

**FACTORS IN ASSUMING**  
**A MAJOR FAULT ZONE**  
**MOORE'S VALLEY**

15<sup>th</sup> September 1958

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AMG REFERENCE POINTS ADDED

399001

15th September,

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To: Mr. G.F. Hudspeth.

Factors in Assuming a Major Fault Zone

Within Moore's Valley

1. Introduction

The area known as Moore's Valley is situated approximately 13 miles south of Birch Inlet, between Thirkell Hill to the north and Hazell Hill to the south. It has already been indicated in the Annual Report 1957-58 that on lithological and structural grounds this area is a most favourable one for further detailed prospecting operations.

2. Lithology

The lithology is clearly evident with exposures of the Dundas Group and Owen Conglomerate both to the north and south of the Valley. The Conglomerate on the south side, at Hazell Hill, is at least 5900 feet thick. The Valley is formed by a downfaulted block of country which is now filled by Tertiary and Recent sediments and consequently direct observations on the lithology within it are impossible. However, this block faulting may preserve sediments which are stratigraphically higher than the Owen Conglomerate and the solid floor of the Valley may in part consist of Gordon Limestone or Crotty Quartzite (c.f. the Linda Disturbance).

3. Structure

The north to south structural element expressed in the Lyell Shear is clear since it faults the Owen Conglomerate to the east against the

Dundas Group to the west. The east to west crosscutting structure is not so evident since it is partly obscured by the Tertiary sediments which fill the Valley. However, this crosscutting element is assumed on the following basis (plate P72):

- A. The Lyell Shear when traced across the valley shows an apparent horizontal displacement of two miles to the right. It is considered that this feature is more due to a curving of the Shear than actual displacement since this former feature is evident to the west of Hazell Hill. Similarly the axis of the Osmund Syncline is displaced to the right, but again shows the same tendency as the Shear to curve to the right at Hazell Hill.
- B. The Osmund Syncline to the south of Moore's Valley is 3 miles wide, with a steeply dipping west limb and a gently dipping east limb (i.e. it is asymmetrical). Immediately to the north of the Valley the east limb of the Syncline has considerably steepened to give a more symmetrical, and consequently narrower, structure only  $1\frac{1}{2}$  miles in width.
- C. To the south of the Valley the complementary anticline to the Osmund Syncline is symmetrical and it has practically closed at its northern end with a gap of only  $\frac{3}{4}$  mile. To the north of the valley the anticline is overturned to the east and it has opened out considerably. Structurally this same anticline, which is closing to the north, does not reach<sup>a</sup> comparable position as its counterpart to the south of the Valley until some 9 miles north of Thirkell Hill.
- D. The granite at Elliott Bay which can be traced northwards for eleven miles to the south side of Moore's Valley is not present on its northern side.

E. The eastern limit of the Tertiary and Recent sediments is the ridge formed by the Owen Conglomerate of the Thirkell Hill zone. This ridge is not broken through until Moore's Valley where the extent of the Tertiary sediments swings south-eastwards for seven miles.

F. Faults have been traced eastwards away from the structure, into the Precambrian.

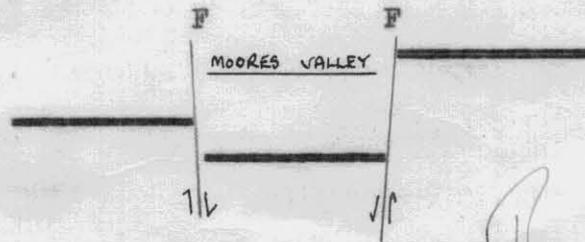
4. General Discussion

All of these factors demonstrate that the Valley marks the trend of a major ESE-WNW trending fault zone which was an open valley during early Tertiary but which was later infilled by unconsolidated sediments to give it its present appearance.

An estimate of the vertical movement within the Valley itself is not yet possible. However, if the fault structure is treated as a single fracture, the downthrow has been to the south (i.e. Thirkell Hill is on the upthrow side) and the vertical component would be measured in several thousands of feet. This is represented diagrammatically below, showing the movement on a hypothetical marker horizon, the section is not to scale.

SOUTH

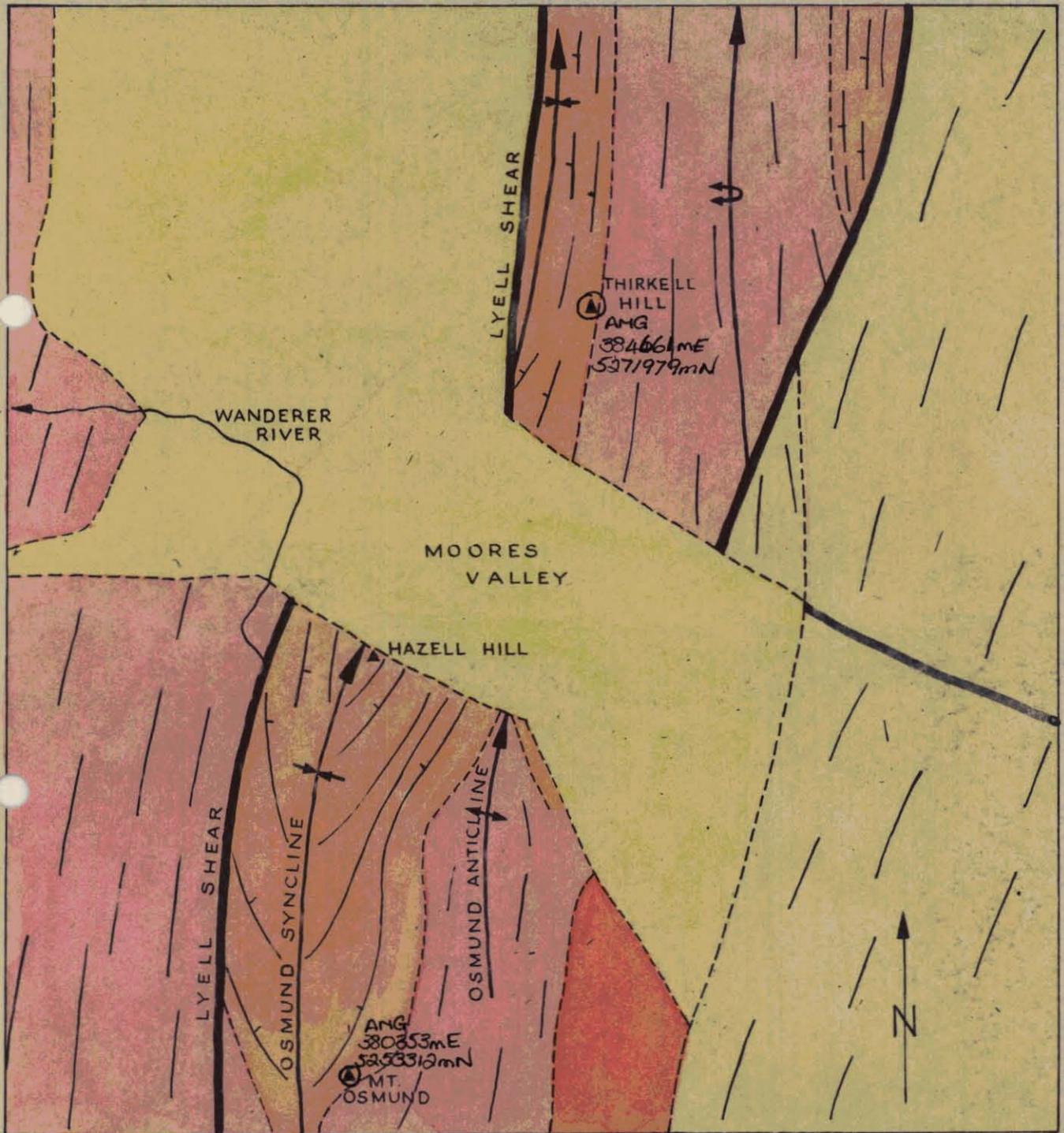
NORTH



F = Fault

*B. Scott*  
Geologist-in-Charge

MOORES VALLEY - PLAN

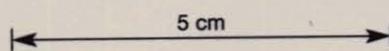


LEGEND

Scale : 1 inch approx. 2 miles

Tertiary & Recent		Dundas Group	
Owen Conglomerate		Precambrian	
Granite		Faults	

5 cm



AMG REFERENCE POINTS ADDED