig 2. Location Map of Lakki Block
Geologically, Lakki Block lies in Bannu Basin (BB), Upper Indus Basin, Pakistan. The Block is surrounded by Surghar-Shinghar Ranges in the northeast and Trans-Indus Ranges in the south.

It is located about 200 Kilometers from Peshawar towards south-southwest and 300 km southwest from capital city Islamabad. It can be easily approachable by a network of highways and metaled roads from District Peshawar, Bannu, Karak and Lakki Marwat where modern facilities are available due to the current boom of Oil and Gas discoveries in the nearby districts. In addition, many small roads, stream courses and fair weather tracks/paths connecting local villages provide a good chance to enter the block and sections from different views.

**History of the Block and Region**

The Province of Khyber Pakhtunkhwa has had a string of discoveries over the past 15 years starting in 1999 with the discovery of the Chanda oil field. The Manzala and Makori fields were discovered in 2002 and 2005 in the Tal Block north of Karak. These were followed by the discoveries of the Mela, Nashpa and Sheikhan fields in 2006, 2009 and 2010 respectively.

![Field Wise Oil Production in Khyber Pakhtunkhwa Since 2013](image)

Daily production of Oil in Barrels per day (BPD).
Lakki Block is positioned to the immediate south of the nearby TAL Block operated by MOL which is situated north of the city of Karak. To the South-East lies the Zindan Block, where Pakistan Petroleum Limited (PPL) will drill an exploratory well named “Lakki X-01” by September, 2015. To the north of the block are the equally successful discoveries at TAL and Nashpa Blocks, making the Lakki Block ideally situated and surrounded by discoveries. The first Nashpa discovery cemented the province’s status as the up and coming oil producing province of Pakistan.

As of March 31, 2015 an area of around 363,639 Km\(^2\) is under exploration for oil and gas throughout Pakistan out of which 34174.38 Km\(^2\) i.e. 9.4% of the total is the contribution of Khyber Pakhtunkhwa province. Eight companies are presently engaged in exploration and production activities at Khyber Pakhtunkhwa.

**Exploratory success of Pakistan**

Oil and Gas sector in Pakistan has seen remarkable growth since 1947. During the last 60 years, petroleum industry played a significant role in national development by making large indigenous gas discoveries. Average daily production of oil in Pakistan is 90,823.46 bbl and gas is 4,062,969.81 Million cubic feet mcf.

To date discoveries of more than 44 tcf of gas and 700 mmbl of oil have been made in Pakistan with major discoveries in the Indus River Basin and Baluchistan areas. Since the first major gas discovery at Sui in early 1950s, the Pakistan gas transmission and distribution infrastructure has
continuously been developed. Today 130,000 Km$^2$ of T&D pipelines span the entire length and breadth of the country offering ready access to new gas discoveries to feed the energy starved consumer market.

**Stratigraphy of the Block**

Lakki Block lies in Bannu Basin and is devoid of any surface Geology while some parts of the block are covered by recent alluvium. Platform rocks are expected to be present in sub-surface. Based on nearby wells, the stratigraphic column of the Block is given (Fig. 5). The figures (6-8) show the DEM-Model and the Elevation profile constructed along the western and central Portion of the Block.

![Stratigraphic Column of Lakki Block](image)

**Fig. 3.** Stratigraphic Column of adjacent wells laying in the vicinity of Lakki Block.
Fig. 4. Digital Elevation Model (DEM) of Lakki Block.

Fig. 5. Profile view of Eastern Portion of the Block Showing Elevation.
Petroleum system of the Block

Complete Petroleum system is present in the block consists of Source, Reservoir and Seal/Cap rocks in the area which is lies in Kohat-Potwar Basin.

Source Rocks

The Patala Formation (Paleocene) and Chichali Formation (Cretaceous) are the primary source rocks for the oil/gas both at Kohat and Potwar Basins. The oldest potential source rock is the Salt Range Formation. Datta and Jatta Gypsum may act as potential source rocks.

Reservoir Rocks

Reservoirs rocks include Lockhart, Datta, Lumshiwal, Sakessar and Kohat Formation.

Cap Rocks

Cap rocks includes Kuldana clays, Jatta Gypsum, Bahadur Khel and Panoba Shale etc.

Play Types

Principal play types in the Kohat-Potwar Basin are anticlinal structures, which are invariably faulted, mostly salt cored and at places asymmetrical to overturned (Fig. 9). In addition, pop-up structures, fault-blocks and triangle zones traps have also been encountered. Possibility of sub-
thrust plays in the footwalls of the major thrust faults of the Trans Indus ranges is also there, which needs to be confirmed through review of existing seismic data if available or acquisition of new seismic data. The existence of stratigraphic traps against the truncation of Eocene/Paleocene and Cretaceous below the Bannu Basin and Jurassic-Triassic rocks in the Marwat-Khisor ranges have also been validated on the basis of well and seismic data, which could provide suitable traps for hydrocarbon accumulation.

Fig. 7. Conceptual play model of the Kohat-Potwar Plateau (Pakistan Hydrocarbon habitat Report, 1988).

Prospectivity of the Block

The Himalayan foreland fold-thrust belt of Pakistan includes Kohat foreland fold-and thrust belt along with its associated frontal ranges that include Surghar-Shinghar, Marwat-Khisor, Bhittani and Manzai (Trans-Indus ranges), Northern Sulaiman Range and Bannu basin in South.
Till date, this area has experienced several significant discoveries of oil and gas within Kohat fold-thrust belt to the north and Bannu Basin in the south. These oil and gas discoveries have proved the presence of petroleum systems in the region and demands re-appraisal as still enough sedimentary area lies unexplored.

Critical review of the available data and literature about the region depicts that all the ingredients of a working petroleum system i.e. source, reservoir, trap/seal, timing and migration exist in the area. Structural and Stratigraphic traps may provide potential drillable prospects.

- Lies adjacent to Tal Block (rated as one of the high 1P)
- Falls in Prospectivity Zone-1
- Probability = 0.6 (source) × 0.7 (reservoir) × 0.5 (seal) × 0.6 (trap) = 0.126 = 12.6%

<table>
<thead>
<tr>
<th>Source</th>
<th>Reservoir</th>
<th>Seal</th>
<th>Trap</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="Image" alt="Rating" /></td>
<td><img src="Image" alt="Rating" /></td>
<td><img src="Image" alt="Rating" /></td>
<td><img src="Image" alt="Rating" /></td>
</tr>
</tbody>
</table>

**Project Economics**

The total revenue of Lakki Block is US $ 1236 Million, out of which Gas revenue is US $ 300 Million and Oil revenue is US $ 936 Million. The total Expenses which include Capital Expenditure (Capex) is US $ 100 Million, Operational Expenditure (Opex) is US $ 68 Million and Royalty is US $ 154 Million. The total expenses include Net Cash Flow US $ 508 Million, present value @ 10% is US $153 Million, present value @ 12.5% is US $ 114 Million and present value @ 15% is US $85 Million. The IRR is 33.3%.
### Project Economics

<table>
<thead>
<tr>
<th>Project Economics</th>
<th>Lakki Block (3270-9)</th>
<th>Million (MM)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas</td>
<td>US $MM</td>
<td>300</td>
</tr>
<tr>
<td>Oil</td>
<td>US $MM</td>
<td>936</td>
</tr>
<tr>
<td><strong>Expenses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capex</td>
<td>US $MM</td>
<td>100</td>
</tr>
<tr>
<td>Opex</td>
<td>US $MM</td>
<td>68</td>
</tr>
<tr>
<td>Royalty</td>
<td>US $MM</td>
<td>154</td>
</tr>
<tr>
<td>Tax</td>
<td>US $MM</td>
<td>405</td>
</tr>
<tr>
<td><strong>Total Expenses</strong></td>
<td>US $MM</td>
<td>727</td>
</tr>
<tr>
<td><strong>Cumulative Net Cash inflow</strong></td>
<td>US $MM</td>
<td>508</td>
</tr>
<tr>
<td><strong>Present value @ 10%</strong></td>
<td>US $MM</td>
<td>153</td>
</tr>
<tr>
<td><strong>Present value @ 12.5%</strong></td>
<td>US $MM</td>
<td>114</td>
</tr>
<tr>
<td><strong>Present value @ 15%</strong></td>
<td>US $MM</td>
<td>85</td>
</tr>
<tr>
<td><strong>IRR</strong></td>
<td></td>
<td><strong>33.3%</strong></td>
</tr>
<tr>
<td>Not including LPG</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Fiscal Terms

#### Economics

<table>
<thead>
<tr>
<th>Expected daily Production</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil</td>
<td>9000 Barrels /day</td>
</tr>
<tr>
<td>Gas</td>
<td>55 MMCF /day</td>
</tr>
</tbody>
</table>

#### Taxes

Tax on income will be payable at the rate of 40% of profit or gains in accordance with the Fifth Schedule of the Income Tax Ordinance, 2001, but there are deductions for capital expenditures and government interests in the play before these are paid.

#### Operating Costs

Operating costs in Pakistan are fairly low when compared with western countries. Trucking costs are estimated at US $3.75 per barrel, while oil treatment and processing is estimated at US $2.08 per barrel respectively. Local labor is available at a reasonable cost.
**Royalty Regime**

Royalty on petroleum is payable by the exploration and production companies to the Government at rate of twelve and a half percent of the wellhead value. It is payable to the Government on a monthly basis within a period not exceeding forty five days of the end of the month of production in question as per Rule 38(3) of the Pakistan Onshore Petroleum (Exploration and Production) Rules, 2013.

**Production Bonuses**

There are several production bonus payments as well. The first is US $600,000.00 for achieving commercial production followed by the following bonus schedule.

<table>
<thead>
<tr>
<th>Cumulative Production</th>
<th>Bonus $US</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 MMBOE</td>
<td>1.2 Million</td>
</tr>
<tr>
<td>60 MMBOE</td>
<td>2.0 Million</td>
</tr>
<tr>
<td>80 MMBOE</td>
<td>5.0 Million</td>
</tr>
<tr>
<td>100 MMBOE</td>
<td>7.0 Million</td>
</tr>
</tbody>
</table>

**Future of the Block**

Plan for a 50,000 Barrels/day refinery being built by PSO (Pakistan State Oil) has been released and it is expected to be completed in 2016 in nearby District Karak. This is an estimated US $ 800 Million project. This will mitigate the transport of crude oil out of Khyber Pakhtunkhwa for refining and will assist E&P Companies in refining purposes.

**Security**

Previously the hostile regulatory environment for investment, lack of available investment, precarious security situation in the province and lack of political will are some of the reasons behind the poor performance of oil and gas sector in Khyber Pakhtunkhwa. Owing to the needs of the province, the law and order situation in the province has been much improved following the North Waziristan Military Operation. Confidence level has increased for national and international oil companies. The fear factor has reduced considerably, thus a number of E&P companies are now working in Khyber Pakhtunkhwa.

Moreover, the Government of Khyber Pakhtunkhwa with the assistance of PSO is working on installing a 50,000 barrel Refinery in order to refine its indigenous crude oil which will create employment and encourage investment in the province.
KPOGCL is in close coordination with security and law enforcement agencies in the province. Now it is the responsibility of KPOGCL to provide security to all the E&P Companies working in Khyber Pakhtunkhwa for Oil & Gas Exploration.

KPOGCL is fully authorized in providing security, logistics to Oil Exploration and Service Companies working at Khyber Pakhtunkhwa. Currently, KPOGCL is providing security and logistics to OGDCL and MOL in Nashpa, Tal, Kohat and Baratai Blocks.

Well Costs
Currently wells in the area have been drilled at the cost of US $ 20-25 Million due to the complex Geology at Kohat Basin. KPOGCL estimates that by engaging in an expansive front-end engineering and geological study (estimated at US $ 1.0 Million) and by using advanced drilling technology (drill bits, mud weights, hole sizes, underbalanced techniques), the drilling and completion of a well could be reduced to by up to 20%.

Farm out opportunity
KPOGCL has designed the Lakki Block and is inviting both national and international E&P Companies interested in participating as joint venture with KPOGCL. Work Program is to begin in 2015 leading to drilling activities in 2016. Full exploration phased program costs is estimated at US$ 100 million.

KPOGCL Profile
Government of Khyber Pakhtunkhwa, being cognizant of Oil & Gas reserves, established Khyber Pakhtunkhwa Oil and Gas Company Limited (KPOGCL) - a landmark achievement of Government of Khyber Pakhtunkhwa. KPOGCL is not only entrusted with the responsibility of carrying out Oil & Gas Exploration and Production (E&P) activities itself, but also to allure more E&P Companies to do so by ensuring them with the requisite logistics, security and sharing of technological data thus literally acting to fast track Exploration & Production activities at Khyber Pakhtunkhwa. KPOGCL, while being actually Government of Khyber Pakhtunkhwa sponsored / patronized, thus can very conveniently act as an interface between the E&P Companies and all the other Government related agencies thereby actually performing the role of ‘One Window of Operations’. Under Pakistan Petroleum Policy 2012, KPOGCL is a “Provincial Holding
Company” (PHC) and it is in fact a facilitator to different national & international Oil Companies working at Khyber Pakhtunkhwa province.

The Company is an active member of Pakistan Petroleum Exploration & Production Companies Association (PPEPCA), Society of Petroleum Engineers (SPE) and Petroleum Institute of Pakistan (PIP). It is run by an independent Board of Directors, who are mostly experts from the private Sector with Raziuddin (Razi) as its CEO.

**Process**

KPOGCL will negotiate with parties on a case by case basis until a joint-venture agreement is established. Contact us to discuss terms & conditions.

To execute a Confidentiality Agreement (CA) and gain access to proprietary information, please send inquiries to razi.ceo@kpogcl.com.pk

Or by inquiries to

**Khyber Pakhtunkhwa Oil & Gas Company Limited**

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[www.kpogcl.com.pk](http://www.kpogcl.com.pk)
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