Geophysical Exploration in Jaisalmer Basin -A Case History

o A. M. Awasthi
Ex General Manager, Oil and Natural Gas Corporation Limited.

Introduction

Jaisalmer basin is a major part of the Rajasthan shelf and occupies an area of about 50000 square kilometers. Geologically, the district of Jaisalmer, an erstwhile princely state, forms the entire basin.

Burmah Oil Company took interest in the first ever-exploratoly activity of the basin by beginning Torsion Balance survey in 1939. However, due to outbreak of 2nd World war, they terminated their efforts and did not resume work after the war. Later, Standard Vacuum Oil Company of USA, applied for prospecting license but Government of India did not grant the same to them.

In 1955, Government of India decided to carryout exploratory, activity for oil in Jaisalmer basin and advised Geological Survey of India (GSI) to carryout gravity magnetic survey. Accordingly, a field party of GSI, started gravity magnetic survey in March 1955.

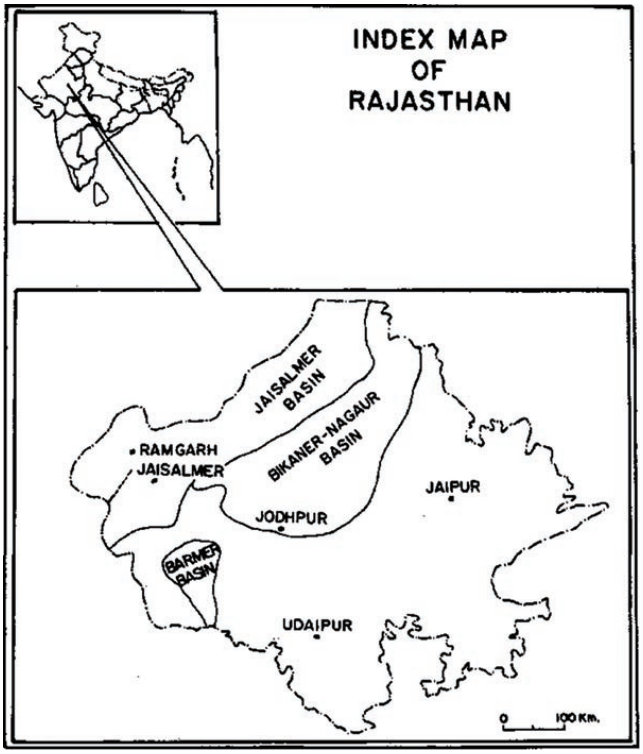
During March-April 1955, an Airborne magnetic survey was conducted under Colombo plan aided by Canadian Aero services Ltd. and Spartan Air Services Ltd., Ottawa, Canada, covering an area of about 45000 sq. kms.

In 1956, an independent Department of Government of India known as Oil & Natural Gas Directorate (ONGD) was formed primarily to explore Rajasthan basin. A field party led by author began the gravity-magnetic survey in Jaisalmer in December 1956, in continuation of the work done by GSI. The entire basin was covered by these surveys in subsequent years up to 1976.

In 1957, reconnaissance seismic surveys were started and were carried out for one field season. Since, the equipment was not adequate and suitable for seismic surveys in Jaisalmer region, the work was suspended.

With the formation of ONGD, Government of India had invited a team of Soviet Advisors for Oil Exploration in India. On their recommendation entire country rather then Jaisalmer basin was considered for oil exploration with equal emphasis and ONGD was converted into an autonomous body known as Oil & Natural Gas Commission under an act of Parliament in 1959.

Considering the adverse conditions of survey and logistics in Jaisalmer, Compagnie Generate De Geophysique (CGG) of France was invited under a contract, to carryout reflection and refraction seismic surveys in Jaisalmer basin in 1963. After the termination of the contract with CGG, ONGC continued seismic surveys in Jaisalmer basin and other parts of Rajasthan from 1968 onward. These



2.1 Geography and General Condition

surveys were continued up to 1998.

Jaisalmer, a princely state before independence is on the western border of Rajasthan. The aerial extent of the state, now district of Jaisalmer, is larger than the state of Kerala, At Jaisalmer, the only town in the district, there is a fort built by a Maharaja of the state. Entire old town in within the forest complex. There are a number of magnificent. buildings within the fort. The most important of these are known as "Patuan ki haveli" were built with intricate wooden and stone carvings and visitors from world over come to Jaisamler to see there. Before 1965, the nearest railhead was at Pokhran, a distance of about 100 Kms. from the town of Jaisalmer. There was a pebbly road linking Jaisalmer with Pokhran, which passed through sandy rocky wasteland. There are a few villages to the north, northwest and west of Jaisalmer. These are located on the fringe of the sand Dunes and are linked by camel tracks, which pass through rocky-waste, and sandy patch. In early days the only post and telegraph office was located at Jaisalmer. The last outpost of human habitation is at Sam to the west and Ramgarh to the northwest of Jaisalmer. Beyond Sam and Ramgarh up to the borders of the country, one could see only shifting sand and sand dunes, some of them rising to the height of 100 meters. The dunes commonly trend in the NNE-SSW direction and appear to have been controlled primarily by the prevailing winds.

The climate is uniformly dry over the entire year; rainfall is very scarce and may take place once in two to five years. The temperatures vary, over wide range, touching a

high of 45°C during summer and falling as low as 2°C during winter nights. Frequent dust seems during summer are common. Sometimes these dust or sand continues for more than two to three days when visibility is to a few meters.

In the early days, it used to take five hours to reach Jaisalmer from Pokhran by bus or jeep, the only mode of transport. Further from Jaisalmer to Sam or Ramgarh, it used to take six hours by jeep through the winding rocky and sandy Camel tracks. 1965, Indo-Pak war brought some improvement in the district. Rail line was laid between Pokhran and Jaisalmer and all weather surfaced roads were built linking Jaisalmer to Sam and Jaisalmer to Ramgarh and beyond up to Tanot and Kishangarh.

The main occupation of the inhabitants of the villages in the district is raising of cattle, goats and camels.

3.1 Geology of the basin

The occurrence of marine Tertiary rocks in Jaisalmer basin was first discovered by Blauford in 1876. Later, Allison of Barman Shell carried out geological mapping of Jaisalmer basin in 1938. Subsequently, geological survey of India initiated geological survey of the basin, which was continued by ONGC after its formation.

Tectonically the Jaisalmer basin constitutes part of the shelf portion of the Indus geosyncline. It is separated from Nagaur-Bikaner basins by Pokhran-Nachna high to the northwest and Banner basin by Banner-Birmama-Nagarpaikar high in the South. The Central path of the basin is traversed by pronounced NW-SE trending regional step faulted high zone from Jaisalmer to Mari. This high divides the basin into three parts. To the northeast lies the monoclinal Kishangarh sub-basin and to the south and south west shahgarh - Miajlar sub-basin.

The sedimentary cycle started with the deposition of Permian shallow marine Karanpur formation and tectonic evolution of Indus shelf was initiated. The Triassic and Early Jurassic phase indicated a major regression and deposition of predominantly fluvial to brackish deltaic elastics represented by Sumarwali and Lathi formations. During middle Jurassic a stable shelf came into existence and deposition of thick carbonate (over 1200 m) took place During Upper Jurassic, elastics of Baisakhi and Badasar formations were deposited under shallow marine conditions. With further regression, Pariwar formation of the lower Cretaceous age were deposited. The next phase of sedimentation started with the deposition of shallow marine Habur and marine Goru formations. During the Upper Cretaceous to the Lower Paleocene, a major uplift took place resulting in the erosion of cretaceous sequence along the axial high and basin in the erosion of Cretaceous sequence along the axial high and basin margin. In the Early Paleocene to Middle Eocene, transgression continued and deposition of Sanu, Khuiala and Bandah formations took place. Subsequently, the axial zone experienced intense tectonics causing folding, faulting and uplift.

On the basis of the data from outcrops and wells drilled in the basin a brief summary of the stratigraphy is given in table 1.

Table 1: Stragiraphy of Jaisalmer basin

Age	Formation	Lithology
Recent to Pliestocene	Sumar	Dune sands, gravels with ferruginous noduls.
Middle Eocene	Bandah	Foraminiferal limestone clayey at the base.
Lower Eocene	Khuila	Shales with limestone beds and Calcareous silts.
Paleocene	Sanu	friable sandstone with minor clays
Upper Cretaceous	Parh	marls and arenaceous limestone
	Gorup	Marls and silty shales
Lower Cretaceous	Hapur	marls and arenaceous limestone
	Pariwar	Sandstones and shales
Upper Jurassic	Badasar	Shales and sandstones Baisakhi
		Shales and Sandstones
Middle Jurassic	Jaisalmer	Limestone
Lower Jurassic	Lathi	Clay, Claystone and Shales
Triassic	Sumarwali	Sandstones and claystones.
Permian	Karampur	Shales and sandsstones.

4.1 Seismic Data Acquisition in Jaisalmer Basin

Initial Phase (1957-58)

4.11 Prior to the start of the seismic data acquisition in Jaisalmer basin, it was necessary to meet certain necessary conditions peculiar to the area, the foremost being the requirement of water for drilling shot holes. For this purpose, Rajasthan Ground Water Board (RGWB) was given contract to drill two tube-wells, one in Ramgarh and another in Khuiala, in the summer of 1957.

In the month of June 1957, the author was asked to inspect the performance of the tube-wells being drilled by RGWB. Accordingly, he left for Jodhpur and after obtaining information on the drilling locations and progress of drilling left for Khuiala village in the vicinity of which

2nd tube-well was under drilling. The drilling crew in the camp provided him a kabulpal for living. During day time living inside the tent was like living on a frying pan. However, nights are always pleasant in the desert areas. A submersible pump was installed after completion of the drilling tube-well and flow of water was measured. Then, author went to Ramgarh to inspect the flow of water form Ramgarh tube-well before returning to Dehradun. Here I will like to narrate an interesting instance. One day in the middle of the right, loud shouting and weeping was heard from the village. The commotion brought everyone out of his tents. But nobody ventured to go to the village. Next morning, when the laborers from the village were asked about the happenings of the night before, they told that the dacoits had demanded camels belonging to them. When villagers protested they threatened to take away the animals by force. Ultimately, the villagers surrendered the camels and the dacoits promised to return the camels within three days. Sure enough, they returned the camels as per the promise. The dacoits of Rajasthan are very particular for their words.

Before the start of work an explosives magazine entirely with stone slabs was built at Ramgarh. A field party led by the author moved to Jaisalmer in October 1957 and established a camp at Ramgarh. Seismic unit model 7000A manufactured by HTL and mounted on power wagon, 4 nos. of truck-mounted failing make drilling rigs and 4 nos. vacuum suction type water-tank trucks all imported from USA, were provided to the field party. Work could not be started till December 1957 due to delay in receipt of explosives.

At the outset extensive experimental work had to be conducted with limited resources at the disposal of the field party. Shooting in the holes up to 30 meters deep with 2 to 5 kg. Of explosives charge failed to give satisfactory result. Ultimately a minimum depth of 50 meters and charge of 10 kg was found optimum in Ramgarh area. The party had only 100 geophones at its disposal and hence only 4 geophones per trace were used, in the area of rock exposure. This was found quite satisfactory but proved completely inadequate in the sand covered area. Attempts were made to increase the number of geophones per trace from 6 to 8 by reducing the number of recording traces but no improvement could be noticed. The work was very slow due to drilling of shot holes. Sometimes as much as 8 to 10 tank-loads of water was consumed in drilling one shot-hole. East of Ramgarh air drilling of shot holes was traced which proved successful in chalky Eocene limestone area. The drilling rigs and water tanks were fitted with mud tyres, which were quite unsuitable for movement through sandy patch. The work of the field party was confined entirely in the area of Eocene and the Cretaceous exposures during the field season.

Due to inadequacy of the field equipment, the seismic surveys were suspended during the subsequent years.

4.12 Problems faced by early explorers

It will not be out of place to mention here the problems faced by early explorers in Rajasthan. Here water is a very scarce commodity. Field parties had to depend entirely for water on shallow village water well, which produced meagre quantity. Field party could collect just 250 gallons of water per day from these wells, which meant two buckets of water per person per day for drinking, bathing and cooking etc. Provisions, fuels and other consumables had to be procured from Jaisalmer every week by truck. Supply of vegetables or fruits were rare commodity. During spring and summer even potatoes were rarely available in Jaisalmer market. As far as spare parts of vehicles are concerned, these had to be procured from Jodhpur only. Snakes and scorpions were constant companions in the field camp. Sand below the carpet of the tent being cooler than outside, scorpions would hide there. Dust and sandstorms is a regular phenomenon but sometimes these continue for two to three days, which meant food without sprinkling of fair amount of sand was unavoidable.

Jaislmer being only post office in the whole district, Sending and receiving mails was possible only once a week. In the initial phase of seismic work, due to extremely saline nature of the drilling water, the vacuum filling water-tankers started leaking very often. The nearest welding facility was at Jodhpur which was too far. The party persuaded a welder from Jodhpur to open his shop at Jaisalmer.

4.13 First Phase of Contract Survey

In 1963, a contract was signed with Compagnie Generale De Geophysique (CGG) of France for seismic data acquisition in Jaisalmer basin. CGG brought desert worthy Dodge Power Wangons (USA make) and Berliet Trucks (French make), all fitted with sand tyres. Compressors and water tanks were mounted on Berliet trucks. The field part of the Company (CGG) started seismic data acquisition in 1963-64 field season. Initially three long refraction lines, two in the ESE-WMW and one NNE-SSW direction were shot. Continuous refraction profiling was carried out with spread length of 5750 meters and shots ranging from 30 kg. To 300 kg. Twelve geophones per trace were used. The refraction surveys brought out four to five markers. In the absence of reliable means of correlation, these markers were tentatively correlated with the various geological horizon as shown in the following table:

Markers	Velocity (Meter/Sec)	Geological correlation	Thickness (in meters)
I	2100-3300	Bandah Formation	0-500
II	3300-4000	Habur formation	100-1300
III	3200-6100	Jaisalmer formation	200-3000
IV	5400-6300	Granite	-
V	5800-6500	-	

The refraction survey, indicated a basin deepening towards, the northwest, southwest and northeast of Jaisalmer and prominent high zones of Bakhari Tibba and Manhera Tibba. Presence of a large depression in Shahgarh was also brought out.

After completion of refraction surveys CGG started reflection seismic survey form 19th July 1964. In the initial phase, extensive experimentation was carried out to find suitable field parameters from single hole to a rectangular pattern of 150 holes ranging in depth from 3 to 10 meters and 12 to 54 geophones per trace with lateral offset. Finally data acquisition was finalised with 700 meters lateral offset, multiple shallow holes 100 in numbers and 3 meters in depth in a box pattern of 90 meters by 90 meters, chare size 0.5 kg per hole and 36 to 48 geophone per trace. The geophones were laid along 6 to 8 lines parallel to the profile with 10 meters spacing between geophones and lines. A spread length of 420 meters was used. SIE, MS-15 magnetic recording unit was used initially and was subsequently replaced by PT-100 seismic unit. Truck mounted air compressors were used to drill the pattern of shallow holes.

Jaisalmer desert has variable thickness of sand cover over the subsurface rocks. In such an environment, the weathering thickness are quite large and rapidly changing. Since, shots were located sallow i.e. within 3 to 4 meters below the surface, it was absolutely necessary to determine weathering thickness along the seismic lines so that necessary correction for weathering variation can be applied. This was achieved by carrying out shallow refraction surveys along the seismic lines at an interval with control from uphole survey from deep holes.

CGG carried out reflection seismic survey up to January 1968 and covered a total of 1750 line kilometers with single fold coverage.

These surveys brought out three reflectors corresponding to the horizons within the Eocene, the Cretaceous and the Jurassic. The top of the Jurassic limestone is the most characteristics marker event, which can be followed over major part of the area. The Eocene reflector is mostly present in Tanot and Shahgrh areas. The seismic events within the Cretaceous events are not continuous and can be followed in some parts of the basin only. The seismic data brings out a prominent faulted arch known as Jaisalmer-Mari arch along which Sumarwali Talai, Bakri Tibba, Manhera Tibba and Ghotaru structural features are located. To the northeast of this arch a monoclinally dipping shelf known as Kishangarh shelf is present, while to the southwest there is a deep basin of Shahgarh.

First exploratory well was drilled over Kharator structrure towards the end of 1964 by French drilling team. Thereafter 14 more wells, at Sumarwali Talai, Vikharan Nai, Bakhai Tibba and Manhera Tibba were drilled in 1965.

4.14 Seismic exploration by ONGC Crews: during 1970 to 1976

After the termination of the contract with CGG in 1968, all the equipment brought by them was acquired and a field party of ONGC started reflection seismic survey in the basin from 1970-71 field season. The field parameters decided by French crew were continued for data acquisition. In the year 1971-1972, experimental broad side data acquisition with 1000 meters lateral offset and 70 meters trace interval was attempted.

During these years seismic investigations was conducted in Lunar-Bhuana, and Tanot-Ranau areas. Minor variations in the shot offset from 700 meters to 1000 meters perpendicular to the line, 100 holes, in a box pattern, trace interval 35 m to 70 meters, 36 to 48 geophones per trace with various geophone arrangements (i.e. geophones along 3 to 6 parallel lines, 10 meters between lines and 6 to 10 meters between geophones) were used.

Reflectors within the Upper Eocene within the Cretaceous and the Jaisalmer limestone (marker event) were mapped. Deeper events below Jaisalmer L.S. marker were recorded sporadically. However in Shahgarh area only the Eocene reflector could be mapped. The following structures were mapped during this period:

(a)	Lunar Structure	70-71
(b)	Sadewala and Tanot structures	72-73
(c)	Bhuana Structure	73-74

4.15 Seismic exploration by ONGC field crews during 1976 to 1981

For the fist time, CDP techniques was introduced for seismic data acquisition in Jaisalmer basin in 1976-77 field season with 6 fold multiplicity, shot offset of 360 to 450 meters, end-on spread of 2070m as well as 81 holes in a box pattern of 90 meters by 90 meters as well 80 x 80 meters (distance between holes 10 meters or 9 meters) and 36 geophones per trace along three lines 4 meters between lines and 6 meters between geophone was used. CDP technique brought improvement in data quality, however large offset was not suitable for shallow events.

During 1977-78, field 12 CDP data acquisition with conventional explosive as well as with seiscord as energy source was attempted. For this purpose considerable experimental work was conducted with various lengths and pattern of seiscord layout. Finally, 400 meters length of seiscord buried along two furrows 1.5 feet deep and 100 meters length separated by 40 meters were used. Two cords of 100 meters length each were buried along the furrows.

The frequency of events with seiscord was lower than conventional system. As far shallow events up to 1.0 sec were concerned, the data with explosive and seiscord was somewhat comparable but deeper events were prominent only with explosives data.

During 1978-79, fresh experimentation, using three furrows as well as two furrows 150 meters in length was carried out. No marked improvement was noticed. It was concluded that siescord as source of energy is not suitable in Jaisalmer area.

During 79-80 and 80-81, seismic data acquisition with 12-fold multiplicity was continued with minor variation in field parameters. During these years (1976-81), seismic data acquisition was confined to Kishangarh-Tanot-Ranau area.

The field parties faced major problems in the repair of vehicles procured from CGG. Since obsolescence being very fast, imported spares were not available. Considerable efforts were made to get the spare parts fabricated within the country to keep the vehicles running.

Buana-1, deep well was drilled to the depth of 3705 meters in 1976. The well ended in the basement after penetrating entire sedimentary section.

4.16 Seismic exploration by ONGC Crews from 1981 to Feb. 1987

Thirty Ardco Buggies were imported from America for work in desert. Instrument van, Kirloskar Compressor, water-tanks and explosive van for two crews were mounted on these buggies. 48 channels DFS-V units replaced old seismographs.

Two fully equipped field parties carried seismic data acquisition with 12-fold multiplicity in Ghotaru-Shahgarh area in 1981-82 field season. Minor variation of in-line shot offset (180 to 270 meters) with 60 to 90 meters group interval, box pattern of 81 to 100 holes and 32 to 48 geophones per trace were the field parameters. There was a definite improvement in data quality over the 6-fold multiplicity. These two parties mapped Ghotaru and Lang structures and many faults were delineated in the Ghotaru structure.

Drilling on Ghotaru structure was started in 1982 and the first well was drilled to a depth of 3548 meters. In this well a number of gas shows were met.

During the following field season (1982-83) two field parties confined their work to the detailing of Kharatar and Sadewala structural features with 12 fold multiplicity with the field parameters established earlier. Additionally, one party carried out experimentation with 24-fold multiplicity along one line. For smooth movement bulldozers cleared seismic lines. During 1983-84, these parties started seismic data acquisition with 24-fold multiplicity in the northwest and southwest of Ghotaru, keeping other field parameter more or less same as in the previous years.

During 1984-85, two field parties were deployed for detailed seismic surveys with 24-fold multiplicity with split spread arrangement, north and east of Ghotaru. All data acquisition parameter remained same as pervious years.

During 1985-86 two field parties were deployed in shahgarh - Ghotaru area for 24 -fold CDP data acquisition. One of these parties carried out 24 fold CDP seismic data acquisition with 96 channels DFS-V unit using asymmetrical split spread (36 channels on one side and 60 channels on the other side of shot) in order to target shallow as well as deeper seismic events.

These parties continued data acquisition after summer break up to Feb 1987 using conventional explosives source of energy with minor variation of parameters.

4.17 Second Phase of Contract Survey - 1985 (Vibroseis)

ONGC awarded a contract to M/s Companie Generale De Geophysique, (CGG) to carryout seismic surveys in Shahgarh sub-basin (PEL area of ONGC) using vibrators as energy source. CGG brought five Mertz-14/613 model vibrators mounted on off-road buggies (manufactured by Mertz Company of USA) and 96 channel recording seismograph SN-358 with CS 2502 real time summator correlator of Rench make. For ground movement CGG brought ten Magrius trucks (French make) and eight Toyota pick-ups (Japanese make) all fitted with sand tyres. They also brought two Komatsu bulldozers to clear vibrator lines. CGG started work in Jan 1985. Before regular production work, CGG conducted extensive experimental work for optimum source and receiver parameters. First of all, drive of vibrators was decided before noise study. Thereafter stacking set, sweep frequency band test, sweep time test, vibro pattern, and geophone pattern test were carried out. Back on these tests, 48 fold seismic data acquisition was carried out with following source and receiver parameters:

In line array of four vibrators with 12 meters pad-to-pad spacing, two sweeps per vibrator position and positions per V.P. (Total sweeps V.P. - 48) sweep length 12 sees and sweeps frequency 10-65 Hz.

Spread with 50 meters trace interval and 4-geophone/trace arranged in a box pattern - 16 geophones along three parallel lines 4m apart. VP offset was kept symmetrically 250 meters on either size of the spread.

Weathering control was provided by carrying out

refraction profiling along all seismic lines at an interval of one KM as a routine. CGG covered major part of Shahgarh sub-basin with reconnaissance to semi-detailed seismic surveys with a total coverage of 3888 ground line kilometers.

4.18 Seismic exploration using vibratory source by ONGC crews from 1987 to 1992

ONGC acquired the entire lot of seismic equipment and desert worthy vehicles from CGG and raised its own crew, Simultaneously another field crew was raised by procuring four buggy mounted Prakla vibrators VVCA/E from Germany and 96 channel seismic unit SN-358 along with real time stacker correlator CS-2502 from France. Four wheels drive short chassis TMB trucks along with jeeps as transport vehicles were provided. Also two bulldozers were provided to line clearing. Both the field crews started seismic data acquisition with 48 fold multiplicity in Feb. 1987 with vibroseis technique. One crew was deployed in Ghotaru - Shahgarh area and another in Manhera-Tibba-Kharatar area. Bunkhouses were provided to both the crews as living quarters. The field parameters were similar on what used by CGG except that the crew operating in Manhera used asymmetrical split spread of 24 channels on one side and 72 channels on the other side of the V.P.

Both the field crews continued seismic data acquisition with 48-fold multiplicity during subsequent field seasons in Shahgarh subbasin extending upto Miajlar with semi-detailed to detailed grid. For detailed survey in Manhera Tibba and Sattarwali Talai areas, trace interval was reduced to 15 to 30 meters. These two crews operated up to the field season 1991-92. At the end of this period, crew using seismic equipment and vibrators procured from CGG suspended its operations.

4.19 Seismic exploration using vibratory source by ONGC field crew form 1992-98

Field crew equipped with Prakla vibrators continued seismic data acquisition with 48 fold multiplicity from 1992-93 field season up to the field season 1997-98. In Miajlor, oagwala-Sadewala and east of Kharatar areas with minor variation in data acquisition parameters. During 1996-97 the vibrator fleet was augmented by providing two vibrators from western Region. In 1997, an advanced model of sercel seismigraph SN-388 with LD-488 B recorder and printer was provided to the field crew. Finally data acquisition work was terminated in 1998. ONGC field crews acquired a total of 2590 GLK single fold and 13850 GLK of multi-fold data in Jaisalmer basin.

Seismic data acquisition with high multiplicity (48-fold) in Shahgarh and Miajlar sub-basins showed considerable improvement in data quality. In addition to two prominent reflectors top of Jaisalmer (reflector) and the Eocene reflector to the base of Bandah formation, a prominent event about 0.7 secs. Below J-reflector has been prepared in Miajlar sub-basin. Events are also seen in the Cretaceous section, which show limited consistency. The sediments below tertiary show faulting but the sedimentary thickness between Eocene and J-reflector is more or less uniform over major part of the area. Faults though active during the Jurassic and the Cretaceous age had no impact on Tertiary sedimentation. The sedimentary thickness increased considerably towards the Shahgarh depression.

In addition of detailing already known structures like Manhera Tibba, Ghotaru, Sumarwali, Talai, Lnag and others, a few new structural Lunar, Dangewala, Sattarwali, Miajlar and Bankia though small extent were discovered.

In all right wells were drilled over Ghotaru structure and eight over Tibba structure. In addition, exploratory wells were drilled Sadewala (1983) Lang (1990), Bankia (1990), Dangewala(1991), Sattarwali (1991), Lunar (1993). Miajlar (1994), and Logewala (1999). Thus, a total of 63 wells were drilled by ONGC within area of Jaisalmer basin and discovered two minor gas fields of Manhera Tibba and Ghotaru. The inplace reserve of gas in these two fields in 2.44 BCM.

5.1 Data acquisition by Oil India Ltd. in the northern part of Jaisalmer basin

In the year 1983, PEL of the northeastern part of Jaisalmer basin was awarded to Oil India Ltd (OIL). OIL deployed two contract crews equipped with vibrators from CGG to cover Tanot-Kishangarh-Lathi area during 1985 to 1987 to carry our seismic data acquisition with 48 foid multiplicity. Thereafter OIL drilled two exploratory wells one in Tanot and other in Bhagewala. The exploratory well at Bhagewala indicated presence of very heavy oil like Tar.

Acknowledgement

Author is grateful to Shri A.G. Pramanik, who prompted him to write this article for inclusion in the magazine of the Society of Petroleum Geophysicists. The Assistance rendered by Shri J.P Paliwal during preparation of this article is gratefully acknowledged. Finally, author would like to thank Mr. Jagdish Pathak for typing of this article.

Reference

Unpublished Reports of the field parties.

Agoes IV. B. 1956 Report on Aeromagnetic Survey, in western Rajasthan.

A.K. 1983 Geological Evolution and hydrocarbon prospects of Rajasthan.

Narayanan K 1964 Stratigraphy of Rajasthan Shelf.