

INTRODUCTION

During the 1969 field season, Adanac Mining and Exploration Co Ltd has continued a program of exploration diamond drilling to test the potential of a low grade, bulk type molybdenite deposit on their Ruby Creek property 15 miles northeast of Atlin, in the extreme northwest portion of British Columbia.

As Supervisory Consultants, Chapman, Wood & Griswold Ltd have submitted progress reports dated June 23rd and August 14th, 1969.

The programs recommended in those reports as Stage I and II are now virtually complete and drilling, for this season, will be suspended about December 1st, 1969.

This report summarizes the results to date and outlines a proposed schedule for completion of feasibility studies early in 1971. Although minor revisions are anticipated on the evaluation of drilling now in progress, the recommended programs will include:

- 1) Additional diamond drilling
- 2) Underground exploration and bulk sampling
- 3) Pilot plant metallurgical testing
- 4) Engineering surveys and studies

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PROPERTY FILE

SUMMARY, CONCLUSIONS & RECOMMENDATIONS

1. As of November 15th, 1969, 72 diamond drill holes, totalling approximately 37,000 feet, have been completed on the Ruby Creek property with drilling still in progress.
2. Three of the above holes were of HQ size. They were drilled, sampled and assayed under precise control for the purpose of comparison to standard drilling and sampling techniques.
3. Estimated reserves mineable by open pit, of the partially delineated deposit, is as follows:

PROBABLE RESERVES 69,876,000 tons @ 0.141% MoS<sub>2</sub>
4. The diamond drill results to date have indicated that significant molybdenum mineralization occurs to a depth in excess of 500 feet within the area explored. Values appear to be higher within an east central core, the grade decreasing with increasing lateral extent.
5. Bench scale metallurgical tests have indicated a milling recovery in excess of 95% MoS<sub>2</sub> by flotation and acid leaching. For preliminary evaluation we have assumed an operating recovery of 90% when mill heads exceed 0.17% and 87% when below 0.17% MoS<sub>2</sub>.
6. It is assumed that a 15,000 ton per day plant could be established at a capital cost ranging from \$40 to \$45 million.
7. Assuming that the average grade mined varies from 4.4 lbs MoS<sub>2</sub> per ton in the first year, through 3.8 lbs MoS<sub>2</sub> in year two, 3.4 lbs in years 3 and 4 to 2.68 lbs MoS<sub>2</sub> per ton in year 5 and subsequent years, preliminary cash flow projections indicate reserves of

100 million tons should sustain a profitable mining operation for a life of 20 years, based upon tax laws currently in effect in Canada. Effect of proposals published in the White Paper of November 1969 is being studied.

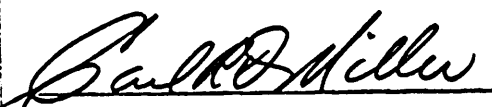
8. Results of these projections indicate that a comprehensive program of development and engineering feasibility studies is warranted.
9. We recommend that such a program consist of continued diamond drilling, physical opening of underground headings to provide material for bulk sampling, operation of a pilot mill to confirm metallurgy, site surveys and engineering studies. If implementation of such a program is properly designed and co-ordinated, it should be possible to complete it early in 1971.
10. Prior to implementation of the above program it would be desirable to acquire the claim blocks immediately south and west of the present Adanac holdings.
11. Estimated project expenditures for the period November 1969 through February 1971 are:

|                       |                    |
|-----------------------|--------------------|
| Planned Programs      | \$1,739,500        |
| Contingent Programs   | 500,000            |
| Contingencies (11.6%) | <u>260,500</u>     |
| Total                 | <u>\$2,500,000</u> |

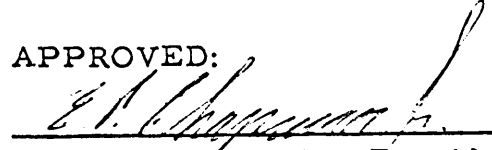
Respectfully submitted,

CHAPMAN, WOOD & GRISWOLD LTD

  
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APPROVED:

  
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PROGRESS REVIEWDIAMOND DRILLING

As of November 15th, 1969 seventy-two diamond drill holes had been completed and two others were in progress. The total footage drilled on the Ruby Creek property is now in excess of 37,000 feet.

The drilling includes 11 BQ size holes, 62 NQ holes and 3 HQ holes. The large diameter HQ holes were drilled adjacent to NQ and BQ holes to check the results obtained by the smaller size drilling. A summary of the coincident results obtained for the HQ, NQ and BQ drilling are shown in Table III-1 on pages 3 and 4 of this section.

The HQ drilling was supervised, sampled and assayed under rigid control and is considered a good basis for assay and grade comparisons. The total core was crushed to minus 10 mesh and split down to provide five separate samples, from each original 10 foot core intersection. Three of the five samples were then pulverized and assayed in separate assay laboratories, with the remaining two samples being stored for possible additional check requirements.

The results of the HQ drilling show a close comparison between it and the indicated grade obtained by NQ size drilling. The BQ size hole however did not check out within acceptable limits and indicates that a lower reliability is obtained from this smaller size drilling. Two erratic high assays in the BQ drilling were not duplicated in the coincident HQ hole, causing the resultant difference in overall grade. Only 3,970,000 tons, or 6% of the present reserve estimate is based on BQ drilling.

The coarse sporadic nature of the mineralization is such that a reasonably large sample is required to provide a reliable grade estimate of the total block. The planned underground bulk sampling will be a further check on diamond drilling results.

C. W. & G. Ltd drawing number 382-1-3, enclosed in the pocket, shows the relative locations of the drill holes with respect to the claim boundaries and topographic features. The geologic and assay results are shown in the book of 100 scale sections, forming Volume II of this report.

#### SURVEY CONTROL

A survey control, which is tied into the geodetic grid, has been established by White, Hasford and Impey Ltd. A legal survey is near completion on the 12 Adera claims owned by Adanac Mining and Exploration Ltd. The claim boundaries have been established and co-ordinates and elevations of all the drill holes determined.

Air photo coverage of the area was completed during the summer of 1969 and topographic maps covering the Adera claims have to be prepared.

#### METALLURGICAL TESTING

Preliminary metallurgical test work was done by the Galigher Company of Salt Lake City. The results of his preliminary test work were favorable indicating a 90.9% recovery and a concentrate grade of 94.41% MoS<sub>2</sub>, using conventional flotation methods.

In August of 1969, Mr. John Britton of Britton Research Ltd., Vancouver, was retained by Adanac to do more detailed bench scale metallurgical test work. This test work was done on crushed drill core rejects, from selected sections, within the trial pit area. The results of his work indicated a 95.7% molybdenum recovery in the final concentrate and a 97.5% concentrate grade.

A relatively coarse grind of 43% minus 200 mesh has been indicated.

Mr. Britton's reports entitled METALLURGICAL TESTS ON A SAMPLE OF MOLYBDENUM ORE submitted by ADANAC MINING & EXPLORATION LTD., Progress Reports No's. 1 and 2 are enclosed in the Appendix.

TABLE III-I

## HQ DRILLING RESULTS SUMMARY

| Hole No. | Sample Type                  | Assayer   | % MoS <sub>2</sub> |              |
|----------|------------------------------|---|--------------------|--------------|
| 2E-2N    | (36 to 299 feet, 26 samples) | HQ total core                                       | Coast Eldridge     | 0.152        |
|          |                              |   | Seymour            | 0.142        |
|          |                              |   | Loring             | <u>0.127</u> |
|          |                              |   | Average            | 0.134        |
|          |                              |   |                    |              |
|          |                              | HQ Sludge   | Coast Eldridge     | 0.157        |
|          |                              |   | Seymour            | 0.124        |
|          |                              |   | Loring             | <u>0.136</u> |
|          |                              |   | Average            | 0.140        |
|          |                              |   |                    |              |
|          |                              | NQ core first $\frac{1}{2}$<br>second $\frac{1}{2}$ | Coast Eldridge     | 0.115        |
|          |                              |   | Coast Eldridge     | <u>0.141</u> |
|          |                              |   | Average core       | 0.128        |
|          |                              | NQ Sludge   | Coast Eldridge     | 0.161        |
| 10W-1S   | (60 to 300 feet, 24 samples) | HQ total core                                       | Coast Eldridge     | 0.167        |
|          |                              |   | Seymour            | 0.167        |
|          |                              |   | Loring             | <u>0.121</u> |
|          |                              |   | Average            | 0.152        |
|          |                              |   |                    |              |
|          |                              | HQ Sludge   | Coast Eldridge     | 0.125        |
|          |                              |   | Seymour            | 0.105        |
|          |                              |   | Loring             | <u>0.122</u> |
|          |                              |   | Average            | 0.117        |
|          |                              |   |                    |              |
|          |                              | NQ core first $\frac{1}{2}$<br>second $\frac{1}{2}$ | Coast Eldridge     | 0.185        |
|          |                              |   | Coast Eldridge     | <u>0.142</u> |
|          |                              |   | Average Core       | 0.163        |
|          |                              | NQ Sludge   | Coast Eldridge     | 0.155        |

| Hole No. | Sample Type | Assayer | MoS <sub>2</sub> |
|----------|-------------|---------|------------------|
|----------|-------------|---------|------------------|

#8 (40 to 300 feet, 26 samples)

|   |                |              |       |
|---|----------------|--------------|-------|
| HQ total core                                       | Coast Eldridge | 0.152        |       |
|   | Seymour        | 0.140        |       |
|   | Loring         | <u>0.140</u> |       |
|   | Average core   |              | 0.144 |
| HQ Sludge   | Coast Eldridge | 0.180        |       |
|   | Seymour        | 0.163        |       |
|   | Loring         | <u>0.177</u> |       |
|   | Average        |              | 0.173 |
| BQ core first $\frac{1}{2}$<br>second $\frac{1}{2}$ | Coast Eldridge | 0.210        |       |
|   | Coast Eldridge | <u>0.180</u> |       |
|   | Average        |              | 0.191 |
| BQ Sludge   |                |              | 0.317 |

IV

RESERVES

Preliminary reserve estimates based on results to November 15th, 1969 are:

PROBABLE - 69,876,000 tons @ 0.141% MoS<sub>2</sub>

The above are drill indicated mineable reserves, limited to the drilled off portion of the property for which assay data is currently available and do not reflect the ultimate potential of the deposit.

Reserve blocks are based on a trial pit design, interpreted on diamond drill hole sections. The grade cutoff value used was 0.08% MoS<sub>2</sub> and volumes were determined by a factor of 12 cubic feet of rock per ton.

Probable reserves are limited to blocks within the normal pit path, normally projected not more than 200 feet from the drill hole intersection. In two instances the blocks were projected over 200 feet but not more than 400 feet where the projected limits are contiguous on at least three sides with adjoining probable reserve blocks.

In view of the present lack of physical openings into the deposit we have placed the present reserves in the PROBABLE category. If assay results and trends of the deposit can be verified and projections between drill holes established as highly reliable, then the reserves can be upgraded to the category of PROVEN reserves. It is anticipated that the planned bulk sampling program will provide the necessary information to justify a higher reserve classification.

The individual reserve blocks are illustrated on the plans and sections included with this report and detail of the tonnage and grade calculations are shown in Table IV-1 following this section.

The preliminary pit design is based on an overall slope of 45° to include mineable reserves to the depths indicated by the results to date without regard to selective mining.



Approximately 93 million tons of waste must be removed during the exploitation of the presently known reserves, giving a probable waste to ore ratio in the range of 1.3 : 1. During the stripping it is probable that stockpiles of marginal mineralization will be accumulated from what is currently designated as pit waste.

When all 1969 drilling results are available a more detailed pit design and reserve calculation should be made from bench assay plans. This would provide a selective mining approach to the pit design and permit a better economic evaluation of the deposit. The results would, in our opinion, provide the optimum basis for further investigations.

The potential for increasing the reserves of the Ruby Creek Deposit to the 80 to 100 million ton range must be considered good. The potential for substantial increases beyond that range is possible, but somewhat more remote, being based on geologic projections and the acquisition of adjoining ground.

The following four areas warrant further investigation as possible extensions of the known reserves.

- 1) At depth, north of section 10 North
- 2) To the northeast
- 3) Below the presently outlined reserves
- 4) South and West on adjoining ground

C. W. & G. Ltd drawing No. 382-1-27 illustrates the possible extensions of the mineralization. A strong fault encountered in drill hole OE-10N may offset the mineralization downward to the north of section 10N. Holes drilled on section 12 North have, to date, been of limited extent, and have shown an increase in  $\text{MoS}_2$  values at depth.

The area to the northeast of the presently outlined reserve has not been sufficiently delineated and warrants further investigation. Hole 12E-8N intersected some reserve grade material and hole 8E-12N was terminated at a depth of 195 feet.

Several holes within the preliminary pit limits terminated in reserve grade material. The present reserve estimate does not include any projections as depth extensions of the deposit.

The deposit, although weakening, is open to both the south and west beyond the existing property boundaries.