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A PRELIMINARY REPORT ON THE  
STRUCTURE AND STRATIGRAPHY  
OF THE SECTION FROM SODA CREEK  
TO A POINT ONE MILE NORTH OF  
QUESNEL, B.C. (copy 1)

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SEPT 4<sup>th</sup> 1930

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

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A PRELIMINARY REPORT ON THE STRUCTURE AND  
STRATIGRAPHY OF THE SECTION FROM SODA CREEK TO  
QUESNEL, B.C.

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Date of Examination

The area was examined from May 15 to May 23 inclusive. I was accompanied in the field by Messrs. Ryan, Weir and Arland.

Purpose of  
Investigation  
Location of  
property

The area under examination extends from Soda Creek on the South to a point 5 miles North of Quesnel, B.C. The width of the area is 3 miles, the centre of the section following the Fraser river. The latitude of the property runs from about 52 degrees to 53 degrees while the longitude is approximately 122 degrees 30 minutes. It is easily reached from Vancouver by train to Ashcroft and motor about 200 miles to Australian ranch which was our headquarters during the investigation.

A motor road runs from Soda Creek through the property to Prince George on the East side of the river while on the West side a road follows the river from Alexandria to Quesnel, and continues to the Blackwater river. Crossings are possible at Alexandria and Quesnel.

A general description of the area is given by L.Reineke in Memoir 132 of the Geological Survey of Canada, in which the geology is given in a general way and the coal described. An account of the coal is given also in the report of the Minister of Mines for the year 1923. The Pacific Great Eastern Railway runs throughout the whole length of the property so that all parts are well supplied with transportation.

#### TOPOGRAPHY

The area under examination occupies the valley of the Fraser River which flows in a Southerly direction throughout its length. The valley is flat bottomed and rises on both sides by a series of terraces which give way to the general slope of the hillside.

Where the plateau basalt is reached it is marked by steep cliffs. The distance between these cliffs which occur on both sides of the river is about two miles.

The plateau is underlain by basalt and is marked by rolling topography into which deep canyon-like valleys have been eroded.

The average elevation of the valley floor of the Fraser river is about 1500 feet above sea level, while the elevation of the plateau is approximately 185 to 2000 feet above sea level.

SUMMARY AND  
CONCLUSIONS

1. The structure of the rocks in the area is a Northerly trending anticline whose axis coincides with the Fraser River.
2. I was unable to secure sufficient outcrops to close the Northern end of the anticline so that a closed structure could not be determined.
3. From the fossils I judge that the sediments are marine.
4. The sediments are Tertiary in age.
5. There is no possibility of finding oil in the Carboniferous which is the most productive of the Alberta fields. The carboniferous in the area under examination is too tightly folded and too highly altered to contain oil.

GEOLOGY

The possible oil-bearing rocks consist of clays, sandstones and conglomerates underlaid unconformably by the limestones, schists and volcanics of carboniferous age.

The clays, sandstones and conglomerates are overlain unconformably by flat lying basalts. The general series of the Austfalian area can be best represented by a geological column:

Post Glacial ..... river gravels of the terraces.

unconformity

Glacial ..... Glacial drift.

Unconformity

Tertiary ..... Basalts

unconformity

Fraser river sediments

unconformity

Carboniferous ..... Limestones, schists and volcanics.

Detailed description of formations:

Carboniferous - The carboniferous contains the oldest rocks exposed in the area. They are exposed in a narrow belt whose most Northerly exposure can be seen at Soda Creek. The rocks consist of metamorphosed limestone, mica schists and altered volcanic rocks. The limestone is massive and occurs in thick beds. It approaches marble in its appearance. The limestone occurs interbedded with the schists and the volcanic rocks. Certain beds are pure enough that they may be used for the production of lime and for the manufacture of cement. The mica schists are fissile rocks which break readily along the cleavage planes. They can be seen in the outcrops along the road just South of Soda Creek. The volcanics are purplish breccias in massive beds, they occur on the motor road in the neighborhood of Castle rock.

Fraser River formation - This formation rests unconformably on the Carboniferous rocks and is separated from it by a vast period of time. This explains the great difference in degree of alteration between the two formations. This also explains the fact that the Fraser river formation is structurally less complex than the carboniferous rocks.

The formation consists of clays, sandstones, conglomerates and coal beds. The sandstones and fine conglomerates are the possible oil-bearing strata. They are open and porous in texture. They can be examined on the Fraser river just below the Australian Ranch. The best exposure of the Fraser river formation is in the rocks out on the Pacific Great Eastern Railway about two miles South of Quesnel.

Basalts - The basalts are amygdaloidal in texture and occur in horizontal layers in the Plateau area. They rest unconformably on the various members of the Fraser river sediments.

Glacial Deposits - The Interior Plateau is covered with a thin veneer of glacial drift which consists of unsorted material in which are embedded many large angular boulders. Some of the valley slopes are also covered with this material.

Post Glacial - The valley floor of the Fraser river is covered with a deep deposit of gravels and sands which have been deposited by the Fraser river. The terraces which mark the sides of the valley have been formed by erosion by the Fraser river.

### STRUCTURE

The data on which the conditions regarding structure are very meagre as outcrops of bedrock are very few and far between. Only about 10 outcrops can be seen in 20 miles. The structure under the Fraser river is anticlinal with a direction North and South. At the South end the anticline forms a closed structure just South of the Australian ranch on the Fraser river. Here the strike is East and West with a dip to the North. Also the coal seams and the conglomerates have been identified on the two sides of the river. On the West side the coal seams and the conglomerates are exposed in the river bank while <sup>on</sup> the East side of the river they were encountered in a drill hole put down by the Cariboo Coal and Clay Company. Thus the coal and the conglomerate swings from one side of the river to the other forming a closed structure at the Southern end of the anticline. At Doyle's ranch on the West side of the Fraser river about opposite the mouth of Australian Creek the strike is approximately North and South with a dip of 18 degrees to the West.



At the Southwest corner of Lot 6730 about  $2\frac{1}{2}$  miles North of the mouth of Australian Creek on the East bank of the Fraser river there is an outcrop of coal and carbonaceous clays which strike North and South with a dip of 21 degrees to the East.

At a point 2 miles South of Quesnel in a cut on the Pacific Great Eastern Railway the strata are almost flat but the general strike is North and South with a slight dip to the East. On the West side of the river about 2 miles South of Quesnel the strike of the Rocks is North and South with a dip of 25 degrees to the West. The occurrence of these two dips with parallel strikes indicates an anticline.

About one mile North of Quesnel along the banks of the Fraser river the strike on the two sides of the river appear to converge but there were not sufficient outcrops to determine that the structure was closed at the North, thus we have an anticline which is definitely closed at its Southern end with the Northern structure in doubt.

FAVORABLE  
POINTS

A favorable structure has been determined. Although this anticline could not be proved to be closed on the North end, still the evidence pointed in this direction.

The sandstones and fine conglomerates are suitable for the accumulation of oil.

Oil has been found in the Tertiary of California.

UNFAVORABLE  
POINTS

Oil cannot be expected in the carboniferous as it is too highly altered and too much broken up to contain oil. The carboniferous contains a great deal of interbedded volcanic rock which is not favorable for oil accumulation.

The tertiary beds are known to have a minimum thickness of 1000 feet. No estimate of the total thickness can be given.

There are other parallel folds striking in the same direction as the one outlined along the Fraser river although the mere fact that the Fraser river follows an anticline would make it a major structure.

"Stuart J. Schofield"

Sept. 4, 1930.