ADANAC MINING & EXPLORATION LTD.

ADANAC MOLYBDENUM DEPOSIT
ATLIN MINING DIVISION, B.C.

REVIEW OF THE
1971 ROTARY DRILLING PROGRAM

September 1971

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Project: 1382-15

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INTRODUCTION

A rotary drilling program totalling 2812 feet was completed on Adanac's Ruby Creek molybdenum deposit during the summer of 1971. The objective of the program was to increase confidence in the reserves and hopefully to enhance previous estimates included in the feasibility study by providing greater precision.

Of a total of 8 rotary holes all were drilled adjacent to previously drilled diamond drill holes; and three holes, R-10, R-12 and R-14, are located beside raises which were bulk sampled in 1970. This coincident bulk sampling and diamond drilling data provided a basis on which to compare various sampling techniques.

A careful analysis of all available data indicated that a significant amount of molybdenum was being lost whenever excessive amounts of water were encountered in rotary holes. This discrepancy occurred despite considerable effort to prevent the loss.

The apparently unreliable results of the sampling technique resulted in curtailment of the program prior to testing the major part of its original objective. They also inspired a substantial amount of test work, the results of which are included in this report.

A total of 15 rotary holes have now been drilled on the Ruby Creek property. The original 6 which were completed in 1970 were described in detail in CW&G report

DISCUSSION OF THE
1970 ROTARY DRILLING PROGRAM
ADANAC MOLYBDENUM DEPOSIT

dated December, 1970.

SUMMARY AND CONCLUSIONS

The results of test work imply that a substantial portion of the sampling data provided by the 1971 rotary drilling program is of questionable value. The test data provides evidence which indicates that a significant loss of molybdenite occurred while dewatering the sample and that the loss increased as the volume of water increased. Based on the data developed in this report the apparent losses were in the order of:

Volume of Water Encountered Per 10-Foot Sample	Footage Drilled	Apparent Loss of Molybdenite
Dry	397	0%
0 to 400 gallons	597	7%
400 to 1000 gallons	697	18%
More than 1000 gallons	965	25%

Although evidence does show that an adjustment to the wet rotary drill hole assays could be made which would offset the apparent molybdenite loss, it is our opinion that further refinement would be required before the application of such data would be meaningful. It is also our opinion that even if the data from the 1971 rotary drilling were applied as adjustment to the feasibility reserve estimates, no significant change in tonnage, grade, and confidence in those estimates would result.

It is concluded that any further efforts to obtain a more precise estimate of tonnage and grade of this particular deposit should be oriented primarily toward further underground development and bulk sampling.

Respectfully submitted,
CHAPMAN, WOOD & GRISWOLD LTD.

E. S. Holt

E. S. Holt, P. Eng.

September 30, 1971

RESULTS OF THE PROGRAM

GENERAL

The aim of the 1971 rotary drilling program was to provide a more reliable reserve grade estimate than was previously available from diamond drilling and bulk sampling. In that regard the work was not successful in that the available test data indicates that significant, but variable, amounts of molybdenite were lost whenever excessive amounts of water were encountered. The results of the wet rotary drilling must be regarded as unreliable and, in our opinion, should not form the basis for a revised reserve estimate.

Pertinent information developed from the rotary drilling program is summarized:

(1) That the wet rotary drilling results at Ruby Creek for both the 1970 and 1971 programs should be regarded as unreliable and of questionable value.

(2) That generally less than 2% of the total sample was lost while rejecting water, but that the grade of that 2% was, in almost all cases tested, more than 10 times the grade of the original sample and thus the loss significantly affected accuracy of the results.

(3) That the dry rotary assays tend to average slightly higher than coincident bulk sampling results.

(4) It further demonstrated the erratic results which are often obtained when coincident sampling is attempted and thus confirmed the complexity of the problem of accurately assessing the Ruby Creek deposit.

(5) It demonstrated the importance of meticulous sampling techniques when dealing with easily liberated molybdenite.

It should be emphasized that the apparent loss of molybdenum from the sample occurred despite concerted preventive efforts. During the latter part of the program, the total volume of water produced from a 1/8 split was caught in barrels, flocculated and allowed to settle prior to decanting. The water being syphoned off was visibly clear, but was found through assaying 14 samples to contain an average of 1/50 of 1% suspended solids. The suspended solids in turn contained an average of 1.3% MoS_2. Since the volumes of water produced per 1/8 split ranged up to 4000 pounds per ten feet of drilling, the resultant effect on the grade was substantial.

CW&G drawing number 1382-1-2 enclosed in the pocket shows the collar location of all rotary drill holes relative to diamond drill holes and underground bulk sampling. All of the rotary holes drilled to date are within the area known as the "initial pit."

During the 1971 program the following rotary holes were drilled:

Hole No.	Depth (feet)	Adjacent to Drill Hole
R-2	350	8W-00
R-4	428	8W-4N
R-5	500	4W-2N
R-7	46	8W-4S
R-9	505	8W-4S
R-10	450	00 -4N
R-12	250	00 -4N
R-14	244	2W-2N
R-15	39	00 -4N
Total footage 1971	2,812	

Of the 2812 feet of drilling completed, 256 feet were through overburden which was not sampled, 397 feet produced dry cuttings, and the remaining 2159 feet contained various amounts of water ranging up to a maximum of 4760 gallons per ten feet of hole.

As the program proceeded it became apparent that a relationship existed between the volume of water being produced and the comparison of diamond drill core grades to coincident rotary assay results. The rotary results on average were considerably higher than the corresponding drill core grades when the cuttings were dry or were accompanied by minor volumes of water. As the volumes of water increased, however, rotary values fell significantly below corresponding core assay averages.

A summary of the total weighted average comparisons follows:

Approximate Water Volume Per 10-Foot Sample	Coincident Footage	Drill Core % MoS_2	Rotary % MoS_2	% Difference Rotary/Core
Dry cuttings	397	.129	.166	+ 29
0 to 400 gallons	497	.113	.136	+ 20
400 to 1000 gallons	697	.150	.157	+ 5
More than 1000 gallons	965	.118	.114	- 4
	2,556	.127	.138	+ 9

A discussion of the check work done together with the standard sampling procedures are outlined in detail elsewhere in this report.

It should be noted that although the above table shows a consistent relationship between the water volume produced and the coincident rotary and drill core grades, this relationship does not hold true when comparing individual sections. Tables VI and VII commencing on page 23 provide some of the backup data concerning water volumes and illustrate this point.

It is apparent that numerous examples of contradictory results exist if individual sections of the drill holes are compared. In our opinion the inconsistent results are due mainly to the erratic nature of the deposit, and inadequate volume of sample, and therefore meaningful comparisons can only be made by including a large population of comparable results or by greatly increasing the sample sizes.

It must be emphasized that most of the mineralization at Ruby Creek occurs as sporadic coarse rosettes of molybdenite within fractures which are likewise quite erratic. This aspect of Ruby Creek deposit has been discussed in considerable detail in the 1971 Feasibility Study.

APPARENT EFFECTS OF WATER

As mentioned earlier, the method used to remove water from the wet rotary cuttings apparently adversely affected the sample grade. This conclusion is based on the following observations:

(1) Grade of the rotary holes, when compared to adjacent diamond drill holes, dropped off significantly as the volume of water increased.

(2) A 250-foot rotary hole, to which water was added, averaged 13% lower grade than a dry rotary hole drilled 4 feet away.

(3) Assay data on the volume and grade of suspended solids in the reject water indicated that significant amounts of molybdenite were being lost with the reject water.

(4) The known fact that molybdenite, when liberated from gangue material, has greatly different thermodynamic properties than the gangue in the solid-liquid interface.

Table I shows detail of the results from the wet and dry holes which were drilled only four feet apart. Hole R-12 had approximately 15 gallons of water per minute added between the casing and the drill stem at the collar of the hole. This was done in an effort to duplicate wet drilling conditions.

Raise 00-4N was driven up diamond drill hole 00-4N, rotary hole R-10 was collared 14 feet southwest of DDH 00-4N, and rotary hole R-12 is located a further 5 feet to the southwest.

In addition to having an overall lower grade, the wet hole indicates less variation in grade between sample intervals. It can only be speculated at this time as to whether this is the result of contamination between adjacent samples when drilling wet or if it is merely a function of the erratic nature of the deposit.

Table II shows the analytical results which indicated that a significant amount of molybdenum was being lost with the reject water. Samples of the reject water were bottled and sent to Coast Eldridge for determination of both the amount of suspended solids and the grade of those same solids.

The first six samples of reject water were taken from barrels which had been allowed to settle for several hours after a flocculant was added.

TABLE I

COMPARISON OF ASSAY VALUES

FROM VARIOUS SAMPLING TECHNIQUES

Footage	R-12 Wet Rotary	R-10 Dry Rotary	00-4N Diamond Drill Hole	00-4N Raise Bulk Sampling
35- 40	.032	.037	.012	
40- 50	.094	.066	.024	
50- 60	.070	.075	.025	.165
60- 70	.339	.208	.057	.212
70- 80	.280	.211	.102	.314
80- 90	.409	.718	.359	.269
90-100	.437	.204	.382	.220
100-110	.480	.907	.180	.244
110-120	.374	.318	.178	.231
120-130	.374	.307	.154	.480
130-140	.257	.279	.705	.571
140-150	.142	.411	.315	.359
150-160	.152	.101	.154	.200
160-170	.205	.135	.133	.226
170-180	.117	.293	.214	.291
180-190	.160	.099	.440	.284
190-200	.363	.281	.163	
200-210	.193	.255	.178	
210-220	.201	.207	.212	
220-230	.335	.487	.176	
230-240	.067	.158	.039	
240-250	.116	.129	.106	
35-250	.241	.273	.200	

TABLE II

EFFECTS OF REJECTING WATER - ROTARY DRILL HOLE R-9

Footage	Sample Collected Lbs.	Sample Collected %MoS_2	Pounds MoS_2 Collected	Pounds Water Rejected	Suspended Solids ppm	Pounds Solids Lost	Grade of Lost Solids %MoS_2	Pounds MoS_2 Lost	% MoS_2 Lost	Weighted Average Grade	% Increase in Grade
100-110	23	.066	.015	500	19.0	.0095	< 5.2	<.0005	< 3	.068	< + 3
200-210	25	.733	.183	500	16.0	.0080	< 6.3	<.0005	< 1	.735	< + 1
210-220	26	.122	.032	500	10.4	.0052	< 9.6	<.0005	< 2	.124	< + 2
220-230	26	.118	.031	500	10.2	.0051	< 9.8	<.0005	< 2	.120	< + 2
230-240	25	.148	.037	500	46.4	.0232	< 2.2	<.0005	< 1	.150	< + 1
240-250	24	.135	.032	500	8.6	.0043	<11.6	<.0005	< 2	.137	< + 2
360-370	25	.049	.012	600	453.6	.27	.9	.0024	17	.058	+18
370-380	25	.078	.020	1,200	238.6	.29	1.7	.0049	20	.097	+24
380-390	24	.095	.023	1,500	638.6	.96	.8	.0077	28	.122	+28
390-400	24	.089	.021	1,800	188.8	.34	1.6	.0054	19	.110	+24
400-410	23	.099	.023	1,500	159.2	.24	1.2	.0029	10	.110	+11
410-420	26	.167	.043	900	251.2	.23	1.2	.0028	6	.176	+ 5
420-430	25	.102	.026	1,800	114.6	.21	1.9	.0040	13	.117	+15
430-440	21	.072	.015	1,200	109.6	.13	1.9	.0025	14	.083	+13
440-450	25	.087	.022	1,200	43.0	.05	2.4	.0012	5	.092	+ 6
450-460	22	.067	.015	1,500	286.0	.43	1.1	.0047	24	.087	+30
460-470	26	.138	.036	3,000	220.0	.66	.9	.0059	14	.157	+14
470-480	29	.062	.018	4,200	181.0	.76	1.1	.0084	32	.089	+44
480-490	27	.098	.026	3,300	177.0	.58	.6	.0035	12	.109	+11
490-500	26	.078	.020	3,300	270.0	.89	.7	.0062	24	.099	+27
Average, 360-500	25	.092	.023	1,900	237.9	.43	1.3	.0046	17	.108	+17

They contained a very small amount of suspended solids. In addition the hole at that time was making less than two barrels of water per 1/8 split over a 10-foot sample interval. The combination of the long settling time and resultant small amount of suspended solids, together with the limited amount of water being rejected, resulted in negligible losses.

Samples from deeper in the hole, when the volume of water had increased and when flocculating and decanting were being carried out at the drill site, showed a much higher loss of molybdenite.

The standard practice throughout most of the program was to send up to two barrels of water to the camp where conditions were such that results similar to the first six samples were attained. When volumes of water in excess of two barrels were produced, the sample was reduced to two barrels by flocculating and subsequently syphoning off what appeared to be clear water at the drill site.

The field decanting was done as an alternative to transporting up to 15 barrels of water per 10-foot sample, in an effort to reduce the sample handling problems. In all probability other sampling errors would result if an attempt were made to handle the several hundred barrels of water that were often produced per day.

The results shown in table II were not received until after the program was terminated and hence no adjustments to further improve the technique were attempted.

Table III provides detail of the water flows encountered in each of the 1971 rotary holes. The drilling rates are the average penetration over 10-foot intervals as recorded on the geolograph log. The water volumes are based on visual estimates and notes on the number of barrels produced for holes 2, 4 and 5. Measurements during each 10-foot interval were taken and recorded for holes 7, 9, 10, 12 and 15.

TABLE III

WATER VOLUME DATA

Hole No. and Location	Footage	Sample Interval (feet)	Drilling Rate min./ft.	Approx. Water Volumes	
				Gallons Per Min.	Gallons Per Sample Interval
R-2	30- 40	10	24	2	480
(8W-00)	40- 50	10	5	2	100
	50- 60	10	8	2	160
	60- 70	10	11	2	220
	70- 80	10	15	2	300
	80- 90	10	7	3	210
	90-100	10	2	6	120
	100-110	10	2	6	120
	110-120	10	4	6	240
	120-130	10	3	6	180
	130-140	10	5	7	350
	140-150	10	7	7	490
	150-160	10	3	9	270
	160-170	10	2	10	200
	170-180	10	2	12	240
	180-190	10	3	12	360
	190-200	10	5	12	600
	200-210	10	8	12	1,000
	210-220	10	13	14	1,800
	220-230	10	16	18	2,880
	230-240	10	9	18	1,620
	240-250	10	10	17	1,700
	250-260	10	8	20	1,600
	260-270	10	9	20	1,800
	270-280	10	11	20	2,200
	280-290	10	5	23	1,150
	290-300	10	5	24	1,200
	300-310	10	4	24	980
	310-320	10	5	24	1,200
	320-330	10	4	23	920
	330-340	10	6	23	1,380
	340-350	10	9	24	2,160
R-4	23- 30	7	18	2	250
(8W-4N)	30- 40	10	10	3	300
	40- 50	10	8	3	240
	50- 60	10	2	8	160
	60- 70	10	2	8	160
	70- 80	10	4	10	400

TABLE III
WATER VOLUME DATA
Cont'd

Hole No. and Location	Footage	Sample Interval (feet)	Drilling Rate min. /ft.	Approx. Water Volumes Gallons Per Min.	Approx. Water Volumes Gallons Per Sample Interval
R-4 (cont'd)	80- 90	10	4	10	400
	90-100	10	1	10	100
	100-110	10	6	10	600
	110-120	10	7	10	700
	120-130	10	5	10	500
	130-140	10	9	10	900
	140-150	10	12	10	1,200
	150-160	10	15	10	1,500
	160-170	10	11	12	1,210
	170-180	10	6	12	720
	180-190	10	4	14	560
	190-200	10	5	15	750
	200-210	10	6	15	900
	210-220	10	7	16	1,120
	220-230	10	11	16	1,760
	230-240	10	19	18	3,420
	240-250	10	10	22	2,200
	250-260	10	9	23	2,070
	260-270	10	14	23	3,220
	270-280	10	11	23	2,530
	280-290	10	8	22	1,760
	290-300	10	6	22	1,320
	300-310	10	4	20	800
	310-320	10	6	20	1,200
	320-330	10	5	22	1,100
	330-340	10	4	22	880
	340-350	10	3	22	660
	350-360	10	4	22	880
	360-370	10	3	26	780
	370-380	10	2	32	640
	380-390	10	2	32	640
	390-400	10	2	30	600
	400-410	10	2	30	600
	410-420	10	2	33	660
	420-428	8	3	32	790

TABLE III
WATER VOLUME DATA
Cont'd

Hole No. and Location	Footage	Sample Interval (feet)	Drilling Rate min./ft.	Approx. Water Volumes Gallons Per Min.	Gallons Per Sample Interval
R-5	30- 40	10	2	Nil	Nil
(4W-2N)	40- 50	10	2	Nil	Nil
	50- 60	10	1	Nil	Nil
	60- 70	10	2	Nil	Nil
	70- 80	10	5	3	150
	80- 90	10	7	3	210
	90-100	10	8	3	240
	100-110	10	6	3	180
	110-120	10	8	3	240
	120-130	10	4	4	160
	130-140	10	3	6	180
	140-150	10	5	6	300
	150-160	10	6	7	420
	160-170	10	8	6	480
	170-180	10	9	8	720
	180-190	10	9	10	900
	190-200	10	9	10	900
	200-210	10	7	12	840
	210-220	10	6	11	660
	220-230	10	6	15	900
	230-240	10	5	15	750
	240-250	10	4	17	680
	250-260	10	3	17	510
	260-270	10	6	17	1,020
	270-280	10	7	18	1,260
	280-290	10	8	22	1,760
	290-300	10	8	22	1,760
	300-310	10	8	22	1,760
	310-320	10	13	26	3,380
	320-330	10	11	31	3,410
	330-340	10	8	31	2,480
	340-350	10	8	32	2,560
	350-360	10	7	32	2,240
	360-370	10	6	32	1,920
	370-380	10	6	30	1,800
	380-390	10	9	30	2,700
	390-400	10	8	31	2,480
	400-410	10	6	32	1,920
	410-420	10	9	34	3,060

TABLE III
WATER VOLUME DATA
Cont'd

Hole No. and Location	Footage	Sample Interval (feet)	Drilling Rate min./ft.	Approx. Water Volumes Gallons Per Min.	Gallons Per Sample Interval
R-5 (cont'd)	420-430	10	9	34	3,060
	430-440	10	8	34	2,720
	440-450	10	7	34	2,380
	450-460	10	8	35	2,800
	460-470	10	10	34	3,400
	470-480	10	11	31	3,410
	480-490	10	14	34	4,760
	490-500	10	7	33	2,310
R-7 (8W-4S)	22- 30	8	9	Nil	Nil
	30- 40	10	17	Nil	Nil
	40- 46	6	37	Nil	Nil
R-9 (8W-4S)	26- 30	4	30	Nil	Nil
	30- 40	10	34	Nil	Nil
	40- 50	10	25	Nil	Nil
	50- 60	10	19	Nil	Nil
	60- 70	10	12	Nil	Nil
	70- 80	10	8	3	240
	80- 90	10	14	3	420
	90-100	10	20	3	600
	100-110	10	17	3	510
	110-120	10	7	2	140
	120-130	10	16	3	480
	130-140	10	13	3	390
	140-150	10	17	3	510
	150-160	10	13	3	390
	160-170	10	10	4	400
	170-180	10	15	5	800
	180-190	10	15	5	800
	190-200	10	8	12	960
	200-210	10	7	11	770
	210-220	10	8	11	880
	220-230	10	7	12	840
	230-240	10	10	14	1,400
	240-250	10	10	14	1,400
	250-260	10	9	17	1,530
	260-270	10	7	17	1,190

TABLE III
WATER VOLUME DATA
Cont'd

Hole No. and Location	Footage	Sample Interval (feet)	Drilling Rate min./ft.	Approx. Water Volumes Gallons Per Min.	Gallons Per Sample Interval
R-9 (cont'd)	270-280	10	6	18	1,080
	280-290	10	9	20	1,800
	290-300	10	9	20	1,800
	300-310	10	4	20	800
	310-320	10	6	20	1,200
	320-330	10	3	17	510
	330-340	10	4	17	680
	340-350	10	2	16	320
	350-360	10	4	16	480
	360-370	10	3	16	480
	370-380	10	5	19	960
	380-390	10	7	17	1,200
	390-400	10	7	20	1,440
	400-410	10	5	24	1,200
	410-420	10	3	24	720
	420-430	10	6	24	1,440
	430-440	10	4	24	960
	440-450	10	5	19	960
	450-460	10	6	20	1,200
	460-470	10	12	20	2,400
	470-480	10	15	22	3,360
	480-490	10	15	18	2,640
	490-500	10	10	26	2,640
	500-505	5	12	25	1,500
R-10 (00-4N)	30- 40	10	8	Nil	Nil
	40- 50	10	9	Nil	Nil
	50- 60	10	19	Nil	Nil
	60- 70	10	12	Nil	Nil
	70- 80	10	12	Nil	Nil
	80- 90	10	9	Nil	Nil
	90-100	10	15	Nil	Nil
	100-110	10	12	Nil	Nil
	110-120	10	7	Nil	Nil
	120-130	10	5	Nil	Nil
	130-140	10	9	Nil	Nil
	140-150	10	12	Nil	Nil
	150-160	10	11	Nil	Nil
	160-170	10	14	Nil	Nil

TABLE III
WATER VOLUME DATA
Cont'd

Hole No. and Location	Footage	Sample Interval (feet)	Drilling Rate min./ft.	Approx. Water Volumes Gallons Per Min.	Gallons Per Sample Interval
R-10 (cont'd)	170-180	10	9	Nil	Nil
	180-190	10	9	Nil	Nil
	190-200	10	10	Nil	Nil
	200-210	10	7	Nil	Nil
	210-220	10	13	Nil	Nil
	220-230	10	8	1	80
	230-240	10	9	4	360
	240-250	10	11	4	440
	250-260	10	12	4	480
	260-270	10	8	5	400
	270-280	10	6	6	360
	280-290	10	7	5	350
	290-300	10	13	14	1,820
	300-310	10	8	15	1,200
	310-320	10	8	15	1,200
	320-330	10	13	15	1,950
	330-340	10	12	15	1,800
	340-350	10	17	15	2,550
	350-360	10	7	15	1,050
	360-370	10	10	15	1,500
	370-380	10	7	14	980
	380-390	10	4	12	480
	390-400	10	3	12	360
	400-410	10	4	12	480
	410-420	10	6	12	720
	420-430	10	5	13	650
	430-440	10	7	14	980
	440-450	10	7	14	980
R-12 (00-4N)	35- 40	5	8	12	480
	40- 50	10	7	12	840
	50- 60	10	17	8	1,360
	60- 70	10	12	8	960
	70- 80	10	11	8	880
	80- 90	10	12	10	1,200
	90-100	10	11	10	1,100
	100-110	10	7	10	700
	110-120	10	8	17	1,360

TABLE III
WATER VOLUME DATA
Cont'd

Hole No. and Location	Footage	Sample Interval (feet)	Drilling Rate min./ft.	Approx. Water Volumes Gallons Per Min.	Gallons Per Sample Interval
R-12 (cont'd)	120-130	10	10	17	1,700
	130-140	10	3	18	540
	140-150	10	4	17	680
	150-160	10	12	17	2,040
	160-170	10	9	17	1,530
	170-180	10	7	17	1,190
	180-190	10	11	16	1,760
	190-200	10	8	16	1,280
	200-210	10	8	18	1,440
	210-220	10	13	18	2,340
	220-230	10	9	22	1,980
	230-240	10	6	18	1,080
	240-250	10	8	17	1,360
R-14 (2W-2N)	21- 30	9	6	Nil	Nil
	30- 40	10	7	Nil	Nil
	40- 50	10	5	Nil	Nil
	50- 60	10	7	Nil	Nil
	60- 70	10	5	Nil	Nil
	70- 80	10	6	Nil	Nil
	80- 90	10	5	Nil	Nil
	90-100	10	5	Nil	Nil
	100-110	10	6	Nil	Nil
	110-120	10	3	Nil	Nil
	120-130	10	4	2	80
	130-140	10	3	3	90
	140-150	10	2	3	60
	150-160	10	4	5	200
	160-170	10	3	5	150
	170-180	10	2	20	400
	180-190	10	2	21	420
	190-200	10	4	16	640
	200-210	10	6	15	900
	210-220	10	10	9	900
	220-230	10	12	8	960
	230-240	10	7	8	560
	240-244	4	8	9	290

CORRELATION WITH BULK SAMPLING

Two rotary holes, R-10 and R-12, were drilled adjacent to 00-4N north raise, and hole R-14 was drilled alongside 2W-2N raise. Detailed assay results from this coincident data are shown on the following two pages.

As will be noted, both holes R-10 and R-14 produced a higher overall grade than did the coincident raise a few feet away. Hole R-12 which was drilled with a substantial flow of water, and therefore is suspect of significant molybdenum loss, averaged only 3% less in grade than the raise.

From the limited coincident data available it appears that dry rotary results tend to run higher in grade than does the comparative bulk sampling. The comparative data from the 1970 drilling tends to support this conclusion. In that case two essentially dry rotary holes lie within a 200-foot square block which is bounded on three corners by raises 2W-2N, 0-2N and 0-4N. Over the 99 feet of vertical height for which there is complete data from all three raises, the average grades are:

2W-2N Raise	99 feet @ 0.202% MoS_2
00 -2N Raise	99 feet @ 0.175% MoS_2
00 -4N Raise	99 feet @ 0.318% MoS_2
Average bulk sample grade	99 feet @ 0.232% MoS_2

The two rotary holes drilled within the block bounded by the above raises gave average grades over the same vertical interval:

Hole R-3	99 feet @ 0.237% MoS_2
Hole R-6	99 feet @ 0.248% MoS_2
Average rotary grade	99 feet @ 0.242% MoS_2

TABLE IV

DETAIL OF COINCIDENT BULK SAMPLING AND ROTARY DRILLING AT 00-4N

Footage	Sample Interval (feet)	R-12 Wet	R-10 Dry	Raise 00-4N	DDH 00-4N
57- 60	3	.070	.075	.165	.025
60- 70	10	.339	.208	.212	.057
70- 80	10	.280	.211	.314	.102
80- 90	10	.409	.718	.269	.359
90-100	10	.437	.204	.220	.382
100-110	10	.480	.907	.244	.180
110-120	10	.374	.318	.231	.178
120-130	10	.374	.307	.480	.154
130-140	10	.257	.279	.571	.705
140-150	10	.142	.411	.359	.315
150-160	10	.152	.101	.200	.154
160-170	10	.205	.135	.226	.133
170-180	10	.117	.293	.291	.214
180-183	3	.160	.099	.284	.440
57-183	126	.288	.329	.298	.244

TABLE V

COINCIDENT BULK SAMPLING AND
ROTARY DRILLING AT 2W-2N

Footage	Sample Interval (feet)	R-14 Some Water	Raise 2W-2N	DDH 2W-2N
45- 50	5	.018	.050	.006
50- 60	10	.026	.071	.018
60- 70	10	.075	.067	.006
70- 80	10	.022	.062	.009
80- 90	10	.229	.071	.097
90-100	10	.021	.073	.042
100-110	10	.230	.098	.154
110-120	10	.293	.169	.340
120-130	10	.223	.325	.630
130-140	10	.250	.353	.282
140-150	10	.316	.227	.076
150-160	10	.407	.171	.527
160-170	10	.300	.182	.189
170-180	10	.124	.190	.228
180-187	7	.130	.167	.359
45-187	142	.184	.155	.201

Although the available data indicates that dry rotary samples on average have produced higher grade results than coincident bulk sampling, it is impossible at this time to determine which method, if either, is in error. The apparent discrepancy could in fact be due to unilateral bias resulting from an insufficient population of comparative data.

When studying the comparative data from hole R-14 and 2W-2N raise it should be noted that 2W-2N was not a typical raise in that the bulk sample grade averaged 30% less than the coincident drill core. This was in sharp contrast to the overall 15% appreciation of bulk sampling values over core.

CORRELATION WITH DIAMOND DRILLING

The rotary drill holes on average assayed 9% higher than the coincident diamond drilling. This relationship, however, is very inconsistent, with large deviations both from hole to hole and to a greater extent over various portions of the same hole.

As mentioned earlier, a relationship does appear to exist between the volume of water being produced and the percent increase of rotary grade over core. This is especially true when the total population of comparative results is grouped in summary form.

Water Volume	Coincident Footage	Drill Core % MoS_2	Rotary % MoS_2	% Difference Rotary/Core
Dry cuttings	397	.129	.166	+ 29
0 to 400 gallons	497	.113	.136	+ 20
400 to 1000 gallons	697	.150	.157	+ 5
More than 1000 gallons	965	.118	.114	- 4
	2,556	.127	.138	+ 9

Tables VI, VII, VIII, and IX provide detail of coincident rotary drilling and diamond drill core assay results. Table VI shows a comparison of rotary and drill core grades when grouped in accordance with the water produced during rotary drilling, Table VII shows a breakdown of the comparative grades for various flows of water encountered in each hole, Table VIII provides complete comparative assay results for each of the eight rotary holes drilled in 1971, and Table IX shows the detail comparison of rotary and drill core assay results.

TABLE VI

COMPARATIVE ROTARY AND DRILL CORE GRADES WHEN GROUPED IN ACCORDANCE WITH VOLUME OF WATER PRODUCED DURING ROTARY DRILLING

Gallons of Water Produced	Hole No.	Interval ft.	Coincident Footage	Drill Core %MoS_2	Rotary %MoS_2	% Difference Rotary/Core
Dry	R-5	30- 70	40	.009	.007	- 29
	R-7	22- 46	24	.066	.065	- 2
	R-9	26- 70	44	.047	.098	+109
	R-10	30-220	190	.210	.269	+ 28
	R-14	21-120	99	.069	.088	+ 28
			397	.129	.166	+ 29
0 to 400	R-2	30-190	160	.138	.124	- 11
	R-4	23-100	77	.016	.017	+ 6
	R-5	70-150	80	.049	.042	- 17
	R-9	70-130	60	.067	.131	+ 96
	R-10	220-290	70	.113	.292	+158
	R-14	120-170	50	.341	.299	- 14
			497	.113	.136	+ 20
400 to 1000	R-4	100-210	110	.064	.083	+ 30
		330-428	98	.049	.052	+ 6
	R-5	150-260	110	.131	.132	+ 1
	R-9	130-230	100	.238	.232	- 3
		320-370	50	.184	.108	- 70
	R-10	370-450	80	.175	.228	+ 30
	R-12	35-110	75	.151	.283	+ 87
	R-14	170-244	74	.272	.173	- 57
			697	.150	.157	+ 5
> 1000	R-2	190-350	160	.100	.099	- 1
	R-4	210-330	120	.069	.088	+ 28
	R-5	260-500	240	.093	.082	- 13
	R-9	230-320	90	.120	.146	+ 22
		370-505	135	.115	.093	- 24
	R-10	290-370	80	.120	.099	- 18
	R-12	110-250	140	.226	.218	+ 4
			965	.118	.114	- 4

TABLE VII

RELATIONSHIP OF WATER VOLUMES
TO ROTARY CUTTINGS VS DRILL CORE GRADE
CORRELATION

Hole No.	Interval ft.	Coincident Footage	Gallons of Water Produced	Drill Core $\%MoS_2$	Rotary $\%MoS_2$	% Difference Rotary/Core
R-2	30-190	160	0-400	.138	.124	- 11
	190-350	160	>1000	.100	.099	- 1
	30-350	320		.119	.111	- 7
R-4	23-100	77	0-400	.016	.017	+ 6
	100-210	110	400-1000	.064	.083	+ 30
	210-330	120	> 1000	.069	.088	+ 28
	330-428	98	400-1000	.049	.052	+ 6
	23-428	405		.053	.065	+ 15
R-5	30- 70	40	Dry	.009	.007	- 29
	70-150	80	0-400	.049	.042	- 17
	150-260	110	400-1000	.131	.132	+ 1
	260-500	240	> 1000	.093	.082	- 13
	30-500	470		.087	.081	- 7
R-7	22- 46	24	Dry	.066	.065	- 2
R-9	26- 70	44	Dry	.047	.098	+109
	70-130	60	0-400	.067	.131	+ 96
	130-230	100	400-1000	.238	.232	- 3
	230-320	90	> 1000	.120	.146	+ 22
	320-370	50	400-1000	.184	.108	- 70
	370-505	135	> 1000	.115	.093	- 24
	26-505	479		.137	.139	+ 1
R-10	30-220	190	Dry	.210	.269	+ 28
	220-290	70	0-400	.113	.292	+158
	290-370	80	> 1000	.120	.099	- 18
	370-450	80	400-1000	.175	.228	+ 30
	30-450	420		.170	.233	+ 37
R-12	35-110	75	400-1000	.151	.283	+ 87
	110-250	140	> 1000	.226	.218	+ 4
	35-250	215		.200	.241	+ 20
R-14	21-120	99	Dry	.069	.088	+ 28
	120-170	50	0-400	.341	.299	- 14
	170-244	74	400-1000	.272	.173	- 57
	21-244	223		.195	.164	- 19

TABLE VIII

SUMMARY OF COMPARISON

OF ROTARY AND DRILL CORE ASSAY RESULTS

Hole Number	Sample Interval ft.	Coincident Footage	Drill Core % MoS_2	Rotary % MoS_2	% Increase Rotary/Core
R-2	30-350	320	.119	.111	- 7
R-4	23-428	405	.053	.065	+15
R-5	30-500	470	.087	.081	- 7
R-7	22- 46	24	.066	.065	- 2
R-9	26-505	479	.137	.139	+ 1
R-10	30-450	420	.170	.233	+37
R-12	35-250	215	.200	.241	+20
R-14	21-244	223	.197	.164	-19
Weighted Average		2,556	.128	.139	+ 9

TABLE IX

DETAIL OF COMPARISON
OF ROTARY AND DRILL CORE ASSAY RESULTS

Hole No. and Location	Footage	Sample Interval ft.	Drill Core Assays			Rotary
			First ½ Select	Second ½ Mine Lab.	Combined Average	Mine Lab.
R-2	30- 40	10	.100	.069	.085	.014
(8W-00)	40- 50	10	.100	.028	.064	.018
	50- 60	10	.025	.018	.022	.039
	60- 70	10	.023	.227	.125	.069
	70- 80	10	.051	.020	.036	.106
	80- 90	10	.036	.019	.028	.183
	90-100	10	.152	.031	.092	.030
	100-110	10	.340	.047	.193	.178
	110-120	10	.040	.063	.052	.268
	120-130	10	.560	.127	.344	.087
	130-140	10	.140	.185	.162	.387
	140-150	10	.262	.219	.241	.168
	150-160	10	.203	.174	.186	.131
	160-170	10	.256	.186	.221	.054
	170-180	10	.170	.183	.176	.051
	180-190	10	.297	.080	.189	.194
	190-200	10	.303	.260	.282	.135
	200-210	10	.031	.038	.035	.084
	210-220	10	.029	.048	.039	.063
	220-230	10	.054	.075	.064	.418
	230-240	10	.290	.263	.277	.098
	240-250	10	.108	.120	.114	.053
	250-260	10	.180	.127	.154	.052
	260-270	10	.133	.113	.123	.102
	270-280	10	.015	.048	.032	.076
	280-290	10	.089	.100	.095	.167
	290-300	10	.059	.026	.043	.044
	300-310	10	.015	.015	.015	.042
	310-320	10	.128	.104	.116	.098
	320-330	10	.022	.021	.022	.061
	330-340	10	.076	.114	.095	.029
	340-350	10	.091	.106	.099	.067
	30-350	320	.137	.102	.119	.111

TABLE IX
DETAIL OF COMPARISON
OF ROTARY AND DRILL CORE ASSAY RESULTS
Cont'd

Hole No. and Location	Footage	Sample Interval ft.	Drill Core Assays First ½ Select	Second ½ Mine Lab.	Combined Average	Rotary Mine Lab.
R-4	23- 30	7	.005	.009	.007	.019
(8W-4N)	30- 40	10	.012	.017	.015	.014
	40- 50	10	.006	.010	.008	.013
	50- 60	10	.009	.008	.008	.027
	60- 70	10	.009	.003	.006	.013
	70- 80	10	.004	.003	.004	.033
	80- 90	10	.068	.016	.042	.006
	90-100	10	.015	.051	.033	.011
	100-110	10	.012	.006	.009	.007
	110-120	10	.028	.040	.034	.048
	120-130	10	.104	.131	.118	.101
	130-140	10	.110	.049	.080	.047
	140-150	10	.037	.044	.040	.229
	150-160	10	.009	.009	.009	.134
	160-170	10	.008	.003	.006	.053
	170-180	10	.046	.115	.081	.066
	180-190	10	.249	.147	.198	.035
	190-200	10	.040	.046	.043	.129
	200-210	10	.120	.055	.088	.070
	210-220	10	.065	.090	.078	.016
	220-230	10	.112	.275	.193	.112
	230-240	10	.104	.078	.091	.069
	240-250	10	.055	.038	.047	.063
	250-260	10	.064	.050	.057	.140
	260-270	10	.075	.053	.064	.214
	270-280	10	.070	.039	.055	.028
	280-290	10	.069	.062	.065	.106
	290-300	10	.045	.029	.037	.053
	300-310	10	.021	.035	.028	.103
	310-320	10	.040	.059	.050	.070
	320-330	10	.080	.050	.065	.080
	330-340	10	.067	.070	.068	.040
	340-350	10	.021	.025	.023	.066
	350-360	10	.042	.034	.038	.042
	360-370	10	.074	.086	.080	.030
	370-380	10	.027	.123	.075	.039
	380-390	10	.055	.160	.108	.030

TABLE IX
DETAIL OF COMPARISON
ROTARY AND DRILL CORE ASSAY RESULTS
Cont'd

Hole No. and Location	Footage	Sample Interval ft.	Drill Core Assays First ½ Select	Second ½ Mine Lab.	Combined Average	Rotary Mine Lab.
R-4 (cont'd)	390-400	10	.037	.023	.030	.033
	400-410	10	.006	.002	.004	.095
	410-420	10	.021	.030	.025	.063
	420-428	8	.031	.042	.037	.092
	23-428	405	.051	.054	.053	.065
			Total Drill Core Mine Lab.			
R-5 (4W-2N)	30- 40	10	.003			.007
	40- 50	10	.008			.007
	50- 60	10	.005			.006
	60- 70	10	.021			.005
	70- 80	10	.012			.007
	80- 90	10	.011			.011
	90-100	10	.039			.054
	100-110	10	.156			.021
	110-120	10	.057			.029
	120-130	10	.044			.007
	130-140	10	.056			.160
	140-150	10	.018			.048
	150-160	10	.054			.018
	160-170	10	.036			.082
	170-180	10	.037			.099
	180-190	10	.114			.189
	190-200	10	.101			.200
	200-210	10	.181			.138
	210-220	10	.161			.067
	220-230	10	.249			.128
	230-240	10	.245			.120
	240-250	10	.037			.188
	250-260	10	.221			.228
	260-270	10	.072			.089
	270-280	10	.020			.101
	280-290	10	.085			.072
	290-300	10	.054			.019
	300-310	10	.152			.036
	310-320	10	.078			.113
	320-330	10	.689			.138

TABLE IX
DETAIL OF COMPARISON
ROTARY AND DRILL CORE ASSAY RESULTS
Cont'd

Hole No. and Location	Footage	Sample Interval ft.	Drill Core Assays Total Drill Core Mine Lab.	Rotary Mine Lab.
R-5 (cont'd)	330-340	10	.072	.111
	340-350	10	.049	.111
	350-360	10	.027	.072
	360-370	10	.063	.087
	370-380	10	.136	.112
	380-390	10	.008	.059
	390-400	10	.063	.044
	400-410	10	.044	.050
	410-420	10	.059	.122
	420-430	10	.067	.069
	430-440	10	.097	.112
	440-450	10	.201	.067
	450-460	10	.031	.077
	460-470	10	.045	.108
	470-480	10	.056	.094
	480-490	10	.039	.053
	490-500	10	.023	.049
	30-500	10	.087	.081

			First ½ Select	Second ½ Mine Lab.	Combined Average	
R-7 (8W-4S)	22- 30	8	.108	.052	.080	.103
	30- 40	10	.027	.092	.059	.055
	40- 46	6	.085	.032	.059	.030
	22- 46	24	.069	.064	.066	.065
R-9 (8W-4S)	26- 30	4	.108	.052	.080	.047
	30- 40	10	.027	.092	.059	.050
	40- 50	10	.085	.032	.059	.043
	50- 60	10	.036	.033	.034	.033
	60- 70	10	.012	.035	.024	.285
	70- 80	10	.007	.027	.017	.262
	80- 90	10	.046	.027	.037	.085
	90-100	10	.042	.055	.048	.099
	100-110	10	.065	.046	.056	.066
	110-120	10	.039	.068	.053	.169
	120-130	10	.176	.201	.189	.106

TABLE IX
DETAIL OF COMPARISON
ROTARY AND DRILL CORE ASSAY RESULTS
Cont'd

Hole No. and Location	Footage	Sample Interval ft.	Drill Core Assays First ½ Select	Second ½ Mine Lab.	Combined Average	Rotary Mine Lab.
R-9	130-140	10	.019	.042	.030	.126
(cont'd)	140-150	10	.066	.083	.075	.041
	150-160	10	.051	.017	.034	.155
	160-170	10	.118	.115	.116	.246
	170-180	10	.182	.396	.289	.125
	180-190	10	.063	.074	.069	.224
	190-200	10	.512	.457	.484	.431
	200-210	10	.395	.769	.582	.733
	210-220	10	.244	.462	.353	.122
	220-230	10	.519	.161	.340	.118
	230-240	10	.095	.062	.078	.148
	240-250	10	.057	.149	.103	.135
	250-260	10	.030	.044	.037	.204
	260-270	10	.043	.084	.064	.135
	270-280	10	.214	.229	.222	.231
	280-290	10	.095	.097	.096	.121
	290-300	10	.083	.066	.075	.124
	300-310	10	.244	.139	.191	.168
	310-320	10	.158	.271	.215	.051
	320-330	10	.318	.178	.248	.144
	330-340	10	.262	.316	.289	.113
	340-350	10	.078	.066	.072	.141
	350-360	10	.135	.272	.204	.092
	360-370	10	.139	.079	.109	.049
	370-380	10	.226	.189	.207	.078
	380-390	10	.033	.036	.035	.095
	390-400	10	.039	.121	.080	.089
	400-410	10	.128	.033	.080	.099
	410-420	10	.392	.364	.378	.167
	420-430	10	.045	.089	.067	.102
	430-440	10	.110	.096	.103	.072
	440-450	10	.054	.052	.053	.087
	450-460	10	.122	.072	.097	.067
	460-470	10	.048	.046	.047	.138
	470-480	10	.026	.021	.024	.062
	480-490	10	.241	.430	.335	.098
	490-500	10	.027	.033	.030	.078
	500-505	5	.015	.060	.037	.041
	26-505	479	.130	.144	.137	.139

TABLE IX
DETAIL OF COMPARISON
ROTARY AND DRILL CORE ASSAY RESULTS

Hole No. and Location	Footage	Sample Interval ft.	Total Drill Core C.E.	Total Drill Core Loring	Rotary Mine Lab.	Reject Water Appx. Gallons Per 1/8 Split
R-10 (00-4N)	30- 40	10	.010	.012	.037	Nil
	40- 50	10	.050	.024	.066	Nil
	50- 60	10	.020	.025	.075	Nil
	60- 70	10	.070	.057	.208	Nil
	70- 80	10	.100	.102	.211	Nil
	80- 90	10	.400	.359	.718	Nil
	90-100	10	.580	.382	.204	Nil
	100-110	10	.230	.180	.907	Nil
	110-120	10	.220	.178	.318	Nil
	120-130	10	.210	.154	.307	Nil
	130-140	10	.680	.705	.279	Nil
	140-150	10	.410	.315	.411	Nil
	150-160	10	.220	.154	.101	Nil
	160-170	10	.140	.133	.135	Nil
	170-180	10	.230	.214	.293	Nil
	180-190	10	.040	.440	.099	Nil
	190-200	10	.280	.163	.281	Nil
	200-210	10	.090	.178	.255	Nil
	210-220	10	.280	.212	.207	Nil
	220-230	10	.180	.176	.487	20
	230-240	10	.100	.039	.158	45
	240-250	10	.130	.106	.129	60
	250-260	10	.230	.169	.242	150
	260-270	10	.060	.036	.344	100
	270-280	10	.080	.059	.197	120
	280-290	10	.170	.208	.490	120
	290-300	10	.120	.118	.155	220
	300-310	10	.060	.066	.084	140
	310-320	10	.190	.160	.142	140
	320-330	10	.150	.130	.079	230
	330-340	10	.130	.063	.080	220
	340-350	10	.350	.315	.115	310
	350-360	10	.100	.076	.074	130
	360-370	10	.040	.031	.062	180
	370-380	10	.180	.147	.043	120
	380-390	10	.080	.076	.144	60
	390-400	10	.830	.504	.636	50
	400-410	10	.200	.282	.108	60

TABLE IX
DETAIL OF COMPARISON
ROTARY AND DRILL CORE ASSAY RESULTS

Hole No. and Location	Footage	Sample Interval ft.	Total Drill Core C.E.	Total Drill Core Loring	Rotary Mine Lab.	Reject Water Appx. Gallons Per 1/8 Split
R-10 (cont'd)	410-420	10	.120	.070	.233	90
	420-430	10	.070	.185	.121	80
	430-440	10	.030	.019	.442	120
	440-450	10	.030	.118	.093	120
	30-450	420	.188	.170	.233	
R-12 (00-4N)	35- 40	5	.010	.012	.032	72
	40- 50	10	.050	.024	.094	105
	50- 60	10	.020	.025	.070	170
	60- 70	10	.070	.057	.339	108
	70- 80	10	.100	.102	.280	77
	80- 90	10	.400	.359	.409	144
	90-100	10	.580	.382	.437	121
	100-110	10	.230	.180	.480	84
	110-120	10	.220	.178	.374	168
	120-130	10	.210	.154	.374	210
	130-140	10	.680	.705	.257	66
	140-150	10	.410	.315	.142	84
	150-160	10	.220	.154	.152	252
	160-170	10	.140	.133	.205	189
	170-180	10	.230	.214	.117	147
	180-190	10	.040	.440	.160	220
	190-200	10	.280	.163	.363	160
	200-210	10	.090	.178	.193	200
	210-220	10	.280	.212	.201	325
	220-230	10	.180	.176	.335	252
	230-240	10	.100	.039	.067	150
	240-250	10	.130	.106	.116	176
	35-250	215	.217	.200	.241	
R-14 (2W-2N)	21- 30	9	.010	.007	.017	Nil
	30- 40	10	.010	.006	.011	Nil
	40- 50	10	.010	.006	.018	Nil
	50- 60	10	.015	.018	.026	Nil
	60- 70	10	.010	.006	.075	Nil
	70- 80	10	.010	.009	.022	Nil
	80- 90	10	.050	.097	.229	Nil
	90-100	10	.040	.042	.021	Nil
	100-110	10	.120	.154	.161	10

TABLE IX
DETAIL OF COMPARISON
ROTARY AND DRILL CORE ASSAY RESULTS
Cont'd

Hole No. and Location	Footage	Sample Interval ft.	Total Drill Core C.E.	Total Drill Core Loring	Rotary Mine Lab.	Reject Water Appx. Gallons Per 1/8 Split
R-14 (cont'd)	110-120	10	.420	.340	.293	10
	120-130	10	.530	.630	.223	10
	130-140	10	.210	.282	.250	15
	140-150	10	.080	.076	.316	15
	150-160	10	.370	.527	.407	20
	160-170	10	.200	.189	.300	20
	170-180	10	.190	.228	.124	20
	180-190	10	.350	.359	.130	20
	190-200	10	.390	.384	.415	40
	200-210	10	.180	.267	.147	50
	210-220	10	.570	.458	.071	100
	220-230	10	.190	.172	.107	130
	230-240	10	.110	.118	.124	100
	240-244	4	.070	.063	.403	50
	21-244	223	.183	.197	.164	

SAMPLING TECHNIQUES

GENERAL

The 1971 rotary drilling was done by the Big Indian Drilling Company of Calgary using their "Sure Core" rotary drilling technique. The "Sure Core" technique is a centre hole return drilling process based on the use of a double wall drill stem pipe, rotary bit and a dual swivel head which provides a closed system and theoretically full recovery of the cuttings. Air is injected between the inner and outer wall of the pipe and the cuttings are recovered through the inner tube.

Recoveries were generally in an acceptable range, holding quite steady between 90 and 105% of the total theoretical weight. The theoretical weight per 10-foot section was 210 pounds, based on a hole diameter of 4-7/8 inches and a specific gravity of 2.6 for the rock. In some holes recovered samples rather consistently exceeded theoretical weights, this overage being particularly evident in Hole R-5.

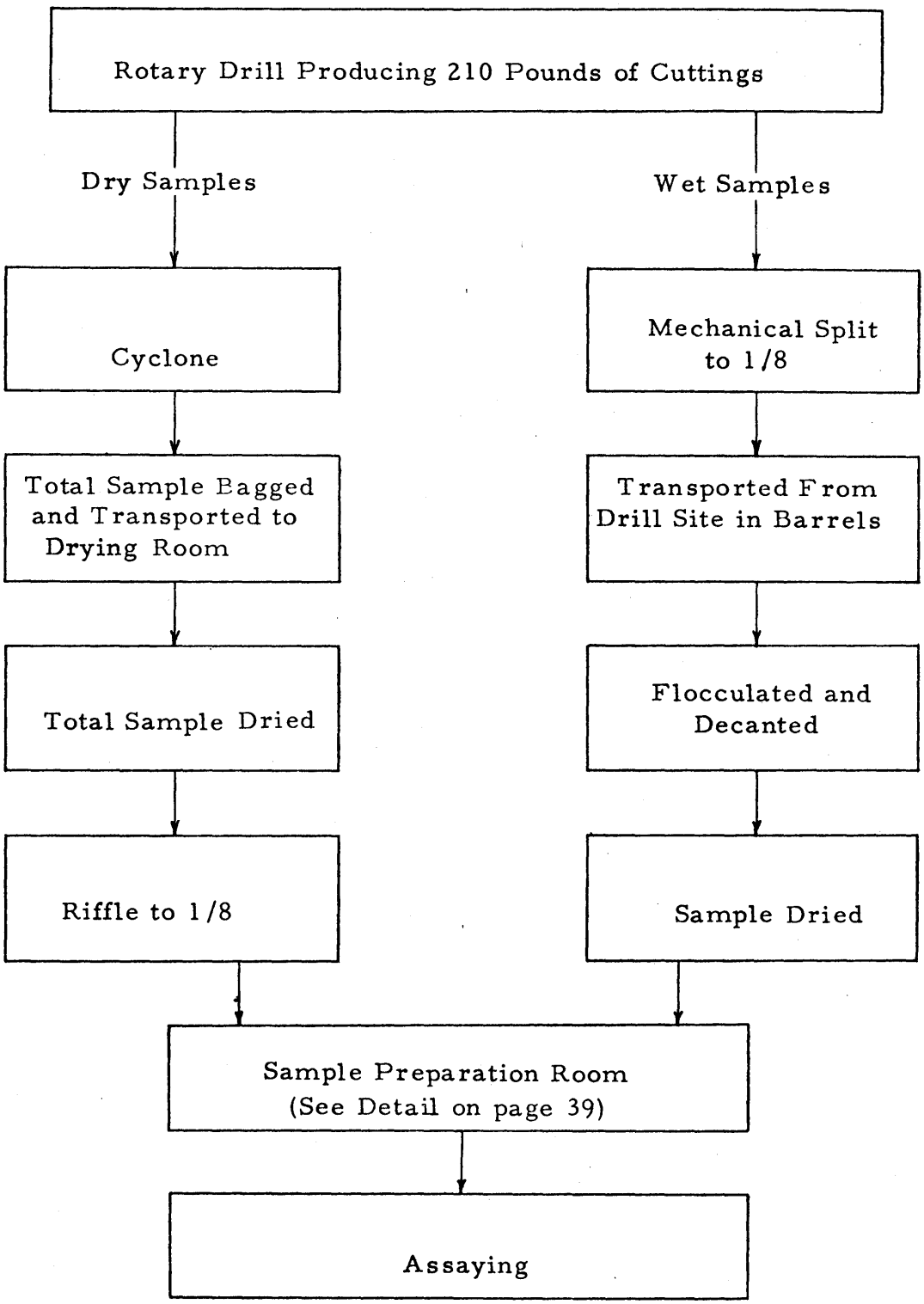
Details of recoveries for each sample are shown in the drill logs which are included in the appendix.

As shown in the flow sheet on the following page the wet and dry samples were handled differently for a considerable part of their preparation. For this reason the two procedures are discussed separately.

DRY SAMPLES

Approximately 15% of 1971 drilling returned dry cuttings. These were separated from the air stream in a large cyclone. The sample was collected from the bottom of the cyclone in large plastic bags, with the hole number and footages marked on the outside of each bag. The total

FLOW SHEET OF SAMPLE HANDLING
1971 ROTARY DRILLING



sample was then dried, weighed and transferred to the bucking room for processing.

The exhaust air from the cyclone escaped up a stack, carrying with it a small portion of extremely fine material. Samples of the stack dust generally assayed in a similar range or less than the drill cuttings. Stack loss of as much as 3 pounds per 10-foot interval was recorded, and it is believed that in some instances this loss may have been at least twice that amount.

Loss of drill cuttings also occurred from around the collar of the hole while drilling at shallow depths. Normally after penetration to about 50 feet, however, this loss became insignificant.

In general the dry samples posed very few problems and are considered to have provided valid results.

WET SAMPLES

The wet samples were directed through a mechanical splitter, which provided a 1/8 volume reduction, and were then collected in 30-gallon drums having disposable plastic liners and clamp-on tops. Whenever sample volumes exceeded two barrels, preliminary decanting was done at the drill site; that is, by adding lime and a flocculant to the barrel of sample to settle out suspended solids prior to syphoning off reject water. This work at the drill site reduced the sample to approximately 50 gallons of sludge. The drums were then transported to the campsite where a careful final flocculation was done.

All water remaining in the sample after the final flocculation was evaporated off during the drying process. After being dried, these samples were treated in the same manner as the dry samples for the remainder of the preparation process.

As discussed earlier, whenever large volumes of water were encountered in the drill hole, accuracy of the sample results was materially affected.

On one series of 12 samples settled cuttings and flocculated product were assayed separately, and it was found that the latter was consistently lower in MoS_2, in fact averaging only about half of the settled cuttings value. Results are summarized:

Hole	Footage	Unflocculated Cuttings % MoS_2	Flocculated Solids % MoS_2
R-2	200-210	.084	.025
	220-230	.418	.040
R-4	110-120	.048	.043
	120-130	.101	.103
	130-140	.047	.060
	140-150	.227	.107
	370-380	.040	.034
	380-390	.031	.019
	390-400	.035	.022
	400-410	.101	.037
	410-420	.064	.057
	420-430	.090	.103
Average		.107	.054

The weight of flocculated solids was generally between 2 and 5 pounds and averaged about 3 pounds. Since the unflocculated portion amounted to approximately 23 pounds, adding the flocculated solids effectively lowered the grade in the order of 6%.

As shown in Table II, page 9, a small but significant portion of solids was still being lost with the reject water. These were solids which were either in solution or had not reacted to the flocculation process in the time allowed. The available data indicates that approximately $\frac{1}{2}$ pound of

material, which often had a grade which ran ten times the grade of the collected sample, was being lost whenever excessive water was encountered.

SAMPLE PREPARATION

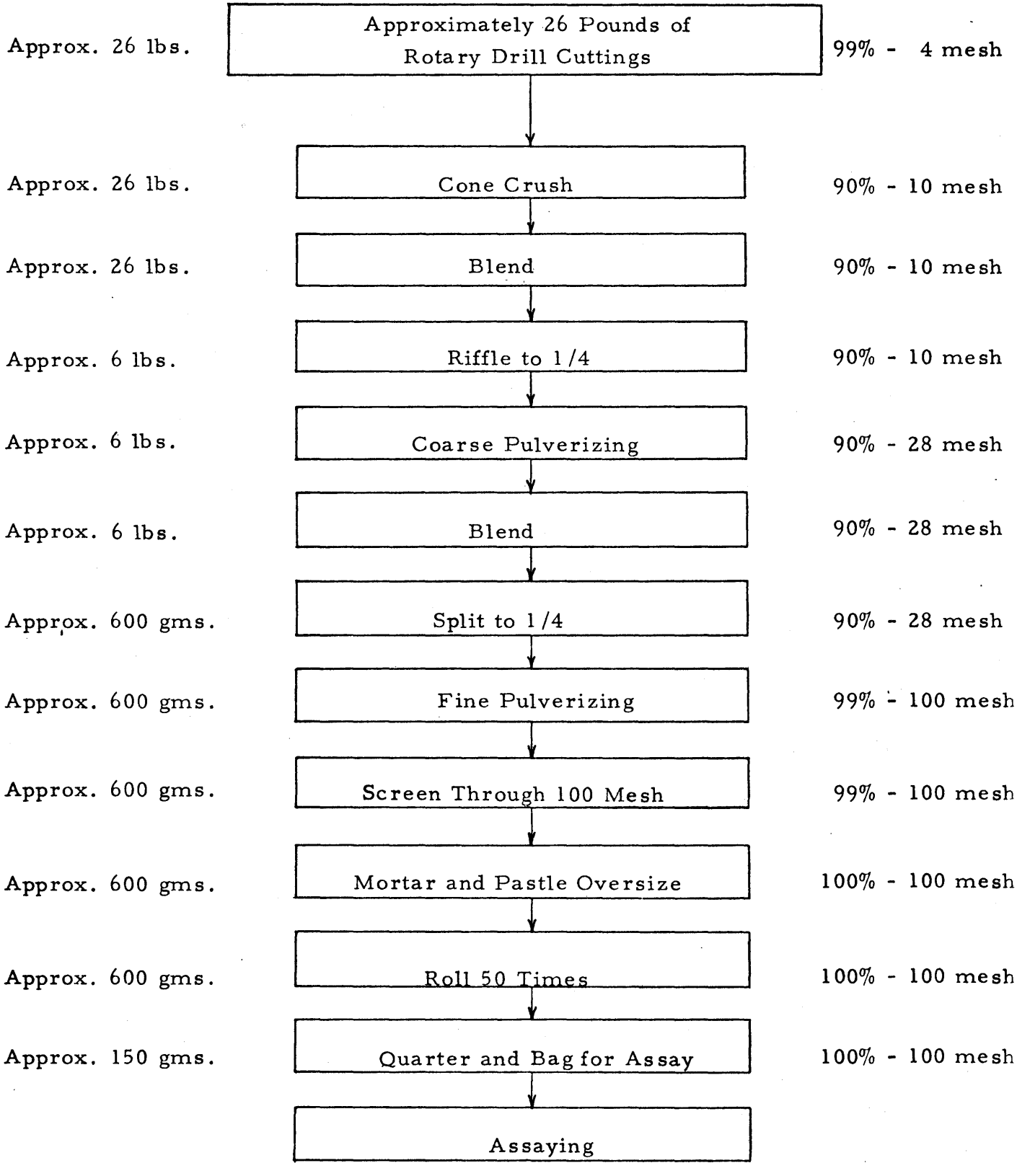
Within the bucking room the sample preparation process once again followed the same flow sheet after the samples had been dried and split to 1/8 of the total original volume. Detail of that portion of the sample preparation is shown in the flow sheet on page 39.

As will be noted, the volume of sample crushed or pulverized to the various specifications is much larger than is normally reduced at a commercial laboratory. It was found that repeatability of the results dropped off significantly if the standards set out in the flow sheet were not strictly followed. Ideally, the volumes processed should be even larger were it not for physical and economic limitations. Examples of the repeatability achieved by the standard procedure are shown in the table below. It will be noted that some individual results are not acceptable, but that deviations tend to be offsetting and in that regard the reliability of the results tend to become increasingly more precise as the population of samples is expanded.

Checks on Sample Rejects

Hole	Sample Interval ft.	First Run	Rejects	Numerical Diff. First Run Rejects	% Difference First Run Rejects
R-9	150-160	.148	.161	- .013	- 9
	160-170	.223	.269	- .054	-24
	170-180	.129	.121	+ .008	+ 7
	180-190	.221	.226	- .005	- 2
	190-200	.407	.456	- .049	-12
	200-210	.774	.692	+ .082	+12
	210-220	.128	.117	+ .011	+ 9
	220-230	.130	.106	+ .024	+22
	230-240	.142	.154	- .012	- 8
	240-250	.129	.142	- .013	-10
	10 checks	.243	.244	- .001	0%

SAMPLE PREPARATION FLOW SHEET
ADANAC BUCKING ROOM



The sample cuttings at Adanac were generally quite fine. Several screen analyses were made on rotary cuttings as received from the drill, with the following results:

Sample Location	Percent Distribution for Various Screen Sizes						
	+4 Mesh	-4 to +10	-10 to +28	-28 to +48	-48 to +65	-65 to +100	-100 Mesh
R-14, 90-100'	0.31	7.04	20.25	26.33	9.50	8.30	28.21
R-10, 150-160'	2.98	16.02	14.12	11.94	6.41	5.18	43.35
R-9 , 420-430'	1.37	16.51	17.06	20.07	6.14	7.51	29.34
R-5 , 260-270'	1.93	19.31	18.13	11.99	10.29	5.93	32.41
R-5 , 350-360'	0.99	13.55	19.76	12.65	5.78	6.45	40.81
R-4 , 180-190'	1.80	13.52	24.44	18.00	8.24	7.76	26.30
R-2 , 220-230'	1.85	15.72	20.38	15.36	6.33	9.14	31.22
Averages	1.60	14.52	19.16	16.62	7.53	7.18	33.09

In an effort to determine the accuracy that could be expected from a 1/8 split, a total sample from 50 and 60 feet in hole R-2 was split into eight equal portions and processed separately. The results were as follows:

		Portion	% MoS_2
R-2	50 to 60'	A	0.042
		B	0.043
		C	0.036
		D	0.035
		E	0.038
		F	0.041
		G	0.042
		H	0.035
	Average		0.039

ASSAYING

All of the samples processed during the 1971 rotary drilling program were assayed at the mine laboratory with periodic check samples being sent to Loring Laboratory in Calgary.

The mine lab. used a colorimetric-spectrophotometric procedure adopted for the feasibility work during 1970.

The check assays which were sent to Loring Laboratory provided the following comparisons:

Hole	Footage	Adanac % MoS_2	Loring % MoS_2	% Difference Adanac/Loring
R-2	50- 60	.032	.037	-16
	100-110	.151	.141	+ 7
	130-140	.368	.348	+ 6
	200-210	.071	.083	-16
	220-230	.373	.336	+11
	300-310	.036	.042	-16
	310-320	.092	.101	-10
R-4	130-140	.037	.039	- 5
	180-190	.032	.037	-16
	260-270	.204	.208	- 2
R-5	130-140	.160	.166	- 4
	180-190	.189	.191	- 1
	190-200	.200	.197	+ 2
	200-210	.138	.141	- 2
R-9	140-150	.040	.050	-25
	150-160	.146	.144	+ 1
	160-170	.227	.252	-11
	170-180	.125	.136	- 9
	180-190	.220	.217	+ 1
	190-200	.420	.377	+11
	Averages	.163	.162	+ 1

RESULTS OF RELATED CHECK SAMPLING

During the course of the 1971 rotary drilling program a considerable amount of check sampling was done. Although some of this work was not strictly related to the drilling program, the data is included here for informational purposes.

Check sample preparation and reassaying of the rejects from Raises 00-4N and 2W-2N was carried out. During the recently completed program rotary holes were drilled beside these two raises and the results compared.

COMPARISON OF 1970 AND 1971
SAMPLE PREPARATION AND ASSAY RESULTS

Raise No.	Sample No.	% MoS_2 1970	% MoS_2 1971	Raise No.	Sample No.	% MoS_2 1970	% MoS_2 1971
00-4N	2001	0.294	0.283	2W-2N	3001	0.173*	n.a.**
	2002	0.305	0.293		3002	0.211	0.220
	2003	0.255	0.236		3003	0.198	0.213
	2004	0.176	0.250		3004	0.166	0.184
	2005	0.217	0.261		3005	0.185	0.196
	2006	0.344	0.396		3006	0.266	0.251
	2007	0.617	0.645		3007	0.401	0.459
	2008	0.324	0.343		3008	0.345	0.306
	2009	0.171	0.210		3009	0.177*	n.a.
	4011	0.254	0.274		3010	0.169	0.153
	2011	0.204	0.258		3011	0.056	0.071
	2012	0.239	0.290		3012	0.087	0.099
	4013	0.324	0.419		3013	0.066	0.069
	2014	0.163	0.227		3014	0.059	0.057
					3015	0.073	0.078
Average		0.278	0.313		3016	0.085*	n.a.
					3017	0.054*	n.a.
				Average		0.175	0.181

* Samples not used in computing average

** Not available

The 1971 assay data provided above was derived from splitting out a new sample from the approximately 15-pound lot which is in storage at the mine. The 15-pound sample is that which was provided from the sampling tower.

An explanation for the higher results reported in 1971 is not presently known.

In an effort to determine if either the flocculating process or the direct heat being applied to the rotary cuttings was in any way affecting the assay results, a series of tests was run. The reject samples from drill core 8W-4S which had recently been assayed were used as a predetermined sample and subjected to the flocculating and drying processes. The rejects were approximately 30-pound samples which had been cone-crushed to -10 mesh, thus closely resembling a 1/8 split of rotary drill cuttings.

The flocculated samples were placed in drums, mixed vigorously with approximately 25 gallons of water and then treated in the same manner as the rotary drill samples. A second set of samples was only dampened and dried over direct heat prior to preparation for assay. The comparative results of these checks are shown on the following page.

The checks on the sampling procedures did not show any trends and thus indicated that neither the flocculating nor drying procedures were affecting the final assay results. As was subsequently determined, the 25 gallons of water used in these tests was not a large enough volume to demonstrate any significant molybdenite loss.

A significant factor revealed by the check sampling was the wide variation of results between individual checks. Of the 19 samples on which rejects were rerun, eight varied by more than 25% from the original assay, with the overall average deviation being 23%.

Although the overall average for the first and second runs was an acceptable 2% difference, the variation on individual assays could result in serious errors. The sample preparation procedures being maintained at the time were the same as those employed during 1970; namely crushing a 25-pound sample to -10 mesh, blending, and splitting out +400 grams which was pulverized to 100% -100 mesh prior to rolling and bagging for assay.

The weak point in the above procedure was deemed to be the size of sample split out at the -10 mesh size. In an effort to improve our ability to reproduce results, an additional step was introduced. Following the cone crusher the -10 mesh samples were split to only 1/4 of their original size (approximately 6 pounds), which was then reduced to -28 mesh in a large Denver pulverizer. This product was then blended and split to 1/4 volume for the final pulverizing.

The results of a second batch of check sampling which was carried out after implementing the above procedure are shown below:

Hole	Sample Interval ft.	First Run	Rejects	Numerical Diff. First Run	Numerical Diff. Rejects	% Difference First Run	% Difference Rejects
R-9	150-160	.148	.161	- .013			- 9
	160-170	.223	.269	- .054			-24
	170-180	.129	.121	+ .008			+ 7
	180-190	.221	.226	- .005			- 2
	190-200	.407	.456	- .049			-12
	200-210	.774	.692	+ .082			+12
	210-220	.128	.117	+ .011			+ 9
	220-230	.130	.106	+ .024			+22
	230-240	.142	.154	- .012			- 8
	240-250	.129	.142	- .013			-10
	10 checks	.243	.244	- .001			0%

The results of the second batch of check sampling showed a significant improvement, but still indicated an average deviation of 11.5%. After implementing the new standards the maximum percent difference was reduced from 67% to 24%.

CHECKS ON SAMPLING PROCEDURES

Sample		Drill Core Dry Sample	Heated Wet Rejects	Dry/Wet Numerical Diff.	Dry/Wet % Difference
8W-4S	150-160	.017	.025	- .008	-47
	160-170	.115	.171	- .056	-49
	170-180	.396	.296	+ .100	+34
	180-190	.074	.096	- .022	-30
	190-200	.457	.568	- .111	-24
	200-210	.769	.458	+ .311	+67
	210-220	.462	.483	- .021	- 5
	220-230	.161	.152	+ .009	+ 6
	230-240	.062	.063	- .001	- 2
	240-250	.149	.122	+ .027	+22
	10 checks	.266	.243	+ .023	+ 9

Sample		Drill Core Dry Sample	Flocculated Rejects	Dry-Flocculated Numerical Diff.	Dry-Flocculated % Difference
8W-4S	260-270	.084	.121	- .037	-44
	270-280	.229	.223	+ .006	+ 3
	280-290	.097	.100	- .003	- 3
	290-300	.066	.063	+ .003	+ 5
	300-310	.139	.180	- .041	-29
	310-320	.271	.234	+ .037	+16
	320-330	.178	.176	+ .002	+ 1
	330-340	.316	.430	- .114	-36
	340-350	.066	.069	- .003	- 4
	9 checks	.161	.177	- .016	-10

OVERALL AVERAGES:

	First Run	Rejects	First Run Rejects Numerical Diff.	First Run Rejects % Difference
10 checks	.266	.243	+ .023	+ 9
9 checks	.161	.177	- .016	-10
19 checks	.216	.212	+ .004	+ 2

APPENDIX

DRILL HOLE EVALUATION SUMMARY

Company Adnac Mining & Exploration Property Ruby Creek Section No. 8W Hole No. R-2

Started	June 30, 71	Bearing	—	Lat.	10,172.26	Collar El.	4730.62
Completed	July 5, 71	Angle	-90°	Dep.	9,310.06	Bottom El.	4580.62
Driller	Bee Jodrian	Length	350 ft	Location	8W-00	Level	Surface

Logged by J. Cook & E. Holt

Remarks All wet drilling, commenced systematic at 2nd

INTERVAL From	INTERVAL To	CORE RECOVERED Wt.	Ft.	%	DESCRIPTION	Sample No.	Interval	ASSAY Au oz/T				
0	30		30	—	Overburden							
30	32	22	2	69	Total wet sample, coarse clastic		2	0.003				
32	38	28	6	99	Total wet sample, " "		6	0.015				
38	50	108	12	43	Total wet sample, " "		12	0.018				
50	60	312	10	100	Total wet sample, " "		10	0.039				
60	68	166	8	95	1/4 wet sample, " "		8	0.072				
68	70	12	2	100	1/2 wet sample, " "		2	0.034				
70	80	25	10	95	1/2 wet sample, " "		10	0.116				
80	90	25	10	95	1/2 wet sample, " "		10	0.183				
90	100	26	10	99	1/2 wet sample, " "		10	0.030				
100	110	27	10	100	1/2 wet sample, " "		10	0.178				
110	120	35	10	100	1/2 wet sample, " "		10	0.202				
120	130	34	10	100	1/2 wet sample, " "		10	0.097				
130	140	29	10	100	1/2 wet sample, " "		10	0.287				
140	150	22	10	100	1/2 wet sample, " "		10	0.168				
150	160	26	10	99	1/2 wet sample, " "		10	0.131				
160	170	39	10	100	1/2 wet sample, " "		10	0.054				
170	180	36	10	100	1/2 wet sample, " "		10	0.051				
180	190	32	10	100	1/2 wet sample, " "		10	0.194				

FORM 10

DRILL HOLE EVALUATION SUMMARY

Company Adanac Mining & Exploration Property Ruby Creek Section No. 8W Hole No. R-2

Started	June 30, 71	Bearing	—	Lat.	10,179.20	Collar El.	4930.62	Logged by	J. Cook & E. Hoff
Completed	July 5, 71	Angle	-90°	Dep.	9,310.66	Bottom El.	4580.68	Remarks	
Driller	Big Indian	Length	350 ft	Location	8W-00	Level	Surface		

INTERVAL From	INTERVAL To	CORE RECOVERED Wt.	Ft.	%	DESCRIPTION	Sample No.	Interval	ASSAY Au oz/T				
190	200	29	10	100	½ wet sample, coarse diabase		10	0.135				
200	210	31	10	100	½ wet sample, fine diabase		10	0.034				
210	220	26	10	99	½ wet sample, " "		10	0.063				
220	230	27	10	100	½ wet sample, " "		10	0.418				
230	240	25	10	95	½ wet sample, " "		10	0.098				
240	250	22	10	84	½ wet sample, " "		10	0.053				
250	260	22	10	84	½ wet sample, " "		10	0.052				
260	270	22	10	84	½ wet sample, " "		10	0.162				
270	280	21	10	80	½ wet sample, " "		10	0.076				
280	290	24	10	91	½ wet sample, " "		10	0.167				
290	300	20	10	76	½ wet sample, " "		10	0.044				
300	310	21	10	80	½ wet sample, " "		10	0.042				
310	320	22	10	84	½ wet sample, " "		10	0.028				
320	330	21	10	80	½ wet sample, " "		10	0.061				
330	340	20	10	76	½ wet sample, " "		10	0.024				
340	350	19	10	72	½ wet sample, " "		10	0.067				

FORM 10

DRILL HOLE EVALUATION SUMMARY

Company Adanac Mining + Exploration Property Ruby Creek Section No. 8W Hole No. R-4

Started	July 5, 71	Bearing	-	Lat. 10,525.64	Collar El. 4970.84	Logged by	J Cook + E Holt
Completed	July 8, 71	Angle	-90°	Dep. 9124.14	Bottom El. 4542.84	Remarks	Air wet drilling, commenced sampling at 100', commenced field descriptions at 370'
Driller	Bo Tochin	Length	428 ft	Location	8W-4N	Level	Surface

INTERVAL		CORE RECOVERED			DESCRIPTION	Sample No.	Interval	ASSAY
From	To	Wt.	Ft.	%				
0	23				Overburden			
23	30	73	7	50	Total wet sample, coarse claskite		7	.019
30	40	232	10	100	" " " " "		10	.014
40	50	37	10	100	1/8 wet sample " "		10	.013
50	60	26	10	99	1/8 " " " "		10	.027
60	70	32	10	100	1/8 " " " "		10	.013
70	80	26	10	99	1/8 " " " "		10	.033
80	90	26	10	76	1/8 " " " "		10	.006
90	100	27	10	100	1/8 " " " "		10	.011
100	110	22	10	84	1/8 " " " "		10	.007
110	120	25	10	95	1/8 " " " "		10	.048
120	130	22	10	84	1/8 " " " "		10	.161
130	140	26	10	99	1/8 " " fine claskite		10	.047
140	150	23	10	88	1/8 " " " "		10	.229
150	160	22	10	100	1/8 " " " "		10	.134
160	170	27	10	100	1/8 " " " "		10	.053
170	180	22	10	84	1/8 " " Coarse claskite		10	.066
180	190	25	10	95	1/8 " " fine claskite		10	.035
190	200	26	10	99	1/8 " " coarse claskite		10	12.9

FORM 10

DRILL HOLE EVALUATION SUMMARY

Company Adanac Mining & Exploration Property Ruby Creek Section No. 8W Hole No. R-4

Started	July 5, 71	Bearing	—	Lat.	10,525.64	Collar El.	4970.89	Logged by	J. Cook & E Hecht
Completed	July 8, 71	Angle	-90°	Dep.	9,124.45	Bottom El.	4542.89	Remarks	
Driller	Big Indian	Length	428 ft	Location	8W-4N	Level	Surface		

INTERVAL From	INTERVAL To	CORE RECOVERED Wt.	Ft.	%	DESCRIPTION	Sample No.	Interval	ASSAY Fluoride in p.p.m.
200	210	23	10	88	½ wet sample, coarse alaskite		10	.070
210	220	30	10	100	½ " " " "		10	.016
220	230	22	10	84	½ " " fine alaskite		10	.112
230	240	22	10	84	½ " " " "		10	.069
240	250	24	10	91	½ " " alaskite porphyry		10	.063
250	260	24	10	91	½ " " " "		10	.140
260	270	22	10	84	½ " " " "		10	.214
270	220	22	10	84	½ " " " "		10	.028
220	290	31	10	100	½ " " " "		10	.106
290	300	25	10	95	½ " " " "		10	.053
300	310	24	10	91	½ " " " "		10	.103
310	320	25	10	95	½ " " fine alaskite		10	.070
320	330	24	10	91	½ " " " "		10	.080
330	340	23	10	88	½ " " " "		10	.040
340	350	17	10	65	½ " " alaskite porphyry		10	.066
350	360	24	10	91	½ " " " "		10	.042
360	371	25	11	95	½ " " " "		11	.030
371	380	24½	9	89	½ " " " "		9	.039
380	390	24½	10	89	½ " " " "		10	.030

FORM 10

DRILL HOLE EVALUATION SUMMARY

Company Adanac Mining & Exploration Property Ruby Creek Section No. 8W Hole No. R-4

Started July 5, 71	Bearing –	Lat. 10,525.64	Collar El. 4970.84	Logged by J. Cook & E. Hewitt	
Completed July 8, 71	Angle -90°	Dep. 2,124.45	Bottom El. 4542.84	Remarks Hole lost at 428 feet due to rotors off but left in hole.	
Driller Big Indian	Length 428 ft	Location 8W - 4N	Level Surface		

INTERVAL From	INTERVAL To	CORE RECOVERED Wt.	CORE RECOVERED Ft.	CORE RECOVERED %	DESCRIPTION	Sample No.	Interval	ASSAY Ounces per ton
390	400	30½	10	100	½ wet sample, alaskite porphyry		10	.033
400	410	22	10	84	½ " " " "		10	.095
410	420	29	10	100	½ " " " "		10	.063
420	428	26½	8	100	½ " " " "		8	.092
					428 ft - end of hole			

FORM 10

DRILL HOLE EVALUATION SUMMARY

Company Adanac Mining & Exploration Property Ruby Creek Section No. Alw Hole No. R-5

Started	July 8, 1971	Bearing	—	Lat.	10,529.69	Collar El.	4913.44
Completed	July 14, 1971	Angle	-90°	Dep.	9,570.32	Bottom El.	4513.44
Driller	R. Tobin	Length	500 ft	Location	4W-2N	Level	Surface

Logged by E. Hall

Remarks Dry to 72 ft. Decanted on site from 270 to 320'

INTERVAL From	INTERVAL To	CORE RECOVERED Wt.	CORE RECOVERED Ft.	CORE RECOVERED %	DESCRIPTION	Sample No.	Interval	ASSAY "Au" oz/t				
0	30	—	30		Casing							
30	40	127	10	60	Total dry sample, Coarse clastic		10	.007				
40	50	137	10	66	" " " " "		10	.007				
50	60	125	10	59	" " " " "		10	.006				
60	70	195	10	93	" " " " "		10	.005				
70	72	94	2	100	" " " " "		2	.007				
72	80	33	8	100	½ wet sample " "		8	.007				
80	90	45	10	100	½ " " " "		10	.011				
90	100	30	10	100	½ " " " "		10	.054				
100	110	30	10	100	½ " " " "		10	.021				
110	120	30	10	100	½ " " " "		10	.029				
120	130	30	10	100	½ " " " "		10	.007				
130	140	22	10	100	½ " " " "		10	.160				
140	150	25	10	95	½ " " " "		10	.048				
150	160	25	10	95	½ " " " "		10	.018				
160	170	30	10	100	½ " " " "		10	.082				
170	180	27	10	100	½ " " " "		10	.099				
180	190	21	10	80	½ " " " "		10	.189				
190	200	23	10	88	½ " " " "		10	.210				

FORM 10

DRILL HOLE EVALUATION SUMMARY

Company Adanac Mining & Exploration Property Ruby Creek Section No. 41 Hole No. R-5

Started	July 8, 1971	Bearing	-	Lat.	10,529.69	Collar El.	4913.44
Completed	July 14, 1971	Angle	-90°	Dep.	9,570.32	Bottom El.	4513.44
Driller	B. Tadian	Length	500 ft	Location	41-2N	Level	Surface

Logged by E. Hutt

Remarks

INTERVAL From	INTERVAL To	CORE RECOVERED Wt.	Ft.	%	DESCRIPTION	Sample No.	Interval	ASSAY oz/t
200	210	29	10	100	1/8 wet sample, coarse alaskite		10	.138
210	220	27	10	100	1/2 " " , alaskite porphyry		10	.067
220	230	35	10	95	1/8 " " , " "		10	.128
230	240	26	10	99	1/8 " " , " "		10	.120
240	250	29	10	100	1/8 " " , " "		10	.122
250	260	27	10	100	1/8 " " , " "		10	.222
260	270	26	10	99	1/2 " " " "		10	.189
270	280	27	10	100	1/2 " " " "		10	.161
280	290	25	10	95	1/2 " " " "		10	.072
290	300	27	10	100	1/2 " " " "		10	.019
300	310	29	10	100	1/8 " " " "		10	.036
310	320	36	10	100	1/8 " " " "		10	.113
320	330	24	10	91	1/2 " " " "		10	.132
330	350	49	20	93	1/2 " " " "		20	.111
350	360	25	10	95	1/8 " " " "		10	.072
360	370	26	10	99	1/2 " " " "		10	.087
370	380	26	10	99	1/2 " " " "		10	.112
380	390	26	10	99	1/2 " " fine alaskite		10	.054
390	400	27	10	100	1/2 " " " "		10	.044

FORM 10

DRILL HOLE EVALUATION SUMMARY

Company Adanac Mining & Exploration Property Ruby Creek Section No. 41W Hole No. R-5

Started	July 8, 1971	Bearing	—	Lat.	10,529.69	Collar El.	4913.44
Completed	July 14, 1971	Angle	-90°	Dep.	9,570.32	Bottom El.	4513.44
Driller	B.C. Indian	Length	500 ft	Location	41-2N	Level	Surface

Logged by E. Holt

Remarks

INTERVAL From	INTERVAL To	CORE RECOVERED Wt.	Ft.	%	DESCRIPTION	Sample No.	Interval	ASSAY Silver oz/ton				
400	410	27	10	100	1/8 wet sample fine clastic		10	.050				
410	420	27	10	100	1/2 " " " "		10	.122				
420	430	26	10	99	1/2 " " " "		10	.069				
430	440	24	10	91	1/8 " " clastic porphyry		10	.112				
440	450	26	10	99	1/2 " " " "		10	.067				
450	460	23	10	88	1/8 " " " "		10	.077				
460	470	20	10	76	1/2 " " " "		10	.168				
470	480	22	10	84	1/2 " " " "		10	.094				
480	490	26	10	99	1/8 " " " "		10	.053				
490	500	26	10	99	1/2 " " " "		10	.049				
					500 ft - end of hole							

FORM 10

DRILL HOLE EVALUATION SUMMARY

Company Adanac Mining & Exploration Property Ruby Creek Section No. 8W Hole No. R-7

Started	July 14, 1971	Bearing	–	Lat.	9816.11 N	Collar El.	4963.05
Completed	July 14, 1971	Angle	-90°	Dep.	9483.14 E	Bottom El.	4917.05
Driller	B. Indian	Length	46 ft	Location	8W-45	Level	Surface

Logged by E S Holt

Remarks Hole lost at 46 ft due to caving below casing

INTERVAL		CORE RECOVERED			DESCRIPTION	Sample No.	Interval	ASSAY
From	To	Wt.	Ft.	%				Adjusted Au oz/T
0	22	–	22	–	Overburden			
22	30	110	8	52	Total dry sample		8	.103
30	40	266	10	125	Total dry sample		10	.055
40	46	134	6	106	Total dry sample		6	.030
					46 ft - end of hole			
					Hole abandoned at 46 ft due to caving conditions below casing.			

FORM 10

DRILL HOLE EVALUATION SUMMARY

Company Adanac Mining & Exploration Property Ruby Creek Section No. 8W Hole No. R-9

Started	July 14, 71	Bearing	–	Lat.	9822.72N	Collar El.	4962.84
Completed	July 21, 71	Angle	-90°	Dep.	9477.98E	Bottom El.	4957.84
Driller	B.C. Indian	Length	505 ft.	Location	8W-45	Level	Surface

Logged by E. S. Holt

Remarks

INTERVAL From	INTERVAL To	CORE RECOVERED Wt.	Ft.	%	DESCRIPTION	Sample No.	Interval	ASSAY Oz/ton H_2S
0	26	-	26	-	Casing through overburden			
26	30	103	4	121	Total sample		4	.041
30	40	178	10	85	" "		10	.050
40	50	210	10	99	" "		10	.043
50	60	50	10	95	1/4 damp sample		10	.033
60	70	96	10	45	Total sample		10	.285
70	80	24	10	91	1/8 wet sample		10	.262
80	90	24	10	91	1/8 " "		10	.085
90	100	21	10	80	1/8 " "		10	.097
100	110	23	10	88	1/8 " "		10	.066
110	120	22	10	84	1/8 " "		10	.169
120	130	23	10	88	1/8 " "		10	.106
130	140	48	10	91	1/4 " "		10	.126
140	150	48	10	91	1/4 " "		10	.041
150	160	49	10	93	1/4 " "		10	.155
160	170	48	10	91	1/4 " "		10	.216
170	180	49	10	93	1/4 " "		10	.125
180	190	48	10	91	1/4 " "		10	.229
190	200	26	10	99	1/8 " "		10	.431

FORM 10

DRILL HOLE EVALUATION SUMMARY

Company Adanac Mining & Exploration Property Ruby Creek Section No. 8W Hole No. R-9

Started	July 19, 71	Bearing	-	Lat.	9822.72N	Collar El.	4962.84	Logged by	E. S. Holt
Completed	July 21, 71	Angle	-90°	Dep.	9971.28E	Bottom El.	4957.84	Remarks	
Driller	R.- Indian	Length	505 ft	Location	8W-45	Level	Surface		

INTERVAL From	INTERVAL To	CORE RECOVERED Wt.	Ft.	%	DESCRIPTION	Sample No.	Interval	ASSAY Atomic % Mo S2
200	210	25	10	95	1/8 wet sample		10	.733
210	220	26	10	99	1/8 " "		10	.122
220	230	26	10	99	1/8 " "		10	.118
230	240	25	10	95	1/8 " "		10	.148
240	250	24	10	91	1/8 " "		10	.135
250	260	25	10	95	1/8 " "		10	.204
260	270	26	10	99	1/8 " "		10	.135
270	280	28	10	106	1/8 " "		10	.231
280	290	23	10	88	1/8 " "		10	.121
290	300	26	10	99	1/8 " "		10	.124
300	310	24	10	91	1/8 " "		10	.168
310	320	26	10	99	1/8 " "		10	.051
320	330	26	10	99	1/8 " "		10	.144
330	340	24	10	91	1/8 " "		10	.113
340	350	24	10	91	1/8 " "		10	.141
350	360	25	10	95	1/8 " "		10	.092
360	370	25	10	95	1/8 " "		10	.049
370	380	25	10	95	1/8 " "		10	.078
380	390	24	10	91	1/8 " "		10	.125

FORM 10

DRILL HOLE EVALUATION SUMMARY

Company Adanac Mining + Exploration Property Ruby Creek Section No. 81-1 Hole No. R-9

Started	July 14, 71	Bearing	-	Lat.	9822.72N	Collar El.	4962.84	Logged by	E. S. Holt
Completed	July 21, 71	Angle	-90°	Dep.	9477.98E	Bottom El.	4957.84	Remarks	
Driller	Big Indian	Length	505 ft	Location	81-45	Level	Surface		

INTERVAL From	INTERVAL To	CORE RECOVERED Wt.	Ft.	%	DESCRIPTION	Sample No.	Interval	ASSAY Assay % H_2S
390	400	24	10	91	1/8 wet sample		10	.089
400	410	23	10	88	1/8 " "		10	.099
410	420	26	10	99	1/8 " "		10	.167
420	430	25	10	95	1/8 " "		10	.102
430	440	21	10	80	1/8 " "		10	.072
440	450	25	10	95	1/8 " "		10	.087
450	460	22	10	84	1/8 " "		10	.067
460	470	26	10	99	1/8 " "		10	.138
470	480	29	10	109	1/8 " "		10	.062
480	490	27	10	102	1/8 " "		10	.098
490	500	26	10	99	1/8 " "		10	.078
500	505	16	5	121	1/8 " "		5	.041
					Hole completed at 505 ft.			

FORM 10

DRILL HOLE EVALUATION SUMMARY

Company Adanac Mining & Exploration Property Ruby Creek Section No. Oldest Hole No. R-10

Started July 23, 1971	Bearing —	Lat. [illegible]	Collar El. [illegible]	Logged by M. Barnett	
Completed July 25, 1971	Angle −90°	Dep. [illegible]	Bottom El. [illegible]	Remarks	
Driller Bi-Trading	Length 450 ft	Location 00-4N	Level Surface		

INTERVAL From	INTERVAL To	CORE RECOVERED Wt.	CORE RECOVERED Ft.	CORE RECOVERED %	DESCRIPTION	Sample No.	Interval	ASSAY %HcS				ASSAY Min/Sec
0	30	—	30	—	Casing through overburden							
30	40	151	10	92	Total dry Sample		10	.037				8
40	50	[illegible]	10	115	" " "		10	.066				9
50	60	196	10	93	" " "		10	.075				19
60	70	212	10	100	" " "		10	.208				12
70	80	174	10	83	" " "		10	.211				12
80	90	[illegible]	10	82	" " "		10	.718				9
90	100	[illegible]	10	97	" " "		10	.204				15
100	110	210	10	95	" " "		10	.907				12
110	120	211	10	100	" " "		10	.318				7
120	130	97	10	47	" " " excessive detergent		10	.307				5
130	140	231	10	109	" " "		10	.279				9
140	150	211	10	100	" " "		10	.411				12
150	160	181	10	86	" " " excessive detergent		10	.101				11
160	170	193	10	92	" " "		10	.135				14
170	180	199	10	94	" " "		10	.293				9
180	190	166	10	79	" " "		10	.099				9
190	200	217	10	103	" " "		10	.281				10
200	210	211	10	100	" " "		10	.355				7

FORM 10

DRILL HOLE EVALUATION SUMMARY

Company Adanac Mining & Exploration Property Ruby Creek Section No. OW Hole No. R-10

Started	July 22, 1971	Bearing	—	Lat.	[illegible]	Collar El.	[illegible]
Completed	July 28, 1971	Angle	-90°	Dep.	[illegible]	Bottom El.	[illegible]
Driller	B. Indian	Length	450 ft	Location	00-4N	Level	Surface

Logged by W. Barnett

Remarks

INTERVAL From	INTERVAL To	CORE RECOVERED Wt.	CORE RECOVERED Ft.	CORE RECOVERED %	DESCRIPTION	Sample No.	Interval	ASSAY % Mos.				ASSAY Mm/Ft.
210	220	208	10	99	Total dry sample		10	.207				13
220	230	33	10	166	1/4 wet sample		10	.487				8
230	240	28	10	106	1/8 " "		10	.158				9
240	250	27	10	102	1/8 " "		10	.129				11
250	260	27	10	102	1/8 " "		10	.242				12
260	270	29	10	106	1/8 " "		10	.344				8
270	280	28	10	106	1/8 " "		10	.197				6
280	290	26	10	99	1/8 " "		10	.490				7
290	300	28	10	106	1/8 " "		10	.155				13
300	310	35	10	132	1/8 " "		10	.084				8
310	320	30	10	113	1/8 " "		10	.142				8
320	330	32	10	121	1/8 " "		10	.072				13
330	340	29	10	109	1/8 " "		10	.080				12
340	350	28	10	106	1/8 " "		10	.115				17
350	360	28	10	106	1/8 " "		10	.074				7
360	370	26	10	99	1/8 " "		10	.062				10
370	380	28	10	106	1/8 " "		10	.043				7
380	390	26	10	99	1/8 " "		10	.144				4
390	400	27	10	102	1/8 " "		10	.636				3

FORM 10

DRILL HOLE EVALUATION SUMMARY

Company Adanac Mining & Exploration Property Ruby Creek Section No. OW Hole No. R-10

Started July 22, 1971	Bearing —	Lat.	Collar El.	Logged by L.L. Bennett	
Completed July 28, 1971	Angle -90°	Dep.	Bottom El.	Remarks	
Driller Big Indian's	Length 450 ft.	Location 00-4N	Level Surface		

INTERVAL From	INTERVAL To	CORE RECOVERED Wt.	Ft.	%	DESCRIPTION	Sample No.	Interval	ASSAY Ag oz/t				Mo ppm
400	410	29	10	109	1/8 wet sample		10	.108				4
410	420	30	10	113	1/8 wet sample		10	.233				6
420	430	27	10	102	1/8 wet sample		10	.121				5
430	440	30	10	113	1/8 wet sample		10	.442				7
440	450	27	10	102	1/8 wet sample		10	.093				7
					450 feet - end of hole							

FORM 10

DRILL HOLE EVALUATION SUMMARY

Company Adanac Mining & Exploration Property Ruby Creek Section No. O blest Hole No. R-12

Started July 28, 1971	Bearing —	Lat. [illegible]	Collar El. [illegible]	Logged by E. Holt	
Completed July 30, 1971	Angle -90°	Dep. [illegible]	Bottom El. [illegible]	Remarks Water added to produce wet results	
Driller Big Indian	Length 250 ft.	Location 00-4N	Level Surface		

INTERVAL From	INTERVAL To	CORE RECOVERED Wt.	CORE RECOVERED Ft.	CORE RECOVERED %	DESCRIPTION	Sample No.	Interval	ASSAY % Mo S	ASSAY	ASSAY	ASSAY	ASSAY Mo in Ppm
0	35	—	35	—	Casing through overburden							
35	40	30	5	113	1/8 wet sample		5	.032				8
40	50	34	10	128	1/8 " "		10	.094				7
50	60	32	10	121	1/8 " "		10	.070				17
60	70	26	10	99	1/8 " "		10	.339				12
70	80	29	10	109	1/8 " "		10	.280				11
80	90	28	10	106	1/8 " "		10	.409				12
90	100	30	10	113	1/8 " "		10	.437				11
100	110	29	10	109	1/8 " "		10	.480				7
110	120	33	10	125	1/8 " "		10	.374				8
120	130	34	10	128	1/8 " "		10	.374				10
130	140	27	10	102	1/8 " "		10	.257				3
140	150	33	10	125	1/8 " "		10	.142				4
150	160	27	10	102	1/8 " "		10	.152				12
160	170	34	10	128	1/8 " "		10	.205				9
170	180	30	10	113	1/8 " "		10	.117				7
180	190	33	10	125	1/8 " "		10	.160				11
190	200	31	10	117	1/8 " "		10	.363				8
200	210	31	10	106	1/8 " "		10	.193				8

FORM 10

DRILL HOLE EVALUATION SUMMARY

Company Adanac Mining & Exploration Property Ruby Creek Section No. 0 West Hole No. R-12

Started July 28, 1971	Bearing –	Lat. [illegible]	Collar El. [illegible]	Logged by E. Holt	
Completed July 30, 1971	Angle -90°	Dep. [illegible]	Bottom El. [illegible]	Remarks Water added to produce wet results.	
Driller Big Indian	Length 250 ft.	Location 00-4N	Level Surface		

INTERVAL From	INTERVAL To	CORE RECOVERED Wt.	CORE RECOVERED Ft.	CORE RECOVERED %	DESCRIPTION	Sample No.	Interval	ASSAY % Mo S.	ASSAY	ASSAY	ASSAY	ASSAY Mo in/ft
210	220	25	10	95	1/8 wet sample		10	.201				13
220	230	30	10	113	1/8 wet sample		10	.335				9
230	240	29	10	109	1/8 wet sample		10	.367				6
240	250	29	10	109	1/8 wet sample		10	.116				8
					250 feet - end of hole							

FORM 10

DRILL HOLE EVALUATION SUMMARY

Company Adanac Mining & Exploration Property Rusty Creek Section No. 2 West Hole No. R-14

Started	July 30, 1971	Bearing	—	Lat.	10,614.	Collar El.	[illegible]	Logged by	E S Holt
Completed	July 31, 1971	Angle	-90°	Dep.	[illegible]	Bottom El.	[illegible]	Remarks	
Driller	B.C. Indian	Length	244 ft.	Location	2N - 2W	Level	Surface		

INTERVAL From	INTERVAL To	CORE RECOVERED Wt.	CORE RECOVERED Ft.	CORE RECOVERED %	DESCRIPTION	Sample No.	Interval	ASSAY % H_2S	ASSAY	ASSAY	ASSAY	ASSAY Units/ft.
0	21	-	21	-	Casing through overburden							
21	30	160	9	94	Total dry sample		9	.017				6
30	40	195	10	93	Total " "		10	.011				7
40	50	183	10	87	Total " "		10	.018				5
50	60	186	10	89	Total " "		10	.026				7
60	70	223	10	105	Total " "		10	.075				5
70	80	197	10	94	Total " "		10	.022				6
80	90	177	10	84	Total " "		10	.029				5
90	100	212	10	100	Total " "		10	.021				5
100	105	147	5	137	Total " "		5	.230				6
105	110	151	5	142	Total wet sample		5	.091				6
110	116	113	6	87	Total " "		6	.314				3
116	120	97	4	114	Total dry sample		4	.261				3
120	130	47	11	91	1/4 wet sample		10	.223				4
130	140	34	11	128	1/8 " "		10	.250				3
140	150	30	11	113	1/8 " "		10	.316				2
150	160	40	11	152	1/8 " "		10	.407				4
160	170	31	11	117	1/8 " "		10	.306				3
170	180	26	11	99	1/8 " "		10	.124				2

FORM 10

DRILL HOLE EVALUATION SUMMARY

Company Adanac Mining & Exploration Property Ruby Creek Section No. 2 West Hole No. R-14

Started July 30, 1971	Bearing —	Lat.	Collar El. 1193.16	Logged by	
Completed July 31, 1971	Angle -90°	Dep.	Bottom El.	Remarks	
Driller R. G. Trotter	Length 249 ft.	Location 2N-2W	Level Surface		

INTERVAL From	INTERVAL To	CORE RECOVERED Wt.	Ft.	%	DESCRIPTION	Sample No.	Interval	ASSAY % MoS2				Mm/ft
180	190	30	10	113	1/8 wet sample		10	.153				2
190	200	30	10	113	1/8 wet sample		10	.415				4
200	210	32	10	144	1/8 wet sample		10	.147				6
210	220	33	10	125	1/8 wet sample		10	.511				10
220	230	35	10	132	1/8 wet sample		10	.107				12
230	240	31	10	117	1/8 wet sample		10	.129				7
240	244	15	4	144	1/2 wet sample		4	.403				8
					244 ft. - end of hole							

FORM 10

DRILL HOLE EVALUATION SUMMARY

Company Adanac Mining + Exploration Property Ruby Creek Section No. O Wlest Hole No. R-15

Started Aug 7, 1971	Bearing —	Lat.	Collar El.	Logged by	
Completed Aug 8, 1971	Angle -90°	Dep.	Bottom El.	Remarks Hole attempted as a test for "down the hole" hammer	
Driller Big Indian	Length 39 ft	Location 00-4N	Level Surface		

INTERVAL From	INTERVAL To	CORE RECOVERED Wt.	CORE RECOVERED Ft.	CORE RECOVERED %	DESCRIPTION	Sample No.	Interval	ASSAY
0	34	--	34	-	Casing through overburden			
34	39		5		Sample not collected			
					Encountered mechanical problems and abandoned the hole at 39 feet.			

FORM 10

To: ADANAC MINING & EXPLORATION CO.
802 - 1111 West Hasting Street
Vancouver, B.C.
Mr. J. Pelletier

File No. 4282
Date July 15th 1971
Samples Pulps

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	MoS2 %
R4-260-270	.208
R4-180-190	.037
R4-130-140	.039
R2-310-320	.102
R2-300-310	.042
R2-220-230	.336
R2-200-210	.063
R2-100-110	.141
R2-130-140	.348
R2-50-60	.037

Oxides of Mo removed

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

A. L. McIsaac

Licensed Assayer of British Columbia

To: ADANAC MINING & EXPLORATION CO,
Ste 910A Baxter Bldg.,
1111 West Hastings St.,
Vancouver 1, B.C.
Mr. J. Pelletier

File No. 4375
Date August 3rd 1971
Samples Pulps

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	SULPHIDE MoS2 %	OXIDE MoS2 %
R-5-130-140	.141	.025
R-5-180-190	.172	.019
R-5-190-200	.182	.015
R-5-200-210	.126	.015
R-9-140-150	.044	.006
R-9-150-160	.139	.005
R-9-160-170	.198	.007
R-9-160-170A	.238	.014
R-9-170-180	.130	.006
R-9-180-190	.212	.005
R-9-190-200	.368	.009

Oxide portion also reported as MoS2 %.

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

A. J. McIsaac

Licensed Assayer of British Columbia

WARNOCK HERSEY INTERNATIONAL LIMITED
125 East 4th Ave., Vancouver 10, B.C. Phone 876-4111

COAST ELDRIDGE
PROFESSIONAL SERVICES DIVISION

REPORT OF: Chemical Analysis

AT Vancouver Laboratory

PROJECT: Water Samples

REPORTED TO: Adanac Mining & Exploration Ltd.,
908 - 1111 West Hastings Street
Vancouver 1, B.C.

cc: Mr. E. S. Holt
General Delivery
Atlin, B.C.

FILE NO. 466 - 14680

DATE August 17, 1971

REPORT NO.

ORDER NO.

We have tested the twenty samples of water submitted to us on August 7, 1971 and report as hereunder:

TEST RESULTS

Sample No.	Suspended Solids	Molybdenum (MoS_2)	Molybdenum (MoS_2) in Solids.
100 - 110	19.0 ppm	Less than 1 ppm	Cannot calculate
200 - 210	16.0 ppm	Less than 1 ppm	Cannot calculate
210 - 220	10.4 ppm	Less than 1 ppm	Cannot calculate
220 - 230	10.2 ppm	Less than 1 ppm	Cannot calculate
230 - 240	46.4 ppm	Less than 1 ppm	Cannot calculate
240 - 250	8.6 ppm	Less than 1 ppm	Cannot calculate
360 - 370	453.6 ppm	4.0 ppm	0.9 %
370 - 380	238.6 ppm	4.0 ppm	1.7 %
380 - 390	638.6 ppm	5.0 ppm	0.8 %
390 - 400	188.8 ppm	3.0 ppm	1.6 %
400 - 410	159.2 ppm	2.0 ppm	1.2 %
410 - 420	251.2 ppm	3.0 ppm	1.2 %
420 - 430	114.6 ppm	2.0 ppm	1.9 %
430 - 440	109.6 ppm	2.0 ppm	1.9 %
440 - 450	43.0 ppm	1.0 ppm	2.4 %
450 - 460	286.0 ppm	3.0 ppm	1.1 %
460 - 470	220.0 ppm	2.0 ppm	0.9 %
470 - 480	181.0 ppm	2.0 ppm	1.1 %
480 - 490	177.0 ppm	1.0 ppm	0.6 %
490 - 500	270.0 ppm	2.0 ppm	0.7 %

.....2