

W. G. HAINSWORTH

CONSULTING GEOLOGIST

4935

REPORT ON

1973 OPERATIONS

ON THE CLAIMS OF

STARBIRD MINES LTD. [N.P.L.]

STEWART, B.C.

103/13w

Vancouver, B. C.,  
November 15, 1973.

W. G. Hainsworth, P.Eng.,  
Consulting Geologist

NO.	4935
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## W. G. HAINSWORTH

CONSULTING GEOLOGIST

SUMMARY & CONCLUSIONS

Starbird Mines Ltd. [N.P.L.] have concluded a drill program on their Stewart, B. C. group of claims.

In the early portion of the 1973 field season a packsack drill program was undertaken and 401 feet of core in eight holes resulted. Following examination of the property including this drilling and the underground workings the writer, in a report dated August 14, 1973, recommended further drilling utilizing a larger drill machine. The report recommended 3,000 feet of BQ drilling with the program estimated to cost \$57,000. Starbird Mines put this program into effect. Snow conditions forced a halt to the drilling almost half-way through the recommended footage.

All the holes drilled, save one, intersected the mineralized zone. The results of the drilling proved up a drill-indicated tonnage of 12,300 tons averaging 0.065 oz/t gold; 6.09 oz/t silver; 1.58% lead and 1.87% zinc across an average width of 5.4 feet.

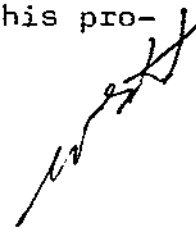
The 1973 drilling proved the extension of the main structure to the south. Grades are below that of the 1910 values but the continuity has been proven.

The shaft area from which interesting gold-silver values were obtained was not touched during this portion of the program.

The writer concludes that the Starbird property at Stewart, B. C. is still an interesting situation and worthy of completion of the original recommendations.

RECOMMENDATIONS

The original recommendations of August 14, 1973 called for 3,000 feet of BQ drilling. Unfortunately, weather conditions did not allow completion of this pro-



gram. It is recommended that this work be completed thereby carrying the mineralized structure further to the south.

In addition, the recommendation concerning mapping, sampling and surveying of the underground was not carried out. This should also be undertaken in the next program.

The shaft area at the north end of the property was recommended for some drilling which never resulted, again because of weather conditions. As this area holds promise, the completion of the drilling should include several drill holes in this area.

Basically, the recommendations are similar to the August 14th, 1973 recommendations.

An estimate of cost based on knowledge of 1973 drill costs would be:

Diamond Drilling:

1,500 feet of "B" size, wire line including mobilization, demobilization, moving @ \$18.00/foot	\$ 27,000
Sample preparation and Assaying	1,000
Camp Maintenance	2,000
Travel [helicopter, etc.]	2,000
Engineering, Supervision	2,500
Contingency at 15%	<u>5,300</u>
Total	<u>\$ 39,800</u>

*W. J. Stevenson*

## W. G. HAINSWORTH

CONSULTING GEOLOGIST

### INTRODUCTION

This report is written at the request of directors of Starbird Mines Ltd. [N.P.L.]. It is an accounting and evaluation report covering the drill program as undertaken by the company on their silver-lead-zinc claims located on Glacier Creek in the Stewart area of northern British Columbia.

In a report dated August 14, 1973 the writer recommended a drilling program estimated to cost \$57,000 and encompassing some 3,000 feet of drilling.

Since the date of the above report the writer has visited the property just once - August 28th, when holes were laid out for the drill program.

During the drilling, a resident geologist, Wayne Waters, logged and, additionally, surveyed the hole locations.

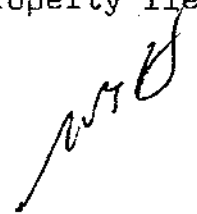
### LOCATION & ACCESS

The nineteen claims of Starbird Mines are located along, and to the southwest of, Glacier Creek, about one mile east of Bear River. The town of Stewart lies two and one-half miles to the southwest of the property.

The claims are primarily serviced by helicopter due to the difficult terrain. However, access can be made to the claims by a pack trail branching from the Bear River road.

Stewart is in daily communication with Prince Rupert through Pacific Western Airlines and may also be reached overland by the newly completed road from Terrace.

Co-ordinates of the claim group are latitude 55° 58' North and longitude 129° 54' East. The property lies within NTS 103-P-13.



PROPERTY

<u>Claim Name</u>	<u>Lot or Record No.</u>	<u>In Good Standing Till</u>
Gypsy CG	Lot 416	
Little Joe	Lot 873	
Lucky Seven	Lot 874	
Glacier King	32295 M	September 28, 1974
Beth	32296 M	September 28, 1974
Ed	32297 M	September 28, 1974
Alyce	32298 M	September 28, 1974
Ann	32299 M	September 28, 1974
Dora	32300 M	September 28, 1974
Ron	32301 M	September 28, 1974
Vic Fr.	32808 G	June 17, 1976
Frank Fr.	32807 G	June 17, 1976
Kitten Fr.	34476 K	August 20, 1974
Cat Fr.	34477 K	August 20, 1974
Jules Fr.	34478 K	August 20, 1974
John Fr.	34479 K	August 20, 1974
Bob	34543 K	August 20, 1974
Verne	34544 K	August 22, 1974

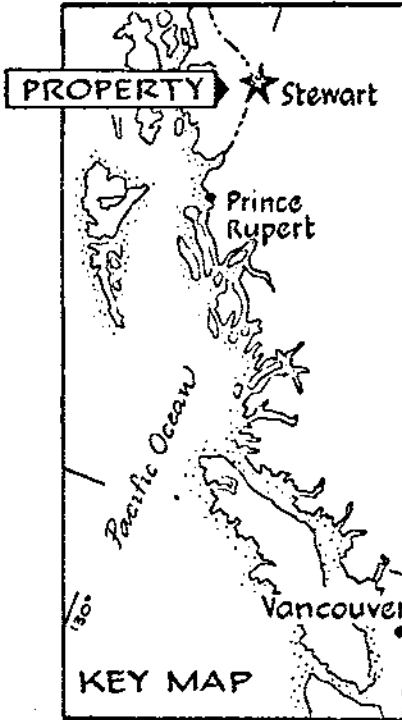
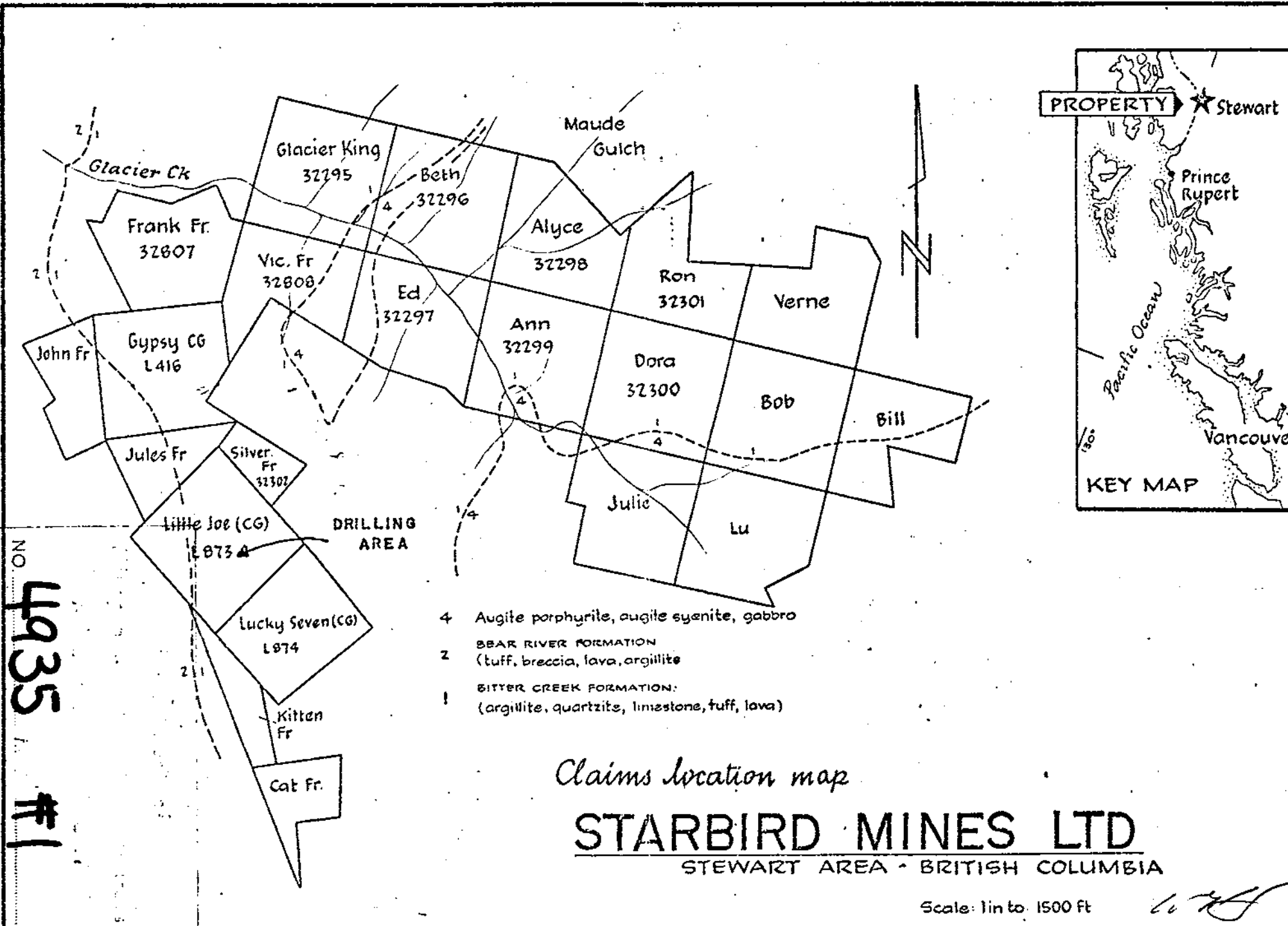
The above information has been supplied by the company. The writer has not checked out the figures at the Vancouver claim registry office.

The claims form a block in the shape of an arrow-head pointing towards the northwest.

TOPOGRAPHY

The area is extremely rugged being part of the Coastal Mountain system. The claims lie along the side of steep and very rugged mountains. The mountains are thickly forested with a heavy percentage of overburden cover.

Elevations extend through a range varying from 850' above mean sea-level at the western end of the group to the 3,500' level in the Cat Fraction at the southeastern end of the claims.



NO 4935 #1

- 4 Augite porphyrite, augite syenite, gabbro
- BEAR RIVER FORMATION (tuff, breccia, lava, argillite)
- 2
- BITTER CREEK FORMATION: (argillite, quartzite, limestone, tuff, lava)
- 1

Claims location map

# STARBIRD MINES LTD

STEWART AREA - BRITISH COLUMBIA

Scale: 1 in to 1500 ft



## HISTORY & PREVIOUS WORK

A full write-up is contained in the August 14th, 1973 report by the writer. The reader is referred to this report.

## AREAL GEOLOGY

A review was included in the August 14, 1973 report.

## GEOLOGY OF THE PROPERTY

A reprint from the earlier report is herewith given for continuity's sake:

" Two main formations, both part of the Bitter Creek sequence, have been identified and mapped on the Starbird claims. They are the predominating argillite formation and the lesser limestone bands.

The argillites are normally of the thin bedded variety although some massive sections do exist. They vary from the highly graphitic type to a limey version although the former is the more prevalent. An integral part of the argillites is the presence of pyrite, and in some locations, pyrrhotite.

Interbedded with the argillites are thin lenses of limestone. Normally these lenses are in the order of a few inches thick. However, several beds of considerable thickness have been identified lying several hundred feet to the east of the main workings.

The attitude of the formations is N 20° - 25° W with a westerly dip which varies from 20° to 60°. Local contortions in the argillites is not unusual and several places, particularly in the vicinity of creeks, show open folding.

Structure-wise, no major zones of faulting are evident on the Starbird claims. Shear structures, normally confined to the argillites, are fairly common although of minor dimensions. In the case of the vein structures, the shear fissures have been filled with

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" quartz accompanied by sulphides of lead, zinc and iron and occasionally calcite. "

### 1973 DIAMOND DRILLING

It was recommended that tier drilling along the southern extension of the vein be given priority in the late 1973 drilling. To this end five sections, spaced at 50 foot intervals, were laid out by the writer on August 28th. Each section consisted of a front tier of holes, a vertical and a  $-45^{\circ}$  inclined hole. The second tier was spaced 60 feet behind the front holes and consisted of a vertical and  $-70^{\circ}$  inclined hole.


This pattern of drilling was followed, although some slight deviations did result.

Drilling commenced on September 4th and, due to weather conditions, was stopped on October 8th. A total of 1,616 feet was completed in fifteen holes. All holes were on the southern extension of the vein structure.

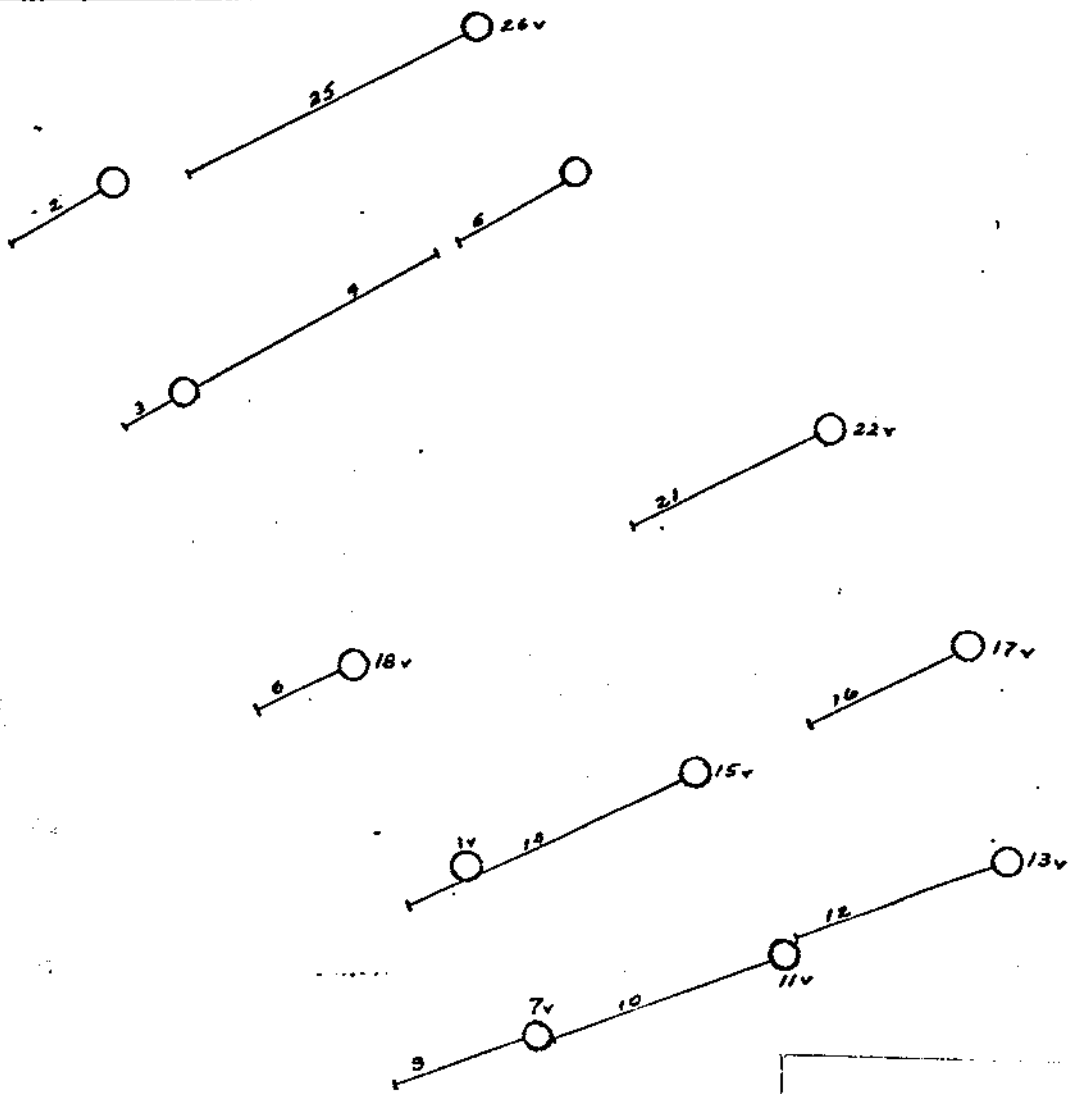
During the early packsack drilling of 1973 a total of eight drill holes incorporating 401 feet was completed. The location of these holes was haphazard and not on an assigned layout.

As mentioned in the August 14th report, four of these eight packsack hills intersected mineralization.

The following table lists the various developments of each hole:



<u>Hole No.</u>	<u>Depth</u>	<u>Dip</u>	<u>Bearing</u>	<u>Width</u>	<u>Au (oz)</u>	<u>Ag (oz)</u>	<u>Pb (%)</u>	<u>Zn (%)</u>
1	46.0	-90	-	17.0	0.06	6.63	3.71	4.51
2	56.0	-65	N 60 E	-				
3	29.0	-65	N 60 E	6.0	0.08	1.85	1.53	7.07
4	60.5	-60	S 60 W	-				
5	65.0	-65	N 70 E	-				
6	52.5	-65	N 80 E	6.5	0.066	2.18	2.15	2.70
7	30.0	-90	-	8.5	0.103	10.49	1.80	2.26
8	62.0	-90	-	-				
9	44.0	-45	N 60 E	8.0	0.07	5.40	2.71	4.21
10	77.0	-45	N 60 E	2.0	0.16	18.70	0.31	0.70
11	57.0	-90	-	12.4	0.04	2.61	1.41	1.74
12	79.0	-70	N 60 E	3.0	0.09	7.50	2.75	2.15
13	134.0	-90	-	4.0	0.02	3.20	0.20	0.10
14	90.0	-45	N 60 E	3.5	0.14	9.70	0.30	0.70
15	85.0	-90	-	3.5	0.04	3.10	0.10	0.15
16	98.0	-70	N 60 E	2.5	0.15	3.10	3.90	0.30
17	152.0	-90	-	2.5	0.05	4.70	1.95	1.40
18	110.0	-90	-	3.0	0.039	8.99	0.12	0.59
19 & 20	Not drilled							
21	125.0	-70	N 60 E	2.0	0.051	3.76	0.01	0.03
22	135.0	-90	-	-	(broke into drift)			
23	40.0	(Hole not completed due to winter conditions)						
24	Not drilled							
25	186.0	-70	N 60 E	6.0	0.069	9.01	0.07	0.06
26	204.0	-90	-	2.0	0.012	3.21	0.05	0.04

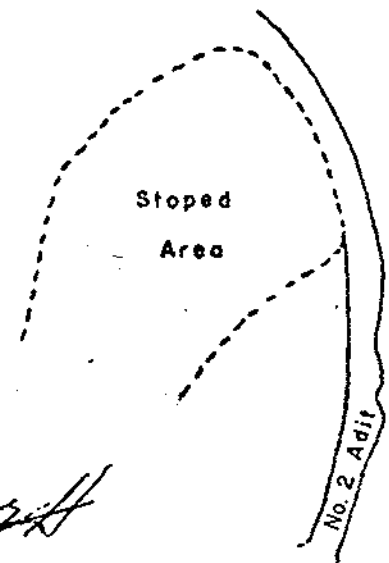


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STARBIRD MINES LTD.

1973 DRILL LAYOUT PLAN

Scale: 1" = 40'



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COMMENTS

The early 1973 packsack drilling had no planned layout to the program. Its intention was primarily to check as to whether the vein existed at various points. As stated, the later drilling was laid out on a grid type approach designated to extend the vein structure to depth and on strike to the south.

Five sections of drilling were laid out at the property. Only four of these sections were utilized. The recommendations called for eight sections of drilling. Time, abetted by weather, did not allow further drilling.

The following column shows the number of holes in each section, the average width and average grade. The final row of figures is the average results of the grid drilling:

<u>Section</u>	<u>No. of Holes</u>	<u>Holes</u>	<u>Width</u>	<u>Au (oz)</u>	<u>Ag (oz)</u>	<u>Pb (%)</u>	<u>Zn (%)</u>
1	6	7, 9, 10, 11,12,13	6.3'	0.069	6.27	1.69	2.18
2	5	1, 14, 15, 16, 17	3.0'				
3	3	6, 18, 21, 22	3.8'	0.056	4.23	1.25	1.69
4	No drilling						
5	2	25, 26	4.0'	0.055	7.56	0.07	0.06
Strike Length = 190'	16	-	5.4'	0.65	6.09	1.58	1.87

Although the following figure can be misleading, the above average represents a gross value per ton of \$39.55, taking gold at \$100; silver at \$2.80; lead at 17½¢ and zinc at 28¢

The vein structure was followed to an average down dip projection of 120 feet. This results in a ton-

*over*

nage indicated by diamond drilling of 12,300 tons.

The results of the drilling are encouraging from the standpoint of structural continuity. The values encountered, however, are somewhat weak. The total drilling was just slightly more than half the recommended footage.

The possibility exists that the drilling was in a weaker extension of the vein. The fact that hole #22 broke into some sort of underground working indicates that this area was probed by previous operators underground and left as an uneconomic section.

In addition, no drilling was carried out on the shaft area at the northern end of the property, despite recommendation to this effect. Sampling by the resident geologist, W. Winters, from various pits close to the shaft, gave the following results:

<u>Sample No.</u>	<u>Au [oz]</u>	<u>Ag [oz]</u>	<u>Pb [%]</u>	<u>Zn [%]</u>
25026	0.003	0.05	0.84	7.85
25027	0.144	0.56	1.11	0.27
25028	0.090	0.68	0.76	0.46
25029	0.170	4.28	5.35	3.34

Sampling widths are unknown.

Surveying of the underground and additional underground sampling, both recommended in the author's earlier report, were not carried out due to the time element.

Respectfully submitted,



W. G. Hainsworth, P. Eng.  
Consulting Geologist

## W. G. HAINSWORTH

CONSULTING GEOLOGIST

CERTIFICATE

I, WILLIAM G. HAINSWORTH, HEREBY CERTIFY:

- 1] That I am a geologist residing at 3473 Capilano Road, North Vancouver, British Columbia.
- 2] That I am a graduate of the University of Western Ontario, London, Ontario, with a B.Sc. degree and am a registered member of the Association of Professional Engineers of the Province of British Columbia.
- 3] That I have practiced my profession for twenty-three years.
- 4] That I have no financial interest, either direct or indirect, in the subject properties, in the securities of Starbird Mines Ltd. [N.P.L.], nor in that of any of its affiliates and that I do not expect to obtain any such interest.
- 5] That the information contained in this report is based on evaluation of all data from various sources pertaining to the property, examination of drill logs, and several trips to the property during the 1973 field season.

Vancouver,  
British Columbia.  
November 15, 1973



Wm. G. Hainsworth, P. Eng.  
Consulting Geologist.

# NEWMAC INDUSTRIES LTD.

TELEPHONE: (604) 573-5455

CONTRACT DIAMOND DRILLING

R.R. 2 - KAMLOOPS, B.C.

CONTRACT dated this 28th day of August, 1973

BETWEEN

STARBIRD MINES LTD  
427-510 West Hastings Street,  
Vancouver 2, British Columbia  
(hereinafter referred to as  
the "Company")

AND

NEWMAC INDUSTRIES LTD  
R R # 2,  
Kamloops, British Columbia  
(hereinafter referred to as  
the "Contractor")

## DESCRIPTION OF WORK

The work is to consist of a series of drill holes drilled at locations specified by the Company. The total minimum footage to be drilled is 3,000 feet, but total footage may be extended by mutual agreement.

Holes shall be drilled with BD equipment.

The Contractor will not be called upon to drill any hole at a flatter angle than  $-45^{\circ}$ .

The Company agrees to pay the Contractor for footage drilled and all other services as follows:-

1. Coring at bedrock  
to depths of 800 feet \$11.00/foot  
over 800 feet \$11.00/foot plus field costs



2. Casing of overburden

0 - 50 feet	\$11.00/foot
over 50 feet	\$11/00/foot plus field cost plus 10%.

The following services will be provided at an operating field cost plus 10% basis.

1. Any bad down hole encounters such as drilling caved or broken ground,
2. Reaming and setting casing for bore hole reduction, bore hole stabilizer and control of return water,
3. All cementing operations excluding setting time but including drilling of set cement,
4. Supplying water to drill when water supply is over 1,000 feet lateral and/or 500' vertical lift from bore hole under non-freezing conditions,
5. Recovering pipe and/or casing at company's request,
6. All costs plus 10% if occur while Company requests Contractor to continue drilling in any hole that the Contractor is encountering bad down hole conditions and must be responsible if the tools are broken off and left in the hole due to these conditions,
7. Supplies consumed or damaged beyond use due to site conditions, including diamond articles, mud ingredients, cement, rods, core barrels, site replacement value plus 10%.
8. All mud ingredients used in drilling operations.

The Company agrees to pay all mobilization costs from Kamloops to drill site including all transportation costs, labour and accommodation costs and all demobilization costs to Kamloops as mentioned above upon completion of contract.

The Company agrees to pay all necessary services, trips to the site from Stewart incurred during the contract.

Camping costs and accommodation and meals will be supplied by the Contractor with our own personnel and will supply meals for Company personnel at \$8.00 per day per man.

Core boxes will be provided by the Contractor and will charge the Company at cost plus 10%.

It is agreed that at the completion of the present active drilling programme the Company may retain the Contractor's drilling equipment at the drill area for a rental rate of \$1,500.00 per month per drilling unit. The standby charge will cease to apply when the Company advises the Contractor the equipment is no longer needed <sup>or</sup> if a new contract is negotiated.

#### DESCRIPTION OF FIELD COSTS

1. Field cost labour is assessed at \$5.00 per man hour including supervision.
2. The Company shall provide at no cost to the Contractor all right-of-way of moving onto and off the property to enable the Contractor to do the work specified.
3. The Contractor will clean up sites left to the Company's satisfaction at field cost plus 10%.

4. Any shut down or loss of drilling time being no fault of the Contractor will be paid by the Company at a rate of \$10.00 per hour for a maximum of 12 hours per day and related field costs plus 10%.

a. Standby, dip test and delay time of any services crews are performing for the Company not otherwise covered herein will be at field cost plus 10%.

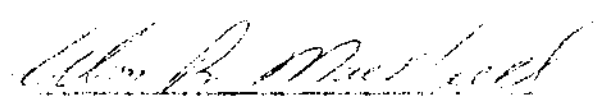
The Contractor agrees that the drilling crew will follow good drilling practices that will enable them to recover as high a percentage of core as possible.

The Contractor agrees that there will be no charges against the Company pertaining to the Contractor's hired labour, machinery, tools or diamonds so that no liens or other such charges related to the contract shall be charged against the Company.

The Contractor agrees that during the carrying out of this contract he will take all necessary precautions to protect the environment against all forms of pollution, if any, that occur during this type of operation.

The estimated costs of the entire drilling programme is \$40,000.00 and this contract is in force on receipt of 50% in advance (\$20,000.00) hereby acknowledged.

  
STARR/RO LINES LTD

  
NEWMAC INDUSTRIES LTD

NOTE: Newmac Industries Ltd carries the necessary PL & PD insurance and all employees are covered through the Workmen's Compensation Board.

