GEOLOGICAL SURVEY BRANCH ASSESSMENT REPORTS

# **GEOPHYSICAL REPORT**

DATE RECEIVED MAR 1 9 1996

# VLF-EM SURVEY ON THE DIANNE MINERAL CLAIM VICTORIA MINING DIVISION SAN JUAN RIVER, BRITISH COLUMBIA

LOCATION:

NT	92B/12W
LATITUDE	48°-36'-25"
LONGITUDE	123°-59'-50"

**OWNER/OPERATOR**:

DEV MILWARDE-YATES 5598 ROCKY POINT ROAD RR2 VICTORIA, B.C. V9B 5B4

AUTHOR:

**DEV MILWARDE-YATES** 

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#### **SUMMARY**

A VLF-EM survey was conducted over approximately 1200 metres of grid lines on the Dianne Claim. The VLF-EM survey indicates that the known vein rapidly diminishes in a southwesterly direction beyond station 2+50N.

Limited geochemical soil and rock sampling should be carried out from station 0+00 to station 3+00N.

#### **INTRODUCTION**

A VLF-EM survey was conducted by the writer over the Dianne Claim which was gridded by previous assessment work. The work was carried out on April 2, 1995. Work permit N° NAN-94-0800699-109 was issued for the VLF-EM survey.

#### **OBJECTIVE**

A VLF-EM survey was conducted to trace the possible extension of the main vein on the Dianne Claim and to locate any associated minor faulting and structural changes in the same general area as the main vein.

### LOCATION & ACCESS

The Dianne Claim is situated in the Victoria Mining Division approximately 32km west of the village of Shawnigan Lake, B.C., and it is situated on the west side of the San Juan River which flows west to Port Renfrew, a distance of approximately 40km.

The claim is reached by the Port Renfrew Road, a public gravel road which runs west from Shawnigan Lake towards Port Renfrew on the west coast of Vancouver Island, and thence by various trails to the claim. Access can also be gained by using an old overgrown road which is currently suitable as a foot trail only. This old road was constructed by Concorde Explorations in 1969 and it passes through the Dianne Claim. Access to this road is via the Fleet River Main, an active logging road maintained by C.I.P. Ltd.

### TOPOGRAPHY & VEGETATION

The Dianne Claim, consisting of one 2-post claim, lies west of the San Juan River. The general topography in the area consists of steep hills, generally covered with small to medium growth timber and heavy underbrush. The area has not been logged but new logging roads are being constructed approximately 1 kilometre away South of the Dianne Claim.

Elevation on the claim runs from approximately 490 metres near the southeast corner of the claim to 640 metres at the northwest corner.

Natural slope was recorded but not taken into consideration during the VLF-EM survey.

One small stream flows very close to the northern boundary of the claim into the San Juan River. Water is available for mining purposes for 8 to 10 months of the year. The San Juan River is a spawning river for both salmon and steelhead, and is the only major source of water in the area. Consequently, some restrictions of water use for mining activity might be imposed by the Department of Fisheries and Oceans.

#### **CLIMATE**

The climate of the area is moderate. Annual rainfall in the area is approximately 1000mm. Winter snows could curtail access to the claims from mid November to mid March.

#### HISTORY

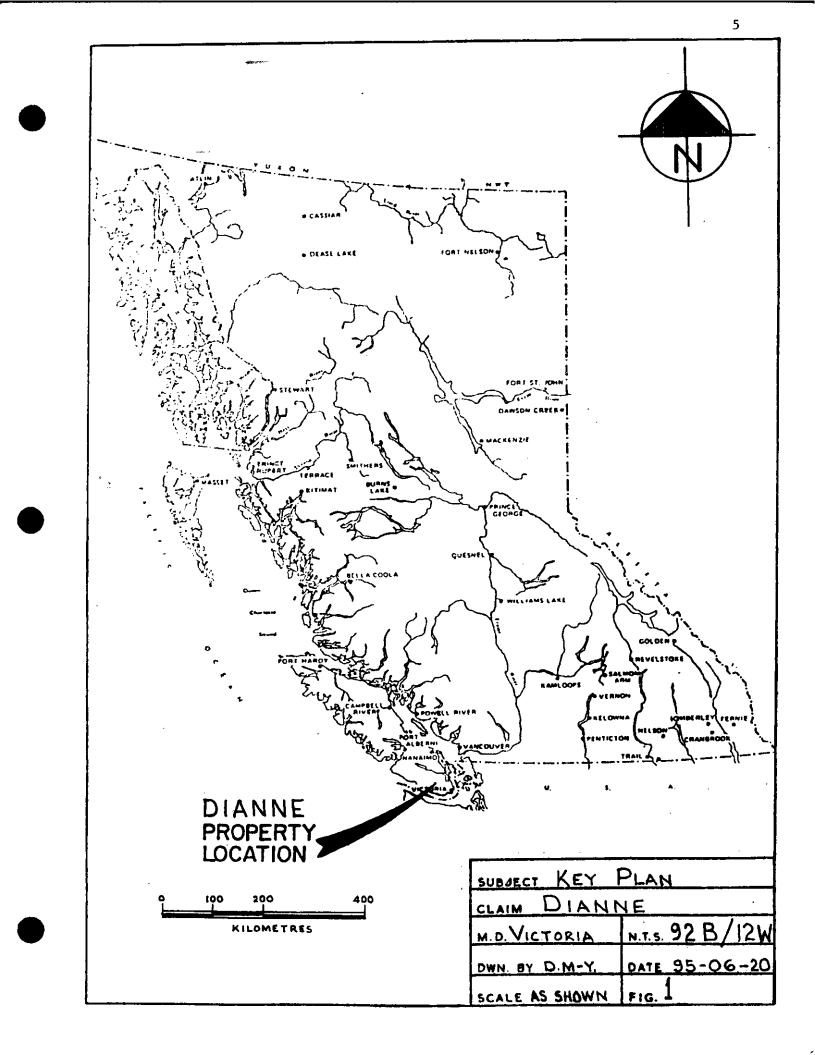
The Dianne Claim, a 2-post claim, was staked and recorded in April 8, 1992. A large Keuffel and Esser surveyor's compass and tripod were used to establish grid lines in previous assessment work. All distances were measured using a hip chain, and chainages were slope corrected.

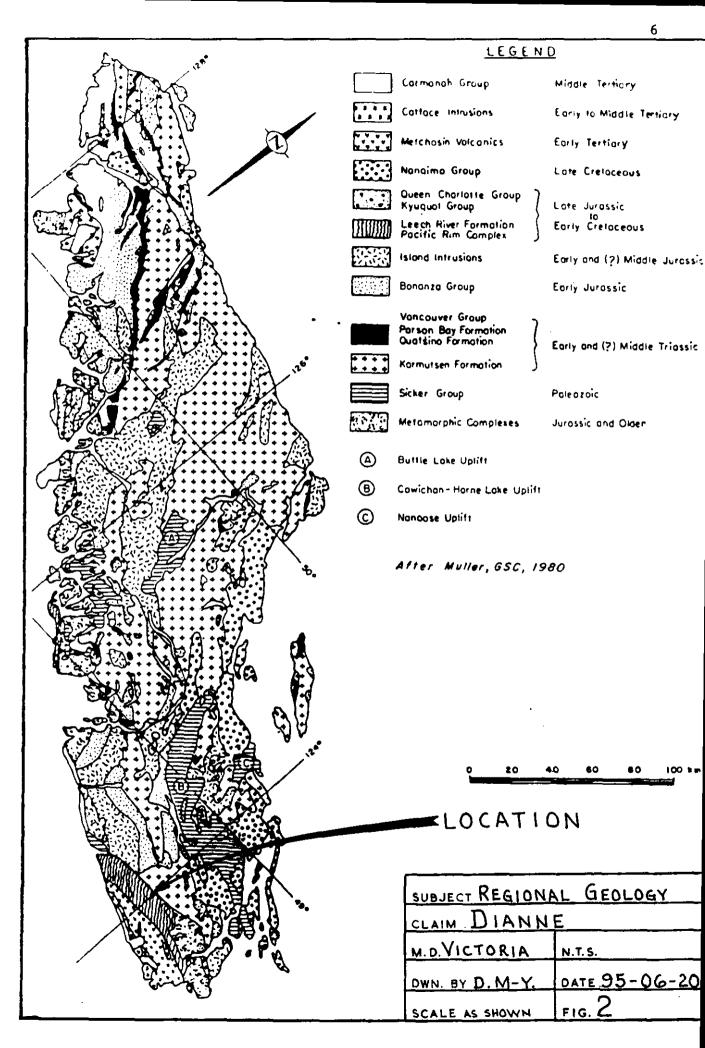
The Dianne Claim was formerly known as the Ruby Claim. Early exploration commenced on the Ruby claim prior to the outbreak of World War 1 (Donaldson, T.J., Concorde Explorations Prospectus, 1968) and continued sporadically thereafter. Concorde Explorations optioned the Ruby claim and carried out limited exploration including shallow trenching and drilling in 1968-70. The writer does not know of any published drill results from the holes drilled by Concorde Explorations.

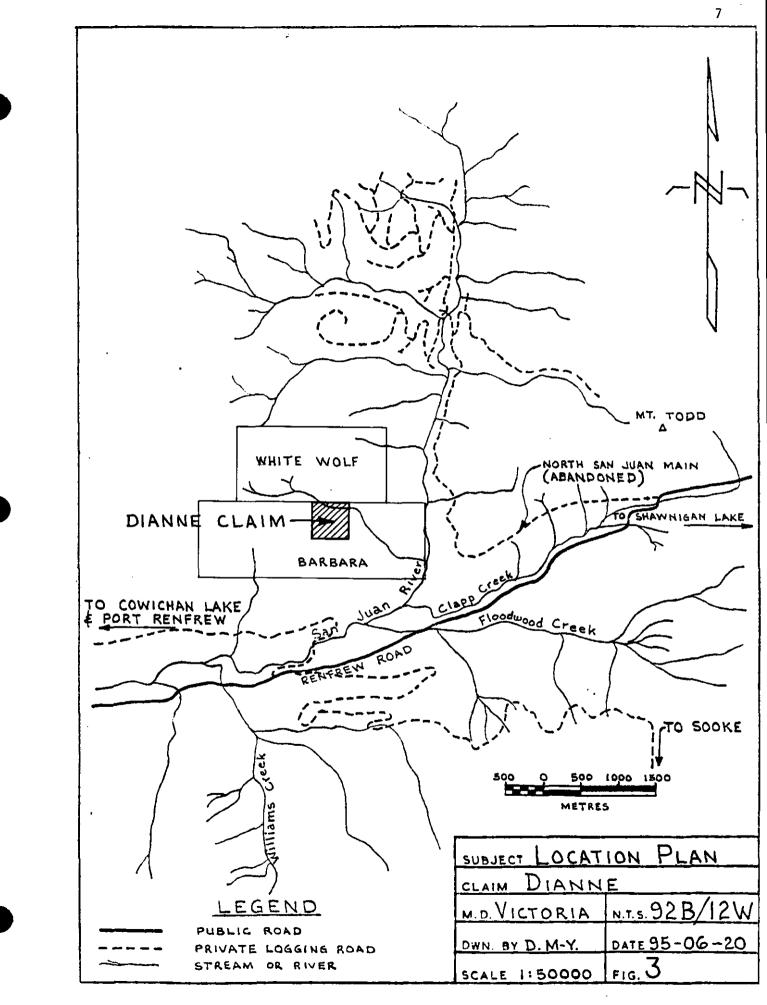
CLAIM NAME	NO OF UNITS	<u>RECORD NO</u>	DATE RECORDED	<u>OWNER</u>
Dianne	2-Post	308737	April 8, 1992	D. Milwarde-yates

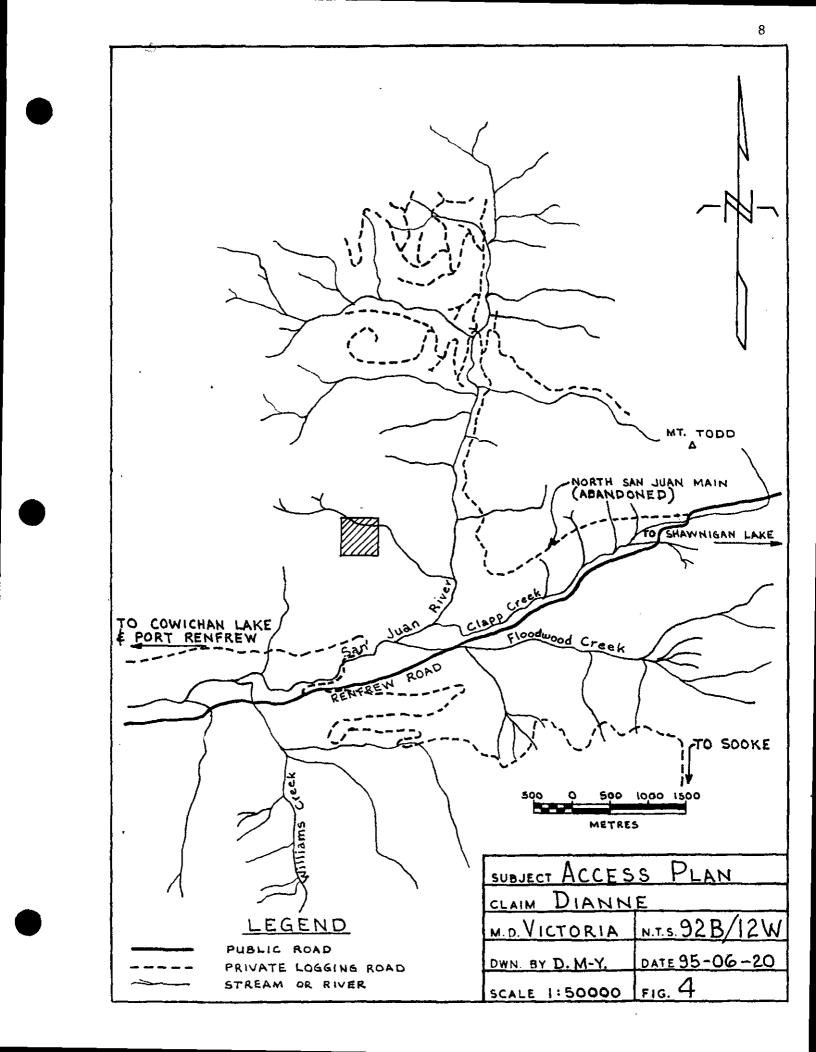
#### **REGIONAL GEOLOGY**

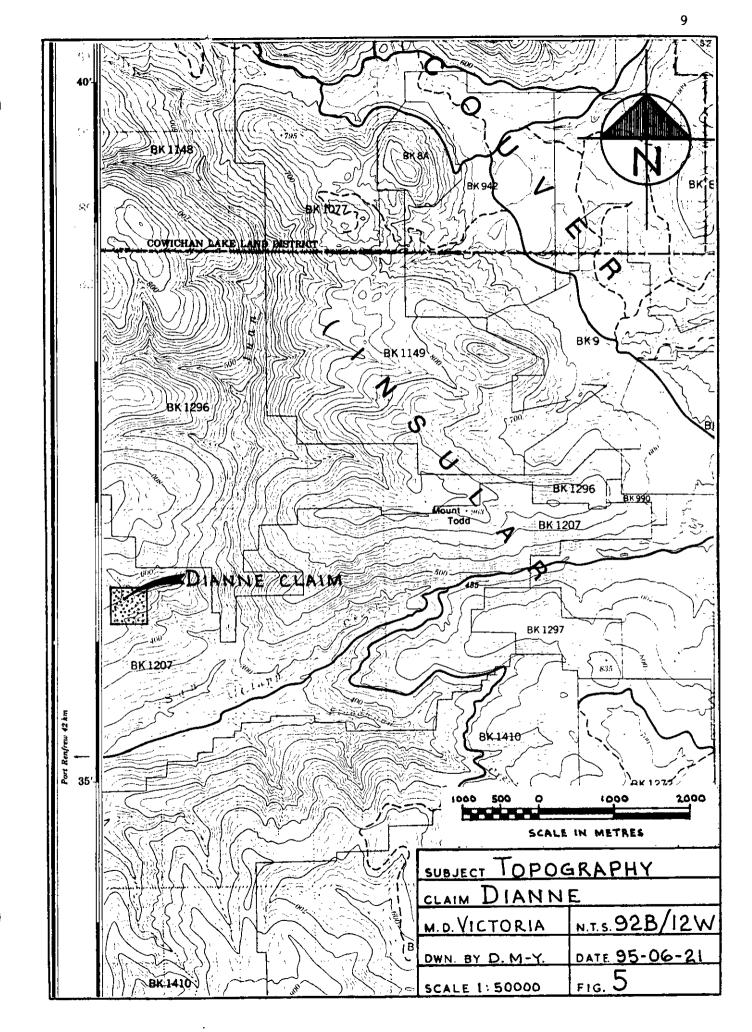
The Dianne Claim lies adjacent to the San Juan fault and is west of the Survey Mountain fault. The regional geology is underlain by volcanics and sediments of the Paleozoic and Mesozoic ages which include the Sicker, Jurassic and Vancouver Groups (E.P. Sheppard 1983). There are numerous small cliffs and rocky bluffs on the Dianne Claim and overburden is generally quite shallow, being less than one metre in most areas. Small amounts of placer gold can be found in the San Juan River which lies approximately 1KM east of the claim.











### **GEOPHYSICS**

A VLF-EM survey was conducted over a portion of the Dianne Claim. Base and grid lines were laid out at 50 X 25 metre intervals by previous assessment work. The Base Line was established to run a few degrees off parallel to the known vein on the claim. The bearing of the Base Line was 48°-48' Astronomic. A total of approximately 1.2 kilometres of line were covered by the VLF-EM survey.

### a. Equipment

- VLF-EM instrument	- Sabre Electronics Model 27, Serial No 327
- VLF Transmitting stations	- Oahu, Hawaii, Frequency 23.4 KHZ - Seattle, Frequency 24.8 KHz

## b. Field Method

A VLF-EM survey, utilizing a Sabre Model 27 receiver was conducted on grid lines bearing 138°-48' Ast. and 318°-48' Ast. Lines were spaced fifty metres apart and readings were taken at twenty-five metre intervals along the grid lines. The US Navy submarine transmitter stations located near Seattle, Washington and Hawaii were both used in the VLF-EM survey.

The US Navy submarine transmitter station at Hawaii was used to determine if the main vein on the Dianne Claim could be located using VLF-EM geophysics. The global position of the Hawaii station was the most suitable to use when considering the strike of the known portion of the main vein on the claim.

The Seattle station was used to determine if any detectable minor cross-faulting running perpendicular to the San Juan Fault exists near the main vein.

The detailed field procedure as laid out in the manufacturer's operating manual was used. A base station was established near the centre of the claim to take periodic checks of field strength during the day. The field strength was set at approximately 100. The field strength button which reduces the reading by half was depressed and the  $\frac{1}{2}$  value of field strength was adjusted to give a value of 50 by adjusting the gain control. Half values of field strength were recorded at all stations. The gain control reading was not adjusted during the survey but a check reading was taken approximately half way through the survey. Refer to <u>Discussion of Field Work</u>.

Dip angle readings were taken with the receiver held in the vertical position in a plane perpendicular to the transmitter station. The receiver unit was then tilted in this

vertical plane until a null or minimum reading was observed on the inclinometer. This dip angle of null was recorded with the appropriate + or - sign.

c. <u>Compilation of Data</u>

The dip angle readings were reduced by applying the Fraser Filter. The filtered readings were plotted in a West to East direction of travel. Filtered data contoured at 5° intervals and one half field strength readings contoured at intervals of 10 are also shown on Figure 19. Individual grid line profiles showing filtered data and field strength readings were also plotted. Refer to Figures 7 to 18 inclusive.

d. <u>Theory</u>

In electromagnetic exploration, a transmitter produces an alternating primary magnetic field with a strong alternating current usually through a wire coil. If a conductive mass such as a sulphide body or a significant fault is within this magnetic field, a secondary alternating current is induced which in turn induces a secondary magnetic field that distorts the primary magnetic field. The VLF-EM receiver measures this distortion. The VLF-EM uses a radio frequency range from 12 to 24 KHz. Due to the frequency range, the VLF-EM can pick up bodies of low conductivity. Consequently, it is more susceptible to react to clay beds, electrolyte-filling fault/shear zones and porous horizons, graphite, carbonaceous sediments, lithological contacts and sulphide bodies of such low conductivity that other EM methods fail to respond to. As the VLF-EM signal derives from an infinite source, faults of great horizontal and vertical extent give particularly strong responses. The San Juan fault is such a fault.

The VLF-EM instrument is a useful tool for mapping structures and for detecting sulphide bodies of too low a conductivity for conventional EM methods and too small in size for induced polarization. However, its response to lower conductive bodies often results in a number of anomalies, many of which are difficult to explain. Therefore, VLF-EM surveys should not be interpreted without good geological knowledge and/or other geophysical and geochemical knowledge of the property.

In recent years, the field strength value has taken on a greater importance in interpretation of data.

The Fraser Filter is essentially a 4-point difference operation which transforms zero crossing into peaks by means of simple numerical filtering technique. Thus, it shows conductors which don't show up as cross-overs on unfiltered data. It also reduces high frequency noise in the data.

## DISCUSSION OF FIELD WORK

Some of the stations on the grid lines were hard to locate because they were established in 1994. Some pickets had been knocked over and/or flagging had broken or fallen off due to weathering or destruction by black bears which are plentiful in the general area.

Slope readings were taken during the VLF-EM survey because the main vein is located on a relatively narrow bench and there are steep bluffs to the northwest and southeast of the bench.

The Sabre VLF-EM equipment worked extremely well during the survey. All high readings were double checked to eliminate error in data interpolation, because field strength has taken on a role of greater importance in recent years. It was decided to set up a temporary base station to check the increase or decrease in readings as the survey progressed during the day.

Sun spot activity, ionospheric storms or the combination of both can cause unstable field strength. Sun-spots generate electrometic radiation and emit a spectrum of radiowaves which can directly affect readings. Sun-spot activity also affects the ionosphere which normally can change reception by skip and other means. Two definitions from the Modern Dictionary of Electronics perhaps best describes this phenomenon.

<u>Ionospheric Error, or Sky Error</u>...."Systematic and random error resulting from reception of navigational signal after it has been reflected from the ionosphere due to variations in the transmission path, uneven height of ionosphere or uneven propagation with the ionosphere".

<u>Ionospheric Storm</u>.... "An ionospheric disturbance associated with abnormal solar activity and characterized by wide variations from normal including turbulence in the F-region and increases in absorption. After the ionization density is decreased and the virtual height is increased. The effects are most marked in high magnetic latitudes".

A combination of the above activities can generate field strength readings exceeding 100% of normal. Radio reception is usually considerably better at night, and this phenomenon also holds true for VLF-EM transmissions. Some variance of transmitter power may also take place but the US Navy is generally reluctant to give out any information concerning its transmission activities.

## **RECOMMENDATIONS**

The following work is recommended.

### Phase 1

Conduct limited geochemical soil and rock sampling from station 0+00 to station 3+00N. Samples should be taken at 10 metre intervals in the areas of interest. Soil samples should be checked for traces of Antimony, Arsenic and Gold in particular.

## Phase 2

If the results of Phase 1 warrant further work, conduct shallow trenching over areas which are geochemically anomalous and sample bedrock for mineralization.

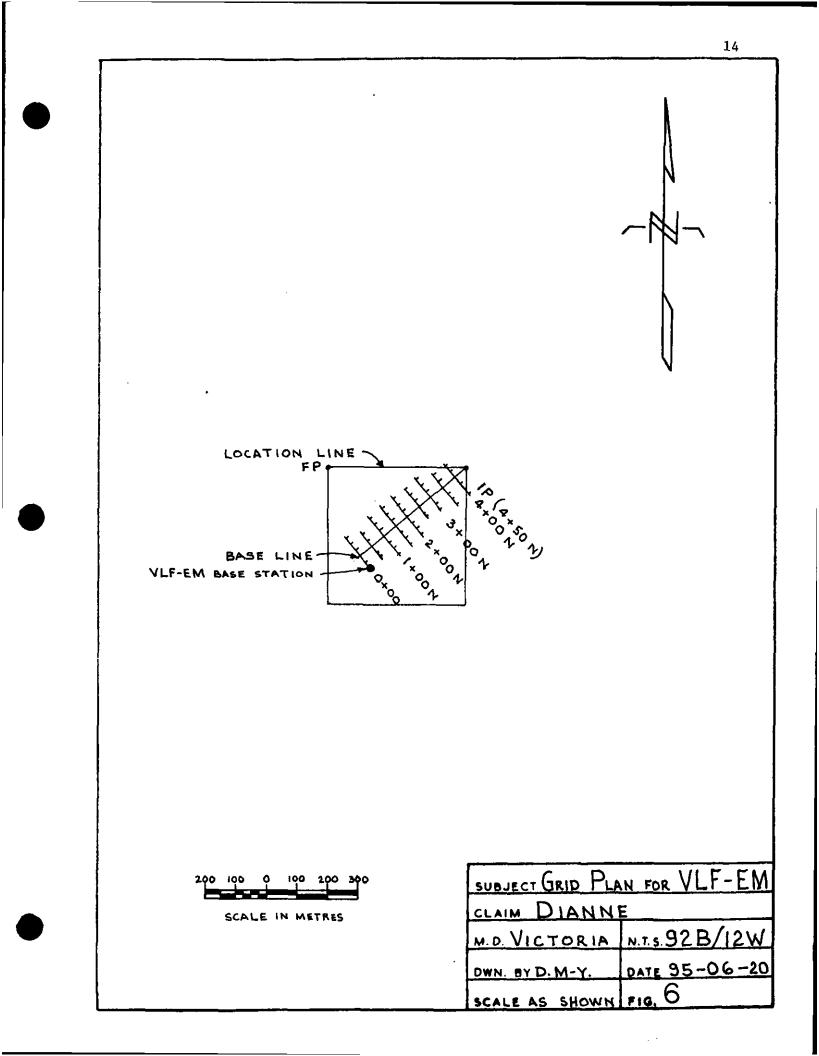
### **RESULTS AND CONCLUSIONS**

### Conclusions:

A portion of the main mineralized quarts vein, identified and located by previous exploration and trenching, generally relates well to both the Field Strength high and Fraser filtered In-phase VLF-EM zero values in the northern portion of the claim. There doesn't appear to be any minor faulting adjacent to the main vein.

To the writer's knowledge, previous exploration work did not locate the main quartz vein between Station 0+00 and Station 2+30N, strengthening the suggestion that the VLF-EM data may identify the location of the main quartz vein structure in the northeastern portion of the claim.

If, in fact, the VLF-EM values do reflect the presence of the main vein, the VLF-EM survey indicates that the vein diminishes rapidly in a southwesterly direction beyond station 2+50N.



# VLF-EM SURVEY

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PAGE ....

CLAIM DIANNE		VICTOF	M.D.	LINE. YAR	1945. DATE
STATION	SLOPE	IN-PHASE	FIELD STR	FILTER	REMARKS
HAWAII					
LINE 0+00×0+75W	+44° to W	- 18	59	ļ	at the of cliff
+ 50W	-22° to E	- 11	57	-8_	
+25W	-33° to SW	- 11	56	-7	······
0+00	-35° to SW	- 10	56	-13	
<u>+ 25 E</u>	-19° to E	- 5	55	<u>_</u>	
+ 50 E		- 3	51		on top of cliff
LINE 0+50N × 0+50W	-28° to E	- 13	66		
+25W			74	0	
0+00		- 13	1	-3	
+ 25 E	-30° to E	- 11	76		
+40 E		- 10	75		at top of diff
LINE 1+00N × 0+15W	-30° to E	- 14	68		
+50W		<u> </u>	78	+2	
+ 25 W		- 12	86	+4	
0+00		- 15	82	-3	
+25E		- 12	78	-4	
+50E		- 12	72		
+15E	-52°t E	-11	80		at top of cliff
LINE 1+50N × 0 +75W	+32° to W	-15	83	ļ	
+50W		-12	67	-5	
+ 25 W	+28" to W	- 9	83	+2	
Q+00		-13	87	ō	
+ 25 E	+270 to W	-10	64	+3	
+50E		-12	81		
+15E		-14	83		
LINE 2+00N × 0 + 75W		-16	85		
	-37° to E	-15	88	]	
+ 25W		-9	92	-8	
0+00		-14	9	+6	
+ 25E	-35° to E	-16	93	+2-	
+50E		-9	93 88	-14	
+ 75E		-7	39	<u> </u>	on wet bottom land
				}	
				}	

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# VLF-EM SURVEY

PAGE .....

CLAIM. DIANNE	• • • • • • • • • • • •		• • • • • • • • • • • • • • • • • • •	LINE YAS	310.45 DATE
STATION	SLOPE	IN-PHASE	FIELD STR	FILTER	REMARKS
HAWAII					
LINE 2+50N × 0+75W		-12	55	}	
+50W		- 12	86	0	
+25W		-12	98		
0+00		- 12	101		
+ 25 E		- 11	100	<u>  + </u>	
+37E	-58° to E	-14	96		on top of diff
LINE 3+00N × 0 + 75W	-35° to W	- 14	75		slopes into creek
	- 35° to NW	- 14	84		Top of bank above creek
+ 25W		<u></u>	85	the second se	
0+00		-10	100	0 +7	2. metres W. of old trend
+25 8		-15	94_	┝╾╌┯╌╹	
+ 50E	-55° ta E	-13	62	<b> </b>	on top of cliff
-INE 3+50N × Q+ 50W		- 16	88		<u></u>
+ 25W	-30° to W	- 13	91	l	······
0+00		- 15	99	+2	in old trench
+ 25 E		-16	88	0	
+ 50E		- 12	82	-3	
+75E		-16	86		
LINE 4+00N × 0+50W	<u></u>	-7	36		across creek
+25W		- V1	98	·	at edge of creek
0+00	+33° to E	- 18	95	+8	
+25 E		~ 14	<u>95</u> 81	~ 3	· · · · · · · · · · · · · · · · · · ·
+ 50 E		- 18	84	<u> </u> +	······································
+ 756		- 15	93		
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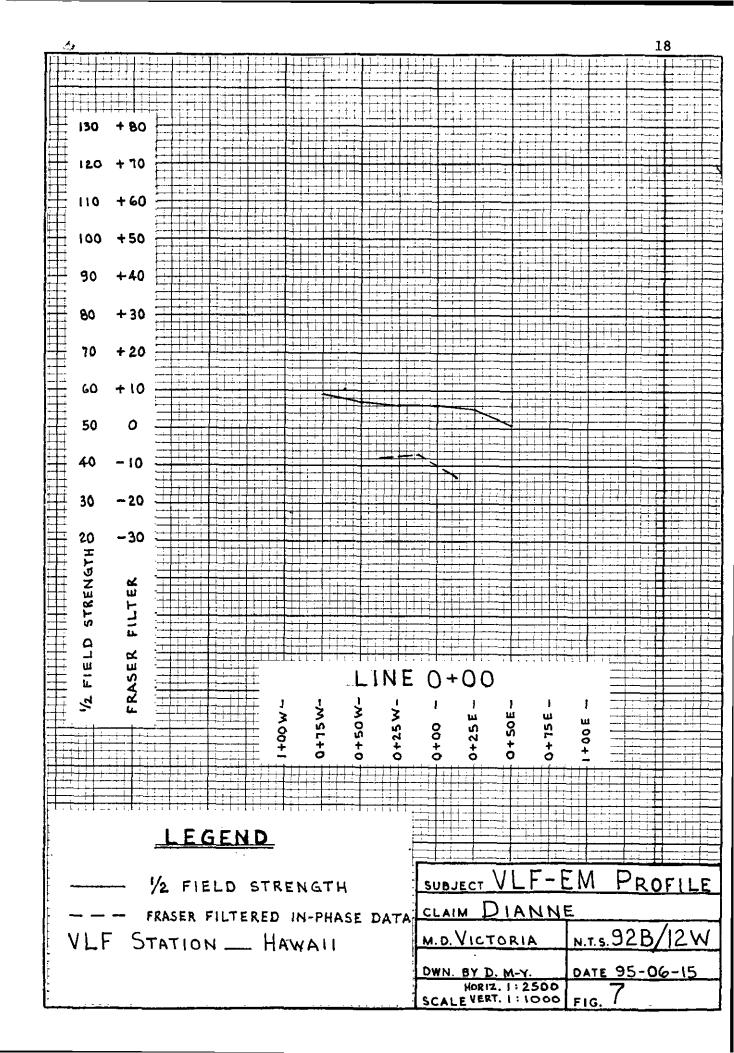
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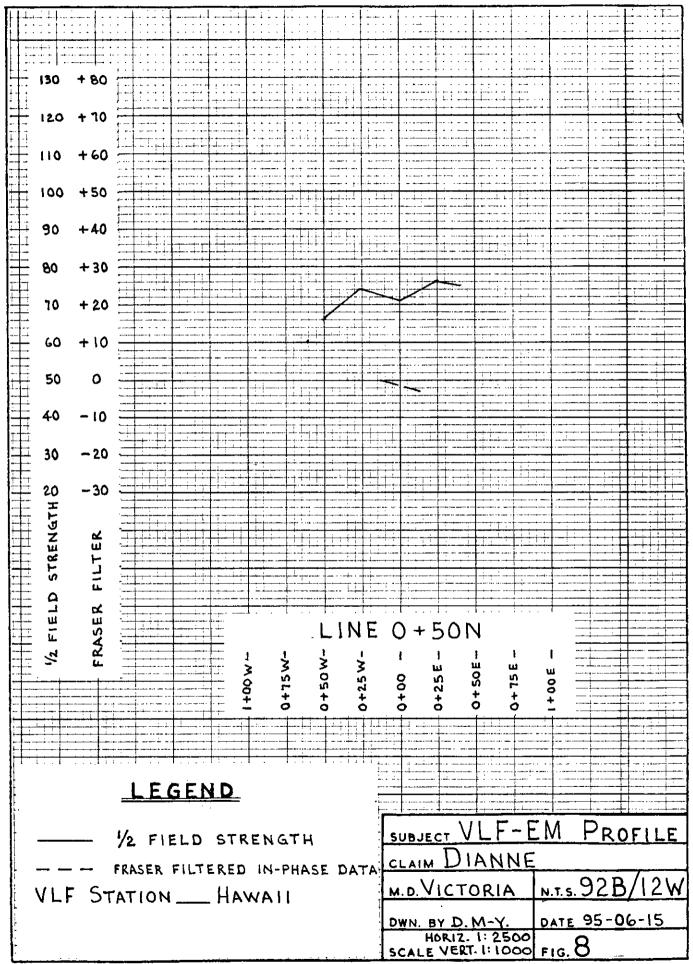
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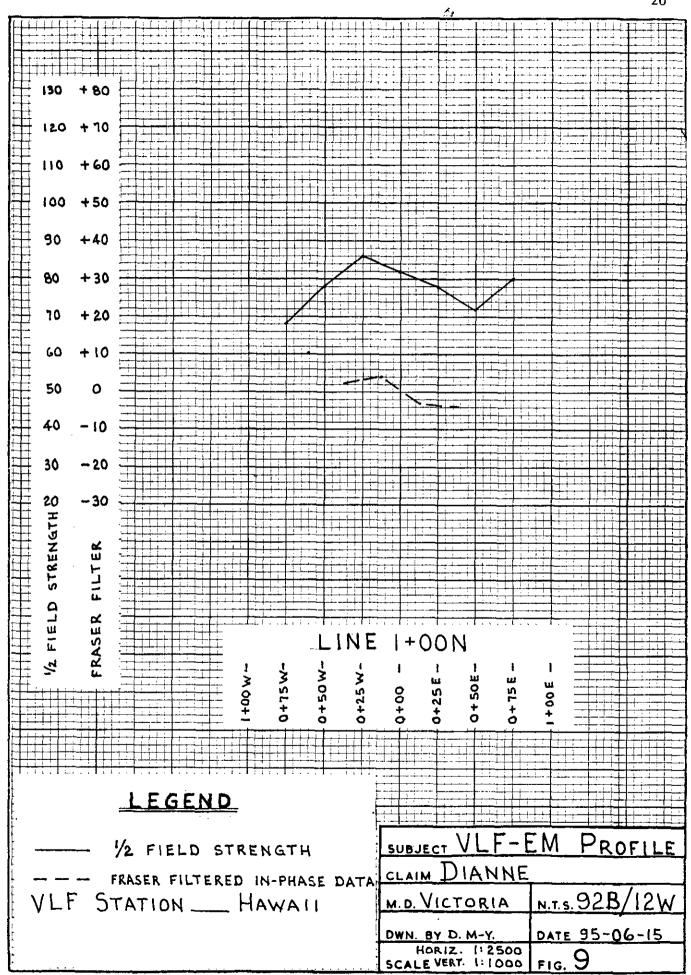
# VLF-EM SURVEY

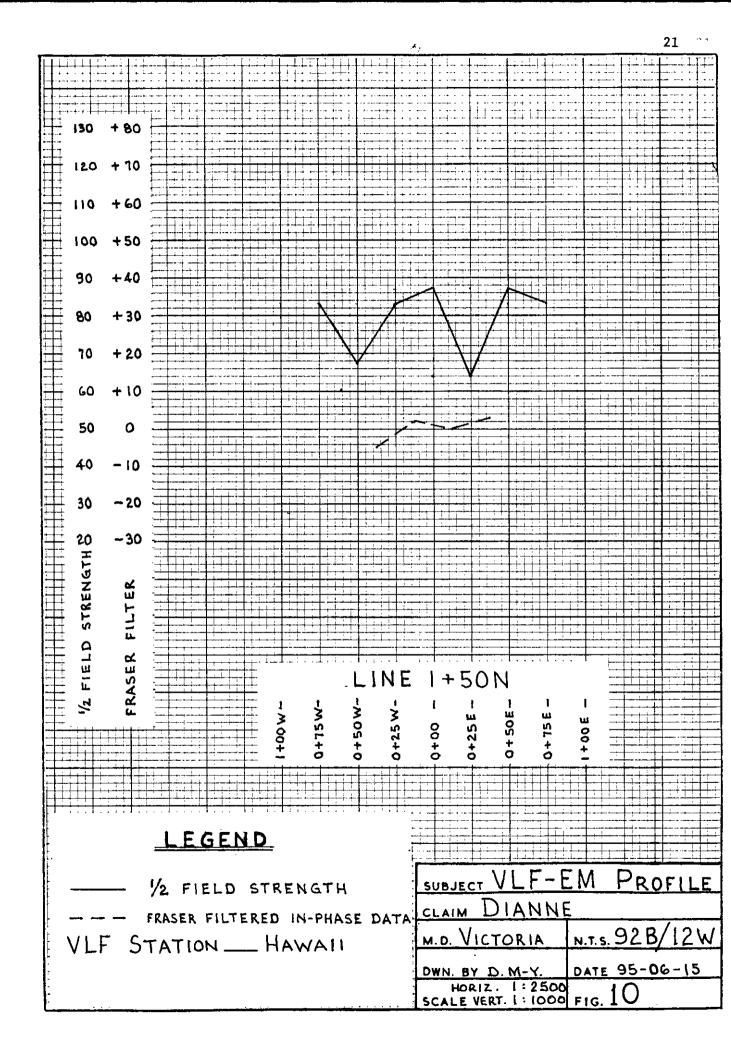
CLAIM. DIANNE		VICTORI	А м.D.	LINE VARI	9.4.5. DATE
STATION	SLOPE	IN-PHASE	FIELD STR	FILTER	REMARKS
SEATTLE					
LINE +00N ×0+75W	-30° to E	-5	46		·
+50W	-26° to E	-5	46	+	
+25W		-4	42	+4	
<u>0+00</u> +25E		-6-	46	+2	
+50E		<u>-6</u> -1	48 49	<u> +</u>	
+ 75E	-52° to E	-7	49	<b> </b>	at top of cliff
LINE 2+50N × 0+ 15W		-6	48		
+ 50 W		-7	40	-5	<u> </u>
+ 25W		-4	47	<u> </u>	
0+00		-4	47.	+2	¶
+25 E		-6	44		
+37 E	-58° to E	-4	46		at top of cliff
LINE 3+50N × 0+ 50W		-10	46		
+ 25W	-30° to W	-11	47	-1	
Đ+00		-10	48	-2	in old trench
+25E		-10	48	-2	
+50E		-9	50	<u>-</u>	·
+15=		-9	45_	<u>}</u>	1
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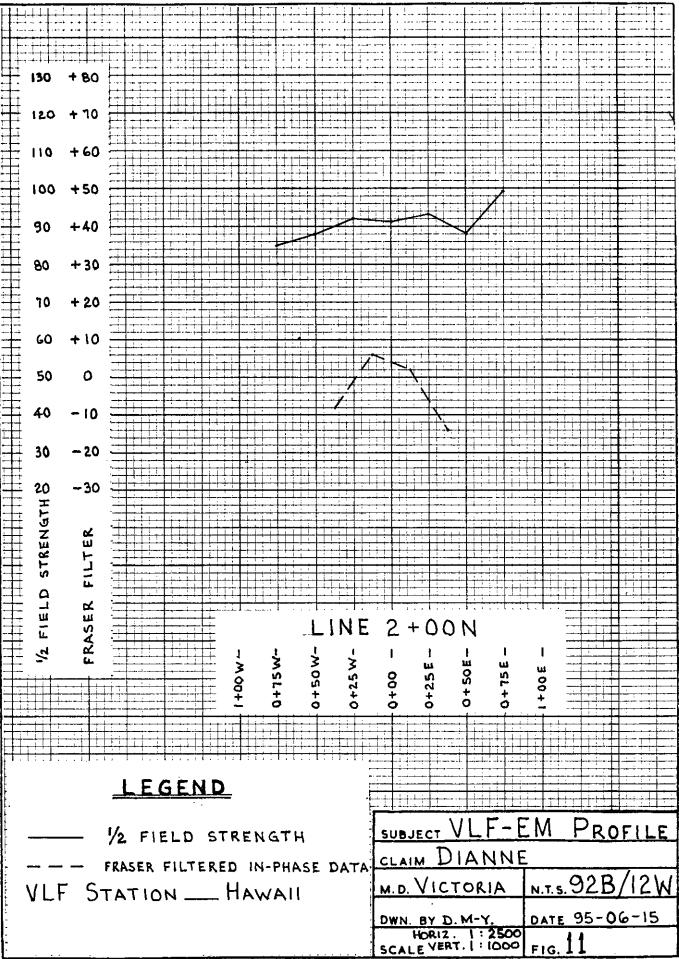




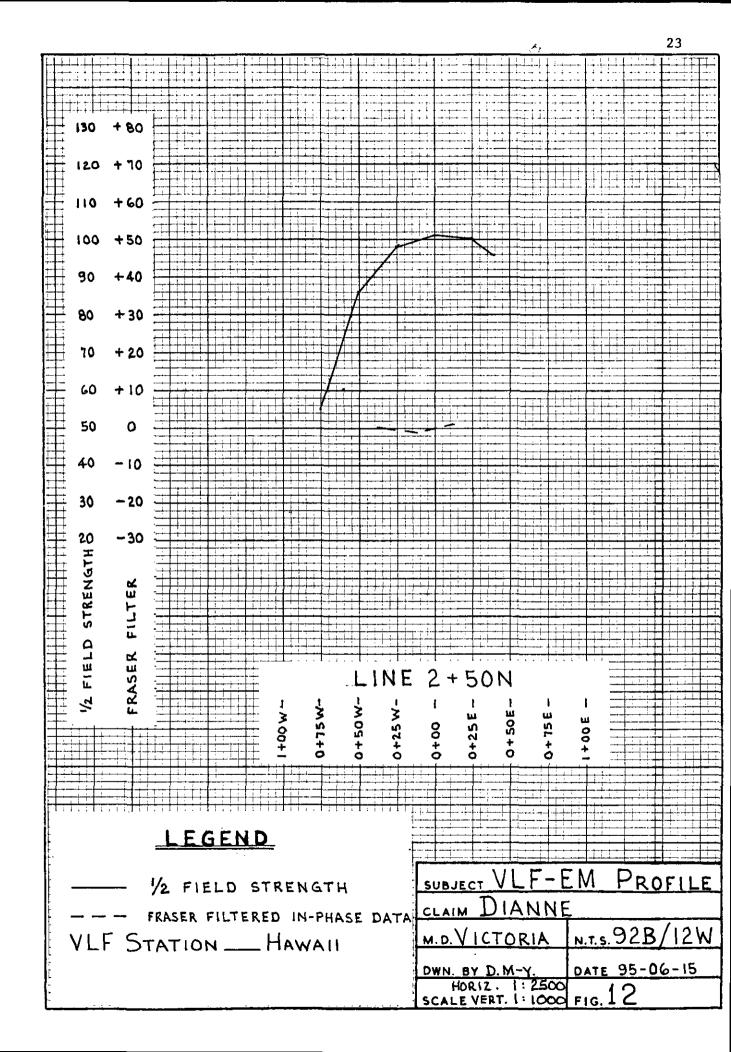


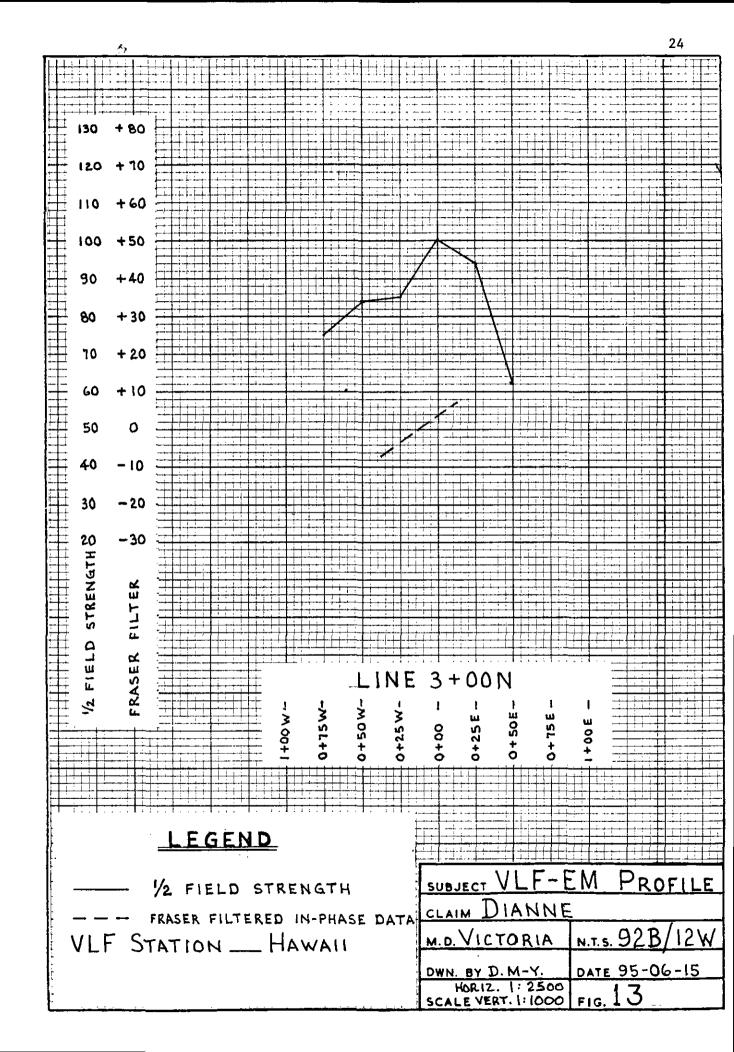


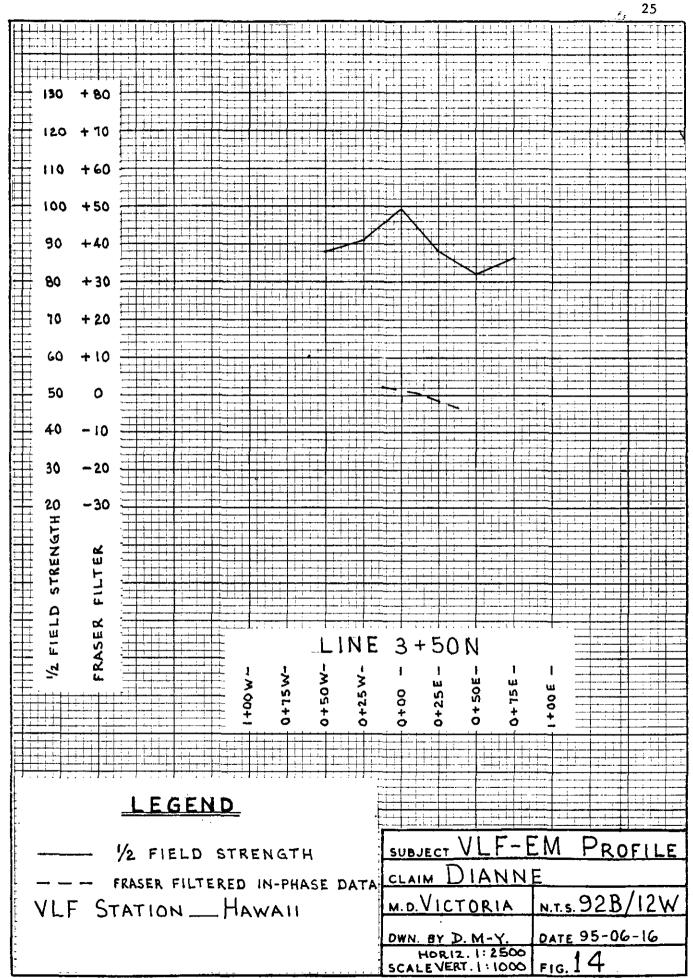
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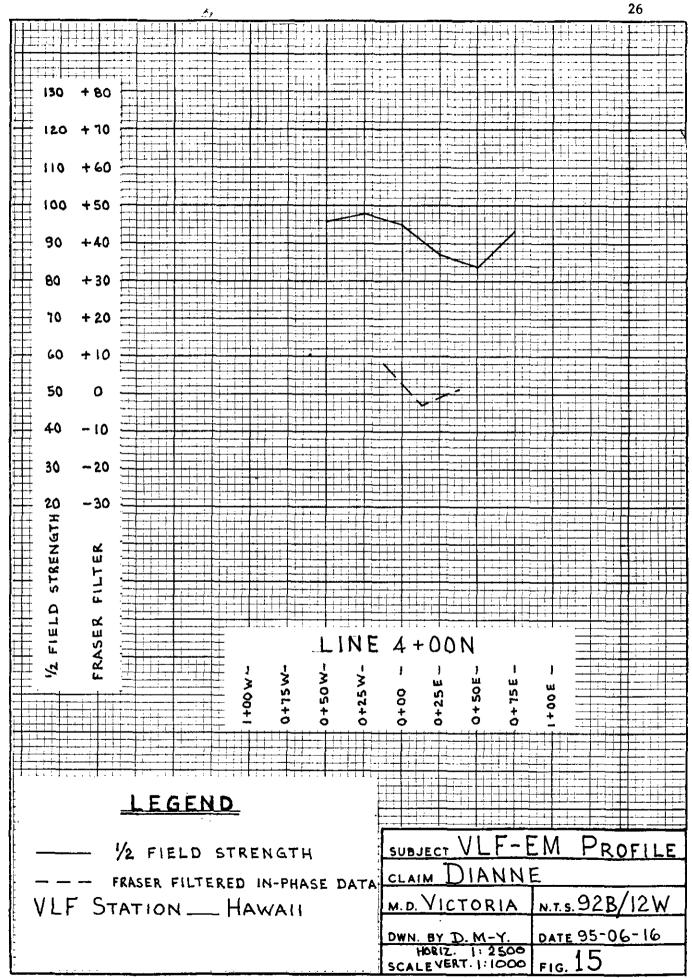


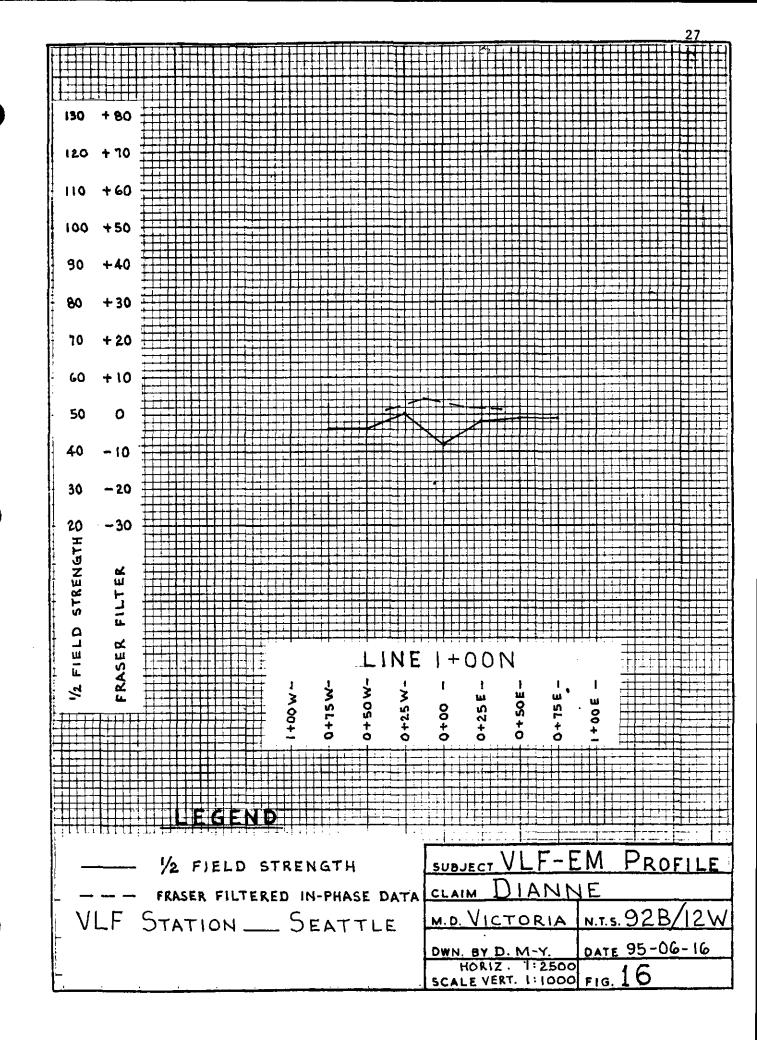
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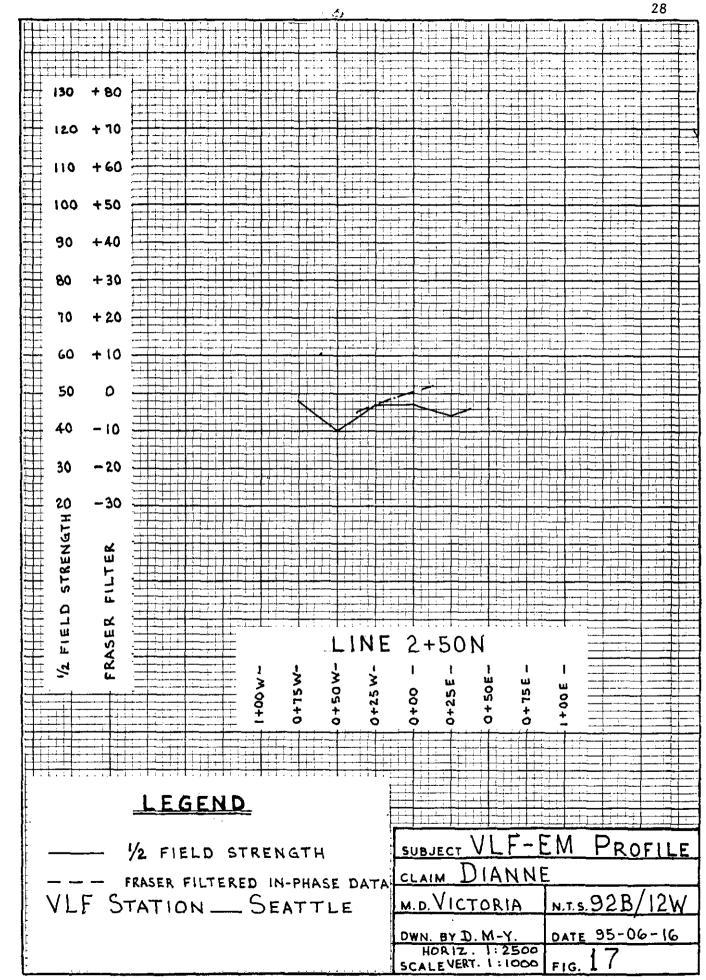






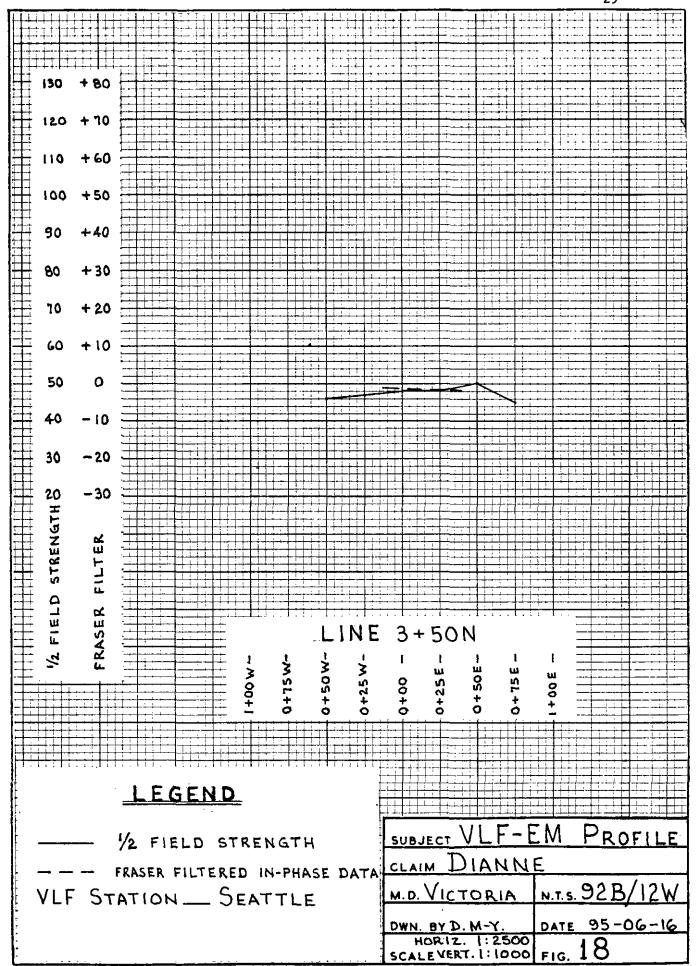


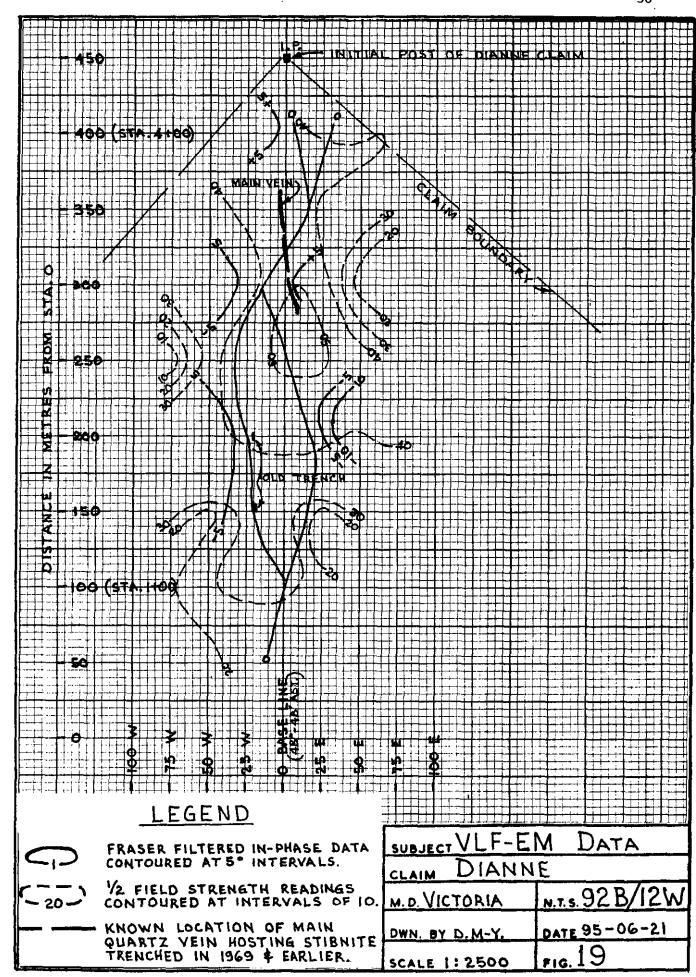












# **ITEMIZED COST STATEMENT**

1.	Conducting VLF-EM survey on existing grid. Mr. D. Milwarde-Ya 8 hrs at \$11.50/hr.	ates.	-\$92.00
2.	Cost of interpolation of data, plotting, drafting, report writing and printing.		-\$700.00
<b>3</b> .	Travel: D. Milwarde-Yates - trip from Metchosin to claim @ 180 km/round trip, 180 km @ 10¢/km.		-\$18.00
		Total	\$810.00

D. Milwarde-Yates

# STATEMENT OF QUALIFICATIONS

I, Dev Milwarde-Yates of 5598 Rocky Point Rd., Victoria, B.C. hereby certify the following:

- 1. That I am a graduate of the Annual Mineral Exploration Course (1984) at Cowichan Lake B.C.
- 2. That I am a graduate of the Basic Prospecting Course (1984) at Camosun College, Victoria, B.C.
- 3. That I have been actively prospecting in British Columbia in excess of 15 yrs.
- 4. That I have been actively employed as a civil engineering technologist in British Columbia in excess of 20 yrs.
- 5. That this report and the information contained herein was compiled from the field surveys and examination of a portion of the Dianne claim which I conducted on April 2, 1995.

Dated at Victoria, this 1st day of June, 1995.

Der Milwarde- Jates

Dev Milwarde-Yates

# **REFERENCES**

Crowe, G.G. & Magrum, M.M. 1984. Geological, Geochemical & Geophysical Report on the San Juan property of Tri-West Resources.

Donaldson, T.J. 1968. Geological Report incorporated into the Prospectus of Concorde Explorations Ltd. N.P.L.

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Parasnis - Mining Geophysics.

Sheppard, E.P. 1983. Geological Report on the San Juan River property for Nu-Sun Energy Corp.