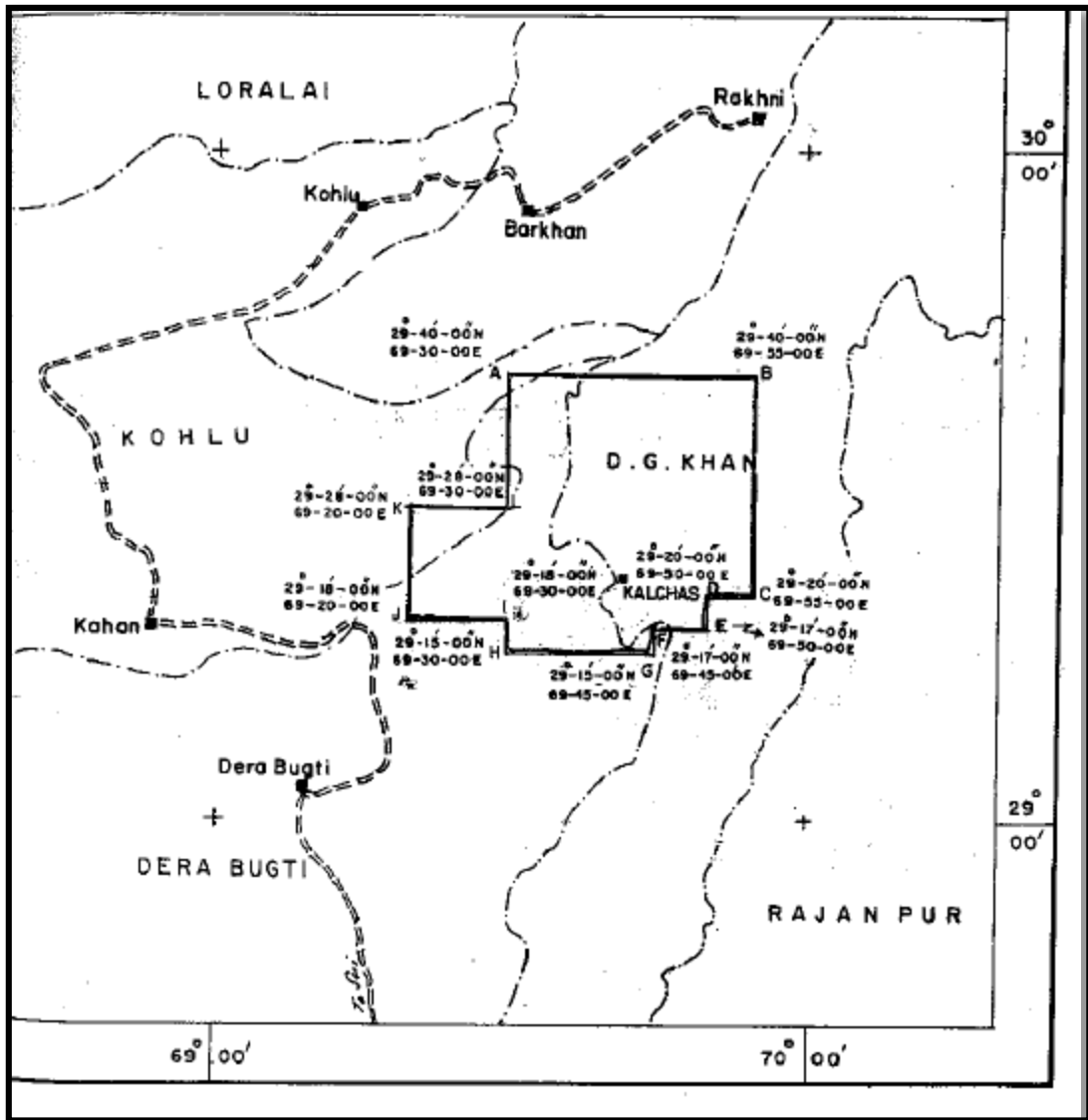


INTRODUCTION AND SCOPE OF WORK

**1- SCOPE OF WORK**

Kalchas E. L comprising an area of 2068.32 Sq. Kms, falls in Rajanpur (trible) district of the Punjab Province, Kohlu&Dera Bugti agencies of Baluchistan Province, Pakistan. Oil & Gas Development Company Limited (OGDCL) is the Operator of the block while Tullow Pakistan Development Ltd. (TPDL) Mari Petroleum Company Limited (MPCL) are the joint venture partners with working interests of 30% and 20% respectively. The area is bounded by latitudes and longitudes as shown below.



### **TAKING:**

<u>QINT A:-</u>	Latitude 29°-40'-00" N	Longitude 69°-30'-00" E
<u>QINT B:-</u>	Latitude 29°-40'-00" N	Longitude 69°-55'-00" E
<u>QINT C:-</u>	Latitude 29°-20'-00" N	Longitude 69°-55'-00" E
<u>QINT D:-</u>	Latitude 29°-20'-00" N	Longitude 69°-50'-00" E
<u>QINT E:-</u>	Latitude 29°-17'-00" N	Longitude 69°-50'-00" E
<u>QINT F:-</u>	Latitude 29°-17'-00" N	Longitude 69°-45'-00" E
<u>QINT G:-</u>	Latitude 29°-15'-00" N	Longitude 69°-45'-00" E
<u>QINT H:-</u>	Latitude 29°-15'-00" N	Longitude 69°-30'-00" E
<u>QINT I:-</u>	Latitude 29°-18'-00" N	Longitude 69°-30'-00" E
<u>QINT J:-</u>	Latitude 29°-18'-00" N	Longitude 69°-20'-00" E
<u>QINT K:-</u>	Latitude 29°-28'-00" N	Longitude 69°-20'-00" E
<u>QINT L:-</u>	Latitude 29°-28'-00" N	Longitude 69°-30'-00" E

From point L the boundary of the area runs due N back to the starting point-A.

## **GEOLOGICAL FRAMEWORK**

The Kalchas E.L area is a part of the Southern Sulaiman Range. This folds & thrust belt separates the relatively undeformed Indus Platform in the east and south from the highly deformed Ophiolite bearing Axial Belt to the west. The intensity of the deformation and the age of the exposed rocks generally increase towards the interior of the fold belt. The fold & thrust belt is genetically related to a major decollement, located in the Lower – Middle Jurassic shale and Carbonates. The Jurassic to Eocene rocks are thrust southwards along the basal detachment to develop large doubly plunging folds. Mostly Paleocene/Cretaceous rocks are exposed in the cores of the surface anticlines. In the surrounding areas, Eocene to Jurassic rocks have been penetrated in the wells. The Jandran Gas Field is located in its north while Pirkoh, Loti and Sui Gas Fields are in the south west of the area.

## **2- SCOUTING OF THE SURVEY AREA**

The Company requires that the Contractor is fully aware of all local conditions in relation to seismic operations. Contractor should conduct a detailed scouting trip prior to submission of technical & financial Bid proposal of the Project area to address, amongst others, the following issues:

1. Sufficient base station locations for the survey system, as required.
2. Hazard Maps.
3. Operational Risk Assessment
4. Baseline Environmental assessment of the survey area
5. Evaluate effects and disturbance of the operation on the local habitats.
6. Road Maps and location of airstrips
7. Location of proposed base camp
8. Local logistics and infrastructure.
9. Local legal frame work, in particular for labor and safety regulations.

10. Licensing permits and tax requirements,
11. Explosive magazines requirements etc.

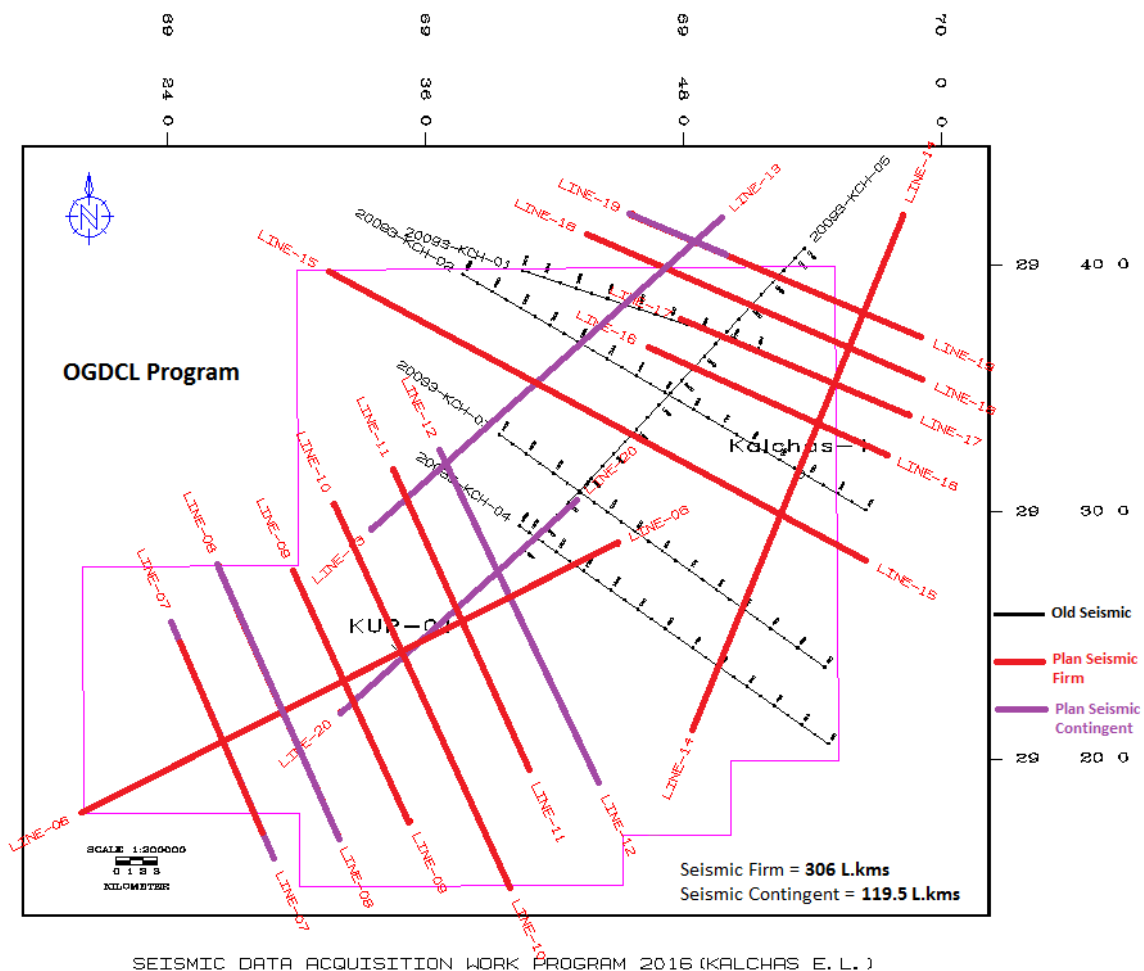
### 3- SEISMIC OBJECTIVES

The aim of the 2D seismic program is to upgrade the existing mapping after 2D seismic acquisition. This seismic reflection survey will help to further delineate the structural configurations and shall be used:

1. To enhance image on reservoir levels for better drilling locations and development of the field.
2. To Identify and map major and minor faults at shallow / deep exploration targets.
3. To seek reservoir characterization, Reservoir Monitoring.

### 4- SEISMIC WORK PLAN

The seismic work plan includes acquisition of 306(firm) L.km 2D data and 119.5 L.km contingents. The completion time of the project is 07 months after signing of the contract



### 5- SEISMIC WORK PROGRAM

The Detailed 2D seismic work program is given below.  
**Kalchas 2D (Coordinates in UTM zone-42)**

**Seismic work program 306(firm)L.km 2D data and119.5L.km contingent**

<b>Kalchas Work Program 2016 (All values in UTM zone-42)</b>					
<b>Line Name</b>	<b>Shotpoint</b>	<b>X</b>	<b>Y</b>	<b>L.kms</b>	<b>Remarks</b>
Line-06	1	532188.19	3241086.00		
Line-06	2	572370.44	3261174.00	44.92372	Firm
Line-07	1	538996.13	3255299.00		
Line-07	2	539808.00	3253432.00	2.035886	Contingent
Line-07	1	539808.00	3253432.00		
Line-07	2	545830.00	3239478.00	15.19798	Firm
Line-07	1	545830.00	3239478.00		
Line-07	2	546617.00	3237622.00	2.015963	Contingent
Line-08	1	542516.63	3259592.00		
Line-08	2	551446.00	3239414.00	22.06548	Contingent
Line-09	1	548097.88	3259163.00		
Line-09	2	556856.13	3240444.00	20.66659	Firm
Line-10	1	551102.00	3264133.00		
Line-10	2	564326.44	3235463.00	31.57301	Firm
Line-11	1	555568.13	3266720.00		
Line-11	2	565786.13	3244222.00	24.70966	Firm
Line-12	1	559045.69	3268265.00		
Line-12	2	570981.00	3243277.00	27.69209	Contingent
Line-13	1	580109.75	3285523.00		
Line-13	2	554108.44	3262341.00	34.83494	Contingent
Line-14	1	593807.00	3285812.00		
Line-14	2	578053.00	3246961.00	41.92361	Firm
Line-15	1	591035.56	3259975.00		
Line-15	2	550759.69	3281575.00	45.70236	Firm
Line-16	1	592490.25	3267840.00		
Line-16	2	574766.88	3275934.00	19.48412	Firm
Line-17	1	594182.44	3270929.00		
Line-17	2	577387.50	3277914.00	18.18956	Firm
Line-18	1	570197.50	3284368.00		
Line-18	2	595254.56	3273444.00	27.33478	Firm
Line-19	1	595134.31	3276651.00		
Line-19	2	579990.00	3283139.00	16.47557	Firm
Line-19	1	579990.00	3283139.00		
Line-19	2	573546.00	3285886.00	7.00508	Contingent
Line-20	1	569306.63	3264400.00		
Line-20	2	551618.38	3248602.00	23.71605	Contingent
				<b>425.546</b>	
Firm Program = 306 L.kms Contingent Program = 119.5 L.kms					

## **6- GENERAL TERMS AND CONDITONS**

Contractors will prepare their bid in two parts i.e. technical proposal (part-I) and financial proposal (part-II) strictly in line with the instructions given in the TOR.

The contractor shall be required to comply with and conduct all operations in accordance with all applicable laws and Government orders, rules and regulations of Pakistan and of the Political Sub-Division in which work is to be performed including, but not limited to income tax laws and regulations, and working hours laws, safety rules and any regulations pertaining to the conduct of seismic operations in Pakistan.

## **7. TECHNICAL PROPOSAL**

7.1 The Technical Proposal of bidder should include the following documents/information, as the contractor shall have to meet the minimum technical eligibility criteria as per details provided in Schedule B, C & D.

7.2 List and detail CV of Technical personnel's, Expatriate and local proposed to be included in basic operating unit as per Schedule C.

7.3 Technical detail and list of equipment and quantities as per Schedule C.

7.4 List of test and quality standards as detailed in Schedule D.

7.5 Complete/comprehensive schedule of work program

7.6 Detailed reconnaissance report (Scouting Report of the Survey area).

7.7 Documented Experience in similar type of survey areas.

7.8 A copy of their current safety manual, HSE Organization and sample of accident /incident reporting forms, together with details of their safety record for the past two years.

7.9 EHS exceptions e. g .Emergency Response Plan, Medical arrangements, camp clinics, field magazine and security etc.

7.10 Copy of all crew operational procedures for land and transition zone operations.

7.11 The Checklist at Annexure-I must be provided in the Technical proposal.

7.12 Technical Performa to be filled by the bidder in Annexure –II.

Note:-Technical Evaluation criteria are mentioned in Annexure –III.

## 8. FINANCIAL PROPOSAL

Bidder should quote their charges in the financial bid strictly in accordance with the Schedule E.

## SCHEDULE - B

### TECHNICAL SPECIFICATION AND PARAMETERS

#### 1- INTRODUCTION

The Company requires that all seismic equipment supplied for the survey to be in new or nearly new condition in particular the spread cable and geophone strings. Geophone receiver elements should not be more than two years old.

All equipment proposed for the survey will be subject to audit for technical and safety before acceptance by the Company.

Specifications of all seismic, equipment and positioning equipment should also be provided with the Bid Proposal.

#### 2- ACQUISITION PARAMETERS

Following are the tentative field parameters for 2D seismic data acquisition work to be tested in Kalchas2D Project.

#### 2D Acquisition Parameters

Receiver Parameters	
No of Channels	480
Spread	Symmetric Split
Station Interval	25 m
Source Interval	50 m
No of geophones	24 (02 strings)
Geophone array	Areal/linear
Group Base	23.92m
Geophone interval	1.04m
Fold	120
Record Length	6 sec
Sampling	2 m sec
Near Offset	+/- 37.5 m
Far offset	6012.5m

*Final parameters shall be selected after experimentation in field.*

**Source Parameters for 2D surveys:**

<b>A) Deep hole drilling</b>	
No. of holes	01
Hole Depth	18m, 20m, 24m, 27m
Charge size	4, 6, 8,10, 12 kg
<b>B) Pop Shot</b>	
No of holes	6,9,12
Hole Depth	1.8 m
Charge / hole	0.5 kg
<b>C) Vibroseis</b>	
No. of vibrators	04 + 01 spare
Peak force	minimum 60,000 lbs
Sweep length	10,12,14,16 sec
Sweep frequency	8-96 Hz (8-64, 8-72, 8-80, 10-60, 10-70, 10-80, 12-60, 12-72, 12-84, 12-96, 14-70, 14-84 Hz e.t.c) will be tested and finalized after experimentation.
No of sweeps	8,10,12,14, 16

*Final parameters shall be selected after experimentation in field.*