

# MAR 19680150: CROWSNEST PASS

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Preliminary Geological Examination

of

Quartz Permit (P<sub>205</sub>) No. 46

for

Meridian Petroleum Ltd.

Calgary Alberta

## Introduction

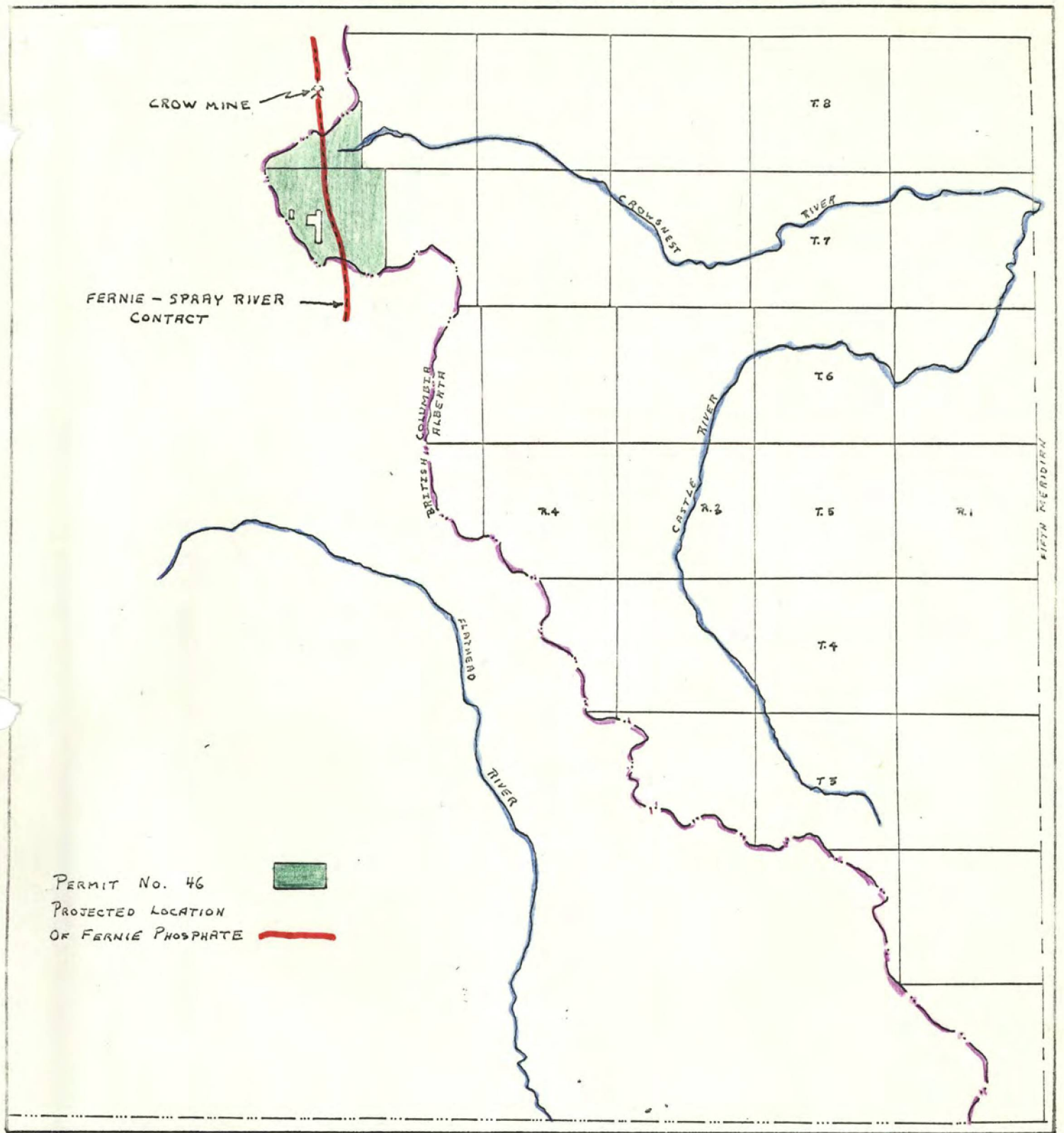
During the past few years there has been an increased interest in the occurrence of phosphate rock in Alberta and British Columbia. It was this interest that led to the acquisition, by Meridian Petroleum Ltd., of Alberta Quartz Permit (P<sub>2</sub>O<sub>5</sub>) No. 46, and a preliminary geological study of the permit area to determine the possible occurrence of phosphate, its economic significance, and the need for a more complete evaluation program.

The area covered by the permit is located 7 miles west of Coleman, Alberta, along the Alberta-British Columbia border in Crowsnest Pass as shown on Map I. The property is easily accessible from Alberta Highway No. 3, an all-weather road which passes just to the north of the property. Jeep trails cover parts of the area and the rest may be reached on foot. Four days were spent examining the permit and surrounding areas.

## Geology

The area in question covers a portion of a northerly trending thrust block along which are exposed rocks ranging from Pennsylvanian to Jurassic in age. The formations exhibit a structural attitude of N 5° W 40°-62° W.

Although phosphate is known to occur in rocks of Triassic age only very minor percentages were found in the Spray River Formation and the investigation was directed toward occurrences in the more prolific, basal portion of



MERIDIAN PETROLEUMS LTD.  
 QUARTZ PERMIT (P<sub>2</sub>O<sub>5</sub>) NO. 46

the Fernie Formation.

On examination of the permit area it was found that it is of relatively low relief and extensive weathering of the Fernie shale had caused a thick mantel of overburden and was consequently highly forested. The Spray River Formation, a sandy siltstone located just below the Fernie Formation formed a small more resistant ridge. Using this ridge as a guide to the location of the phosphate within the Fernie Formation the property was walked from one end to the other. Due to the intense weathering of the area, and vegetation, no evidence of phosphate was seen either in outcrop or in the weathered material.

About 1.5 miles north of the permit area 9 feet of pelletal phosphate rock is seen in an old exploration trench at the base of the Fernie Formation. The phosphate is dark gray to black, pelletal, slightly silty and the weathered surfaces carry the characteristic bluish-white phosphate blume. Telfer (1933, Canadian Institute of Mining and Metallurgy Trans., vol. 36) reports widths of up to twenty and thirty feet here at the Crow Mine. These thicknesses are due to thrust faulting which has caused repetition of bedding and therefore a multiple thickness of the phosphate zone. Assays of the phosphate ran 18% to 23%  $P_2O_5$ .

South of the permit area, just east of Tent Mountain, a small outcrop was located which yielded a good exposure of the basal portion of the Fernie Formation but no phosphate was found at this outcrop. Here the phosphate was

either not deposited, or it has been faulted out. The occurrence of numerous thrust faults seen on Tent Mountain suggests the latter.

A study of the literature suggests that throughout the area phosphate was deposited in thicknesses varying from 18 inches to 4 feet. Occasionally, in local areas, thrust faulting has either caused a greater thickness through bedding repetition or has faulted it out completely.

#### Conclusions and Recommendations

Sedimentary phosphate of the type found at the base of the Fernie Formation is deposited by cold phosphate rich, marine waters upwelling onto a continental shelf. Deposits of this type are generally uniform over large areas and seldom change their characteristics or grade rapidly. If the basal Fernie phosphate were not faulted out in the permit area it is possible that the grade would be similar to that found in the Crow Mine to the north. Although the thickness may be as great as thirty feet or more this grade would not constitute commercial ore at this particular time, unless it could be upgraded with ore averaging 36%  $P_2O_5$ .

I feel, after considering the facts, that further examination of this property would be far too costly and the chances of commercial grade phosphate far too remote to recommend a continuation of this program.

  
F. A. Peel, P. Geol.

19680150

# QUARTZ MINERAL EXPLORATION PERMIT No. 46

CANCELLED

MERIDIAN PETROLEUMS LTD.,  
215 A - 10th STREET N.W.,  
CALGARY, ALBERTA

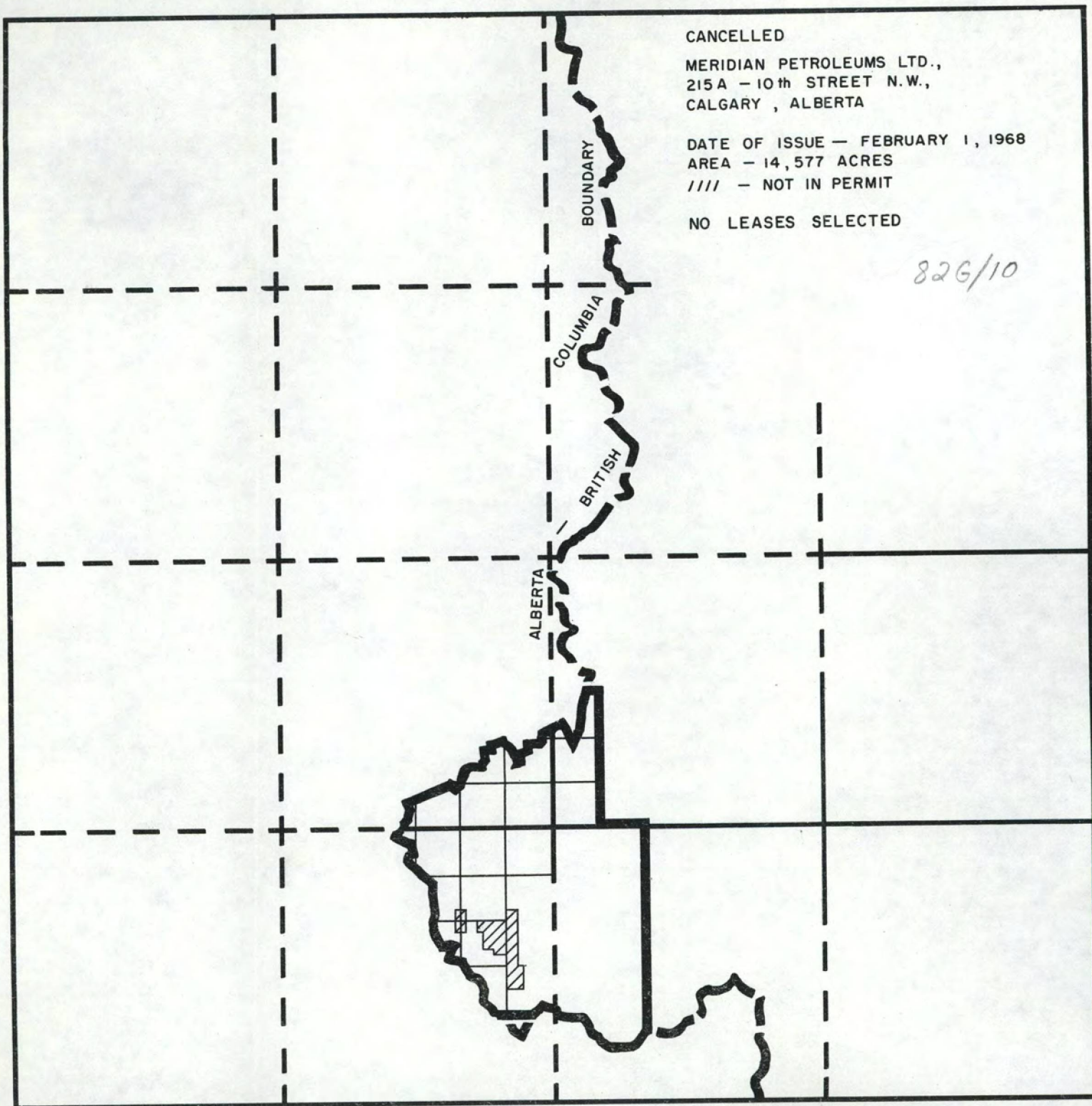
DATE OF ISSUE - FEBRUARY 1, 1968

AREA - 14,577 ACRES

//// - NOT IN PERMIT

NO LEASES SELECTED

826/10



BOUNDARY

COLUMBIA

BRITISH

ALBERTA

TP. 8

TP. 7

R. 6

R. 5

R. 4 W. 5 M.