Seismic interpretation:

The purpose of interpretation is to obtain depth map (structural map) of the surveyed area. These maps are given to the geologist to locate:

1- Exploration wells.
2- Delaines (evaluation) wells.
3- Development wells.

Type of seismic maps:

1- Isochrones (Time) map.
2- Velocities map.
3- Depth map.

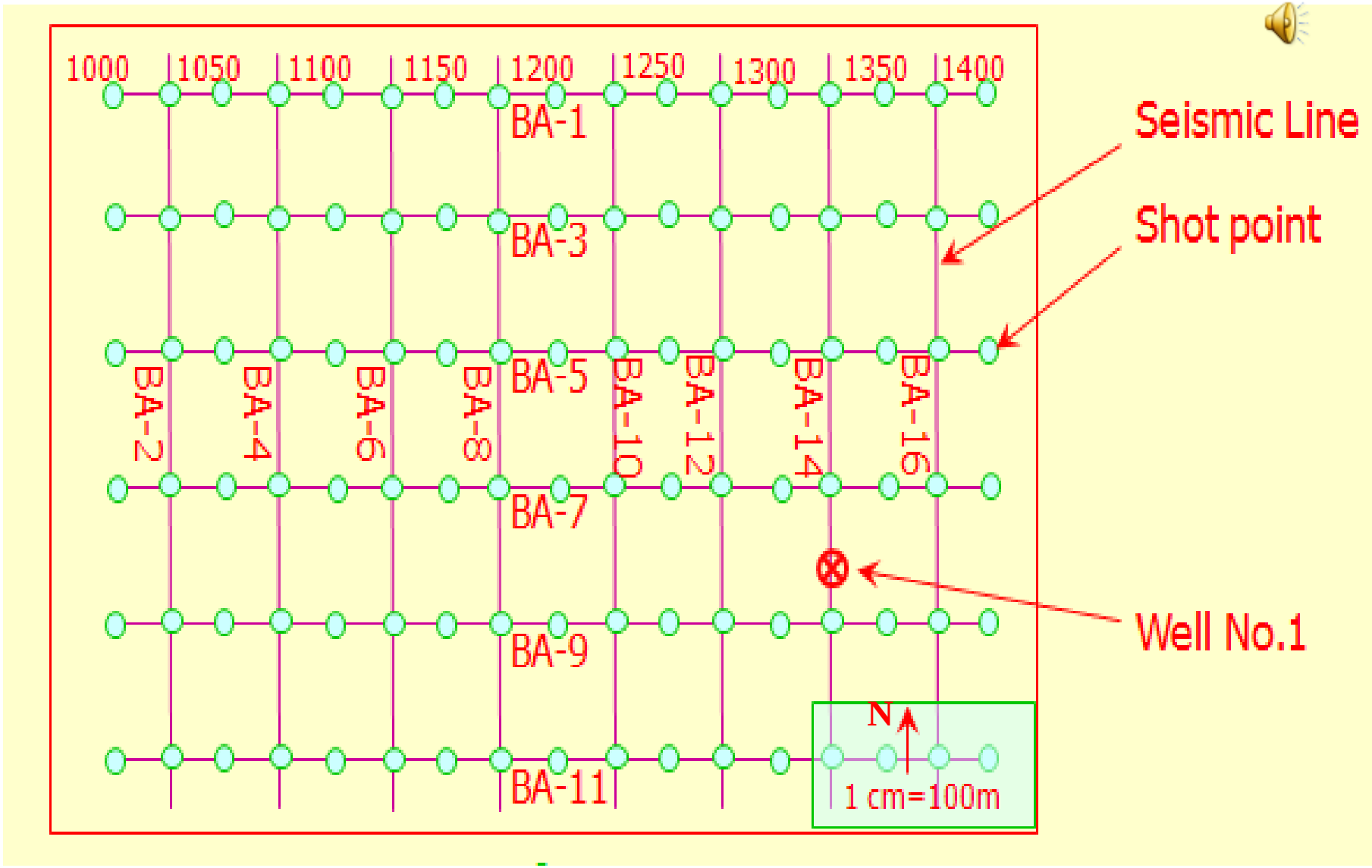
Construction of seismic maps:

The following tools are required

1- Base map.

It is a map consist the following elements:

a- Seismic lines.
b- Names and number of the seismic lines.
C- Shot point number.
d- Location of wells.
e- Scale and north symbol.



Base Map of Study Area

The direction of seismic lines depend on:

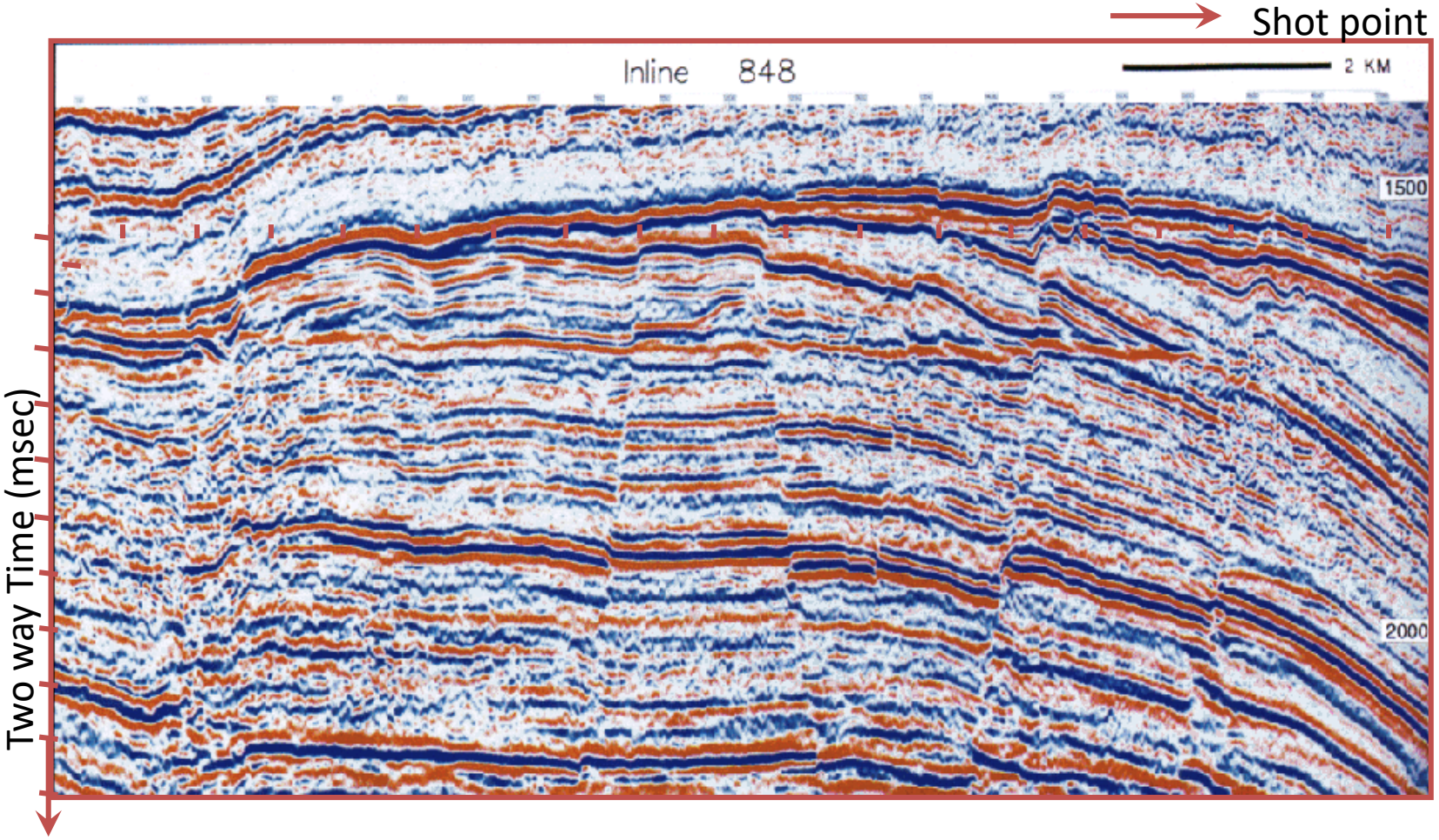
1- Strike and dip of the outcrops.
2- General trend of the structures.
3- General strike.

The following information must be known:

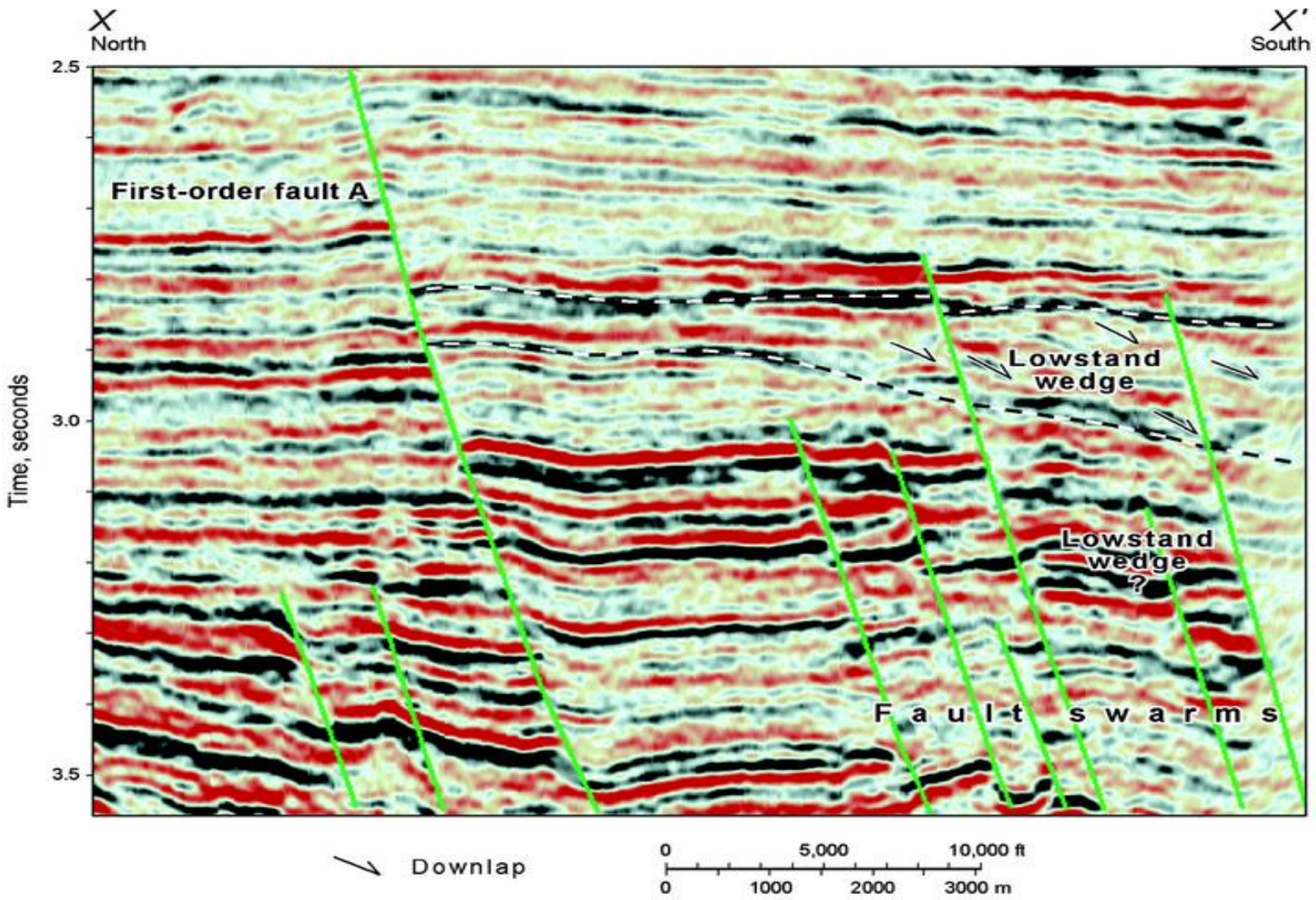
1- Whether the seismic lines from different survey.
2- Fold of coverage.
3- Energy source.
4- Elevation of datum plane.
5- Different processing operation.

2- Seismic sections.

It is a product of a final stage of data processing.

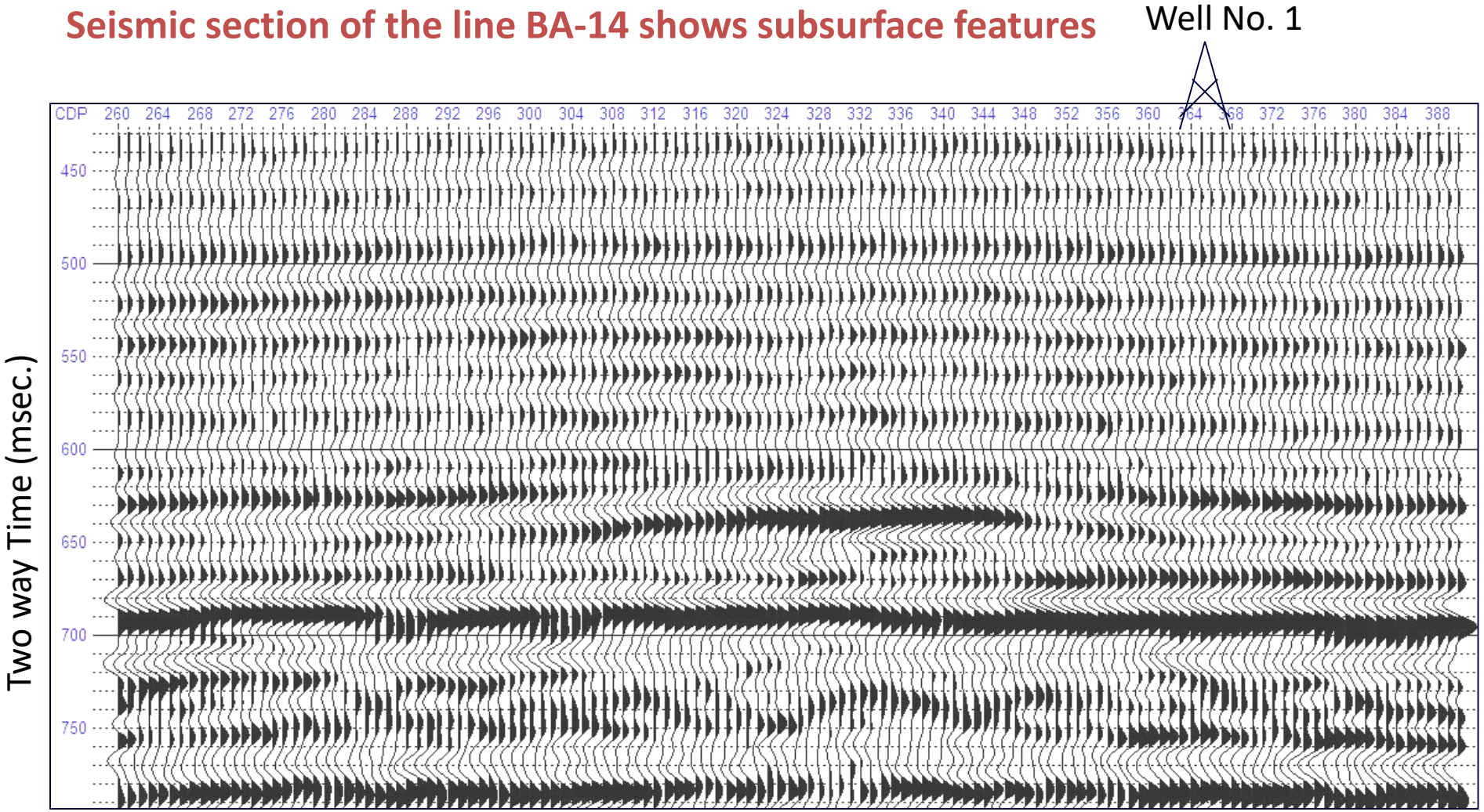


Seismic section of the line BA-3shows subsurface layers



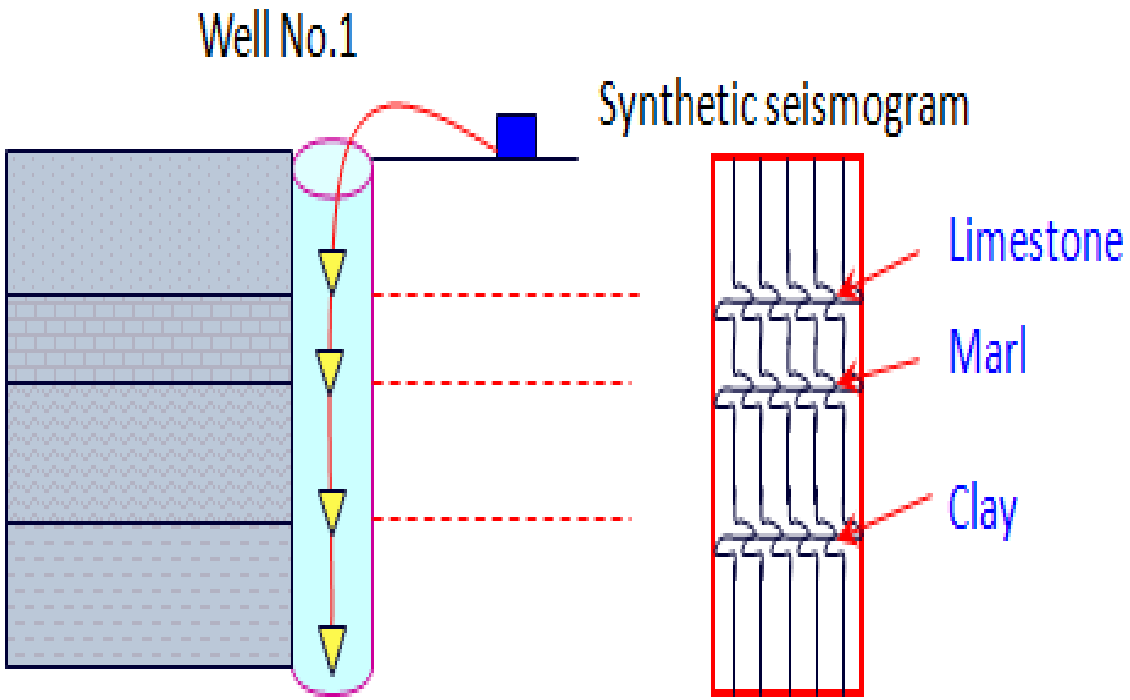
Vertical seismic slice along profile XX́ showing faulted stratigraphic features.

Seismic section of the line BA-14 shows subsurface features

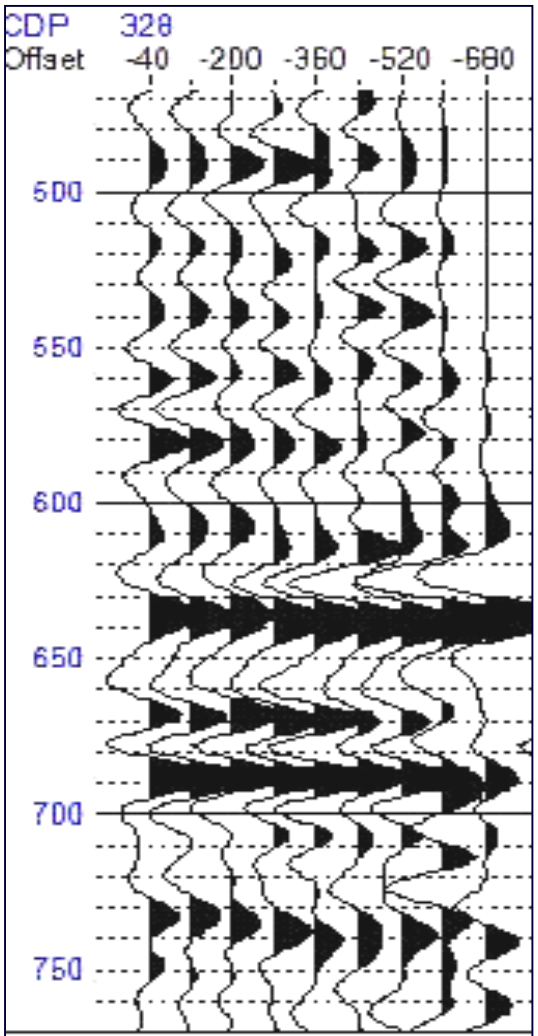


3- Synthetic seismogram.

It is a theoretical seismic response model for assumed geological situation



Actual Synthetic seismogram



Notes:-

A- When there is a well and the well has synthetic seismogram.

1-The synthetic seismogram of the well is prepared.

2- The depths of the different geological unit obtained from the geological column of the well.

3- The velocity of different geological unit (or formation) calculate from the well survey.

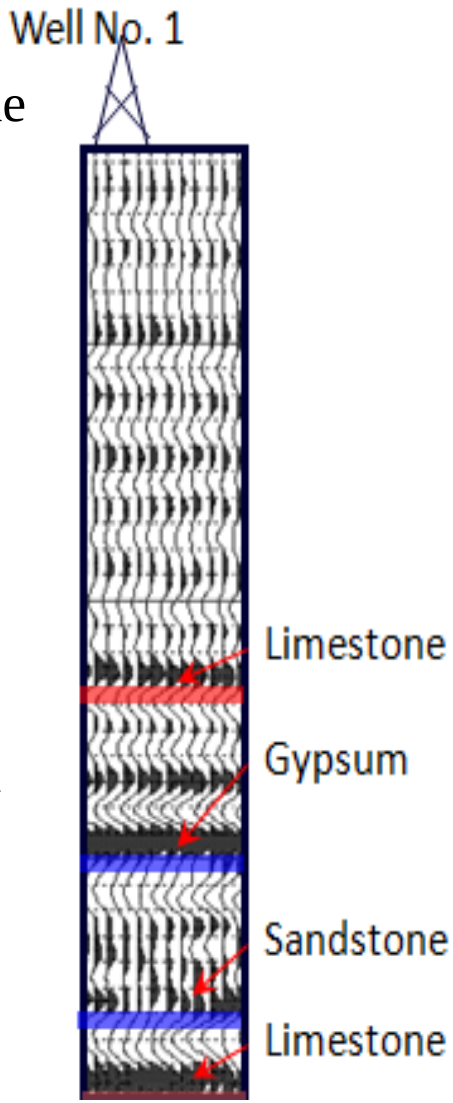
4- The two way time is calculate for each layer by:

TWT = Depth/ Velocity

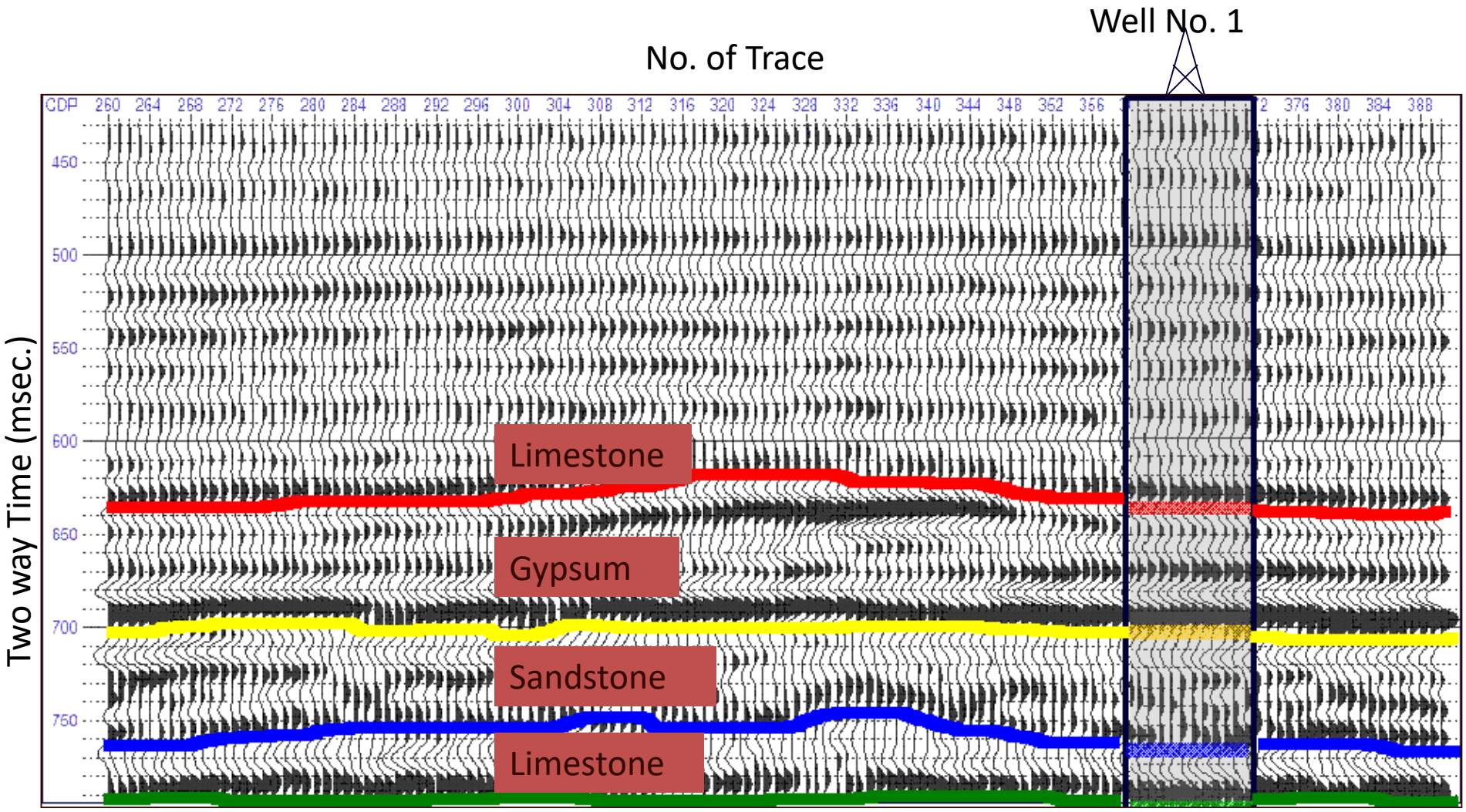
5- From the calculated TWT different reflectors on synthetic seismogram were picked.

6- Then the synthetic seismogram is coincide with the seismic section No. BA-14 at its proper location

7- The reflectors will pick on this seismic line and then on other lines using the intersection points .....



Seismic section of the line BA-14 shows subsurface features



8- Measurements of TWT were taken for each reflector and on each seismic section.

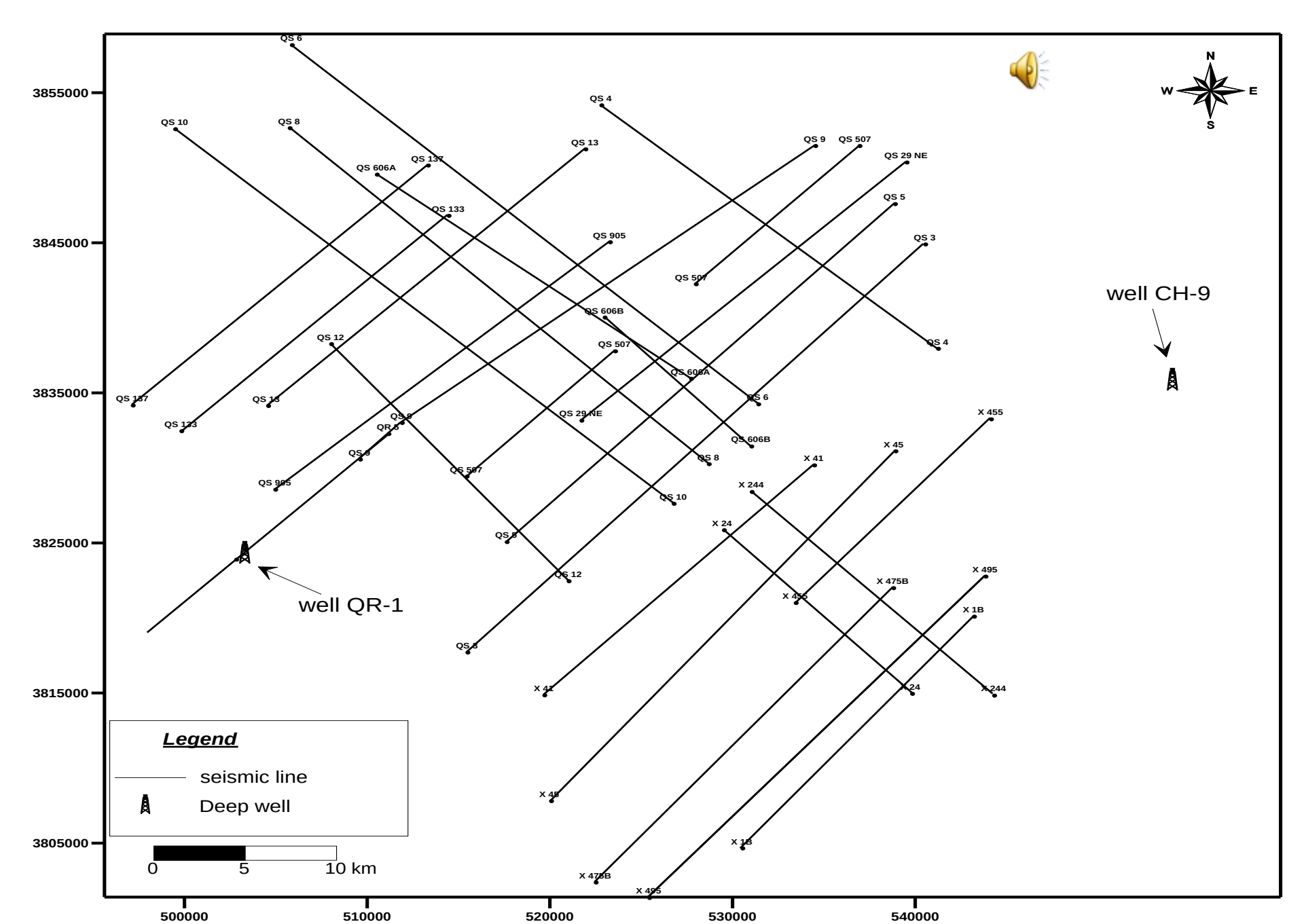
9- The measurements are plot in the following table:

Shot point No.	Two way time (msec)			
	Reflector-1	Reflector-2	Reflector-3	Reflector-4
1000	223	345	556	654
1050	229	356	535	667
1100	243	367	542	679
1150	245	365	552	689
1200	254	376	578	690
1250	269	381	587	700

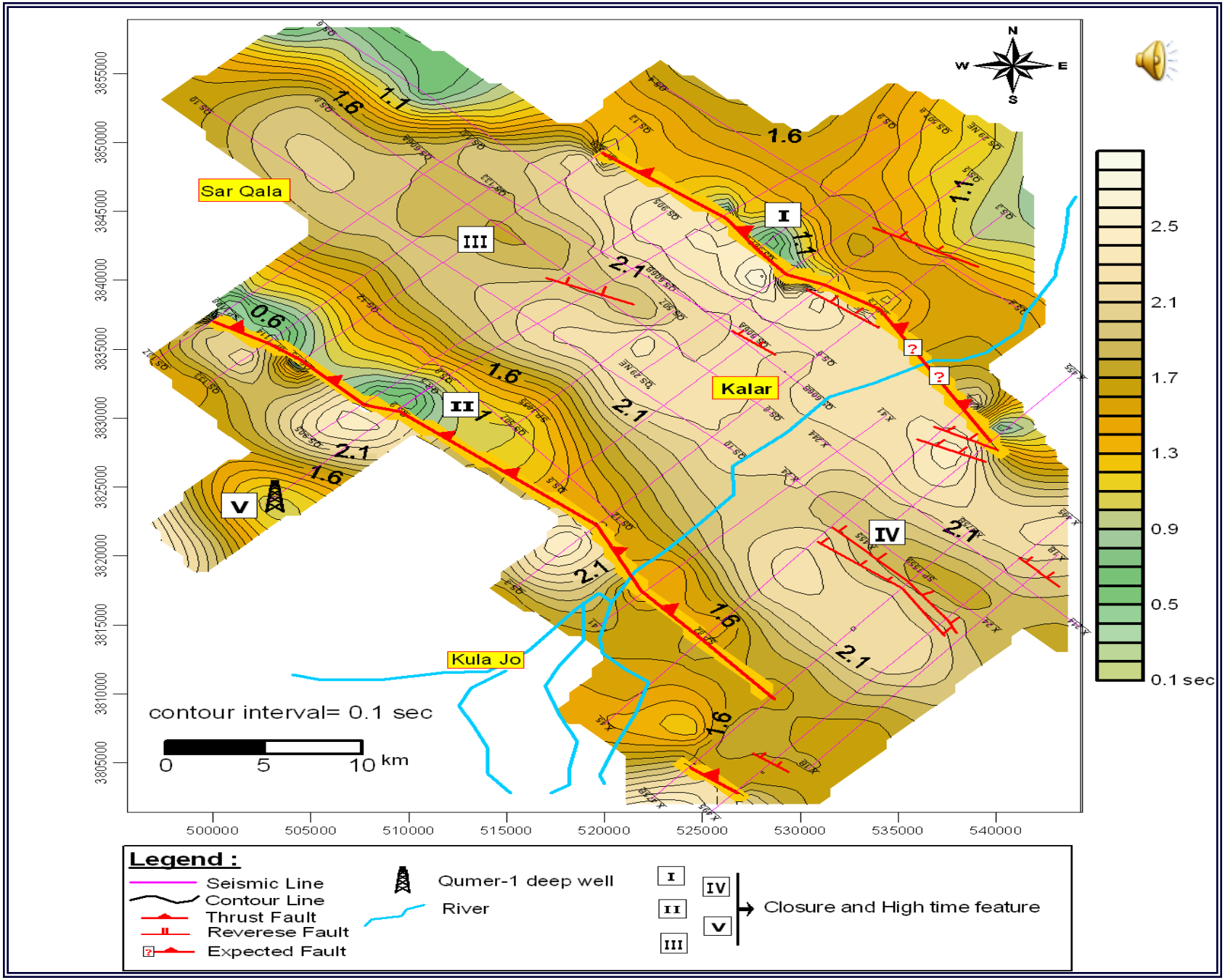
10- The measurements of TWT for each reflector are plotted on the base map of the area for drawing isochrone map

11- From velocity analysis the average velocity map for each reflector is drawn also.

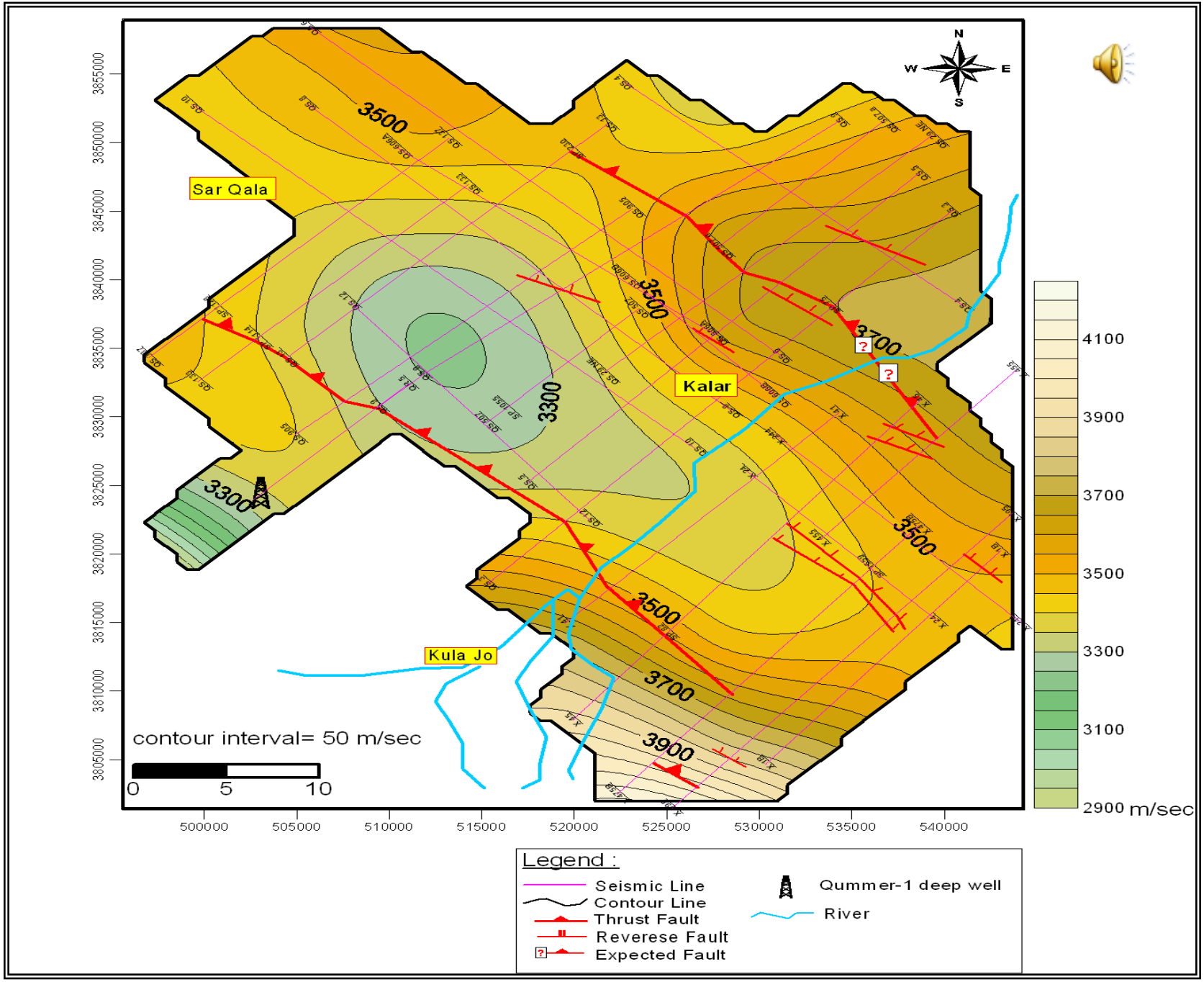
12- Then by coinciding the velocity map over isochrone map the depth maps for each layer are drawn.


QS 6
QS 4
QS 10
QS 8
QS 13
QS 9
QS 507
QS 29 NE
QS 606A
QS 137
QS 5
QS 133
QS 905
QS 3
QS 507
well CH-9
QS 606B
QS 12
QS 507
QS 4
QS 606A
QS 137
QS 6
QS 133
QS 13
QS 29 NE
QS 606B
QS 8
QR 5
QS 9
QS 507
QS 905
QS 8
QS 10
QS 5
QS 12
well QR-1
QS 3
X 455
X 45
X 41
X 244
X 24
X 495
X 475B
X 455
X 1B
X 41
X 24
X 244
X 45
X 475B
X 1B
X 495
3855000
3845000
3835000
3825000
3815000
3805000
500000
510000
520000
530000
540000
N
W
E
S
Legend
seismic line
Deep well
0
5
10 km

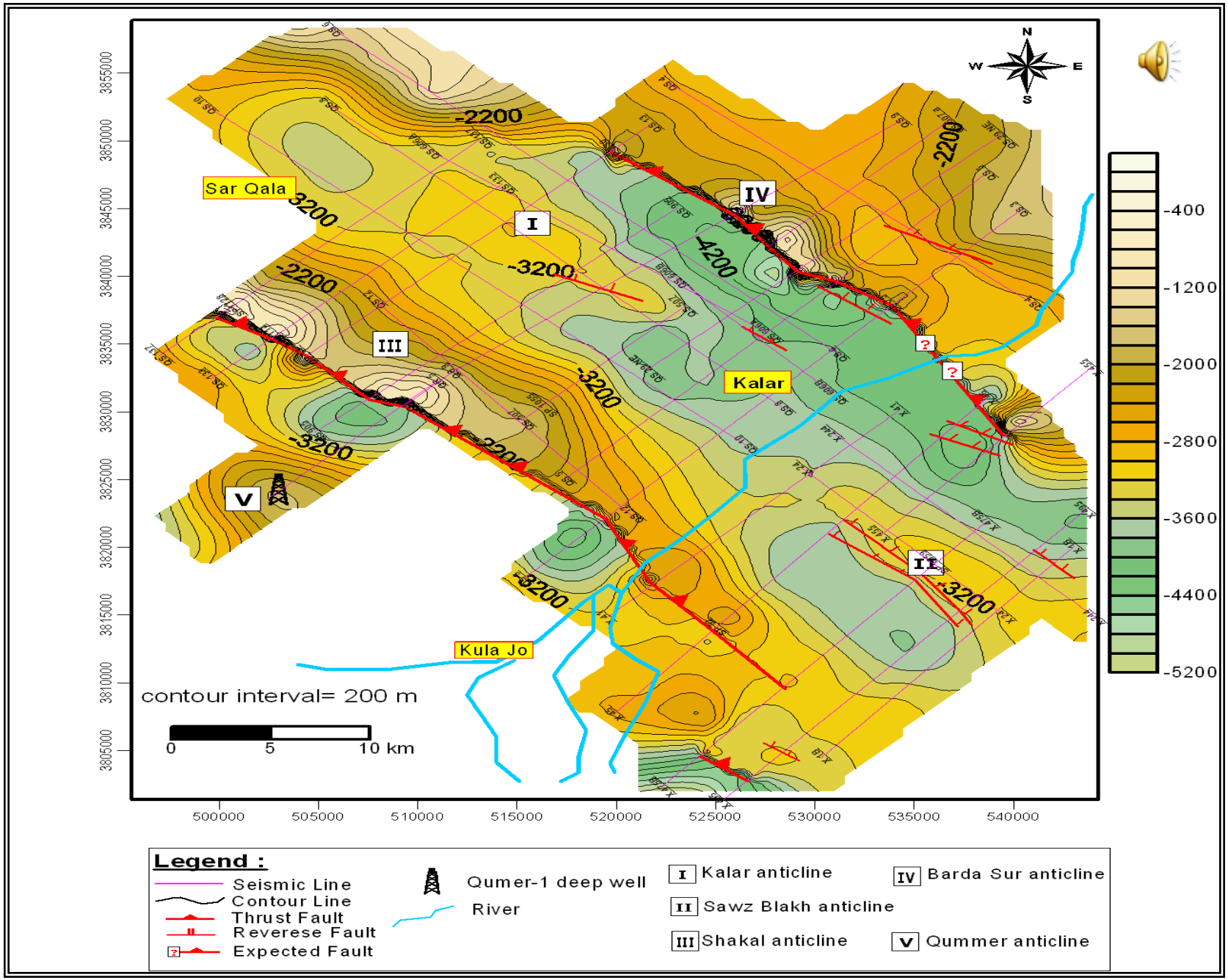
Base map



Isochrone map of reflector-1



Average velocity map of reflector-1



Depth map of reflector-1

B- When there is a well and the well has no synthetic seismogram or there is no well.

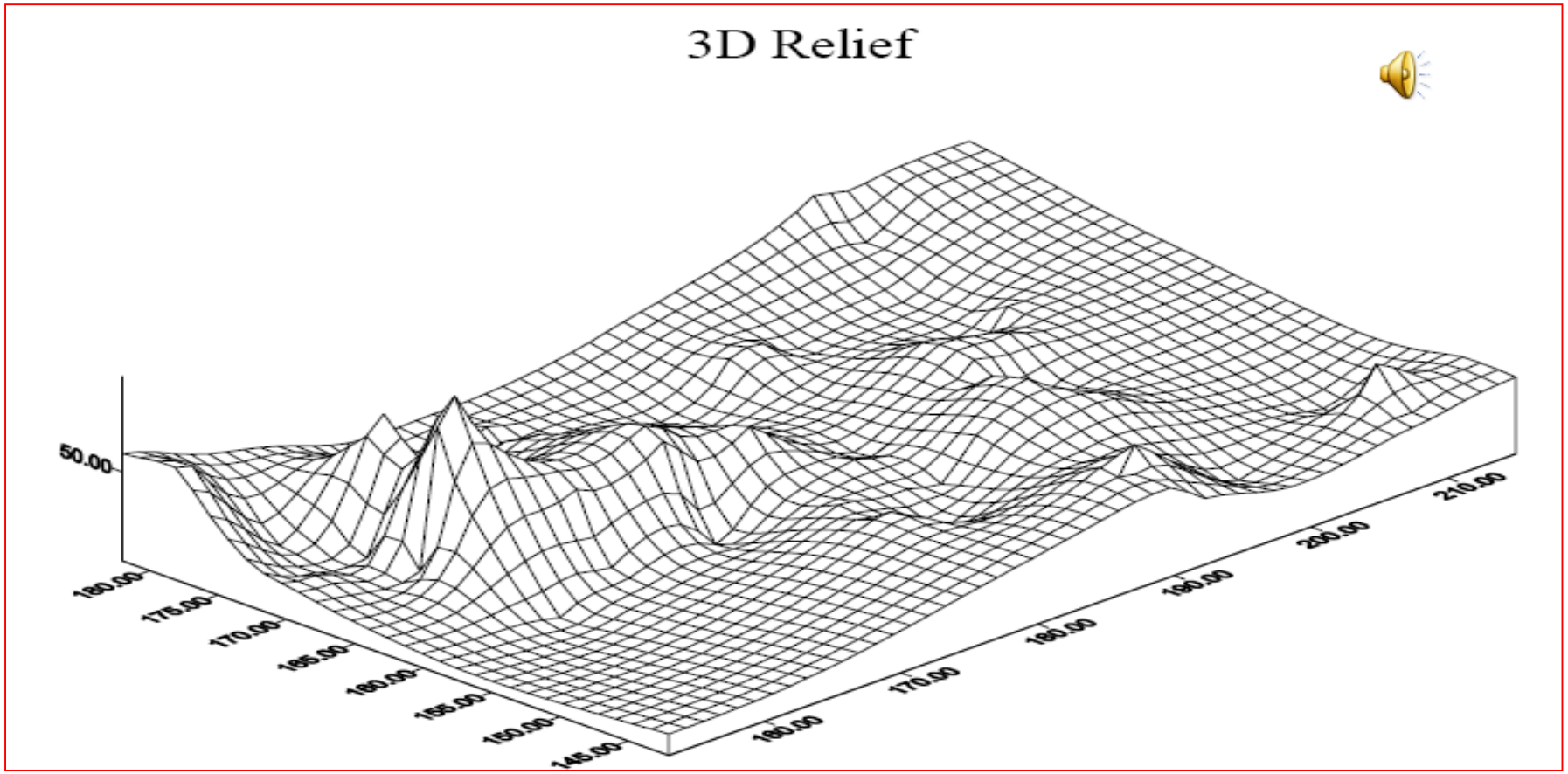
1- The study area is connected with a well located out side the area.

2- The studied area connected with an adjacent interpreted area.

3- The same steps described before followed for interpretation.

Seismic maps:

Isochrone map	x	Velocity map	=	Depth map
Isochrone map(H1)	-	Isochrone map(H2)	=	Interval Time map
Interval Time map	x	Interval velocity map	=	Isopach map
Depth map (H2)	-	Depth map (H1)	=	Isopach map


3D Relief
50.00
180.00
175.00
170.00
165.00
160.00
155.00
150.00
145.00
160.00
170.00
180.00
190.00
200.00
210.00

THE END