

# GM 02527

NOTES ON THE GEOLOGY OF THE TAR POINT ANTICLINE

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FOREWORD

In presenting the following report I wish to state that I am not a professional geologist. Whatever qualifications I possess for this work have been acquired only through a study of geology and over thirteen years of experience in field work as assistant to geologists working for the Quebec Department of Mines, chiefly throughout the Gaspé Peninsula including that part which forms the subject of this report.

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Montreal, P. Q.

October 20th, 1953.

To Mr. Paul Payette,  
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Notes on the Geology of the  
Tar Point Anticline in Douglas  
Township, Gaspé County, Quebec

The Tar Point Anticline near the east end of Gaspé Peninsula has long been known to Geologists, having been mentioned in the early reports of Sir William Logan, the founder of the Canada Geological Survey who noted a tarry substance in the rocks near a diabase dyke on the north flank of the structure.

This occurrence of mineral tar has also been commented on by geologists who have made more recent surveys for the Quebec Department of Mines.

For a description of this dyke, I quote as follows from page 122 of the "Geology of Eastern Gaspé" 1950 Geological Report 35 of the Department of Mines of the Province of Quebec:

" The presence of petroleum in the dyke at Tar " "  
" point has attracted attention from an early " "  
" date. The dyke is a medium- to coarse-grained " "  
" diabase. Many of the druse and amygdule cavi- " "  
" ties in the dyke are filled with petroleum " "  
" which generally is viscous and in some cases " "

" is hardened to pitch. Similar petroleum subs- "  
" tances are present, and perhaps in relatively "  
" greater quantity, in calcite veins bordering "  
" the dyke. According to Parks (1), viscous "  
" petroleum occurs in a layer of limestone that "  
" crops out on both limbs of the anticline at "  
" Tar point. "Far more bitumen" he says, "was "  
" found in the limestone than in the dyke as "  
" described by Logan". "

An outline of the geology of the area as indicated by these more recent surveys, is shown on the map which I recently completed under date of October 16th, 1953, and which map is intended to accompany these notes.

#### Rock Formations

The rock formations definitely known to underlie the area consist of the Battery Point sandstone, shale and conglomerate, the York River sandstone and shale, and the Grande Greve limestone. Only the Battery Point and York River formations are actually exposed at the surface within the boundaries of the area covered by the oil and gas claims.

The Grande Greve limestone is exposed a short distance southwest of the property and has been encountered at depth in the Tar Point No. 1 Well.

These formations are all of Devonian age as is also the Cap Bon Ami formation which is known to underlie the Grande Greve in other parts of Gaspé not far distant.

Sedimentary rocks of Silurian and Ordovician age also probably underlie the Cap Bon Ami at depth, as these

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Buis Bueli  
Douglas Turp.

are exposed in Gaspé Peninsula both to the north and south of Tar Point Anticline.

### Structure

On the shore of Gaspé Bay where the rocks are well exposed in cliffs, the Tar Point Anticline is a strong and well defined structure. It has been found difficult, however, to trace it far inland. This may be due in part to scarcity of good rock exposures, and possibly in part to faulting and/or minor folding.

There are indications of an easterly plunge in the shore section and there is also the possibility of a westerly plunge inland, in which case the structure would be in the form of an elongated dome, and would tend to decrease or die out inland.

### Formation Thickness

The thickness of the Ordovician and Silurian varies considerably where exposed in different parts of Gaspé, and no estimate of these will be given here. Both would probably be measured in thousands of feet. An estimate of the Cap Bon Ami would be about 3,500 to 4,000 feet.

The thickness of the Grande Greve limestone where exposed in different parts of Gaspé also varies

considerably. In the Tar Point area, it would probably have a thickness of 2,500 to 3,000 feet.

The Tar Point No. 1 Well which appears to have started at the top of the York River formation penetrated about 6,450 feet of this. Allowing for dip of the beds, this is probably somewhat greater than the actual thickness in this area.

Up to the present time two wells have been drilled for oil on the Tar Point Anticline. The first of these was drilled by the Petroleum Oil Trust in the year 1890 - 1891.

It is located on the north flank of the axis, and according to available records was drilled to a depth of 2,970 feet of which the upper 1,000 feet was in the Battery Point formation and the lower 1,970 feet in the York River formation.

An oil showing was reported at a depth of 2,215 feet.

From an examination of the log of Tar Point No. 1 Well which has reached a depth of 7,070 feet, it is apparent that to the depth of about 1,100 feet the rock was sandstone with only a very small proportion of siltstone and shale; below this to the top of the Grande Greve limestone, shale and siltstone make up a large proportion of the rock, perhaps equal in amount to the sandstone.

From about 6,450 to 6,600 feet, the log shows calcareous siltstone and shale. This appears to me to be a transition zone between the York River and more typical Grande Greve formation.

From 6,600 feet to the bottom of the hole at 7,070 feet the log shows limestone and calcareous siltstone, apparently quite typical of the Grande Greve.

The Grande Greve limestone was reached at a greater depth than the estimate given in the report on the Geology of Eastern Gaspé published by the Quebec Department of Mines which seems to indicate that the thickness of the York River formation here is somewhat greater than the estimate of 4,000 feet given in the above mentioned report.

This greater thickness of York River formation and greater depth to the Grande Greve limestone would probably tend to give higher pressures in oil or gas reservoirs which might be encountered in this, or the underlying formations.

The source of the oil and gas which has been found in the two wells drilled is still unknown. It may have originated in the Grande Greve, or possibly in the underlying formations. The Silurian rocks exposed in other parts of Gaspé are known to contain coral reefs, which are petroliferous.

Evidence of petroleum has also been noticed by the writer in the rocks of Ordovician age in a few places in Gaspé.

The gas encountered in the Tar Point No. 1  
Well last April, and which is evident to this date, cer-  
tainly gives encouragement to both drilling and testing.

*Alfred E. Miller*