PROGRESS REPORT

on the

RED DOG PROJECT

Located on Vancouver Island B.C.

50° 40'N, 127° 50'W

Owned by CREW CAPITAL CORP.
Vancouver Canada

J.B.Richards P.Eng.
JB Engineering

November, 1988
Vancouver, B.C.

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RED DOG PROPERTY, VANCOUVER ISLAND
Progress Report

SUMMARY AND RECOMMENDATIONS

The Red Dog property is located near Port Hardy on northern Vancouver Island in British Columbia, Canada. Since discovery in 1966, the property has been explored by four different operators and the present owners with 53 diamond drill holes totalling 23,922 feet.

A complex of porphyry dikes and stocks is intruded into lower Jurassic age andesitic volcanics of the Bonanza Formation of the Vancouver Group. These volcanics have undergone extensive hydrothermal alteration and are mineralized with gold and copper plus molybdenum and minor silver values.

While there is insuficient data to calculate a proven ore reserve,there is a reasonable expectation of an open pit minable reserve in the order of 50 million tons at a grade in the order of .32 % copper and .012 ounce per ton gold. Molybdenum and silver values enhance the value of the deposit. There are prospective areas on the property that remain to be tested.

Preliminary economic analysis indicates that the drill indicated reserve could be mined at a profit, yielding a return on investment of at least 15%, at a copper price of $1.00 per lb. and a gold price of $425. 00 per ounce. There is potential for optimizing both the mining plan and the development method and hence enhancing value of the property. The preliminary economic analysis is contained in a letter from J.B.Richards to John Darch dated November 28, 1988, and is appended as APPENDIX A.

A staged program of ore reserve definition, bulk sampling, metallurgical testing and environmental impact studies costing $3.2 million is proposed for 1989. Should this program be successfully completed, there will be sufficient data for a full feasibility study.

INTRODUCTION

The Red Dog property is a copper porphyry type deposit, located on northern Vancouver Island, British Columbia Canada. Crew Capital Corp. holds the claims under option from Mr Heinz Veerman of West Vancouver,B.C. In early 1988, JB Engineering was commissioned to review and provide an interpretation of all available data with a view to determining the potential for the existence of a significantly larger mineralized body on the claims than previous operators had thought, and to design an exploration program to test the model proposed.

On completion of this study, JB Engineering concluded that there was indeed a reasonable prospect of greatly increasing the known mineralization, and a short diamond drilling program was recommended to test the geologic model proposed. This program, while not totally proving the model proposed, did establish that the prime area of interest on the west slope of Red Dog Hill does contain very significant widths of ore with excellent gold and copper grades.

LOCATION AND ACCESS

The Red Dog property is located on northern Vancouver Island, in British Columbia Canada. Geographic coordinates are 50° 40'north latitude and 127° 50' west longitude.

The claims lie completely within Western Forest Products tree farm license #6, and are surrounded by BHP-Utah Mines Ltd "Expo" claim block. See Figure 1, LOCATION MAP and Figure 2, CLAIM MAP.

Access to the claim block is by way of 28 miles of good gravel road to the Island Highway at Port Hardy. Tide water is 10 miles away by road at Holberg. Western Forest Products logging access road NE62 provides access from the Port Hardy - Holberg road. Branches 62B and 62H cross all areas of interest.

Port Hardy is serviced by several flights of commercial airline service daily. Charter helicopter service is also available at Port Hardy.

TOPOGRAPHY, PHYSIOGRAPHY AND CLIMATE

The area is one of moderate relief, the hills rising to 1200 feet above the valley bottom at 600 feet above MSL. Slopes rarely exceed 40.

The mineralized zone occupies a local prominence called Red Dog Hill, which rises to 1550 feet, on the flank of a long 1800 foot elevation ridge.

The soil in the area is for the most part a dense and almost impervious basal till. Where the roots of trees have penetrated deeply and oxidized the till the soil is very prone to slumping after periods of heavy rain-fall following extended

dry periods. One such slide exposed the "Slide Creek " mineral zone. The normally waterlogged nature of the surface soil makes exploration road construction very expensive, in the order of $80,000 to $90,000/mile, as any road must be ballasted with 18 inches of quarried rock to be strong enough to support the construction equipment.

The entire area of interest has been clear-cut logged and replanted in the years since the Red Dog claims were staked. Secondary growth is very dense, and movement through the bush away from cut lines or creek beds is difficult.

Climate is typical of the west coast marine climatic zone. Temperatures are moderate throughout the year, mean temperatures ranging from a few degrees C. above zero in winter to 14 above in July. Summers are usually fairly dry. Most of the 200 inch annual precipitation falls in the winter months, and while cumulative annual snowfall is in the order of 100 inches, snow does not usually stay on the ground all winter.

WATER AND SURFACE RIGHTS

The adjacent Goodspeed river should provide ample water for mining purposes, and is unencumbered, but surface rights for a mill site, tailings pond, and waste dumps would have to be negotiated with the holders of the adjacent Expo claims and the tree farm licensee.

POWER

A 25KV power distribution line follows the Port Hardy - Holberg road. This would be the logical route for a high-voltage transmission line from Port Hardy should the need arise. The existing distribution line has insufficient capacity to support a major project, but could possibly support a mine if the mill were sited elsewhere, a considerable cost saving.

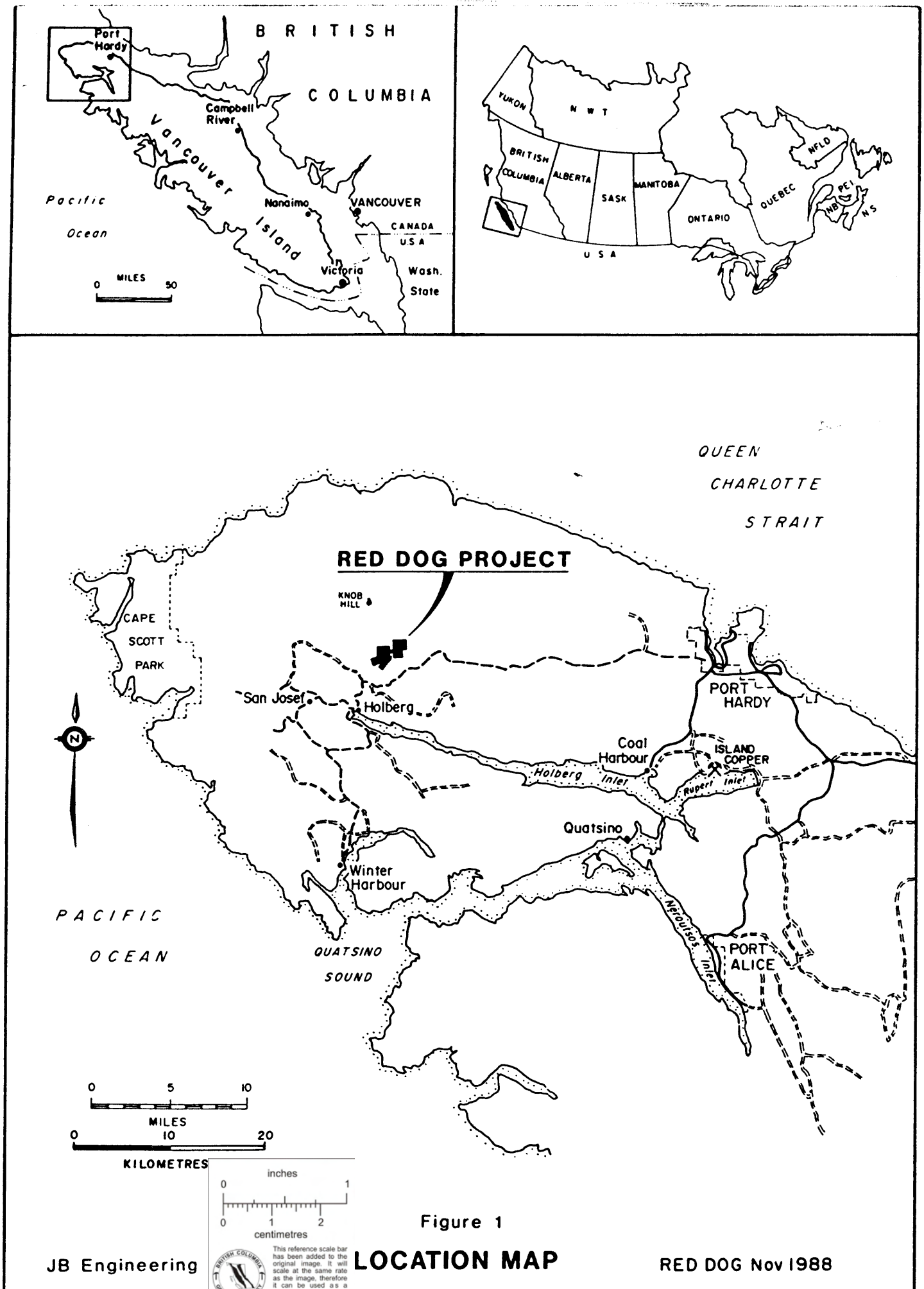


Figure 1

JB Engineering **LOCATION MAP** RED DOG Nov 1988

CLAIM STATUS

The Red Dog property consists of 28 full size and fractional two post claims. Relevant data is tabulated below.

Claim Name	Record No.	Record date	Expiry Date
Red Dog 1 - 8	19134 - 19141	Dec. 13,1966	Dec.13,1998
Red Dog 9 - 10	19142 - 19143	Dec. 13,1966	Dec.13,1998
Red Dog 11 - 12	19144 - 19145	Dec. 13,1966	Dec.13,1998
Red Dog 13fr.	25147	June 17,1968	June17,1999
Red Dog 14	19409	May 23,1967	May 23,1999
Red Dog 15 - 26	21521 - 21532	Dec. 1,1967	Dec. 1,1998
Red Dog 29fr.	21535	Dec. 1,1967	Dec. 1,1998
Red Dog fr.	19410	May 23,1967	May 23,1999

The Red Dog 15 to 26 claims are referred to as the "eastern block" as they are more or less separated from the rest of the block by "Expo" claims owned by BHP-Utah Mines. For grouping purposes the claims may be grouped as a single group since Red Dog 15 & 16 form a small wedge-shaped area that touches the western block. See Figure 2. Claim Map.

The claims were grouped November 8, 1988 as the RED DOG 88 group. The 1988 field work was recorded November 10th, and a drilling report filled at that time.

HISTORY

The Red Dog property is a geochemical find, having been first detected by a regional program conducted by Noranda in 1962. Follow-up on a 1962 anomaly during the 1966 field season led to the discovery of the mineralization in the bed of Slide Creek and the subsequent staking of the Red Dog claims. Three holes were drilled with a winkie drill in 1967 but core recovery was very poor.

In 1968 a two stage drilling program was carried out; 5,651 feet in 20 holes, with a soil geochemistry survey run in between stages. The "Slide Creek" zone was developed in the first 15 holes, but except for the mineralized intrusive found in hole 17 the remainder of the scout drilling was unproductive and it was concluded that there was no significant westerly extension to the mineralization. The mineralization was thought to amount to 5 to 10 million tons.

In 1970 very-low frequency electromagnetic (VLF- EM) and ground magnetic surveys were completed. Four anomalies located in by the geophysical surveys were tested by 4 diamond drill holes totalling 1,486 feet. Two holes, 23 and 24, from the same set-up intersected short sections of quartz-magnetite breccia mineralized with copper. As with previous drilling, core recovery was very poor, but these were the first indications of the "Red Dog Hill zone". The roads and creeks were geologically mapped.

In 1972 the claims were optioned to Cities Services who remapped the property, relogged the previous drilling and drilled three holes totalling 2963 feet. Petrographic studies suggested that the mineralizing source was a trachyte dike; the intrusive equivalent of some of the finer grained extrusives.

In 1973 Cities Services was joined by Westminex Development. A program of rock geochemistry and 4.8 miles of road I.P. survey were done. An interesting result of this work was the indication that the altered zone extended out under the deep overburden to the north-west, in the valley of the Goodspeed river (Expo claims). Three deep core drill holes were recommended on the Red Dog property, but it was left to others to drill them.

In 1974 Westminex Development drilled the three core holes recommended in 1973, totalling 2,011 feet as well as 2 winkie holes. No expansion to the mineralized zones was achieved in this drilling, but 74-3 was interesting in that it seemed to be getting back into altered rock near the bottom. As this hole is well south of the "mineralized" area and probably across a major fault, the possibility that another alteration zone, or another portion of the same zone was intersected is intriguing. Hole 74-2 could have been very useful but it was not assayed in full for copper, and not assayed for gold at all.

The property was not worked again until 1982 when Utah Mines optioned it and completed the line I.P. work over the Red Dog hill as recommended in 1973, and 2,180 feet of core drilling in 6 holes,in the first stage and 3476 feet in 6 more holes plus one earlier one deepened. This drilling indicated the tenor of mineralization that existed in the "Red Dog Hill" zone, but by no means delineated it.

The final work program on the property was a program of five core holes drilled by Utah in the fall of 1983, totalling 2,556 feet, to test various I.P. anomalies noted by K.W.Witherly, Utah geophysicist. All the anomalies were on the south slope of Red Dog hill, and all results were negative.

Based on a model of the mineralization in both zones being limited in depth extent by "dish-shaped" relatively flat lying intrusive contacts, Utah Technical Services engineers concluded that the "Red Dog Hill" zone could contain 12.2 Mt. of 0.387% Cu and 0.021 oz/t Au, and the "Slide Creek" zone 3.59 Mt. of 0.436% Cu and .008 oz/t Au, both zones being limited in depth to above 1000 feet elevation.

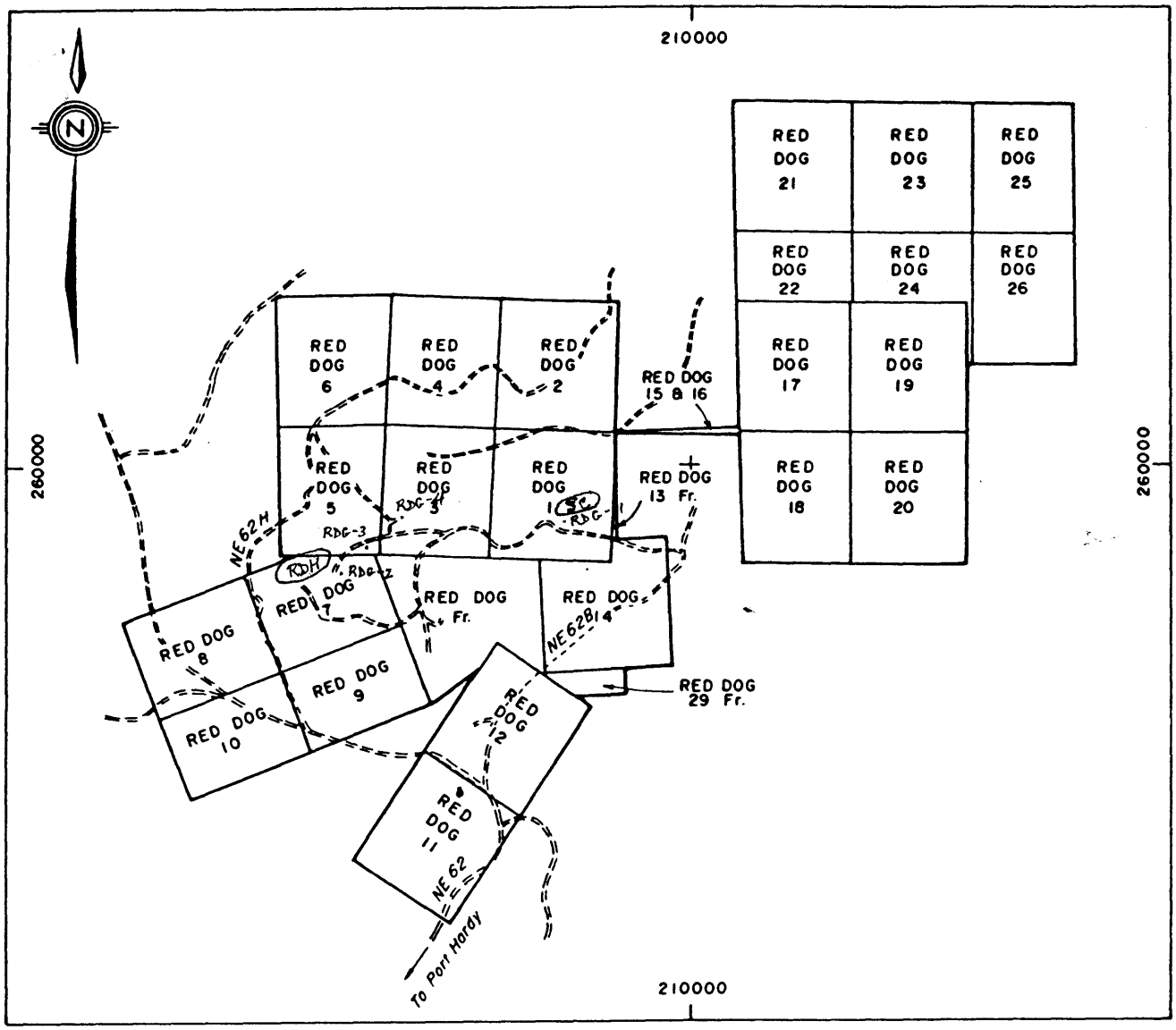
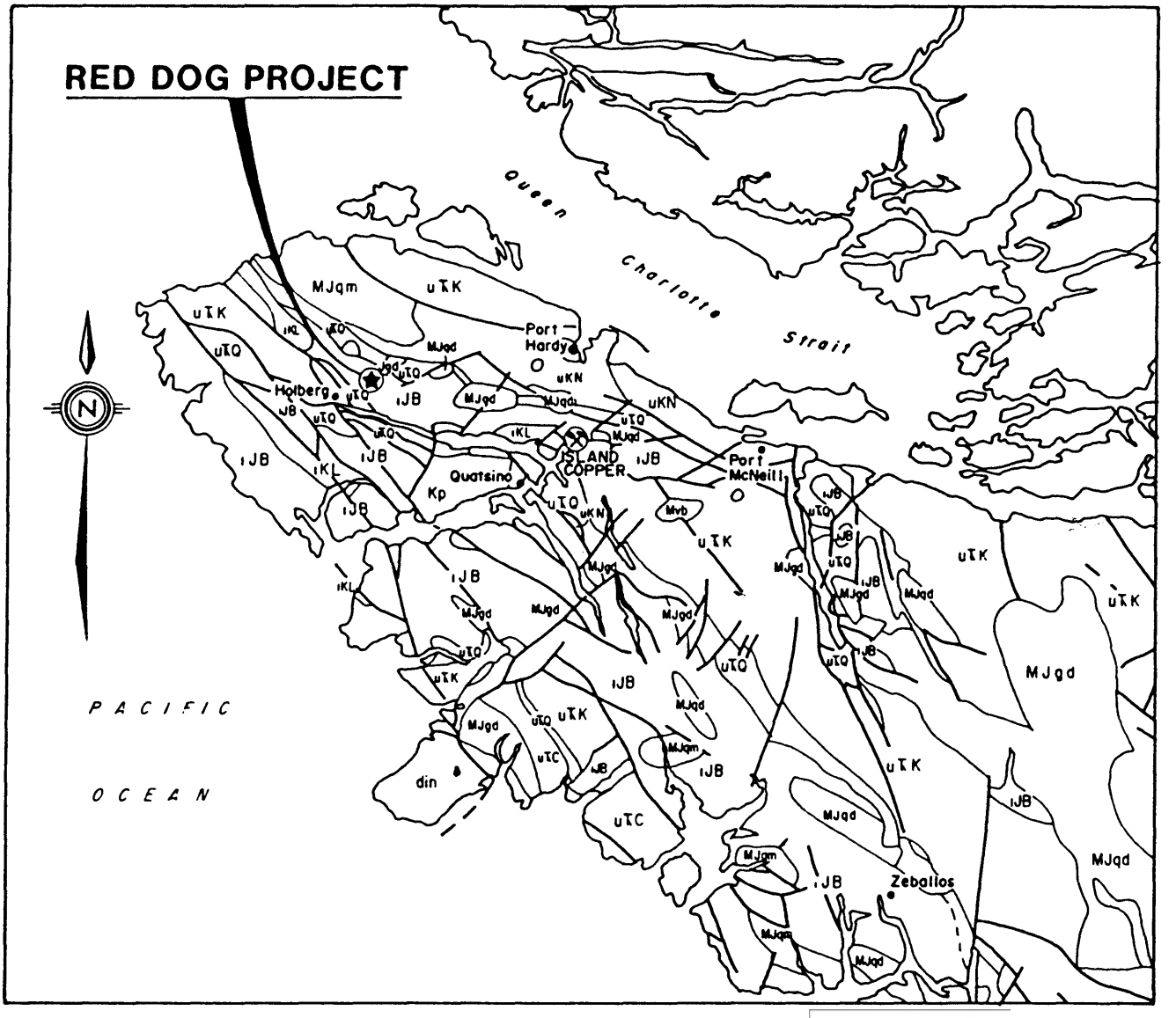


Figure 2

JB Engineering

CLAIM MAP

RED DOG Nov 1988



MIOCENE

Mvb *basalt flows, sills and dykes*

UPPER CRETACEOUS, PALEOCENE, EOCENE

Kp QUEEN CHARLOTTE GROUP *siltstone, shale, greywacke*

UPPER CRETACEOUS

uKN NANAIMO GROUP *sandstone, shale, conglomerate*

LOWER CRETACEOUS

lKL *LONGARM greywacke, conglomerate*

JURASSIC

Jgd *granodiorite, quartz diorite*

MIDDLE JURASSIC

MJqm *quartz monzonite, granite, monzonite*

MJgd *granodiorite*

MJqd *quartz diorite*

LOWER JURASSIC

lJB *BONANZA andesite, dacite, rhyolite*

UPPER TRIASSIC

uTQ *QUATSINO and PARSON BAY limestone, argillite*

uTK *KARMUTSEN basalt, pillow lava*

From Map 1386 A - GSC

Figure 3

REGIONAL GEOLOGY

JB Engineering

RED DOG May 1988

GEOLOGY

A) Regional

The property is underlain by volcanic and sedimentary rocks of the Vancouver Group; the Bonanza Formation volcanics and related tuffs and tufaceous sediments of lower Jurassic age for the largest part. The volcanics have been intruded by Jurassic and later porphyry stocks and dikes. The regional trend of the volcanics is NW with moderate SW dips in the order of 20 to 35 degrees. The regional dip is related to a set of strong NW block faults which also cause the section to be repeated. The NW tending block faults appear to be part of a deep seated zone of structural weakness along which intrusive centres have been located. The Red Dog intrusive and related dikes are one of seven volcanic centres regularly spaced at 7 to 10 km intervals in a more or less straight line along the north side of Holberg and Rupert inlets starting with Island Copper on the south east, Apple Bay, Pemberton Hills, Hushamu, Red Dog, and finally Knob Hill to the north west. Block faulting has lifted the various volcanic centres so that different levels within the original systems are exposed at each location. Island Copper, Hushamu, and Red Dog are the only ones having sufficiently deep erosion to expose the copper porphyry zones. See Figure 3. REGIONAL GEOLOGY.

B) Property (See Plates 1 to 40 for data and interpretation.)

Andesitic flows, tuffs and tufaceous sediments of the Bonanza volcanics have been intruded, altered and mineralized by a sequence of feldspar porphyry dikes. In the "Slide Creek" zone the mineralizer has been identified as a trachyte dike which is itself mineralized with pyrite and chalcopyrite. Alteration is commonly sericitic, but some authors have noted some remnant biotite, suggesting that the sericite is later retrograde. While both West Coast Mining and Cities Service geologists interpreted the Slide Creek Zone as being a shallow south-dipping dish shaped body, they speculated that the apparent discontinuity of the ore may have been due to it being in steeply dipping narrow dike-like masses. This steeply dipping model is the one chosen here. See Plates 19 to 22. The strike of approximately 060 degrees is based on Witherly's observation that he saw such a trend in the geophysics. The dip is chosen to force the pattern of drill hole intercepts. The potential of this zone does not appear to be as great as the Red Dog Hill zone, but it would be a mistake to write it off without fully testing and delimiting it.

The Red Dog Hill zone is underlain by a quartz-magnetite breccia or QMBX, an alteration facies superimposed on various Bonanza units. Andesitic volcanics have been flooded with silica, brecciated, and the breccia cemented with additional silica plus or minus magnetite. This QMBX lies sandwiched between the Red Dog stock to the north, a complex porphyritic assemblage, generally little altered, and thick east-west striking, steeply dipping strongly altered feldspar porphyry dike on the south. Diamond drill holes EC 143, and 88-1A and 88-2 are notable for the excellent gold values encountered in Quartz-magnetite breccia. Mineralization is invariably fracture controlled. Where chalcopyrite appears at first glance to be disseminated it will always be seen to be strung out along a healed fracture. The minerals of economic importance are chalcopyrite and molybdenite. Trace bornite and covellite have been observed as primary minerals, but are of little overall

economic significance. Bornite has been noted, in DDH 88-2 for instance, in very fine disseminations, not visible except under 20X magnification, and probably accounts for erratic high copper assays noted by early workers who could see no visible mineralization. The mode of occurrence of the gold has not been studied. Although several of the porphyry dikes in this zone are mineralized with pyrite, none carry significant copper or gold. This zone contains the best mineralization, and the most coherent "ore" blocks on the property.

The area between the two known zones, along fault NW1, is interesting. The mineralized trachyte dike is cut by DDH 17 on section 207400E (Plate 17), and so the "ore block" is postulated to extend this far from the Slide Creek zone, and may be more substantial than the relatively thin and discontinuous Slide creek "ore" bands. The trachyte does not extend west of this section, however short sections of +0.4% Cu.Eq. were found in the top and bottom of holes 139 on section 206850E and 140 on section 207100E, and in the top of hole 145 on section 207100E. This area remains prospective.

Faulting is very extensive. Fracturing is everywhere at least moderate and very often strong to extreme in its intensity. A strong north-west trending, south-west dipping fault, mapped by K.Northcote of the B.C. Department of Mines, in a creek on the north side of Red Dog Hill has been traced in the drill holes across the saddle and into the next creek. This fault, labelled NW1 on plans and sections, may be the break between the two mineral zones.

Alteration in the Red Dog Hill zone ranges from propyllitic to advanced argillic, with sericite-chlorite-magnetite quite common. Alteration, as detailed in the geologic coding on the geologic sections varies considerably over quite short distances. The quartz magnetite breccia with chlorite-sericite alteration is suggestive of the chlorite-sericite zone of the Lowell & Gilbert model for porphyry copper deposits, that is, very low in the system. The Slide Creek Zone probably lies in the alteration pattern on about the phyllic-potassic transition, but, in as much as a recognizable fossil has been found in the bed of Slide Creek, the overall alteration intensity cannot be very strong in the Slide Creek zone.

There must be some uncertainty attached to any geologic interpretation until more drill data is available, and preferably some surface and underground mapping; at which time it may be possible to say with more certainty which dike or dikes were the key to ore formation, and how much movement there has been on any one fault.

1988 PROGRAM

The objective of the drill program was to test the depth extent and continuity of the mineralized zone located on the top of Red Dog Hill by previous operators, and to briefly test and the possible mineralization between the two zones.

The drilling was done by Tonto Drilling Ltd. of Burnaby B.C., using a Longyear Super-38 drill rig equipped for helicopter moves. NQ tools were used for all

coring, recovering a 48 mm. diameter core.

Drill moves were made with a Bell 206B helicopter on charter from Vancouver Island Helicopters of Port Hardy B.C.

The field work commenced with the mobilization of the engineer and assistant on the 25th of July. The drill and crew arrived on the 3rd of August and drilling continued until the 19th of September. The last core was logged and sampled and the engineer left the site on the 26th of September.

Considerable difficulty was experienced by the drill crew in gaining good core recovery due to the highly fractured nature of some rock units. The drilling fluid often did not return to the stand-pipe, and in the case of holes 1A and 4, appeared at ground surface hundreds of feet away. Holes 1 and 4 were both lost due to the drill strings breaking in faults. Hole 4 was abandoned as it had achieved most of it's planned depth, hole 1 was redrilled as 1A about 30 cm. from its original position. Future core drilling holes should be started with HQ tools to improve the core recovery, and minimize down-hole problems. The slight extra footage cost should be more than offset by savings in hourly-rate charges.

On completion of each hole, as the drill was being moved to the next location, the core was flown to the road and transported by truck to the logging facility at the Trails End Motel at Holberg. The core was logged in detail by J.B.Richards, P.Eng. on GEOFORM computer forms. The GEOFORMs were used to enable the data to be readily digitized at a later date should this be necessary. The logs contain a prefix that explains the codes and scales used, and at the end of each geologic log there is a plain english summary of the geology on a unit by unit basis. The detail logs are appended as APPENDIX G.

The core was marked out in intervals of 10 feet and split lengthways, with half being returned to the core-box and half sent for assay. Assaying was done by Acme Analytical Laboratories Ltd. of Vancouver. The assay results are tabulated on Assay Logs at the end of each geologic log. The core recovery was estimated by measuring the core over each sample length, and is reported as a percent on the assay logs. Also the Rock Quality Designator or RQD was estimated by measuring the amount of core in each sample interval that is in pieces longer than twice the core diameter. This figure is also tabulated with the assay data.

The core is stored at the Trails End Motel in Holberg.

The collars of the holes were surveyed by closed tape and compass traverses using previously established control. The coordinates are in feet on the Western Forest Products Ltd. grid. Problems encountered in closing relatively short traverses suggest that some of the previous surveying may not have been closed and adjusted.

RESULTS and DISCUSSION

The results of the program are ambiguous, and do not provide clear answers to the questions it was hoped that they would solve. While holes 88-1A and 88-2 did contain excellent mineralization over long intervals in their upper portions, both holes encountered barren intrusives well before their planned depths. In both cases it is probable that the intrusives are dikes that are in the order of 100 feet thick or less at shallow angles to the drill holes. In the case of hole 1A, approximately 40 feet of good grade is encountered at depth (900 feet) between dikes. This intersection proves that ore grade does persist to depth. The question of the orientation of the barren dikes will require east-west oriented drill holes, and/or trenches.

Hole 3 encountered a zone of strong hydrothermal alteration and sulphide mineralization, up to 10% pyrite, and averaging 5% or more, but only 145 feet of .4% Copper equivalent near the surface. This zone appears to represent a fault block of peripheral alteration that has been moved into the "ore" zone, probably from the North. The mineralization is cut-off to the north by a southerly dipping fault.

Hole 4 was expected to pass from barren altered rock through a fault and into copper mineralization and then back into barren rock through another fault. The faulting proved to be more extensive than anticipated, but 310 feet in the mid-section of the hole averaged .47% copper equivalent.

In both holes 88-3 and 88-4, the gold mineralization was more erratic than the copper, and suggest that like Island Copper, the gold mineralizing event was different from the copper mineralizing event.

POTENTIAL MINERAL RESERVE

As an aide to economic evaluation of the property's worth, a trial ultimate pit with included 3 year pit (at 10,000 tons per day) was drawn on the Red Dog Hill zone, and contained volumes calculated. The limits of ore included are taken to be within the .40% Copper Equivqlent cut-off. The term copper equivalent is used to simplify consideration of values given the relatively equal importance of both copper and gold plus molybdenum. The factors used are: copper plus gold in oz./ton X 29 plus molybdenum % X 3.3. These factors are factored from expected recoveries and values. They would of course vary with metal prices, and metallurgical research may change the recoveries of the several minerals.

This is not an optimum pit, and the "ore" contained within it is not proven. The purpose of this calculation is to demonstrate what the property may be worth if the geologic model is proven correct. Details of the calculation are appended as APPENDIX B.

No reserve estimate was made on the Slide Creek zone.

RECOMMENDATIONS FOR THE 1989 PROGRAM

A two stage program is recommended: the object of the first being to test the variability of the ore in the probable pit area on Red Dog Hill, as well as to determine if the Slide Creek zone has the potential for the development of significant tonnages. See the vellum transparency labelled **PROPOSED 1989 DRILL HOLE LOCATIONS** in the map pocket. This may be overlaid over Plate 1.

The rather close spacing of holes around proposed hole 8 is to give data on variability of the ore for geostatistical studies. Previous work by the author on continuity studies of the Red Dog Hill zone suggested that the range of continuity was in the order of 300 feet, but the data was insufficient for proof. The first phase of drilling will confirm this or some other figure. The range of continuity of the ore established in the first phase will be used to establish the drilling pattern for the second phase, tentatively set at 300'.

Should the first phase in the Slide Creek zone outline some coherent mineralization, it should be fully defined in the second phase.

A program of metallurgical test work and environmental research are included in stage 1, with completion in stage 2.

The recommended program and its costs are detailed below.

STAGE 1 PROGRAM

A) Move all core from the Utah Mines core storage to a facility at Holberg, examine all core to ensure that it has been logged with uniformity.

Establish core facility.	$10,000.00
Move core and examine.	$5,000.00

B) Establish survey control over all the western block of claims.

$5,000.00

C) Convert all old logs, and other data to metric units. All communications with government re permitting, environmental impact etc. will have to be in metric units, so make the change now.

$2,000.00

D) Prepare 1st order topographic maps from air-photos.

$10,000.00

E) Remap geology onto accurate base. Geologic mapping will not be time consuming because of the relative lack of outcrop in the key areas, but more outcrop exists thAn has been mapped, and no good control has ever existed on previous mapping; the time has come to complete this work.

$6,000.00

F) Diamond drilling , 20 hole totalling 13,455 feet. See **PROPOSED 1989 DRILL HOLE LOCATIONS**, on transparent vellum in map pocket. Estimate all-up cost including drill moves,engineering and assaying at $45. per foot.

$605,475.00

G) Base-line environmental studies, see APPENDIX C, letter proposal, Rescan Environmental Services Ltd., C.A. Pelletier to J.B.Richards, Phases 1 and 2.

$71,225.00

H) Preliminary metallurgical testing see APPENDIX D, letter proposal, Bacon, Donaldson & Associates; M.J.V.Beattie, to J.B.Richards, Phase 1.

$57,200.00

I) Engineering supervision and reporting.	$32,000.00
	$803,900.00
J) Contingency, 15% of $803,900.	$120,585.00
TOTAL, STAGE 1	**$924,485.00**

Elapsed time for stage 1: 16 weeks to complete fieldwork, plus 8 weeks for assay results and data reduction and analysis. Total 24 weeks.
Metallurgical and environmental work will overlap other phases.

STAGE 2 PROGRAM

A) definition drilling of all zones. 26,290 feet on the Red Dog claims. See **PROPOSED 1989 DRILL HOLE LOCATIONS**, on transparent vellum in map pocket. 26,290 feet in 42 holes, at $45. per foot, all in. Note that there are 9 hole totalling 4400 feet on the adjacent Expo claims that will require drilling, that have not been included in this total.

$1,183,050.00

B) Complete environmental studies, see APPENDIX C, letter proposal, Rescan Environmental Services Ltd., C.A. Pelletier to J.B.Richards, Phase 3.

$44,370.00

C) Pilot scale metallurgical testing see APPENDIX D, letter proposal, Bacon, Donaldson & Associates;M.J.V.Beattie, to J.B.Richards, Phase 2.

$260,000.00

D) Underground bulk sampling program. 600 feet of adit total, at $600. per foot, all in.

$360,000.00

E) Sampling and shipment of bulk sampled material.

$30,000.00

F) Engineering supervision and reporting. $60,000.00

$1,937420.00

G) Contingency, 15% of $1,937,420 $290,613.00

Total stage 2 $2,228,033.00

Total program $3,152,518.00

Respectfully submitted,
JB Engineering

J.B.Richards, P.Eng.

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