

LEASE NO. 101M/47 - S. A. CLARK - ZEEHANINTRODUCTION

Mr. S. A. Clark of Zeehan has applied for financial assistance in order to carry out prospecting work on his lease No. 101M/47 (20 ac). His intention is to find the southern extension of the Montana main lode for which purpose an adit was started.

Subsequently instructions were received from the Director of Mines to investigate the geological conditions on the lease and to report whether financial assistance would be justified.

LOCATION

The lease is situated south of and adjoining lease No. 11789M (40 ac) held by the Montana Silver - Lead N. L.

TOPOGRAPHY

The lease includes a low hill covered by button grass. The hill top is not higher than 50 ft above the flats of the main creeks. Drainage takes place in a generally westerly direction.

WORKINGS

Prospecting activities have been concentrated mainly in the north western corner of the lease. Amongst the older and recent workings are:-

- (1) Three adits with a total length of 413 ft. At present the lessee is working on No. 1. Adit which has reached a length of 53 ft in a southeasterly direction. It is for the extension of this adit that the lessee has applied for financial assistance. No. 2 Adit is 35 ft long and No. 3 Adit 325 ft. It appears that the latter has been driven for at least 185 ft beyond the northern lease boundary. Nos. 1 and 2 Adits have been driven by the present holder. No. 3 Adit was driven many years ago.
- (2) Two shallow shafts about 20 ft deep, but the presence of ground-water prevents a close examination.
- (3) Twelve costeans with a total length of 597 ft. The majority of these costeans have been dug by the present lessee.

GEOLOGY OF THE AREA.

Beside the geology revealed in the abovementioned workings, the already known structural details of the Montana lease and outcrops in the vicinity of the south-west lease corner have provided additional information.

It appears that the main structural feature of the area consists of the contact between the tillite on the west and other sediments, such as shales, slates and quartzites on the east. During the investigation of the Montana Silver-Lead Mine in 1951 it was found that this contact is a fault contact. Its general strike is north north east and its dip varies from

38° - 55° E. On the Montana lease the actual contact is well exposed in the costeans and adits. Its southerly continuation into Clark's lease is proved in the two shafts and No. 4 costean. A further extension is deduced from the presence of tillite in No. 7 costean and of shales in Nos. 6 and 9 costeans. Actual exposures of the contact occur in Nos. 1 and 2 adits. A closer examination of this area reveals its rather complicated nature.

- (1) The strikes and positions of the tillite contacts in the adits Nos. 1 and 2 do not conform with the general trend of the contact north of this area.
- (2) The presence of additional faults in Nos. 1 and 2 adits which seem to branch off from the contact.

The conclusion is that the regular south-south western trend of the tillite contact has been offset by a group of at least two faults. One of them is actually exposed on the east wall of No. 8 costean, while the second is between Nos. 1 and No. 2 adit. These faults strike NW to NNW, while their relation to the tillite contact shows that they are reversed faults.

As for a farther southern extension of the tillite contact it is necessary to consider the group of outcrops situated immediately west and southwest of the lease. Tillite occurs in No. 13 costean and in a large outcrop at 80 ft NW of it. Near the east end of this costean the tillite is cut by a hard silicified zone, feebly mineralised, the position of which indicates that it is closely associated with a fault immediately SE of the costean. This fault is visible in two small exposures of shattered and slickensided slate fragments in the gully. The upstream part of the gully shows a series of small outcrops of mostly dark thinly bedded shales, in places silicified, with varying strikes and dips. The tillite contact should therefore run between No. 13 costean and the western lease boundary. As the locally occurring fault has an attitude corresponding to those referred to in the area of Nos. 1 and 2 adits, it is reasonable to assume that the tillite contact will be offset again before continuing its southward trend.

Another tillite exposure occurs in the costean south of a large quartz blow, while shales are found in a gully south of the southwest corner peg. Evidence of faulting occurs in that area. The tillite contact runs probably east of the abovementioned costean in a direction due south or slightly east of south.

SOUTHERN EXTENSION OF THE MONTANA MAIN LODE.

It was shown during the survey of the Montana Silver-Lead Mine that on the Adit level the Tillite Lode runs roughly parallel to the Main Lode, at a distance of 80 ft west. Using the tillite contact as a marker in the field and assuming that parallelism of the main lode continues there would be a reasonable chance of locating the main lode in a zone of 80 ft east of the tillite contact. So far the earlier prospectors have had no success. No lode formation has been located, either in No 5 costean or in No. 3 adit. Neither do the more recent costeans show any signs of mineralisation. These facts cause us to consider two other possibilities regarding the behaviour of the main lode.

(1) The main lode is dying out in a southerly direction. On both the Adit level and the 100 ft. level in the Montana Mine development has shown that the mineralisation is quickly decreasing in a southerly direction. However there is no evidence on those levels that the actual zone of faulting is petering out, as shattered material occurs over the full width of the drives at the southern faces.

(2) The main lode gradually trends toward the tillite contact, instead of running roughly parallel. The facts supporting this possibility are:
 (a) The West crosscut driven from the Eastern Adit is 90 feet long and has not cut the tillite lode.

(b) In the principal Adit crosscut the tillite lode and the main lode are only 80 ft. apart. In addition the strikes of these lodes at the Adit crosscut suggest a slight convergence in a southerly direction.

(c) In Clark's No. 1 adit there is a zone of mineralization 2 to 3 ft wide showing a little pyrite and some specs of galena with quartz occurring 20 ft east of the tillite contact. In the Montana workings there is no lode formation between the tillite contact and the main lode on the Adit level.

RECOMMENDATIONS

(1) The tillite contact occurs at a depth of approximately 20 ft below ground level in Nos. 1 and 2 shafts. No. 3 adit is driven for a 180 ft north-north east paralleling the tillite contact and a distance of approximately 120 ft to the east. The last 140 ft of this adit are driven almost due east. Nowhere in this adit is a lode cut. The continuation of the Montana main lode, if it exists, must therefore lie between Nos. 1 and 2 shafts and the first portion of No. 3 adit.

It is recommended therefore that a trench approximately 90 ft be excavated from between Nos 1 and 2 shafts in a east-south eastern direction.

If this trench does not reveal the presence of lode, it is considered inadvisable to continue the underground exploration.

(2) If the trench mentioned under (1) reveals the presence of the main lode then continuation of No. 1 Adit is recommended in order to test the value of the lode at depth.

The revealing of the lode in the proposed trench would provide more data on its position with respect to the tillite contact. From the information available at the presenttime it is considered that if the mineralized zone occurring 20 ft from the tillite contact in No. 1 adit is not the Montana main lode, then the main lode, if present, will occur not farther than 80 ft from the present face of No. 1 adit.

It is therefore recommended, that if No. 1 adit is to be continued, it be not driven farther than and additional 80 ft. If lode is not met within this distance it is considered that the prospect must be abandoned.

Zeehan, 26th August, 1952

Signed (B.L. Taylor) B.Sc.(N.Z.), A.M.A.I.M.M.
Geologist

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