STRUCTURAL INTERPRETATION OF BALKASSAR ANTICLINE POTWAR SUB BASIN, PAKISTAN BASED ON 2-D SEISMIC DATA

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TABLE OF CONTENTS

CHAPTER # 4

Seismic data acquisition

CHAPTER # 5

Seismic data processing

CHAPTER # 6

Seismic velocities

CHAPTER # 7

Seismic data interpretation

Chapter # 8

ABSTRACT

Balkassar Oil Field discovered in 1945 is one of the oldest known Oil Fields of Pakistan. It lies in the Central Potwar on the southern flank of Soan Syncline. The already interpreted 2-D seismic data, consisting of seismic lines PBJ-04 and PBJ-09 is re-interpreted. This seismic survey was carried out in 1980 to explore the deeper potential of the sedimentary sequence i.e. Khewra Sandstone of Early Cambrian age. The surface geological information does not reflect the subsurface geometry of the Balkassar Anticline.

The major aim of interpretation is to reveal as clearly as possible the subsurface structure of the Balkassar Anticline and to infer the possibility of hydrocarbon occurrence in deeper horizons of the sedimentary sequence. The interpretation includes, the calculation of lateral and horizontal variation in seismic velocities and amplitudes that help in recognizing the structural and stratigrahic variations of the Balkassar Anticline, the construction of time contour map of top Eocene and preparation of depth sections along Seismic dip lines PBJ-04 and PBJ-05.

The Balkassar Structure is a long, northeast southwest trending double plunging anticline. The structure is bounded by tear and reverse faults. The northwestern flank of the structure is steeply dipping and is terminated by southeast dipping reverse fault. Estimated horizontal closure of Balkassar Anticline is 80 sq.km and the vertical closure is 365 meter. Two decollment surfaces are present, one in the Pre-Cambrian Salt, the other in Neogene Sediments. The compressional tectonic of the structure is obvious from the reverse faults that bound the plunge of the structure. The geoseismic section along PBJ-04 show a salt-cored Pop-Up structure, which is one of the most favorable structures for oil and gas accumulation. The well data of Balkassar Oxy # 1 was used to confirm the reflectors depth.