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GEOLOGICAL AND GEOCHEMICAL SAMPLING REPORT on the **ROYAL 1 and 2 Claims** Omineca Mining Division Latitude 54°20' North Longitude 127°27' West N.T.S. 93-L/6 British Columbia

September 25, 1991

on behalf of

SKEENA RESOURCES LIMITED Vancouver, British Columbia - and -LEEWARD CAPITAL CORP. Calgary, Alberta

by M.D. Jamieson, P.Geol.

TAIGA CONSULTANTS LTD. #400, 534 - 17th Avenue S.W. Calgary, Alberta T2S OB1

> GEOLOGICAL BRANCH ASSESSMENT REPORT

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BC-90-4

ABSTRACT

The ROYAL 1 and 2 claims, located 36 km south-southeast of Smithers, encompass an area underlain by andesitic rocks of the Hazelton Group, intruded by basaltic and dioritic dykes. Faulting and shearing are evident throughout the area.

Base metal occurrences have been found in the volcanics adjacent to shears and/or feldspar porphyry dykes. The rock samples collected yielded significant copper (to 90,000 ppm) but little gold (to 58 ppb).

Old adits on the property were easily located; however, due to subsequent caving, only the Upper Duchess adit was accessible for underground sampling.

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INTRODUCTION

Taiga Consultants Ltd. was contracted by the Skeena Resources Limited / Leeward Capital Corp. joint venture to examine existing workings on the ROYAL claims. The program consisted of locating, mapping, and sampling the Duchess and Evening Showings.

Location and Access

The ROYAL claims (Figure 1) are located on NTS map-sheet 93-L/6 in the Omineca Mining Division. The centre of the claims lies at $54^{\circ}20'$ North latitude and $127^{\circ}27'$ West Longitude, 36 km south-southeast of Smithers (Figure 2).

Access to the property is by helicopter from Smithers. There is trail/ logging road access to Mooseskin Johnny Lake; however, the condition is unknown.

<u>Claim Status</u>

The ROYAL group consists of the ROYAL 1 and 2 mineral modified-grid claims consisting of 20 units each for a total of 40 units. The claims were recorded in the name of Skeena Resources Limited on July 14, 1990; the next assessment deadline is 1992. Assessment requirements are \$100/unit/year plus an assessment filing fee of \$5 per \$100 of work filed. The claims have been grouped for assessment purposes.

<u>Physiography</u>

Topography on the property has a maximum relief of approximately 610 m, ranging from under 1220 m along Howson Creek at the east boundary of ROYAL 2 to 1830 m at the legal corner post located on the north edge of the claims.



PROPERTY LOCATION MAP

ROYAL CLAIMS



The property is heavily forested except in the upland areas. Tree line is located at an elevation of between 1675 m and 1830 m. There is moderate relief in the area, and the Howson Creek valley is relatively wide and flat. Due to the gentle slopes, outcrop is sparse (generally less than 10%) and overburden covered.

GEOLOGY

The property is underlain by Lower Jurassic Hazelton Group volcanics. This group is comprised of bedded volcanics, red and green andesites, rhyolites, tuffs, and breccias, which often contain pyrite. Mineralization consists of chalcopyrite, pyrite, tetrahedrite, and minor sphalerite and galena, associated with northwest and northeast trending siliceous shears.

The following description of the Duchess and Evening showings is extracted from the Department of Mines and Petroleum Resources annual report for 1967:

Duchess - The main Duchess workings consist of two adits and of several crosscuts. Recently, Norcan Mines Ltd. has done a considerable amount of bulldozer trenching, and to the time of the writer's visit, had put down six diamond drill holes using BQ wireline equipment.

The Duchess vein, a northerly trending shear zone mineralized with chalcopyrite, pyrite, hematite, and quartz, is exposed at the upper portal. Tetrahedrite is also reported from the vein. The shear is localized near the contact between a fine-grained green epidotized andesite to the west and fine-grained purplish-brown to olive-brown tuff to the east. The width of mineralization ranges up to 12 feet. Highly broken and sheared, buff-coloured feldspar porphyry dykes cut the volcanic rocks and carry only very minor amounts of sulphides. A few feet above the upper portal, a narrow vesicular basaltic dyke parallels the vein and cuts through the middle of the mineralized zone.

Faulting and shearing or pre- and post-mineral age is evident throughout the rock exposures created along the recent trenches and at the portals of the two adits. Approximately 180 feet east of the lower portal, along the bulldozer trail, a major shear zone trending N30°E and dipping very steeply is exposed. Low copper and silver values are reported from this zone by company officials. Approximately 500 feet west of the Duchess adits, a major fault strikes N10-15°W and dips at approximately 70°W. The fault is exposed along the bottom of a steep gully, where it is paralleled by a narrow basaltic dyke and is marked by discontinuous narrow zones of a bluish-grey breccia. A zone of quartz-garnet-epidote skarn extends from the west side of the gully eastward to the workings, and its easternmost exposures may be found at the west end of the upper bulldozer trench. From the Duchess area, the fault may be traced northward to the northern rim of the cirque west of Evening Lake and southward at least as far as the Princess showings. Together with several other subparallel smaller faults and shears, this fault forms a well-marked fracture system which is prominent in the western part

of the claim block. Although the relationships between known occurrences of mineralization and these northerly trending faults are at the present time not fully understood, at least their spatial relation is evident on Figure 3. That the generation of this set of fractures pre-dates mineralization and that these fractures served as conduits for hydrothermal fluids is indicated by the formation of skarn along and near the main fault and by the concordance in attitude between the fault and the mineralized shears at the upper Duchess adit.

Evidence of post-mineral movement, possibly subsidiary to later movements along the northerly trending faults, is also found at the Duchess. Company officials report a fault which truncates the main lode 90 feet from the portal along the upper adit. This structure is reported to trend N75°W and to dip steeply south. Although company reports speak of solid sulphide mineralization between this fault and the portal, three inclined diamond drill holes (driven in a northwesterly direction from points of the bulldozer trail a very short distance to the east of the portal and designed to intersect the vein a few feet below the floor of the adit) went well past the projected intersection and failed to encounter the lode. A sharp slip surface which trends N50°E and dips at approximately 45°SW is exposed a few feet west of the portal and probably represents a set of fractures which is responsible for some of the displacement of the mineralized veins. The mullion structure on this later fault pitches at a moderate angle to the southwest, but the sense of movement could not be determined. Another fact which remains as yet unexplained, but which is obviously of vital importance to further development of the Duchess vein, is that although the lower adit was driven on the supposed location of the vein as projected from above, it and several crosscuts apparently failed to intersect the lode.

Evening -Only a very summary examination was made of the showings which are known as the Evening zone and which are located approximately 2500 feet to the east of the Duchess adits at an elevation of 4700 to 5000 feet. Old records show that in 1907, an adit was driven for 70 feet in a direction of N20°E along a zone of low-grade mineralization. More recent workings done by Norcan Mines Ltd. consist of several narrow hand trenches which expose narrow irregular shears with veins of guartz replacement and sulphide mineralization in highly epoditized and chloritized buff, reddish, and green fine-grained andesitic tuffs and/or flows of the Hazelton Group. The mineralized shears trend northeast to east and dip at moderate angles to the north. They are found between two precipitous narrow gullies and may represent fractures subsidiary to northerly trending faults which probably follow the gullies.



Norcan Mines Ltd. Sketch showing the relative positions of mineralized showings and northerly trending faults.

HISTORY OF EXPLORATION

The area around the Duchess showing was first staked in 1905. In 1905 and 1906, Telkwa Mines Ltd. completed several rock cuts and shallow shafts on the property. In 1907, two tunnels (30 and 42 feet) were driven. In 1908, the upper tunnel was advanced 60 feet along the footwall of a mineralized dyke, and the property was surveyed. In 1909, a Crown grant for the land was issued; the grant reverted in 1921. In 1915, the upper adit was advanced to 90 feet along the mineralized zone, by the Jefferson-Dockrill Syndicate. At 90 feet, the adit passed out of the ore; it was lengthened to 253 feet with several crosscuts, but no continuation of the zone was found. The lower adit was advanced 60 feet in 1917 but also failed to locate the mineralization.

In 1928, Cominco acquired an option on the property and completed 926 feet of drifting and crosscutting in the lower adit. After finding only narrow mineralized zones, they abandoned the property. Figure 4 shows a plan of the upper and lower adits on the Duchess showing.

No further work was done until Norcan Mines Ltd. staked the property in 1966. Norcan had an airborne EM survey flown, and completed bulldozer trenching and sampling of the Duchess zone. In 1967, 6 holes were drilled on the Duchess zone (Preto, 1967). However, Price (1983) reports on logs for only four holes. The Norcan Mines 1968 annual report gives surface sample values as follows:

Width	Copper	Silver
24 feet	3.94%	2.72 oz/ton
26 feet	1.05%	0.78 oz/ton
25 feet	3.61%	1.80 oz/ton

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Interse	<u>ection</u>	Copper	Sil	ver
2 fe	eet	11.31%	4.4	oz/ton
2 fe	eet	8.12%	3.0	oz/ton
2 fe	eet	6.42%	4.3	oz/ton
2 fe	eet	17.23%	7.8	oz/ton
2 fe	eet	19.80%	8.0	oz/ton
2 fe	eet	8.01%	3.4	oz/ton
2 fe	eet	1.07%	0.8	oz/ton
2 fe	eet	0.37%	0.32	oz/ton
2 fe	eet	0.18%	0.18	oz/ton
2 fe	eet	0.17%	0.22	oz/ton
32 fe	eet	0.26%	0.12	oz/ton



Royal Claims

This was a vertical hole believed to be located "a few feet west of the portal" (Price, 1983).

The first 90 feet of the upper adit were sampled, giving the following results:

<u>Width</u>	<u>Copper</u>	<u>Silver</u>
14.0 ft 5.0 ft 7.0 ft 10.0 ft 6.7 ft 10.5 ft 17.0 ft 24.0 ft	6.35% 3.25% 0.5 % 1.2 % 0.7 % 4.25% 3.7 % 0.45%	2.90 oz/ton 2.65 oz/ton 0.65 oz/ton 1.05 oz/ton 1.30 oz/ton 2.65 oz/ton tr 0.40 oz/ton
4.0 ft	0.4 %	0.20 oz/ton

Bethex then optioned the property, and in 1968 undertook mapping, prospecting, and sampling over a small grid on the Duchess and Evening showings. Previous trenches were also rehabilitated.

In 1983, two 2-post mineral claims were registered to Joyce Warren over the Duchess showing and a one-day program was conducted in which 6 rock samples were collected from the upper adit, and two short VLF-EM traverses were completed. The samples assayed up to 7% Cu and 5.74 oz/ton silver, but had no gold values above 0.004 oz/ton.

1991 EXPLORATION PROGRAM

The 1991 exploration program consisted of a one-day (July 11) visit by two geologists. The two adits at the Duchess showing and one at the Evening showing were located. Fifteen rock samples were collected and sent to TerraMin Research Labs Ltd. in Calgary, Alberta for Au, Ag, Cu, Pb, and Zn analyses.

Fourteen chip samples were collected from the upper adit at the Duchess showing and one grab sample from the Evening showing (see Map 1 and Figure 5 for sample locations). Sample descriptions, analytical results, and laboratory procedures are presented in the Appendix.

The upper portal at the Duchess occurrence was easily located, since it had only partially sloughed in. This was easily cleared by hand, and most of the water immediately inside was drained. This allowed access to the end of the first northwest branch of the drift. The walls here are competent though sheared and fractured. The northeast branch has about 12" of water in it, has partially caved in, and the supporting timbers are quite rotten.

Chip samples (WR-7 to WR-20) were taken in the northwest branch, just inside the portal and across the face outside the portal. These samples yielded significant amounts of copper (up to 9%), elevated zinc (up to 2,200 ppm) and silver (up to 890 ppm), but low gold (up to 58 ppb) values.

Mineralization in the footwall of the shear consists of equal amounts of pyrite and chalcopyrite and minor amounts of fine-grained galena and sphalerite. The sulphide content ranges from 10% as coarse-grained anhedral stringers, blebs, and disseminations; to 80% (massive). Crosscutting relationships indicate at least two generations of quartz veins.

A brief visit was made to the Evening showing. One grab sample (WR-21) was taken which yielded moderate copper (1.9%) values. The entrance is partially sloughed in, but this could probably be cleared easily by hand. The adit is driven near the contact of a dark green chloritized andesite and a buff to red andesite tuff. Small (10 cm) shears trending northeast are present across the



<u>SYMBOLS</u>

Chip sample location <u>sample number</u> sample width(m)



Sulphide mineralization

Shearing

Strike and dip of shearing



25 m of exposed outcrop. Mineralization is in the form of <1 cm chalcopyrite stringers and randomly oriented <0.5 cm galena stringers with minor disseminated pyrite. Sulphide concentration increases slightly to the west.

SUMMARY AND RECOMMENDATIONS

The 1991 exploration program consisted of locating and sampling existing showings on the property. The results yielded significant copper (to 9%) and elevated zinc (to 2,200 ppm), but low gold (58 ppb) values at the Duchess adit.

To date, the property has received only a cursory inspection in respect to its copper/gold potential. Further evaluation should include relocation and sampling of the old trenches, and prospecting higher up the hill and to the west along a fault for any possible extension of the mineralization.

Additional work at the Evening showing and to the east is recommended, since this area has been given only minimal exploration attention.

CERTIFICATE

I, Michael Douglas Jamieson, of 101 - 7th Street N.E. in the City of Calgary in the Province of Alberta, do hereby certify that:

- 1. I am a Consulting Geologist with the firm of Taiga Consultants Ltd. with offices at Suite 400, 534 17th Avenue S.W., Calgary, Alberta.
- 2. I am a graduate of Queen's University, B.Sc. Geology (1985), and I have practised my profession continuously since graduation.
- 3. I am a member in good standing of the Association of Professional Engineers, Geologists and Geophysicists of Alberta.
- 4. I am the author of the report entitled "Geological and Geochemical Sampling Report on the **ROYAL 1 and 2 Claims**, Omineca Mining Division, British Columbia", dated September 25, 1991. I personally participated in the work reported therein.
- 5. I do not own or expect to receive any interest (direct, indirect, or contingent) in the property described herein nor in the securities of **SKEENA RESOURCES LIMITED** or **LEEWARD CAPITAL CORP.** in respect of services rendered in the preparation of this report.

DATED at Calgary, Alberta, this 25th day of September, A.D. 1991.



Respectfully submitted,

Jamieson, B.Sc., P.Geol

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- Preto, V.A.G. (1967): B.C. Department of Mines and Petroleum Resources, Annual Report 1967; pp.91-95

Price, B.J. (1983): Brief Geological Report, DUCHESS 1 and 2 Mineral Claims; for Joyce Lee Warren; B.C. Assessment Report 12135

APPENDIX

Summary of Personnel Summary of Expenditures Rock Sample Descriptions Certificates of Analysis Analytical Techniques

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SUMMARY OF PERSONNEL

M.W.Bowles, P.Geol.	Assistant Geologist	July 11,	1991	l day
M.D.Jamieson, P.Geol.	Geologist/Prospector	July 11,	1991 _	<u>1 day</u> 2 man days

SUMMARY OF EXPENDITURES

Pre-Field			
Data Compilation	pro rata	865.00	
Air Photo Interpretation	pro rata	370.00	
Pre-Field	pro rata	125.00	
Mob and Demob	pro rata	350.00	1710.00
Field Porsonnol			
Assistant Geologist	veb/0042 0 veb 1	400 00	
Prospector	1 day = 9400/day	285 00	685 00
TTOSpector	1 day e \$205/day		000.00
<u>Helicopter</u>	1.3 hrs @ \$688/hour		894.40
Comp. Suppost			
<u>Camp Support</u>	2 man dava @ \$60/dav	120 00	
Proceeding Equipment	2 man days @ \$60/day	120.00	
Prospecting Equipment	z man days @ \$ 5/day	10.00	
Vall Kellal Misselleneeue (dispessblee	tolophono obinning)	55.00	215 00
miscellaneous (disposables,	terephone, snipping)	50.00	215.00
Geochemical Analyses			
silts: Au/Aq/Sb/Cu/Pb/Zn/Co	1 @ \$13.50/each	13.50	
rocks: Au/Ag/Cu/Pb/Zn	15 @ \$15.60/each	234.00	247.50
Post-Fiold			800 00
<u>rost-rieta</u>			0
		TOTAL	\$ <u>4,551.90</u>

ROCK SAMPLE DESCRIPTIONS

Samples <u>WR-7</u> (1.0 m chip, massive sulphide), <u>WR-8</u> (0.7 m chip, massive sulphide), and <u>WR-9</u> (0.5 m chip, hanging wall) were collected from the wall along the first northwest branch of the drift. At this location, mineralization appears to be bounded by a 25 cm shear striking 265° and dipping 42°S. Mineralization in the foot wall of the shear is composed of massive and near-massive (80%) sulphides. Sulphides include pyrite and chalcopyrite in equivalent concentrations, as well as minor fine-grained galena and sphalerite. Sulphides occur primarily as coarse-grained anhedral stringers, blebs, and disseminations. Irregular milky white to grey quartz veins 0.1 to 1.5 cm wide form approximately 5% of the rock. At least two generations of quartz veins are present as indicated by cross-cutting relationships. The apparent strike of mineralization at this locality suggests the unit should be continued in the immediately adjacent small south-trending crosscut, but no evidence of it could be found. This in turn suggests that mineralization is abruptly faulted off.

Samples <u>WR-10 to WR-13</u> form a contiguous series of 1 m chip samples taken along the southern wall of the adit to the southeast of samples WR-7 to WR-9. Mineralization here is essentially the same as that described for WR-7 to WR-9 except sulphide contents drop off from approximately 80% to 40% to the southeast along the adit wall.

<u>WR-14 and WR-15</u> comprise two 1.0 m chip samples along the east and west sides, respectively, of the adit entrance. Mineralization on the east side of the adit consists of only 5-10% sulphides (chalcopyrite and pyrite in equivalent concentrations) as fine- to medium-grained, anhedral to subhedral disseminations with rare fine stringers. The style of mineralization in WR-15 is similar, but chalcopyrite and pyrite concentrations rise to 15% as an average.

Samples <u>WR-16 to WR-20</u> form a contiguous series of chip samples taken across the outcrop at the entrance to the adit. Mineralization here is again composed primarily of disseminated pyrite and chalcopyrite (10-15%). Massive to near-massive sulphides are found only within the northeastern half of sample WR-16 suggesting that the adit was driven down the eastern side of the mineralization, giving the mineralization an overall northeast to west strike. Minor malachite staining is found throughout the adit.

<u>`Evening' Showing</u>

Sample <u>WR-21</u> is of andesite, dark green, very fine-grained, massive, 3% chalcopyrite in stringers to 5 mm, minor quartz stringers, 2-3% very fine-grained <5 mm blue-grey metallic (probably galena) in stringers 2-3 mm, minor disseminated pyrite; 5 m west of portal.

Job#: 91-124

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Project: BC-90-4 Royal Claims

	Sample	Au	Ag	Cu	. Pb	Zn
	Number	ppb	ppm	ppm	ppm	ppm
Rocl	<					2.1
WR-	7	18	88.0	90000	20	710
	8	20	83.0	61000	ЗО	320
	÷.	14	18.4	12500	9	176
	10	10	23.0	12500	10	168
	11	8	89.0	49000	86	350
	12	58	45.0	30000	370	1240
	13	6	9.50	5000	174	980
	14	20	4.20	960	700	990
	15	26	42.0	10100	184	2200
	16	24	66.0	24000	100	350
	17	26	9.00	2400	1010	1200
	18	18	9.10	1170	1390	540
	19	16	28.O	5200	730	730
	20	16	17.9	4900	1540	1610
	21	16	14.6	19100	20	830

TERRAMIN RESEARCH LABS Ltd.

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	Job#: 90	-160							
	Project:	BC-90-4							
	Sample Number		Αu ρρδ	Ag pm	Sb ppm	Сц ppm	Рb ppm	Zn ppm	Co ppm
JS-90-	1	-40 m	2	0.21	1	39	11	270	15



250-9460

FIRE ASSAY/AA METHOD FOR GOLD AND SILVER PLATINUM AND PALLADIUM

Approximately 1 assay ton of prepared sample is fused with a litharge flux charge to obtain a lead button. The button is cupelled down to a precious metal prill which is then dissolved in aqua regia. The resulting solution is analysed by atomic absorption spectrophotemetry to determine the precious metals.



250-9460

ANALYTICAL METHODS FOR BASE METALS

Cd, Cr, Co, Cu, Fe (soluble), Pb, Mn (soluble), Mo, Ni, Ag, Zn

A portion of the prepared sample is digested in hot nitric/perchloric acid mixture, or hot aqua regia (nitric/hydrochloric acids).

Elements are determined by atomic absorption spectrophotometry.



250-94€

SAMPLE PREPARATION

Soil and sediment samples are dried and sieved through 80 mesh nylon screen (maximum partlcle size 200 microns).

Rock or drill core samples are crushed to approximately 1/8" in a jaw crusher, riffled to obtain a representative sample, and pulverized to 150 mesh (100 micron particle size).





	ROA
	HAZ
IJn	shal
IJt	grey TEL
	varie