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PORTOCANNONE PERMIT

Seismic Survey Interpretation
Report

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INTRODUCTION

A seismic reflection survey was conducted by Società Italiana Applicazioni Geofisiche, S.I.A.G., Party A-105, from September 3, until November 15, 1974.

All field data were submitted to Geophysical Service International Limited, Croydon, England and digitally processed by Party 682-D-10.

The seismic survey consists of 8 lines for a total of 75.900 Kms at 600% multifold coverage, with a 24 groups cable and using dynamite in a single shothole as energy source. In some places, where the topographic surface was too rough, patterns of 12 shotholes 3 mts deep were used.

The objectives of the survey were to explore the northern part of the permit, where previous subsurface geological studies were showing an East-West positive trend, to have ties with some wells drilled in the area and to locate possible gas bearing structures and stratigraphic traps.

The area of the survey, between the coast and the Apennines, is characterized mainly by hills, often with step slopes and is relatively flat only on its south-eastern part (Biferno river).

The area is not densely populated and the land properties are generally of small and medium size dimensions, causing a considerable amount of work for the permitting and damages payments crew, even if, due to the time of the survey, after the harvesting season, no serious troubles were encountered.

The rate of the damages payments was below the budget figure.

The record quality was fair to poor, especially for the shallower section, mainly due to the continuous lateral changes of lithology within the Pliocenic sediments and to the presence of a thick allochthonous section in the western part of the survey.

INTERPRETATION

On the basis of the geological correlations of the wells drilled in the area and of the quality of the seismic reflections, four horizons were chosen and attributed to the following geological formations:

- Horizon A : phantom horizon within the Cd1 eq. member
- Horizon A1 : near the top of the Cd4 eq. member
- Horizon B : near the top of the basal shales of Lower Pliocene
- Horizon C : base of Pliocene

Horizon A shows as a monocline rising to the South-West towards the Apennines and ranging between 950 and 600 milliseconds. On the western side the horizon is interrupted by the allochthonous body against which it pinches-out. On the eastern side the horizon disappears completely probably due to a change of lithology. No closed structures are present in the area of the survey at this level.

The quality of this reflector ranges from poor to very poor.

Horizon A1, ranging between 1200 and 1050 milliseconds shows, going from the coast to the West, a high trend with small culminations near the village of Campomarino, South of the intersection of lines PC-2 and PC-4 and at the intersection of lines PC-1 and PC-5. All these features are of small areal size and the vertical closure ranges between 10 and 25 milliseconds.

Another high trend is shown is correspondence of line PC-8, where the horizon is interrupted by the allochthonous body against which it pinches-out. A high feature, not controlled to the South, lies at the intersection of lines PC-3 and PC-8.

The two high trends are separated by a trough going from the northern end of line PC-7 to the southern end of line PC-5, that corresponds to a faulted low of the carbonatic formation.

The thickness of this horizon varies from 200-300 milliseconds on the West, against the allochthonous body and 20-30 milliseconds towards the coast. The thinning of the section to such extent practically indicates its pinch out against the basal shales of Lower Pliocene.

The quality of the reflecting horizon A1 is fair to poor.

Horizon B, most probably an erosional surface, ranges between 1400 and 1100 milliseconds and follows very closely the structural pattern of the underlying carbonatic formation. The main faults affecting the base of the Pliocene are surely interesting also the basal shales of Lower Pliocene, but they are not shown on the contour map of horizon B because of the erosion that flattened the up-thrown sides giving origin only to steep slopes.

On this horizon we can recognize the same trends and features described for A1 and, not being this shaly section of any interest for hydrocarbon accumulation, it is not described in detail.

The quality of this horizon is fair to poor.

Horizon C is broken by faults, mainly in apenninic direction, that give origin to the features recognizable at this level. The most important ones are: the horst lying North-East of the village of Guglionesi and culminating with the structure between lines PC-2 and PC-3; another feature of small areal size lies South of the village of S. Giacomo degli Schiavoni, it was drilled with the omonymous well n. 1 which did not reach the carbonates.

The quality of horizon C is fair to good.

CONCLUSIONS AND RECOMMENDATIONS

The possible objectives for hydrocarbon accumulation in this area were the sand intercalations of Pliocene age and, in a lesser extent, the top of the carbonatic formation.

Both structural and stratigraphic trapping possibilities were taken into consideration and probably they are both present in the high trend visible on horizon A1 on the eastern side of the survey area, but for the small size of the closures the drillable prospects become of secondary importance because not very economic.

It is advisable, in the light of the latest oil discoveries made not so far from the area of the permit, in deeper Mesozoic formations, to cover the area of the permit remained unexplored with a reconnaissance grid of seismic lines shot with parameters and techniques different from the ones used on the past survey, that could give the possibility to follow and map the deeper oil producing horizons, as well as the shallower pliocenic sands that are always a good target, even if in this case they become of secondary importance.

STATISTICAL DATA

Days worked		39
Km of coverage		75.900
No. of shot points		480
Dynamite used	Kg	2,205.5
Detonators used		663
Metres drilled		10,080
Bentonite used	Kg	700
Bits used		20
Magnetic tapes used		16

PROCESSING

- Field statics computation
- True Amplitude Recovery
- Common Depth Point Gather
- Velocity Analysis
- Normal Move-out Correction
- Field statics application
- Automatic residual statics
- 6 Fold Stack
- Time Variant Deconvolution
- Time Variant Filtering
- Time Variant Scaling
- Film Display