

## SCHEDULE - A

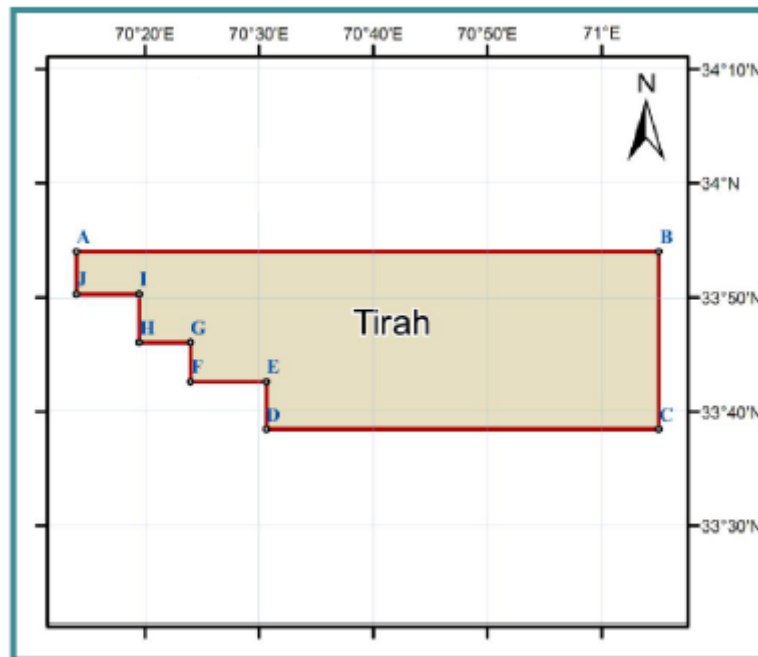
### INTRODUCTION AND SCOPE OF WORK

#### **1- SCOPE OF WORK**

Tirah E.L (3370-14) having an area of 1945 sq km is located in Kurrum, Khyber and Orakzai agencies of federally administrative Tribal Areas (FATA) in the west of Khyber Pukhtoon Khwa Province. The block falls in Prospectively Zone I.

Oil & Gas Development Company Limited (OGDCL) is the Operator of the block.

The area is bounded by latitudes and longitudes as shown below.



A	33	54	00.00	70	14	00.00
B	33	54	00.00	71	05	00.00
C	33	38	24.00	71	05	00.00
D	33	38	24.00	70	30	36.00
E	33	42	36.00	70	30	36.00
F	33	42	36.00	70	24	00.00
G	33	46	00.00	70	24	00.00
H	33	46	00.00	70	19	30.00
I	33	50	16.00	70	19	30.00
J	33	50	16.00	70	14	00.00
A	33	54	00.00	70	14	00.00

## **GEOLOGICAL FRAMEWORK**

Tectonically, the block area is located in Kalachitta-Parachinnar Fold Belt, a part of Himalayan Fold and Thrust Belt on the western margin of the Indian Plate. The structural trend in the area is NW-SE direction. The area is characterized by folds and faults related with the compression due to the Himalayan orogeny initiated in the Mid to Late Eocene times. It has also experienced the impacts of transpression dominated Kurram Fault running in southwest direction of the block.

Kalachitta-Parachinnar Fold Belt and Kohat Plateau are parts of foreland fold and thrust belts system on the western margin of the Indian Plate. The presence of basalt sills in the northwest of Kalachitta-Parachinnar Fold Belt and Kohat Plateau are considered a cause of the presence of partially metamorphosed sedimentary rocks of Jurassic and Cretaceous age (716-F, GSP, 1975).

Kurram Fault makes the western boundary of Kohat Plateau and joins Chamman fault. The Kalachitta-Parachinnar and Kohat Plateau contains several tectono-sedimentary cycles. Structural trend is NW SE in the western part of the block. Major N-S compression and associated E-W structures started in a Neogene foredeep basin during Miocene-Pliocene time.

### **STRATIGRAPHY**

Drilling history in the Kohat-Potwar shows that the rocks from Infra-Cambrian to recent age are present in 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.

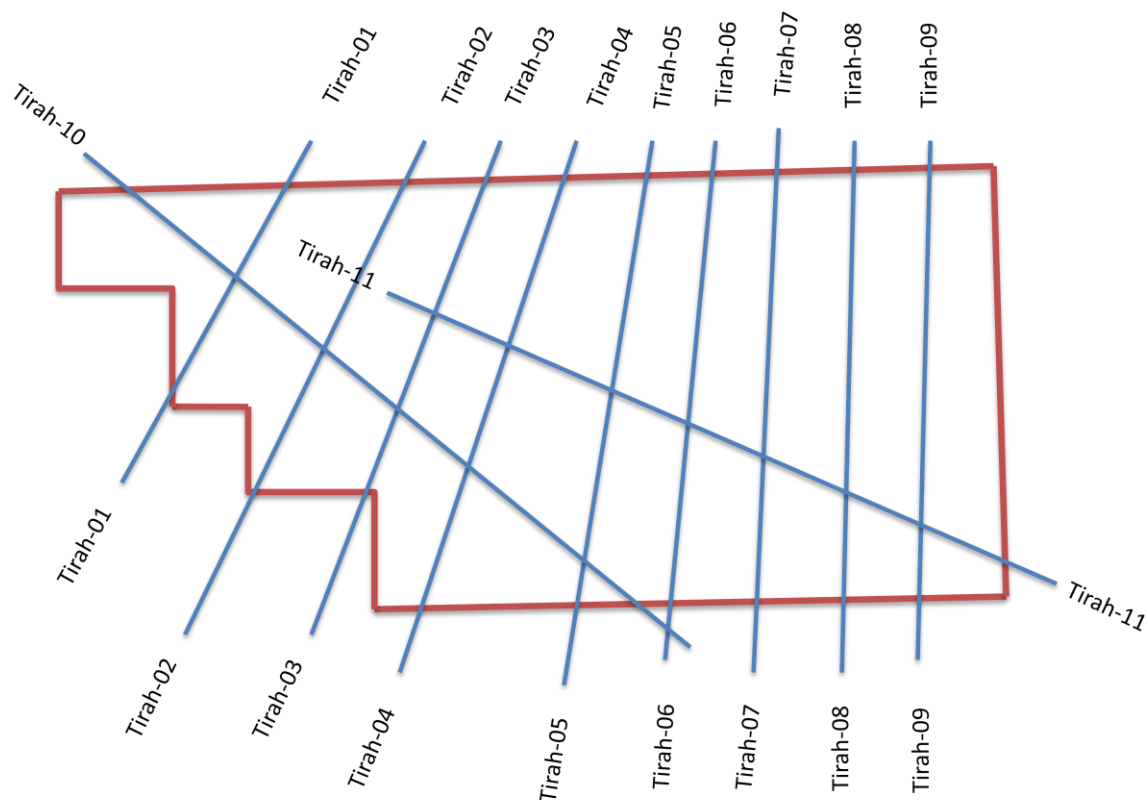
### 3- SEISMIC OBJECTIVES

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 435 Firm L.km and 200 contingent L.km 2D data. The completion time of the project is about 10 months after signing of the contract.



## 5- SEISMIC WORK PROGRAM

The Detailed 2D seismic work program is given below.

### Tirah 2D (Coordinates in Local Grid-I)

Seismic work program 435 Firm L.km and 200 contingent L.km 2D data in Local Grid-I

Line Name	Sp	X	Y	Length (Kms)
Tirah-01	101	2970610.36	1074674.09	28.45
Tirah-01	201	2954637.57	1051157.19	
Tirah-02	101	2979688.17	1074934.10	29.51
Tirah-02	201	2964546.19	1049633.78	
Tirah-03	101	2986518.44	1075174.04	36.82
Tirah-03	201	2970902.40	1041863.97	
Tirah-04	101	2993080.47	1075231.58	39.21
Tirah-04	201	2978480.02	1038875.30	
Tirah-05	101	2999014.63	1075103.61	37.76
Tirah-05	201	2991979.80	1038041.36	
Tirah-06	101	3004139.74	1074968.47	35.41
Tirah-06	201	3000550.59	1039768.81	
Tirah-07	101	3009793.06	1076096.26	36.55
Tirah-07	201	3007342.39	1039659.18	
Tirah-08	101	3016267.67	1075792.99	36.22
Tirah-08	201	3014889.91	1039636.76	
Tirah-09	101	3021845.66	1075212.06	35.29
Tirah-09	201	3021599.90	1039954.94	
Tirah-10	101	2951468.78	1073604.62	60.64
Tirah-10	201	3002461.78	1040886.75	
Tirah-11	101	2977003.33	1064413.59	59.24
Tirah-11	201	3033145.28	1045685.99	
Total L. kms				435.10

## 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 Tirah2D Project.**

#### **2D Acquisition Parameters**

<b>Receiver Parameters</b>	
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	15m, 18m, 21m, 24m, 27m, 30m
Charge size	4, 6, 8,10, 12 kg
<b>B) Pop Shot</b>	
No of holes	8,10,12
Hole Depth	1.8 m
Charge / hole	0.5 kg

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