GM 55909

REPORT ON GEOLOGY, LITHOGEOCHEMISTRY AND DIAMOND DRILL PROGRAM, LAFLAMME PROPERTY

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DAVE GAMBLE
GEOSERVICES INC

REPORT ON
GEOLOGY, LITHOGEOCHEMISTRY AND DIAMOND DRILL PROGRAM LAFLAMME PROPERTY 1997 GRID PHELPS DODGE CORPORATION OF CANADA, LIMITED FIEDMONT TOWNSHIP BARRAUTE, QUEBEC NTS 32 C

REÇU AU MRN
1998 -05- 29
EGISTRAIRE

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1998
GM 55909

DAVE GAMBLE
DAVE GAMBLE GEOSERVICES INC
NOV/DEC , 1997

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1) INTRODUCTION

The Laflamme Property is held by Phelps Dodge Corporation of Canada, Limited, and was acquired through staking as a result of previous geological work in the area. In May-June 1997, a control grid was established, and in September, 1997, an Induced Polarization I.P. geophysical survey was conducted over selected lines on the grid.

During the period from September 2, to September 29, 1997, a geological survey was conducted by Dave Gamble Geoservices Inc. on the Laflamme property grid for Phelps Dodge Corporation of Canada, Limited.

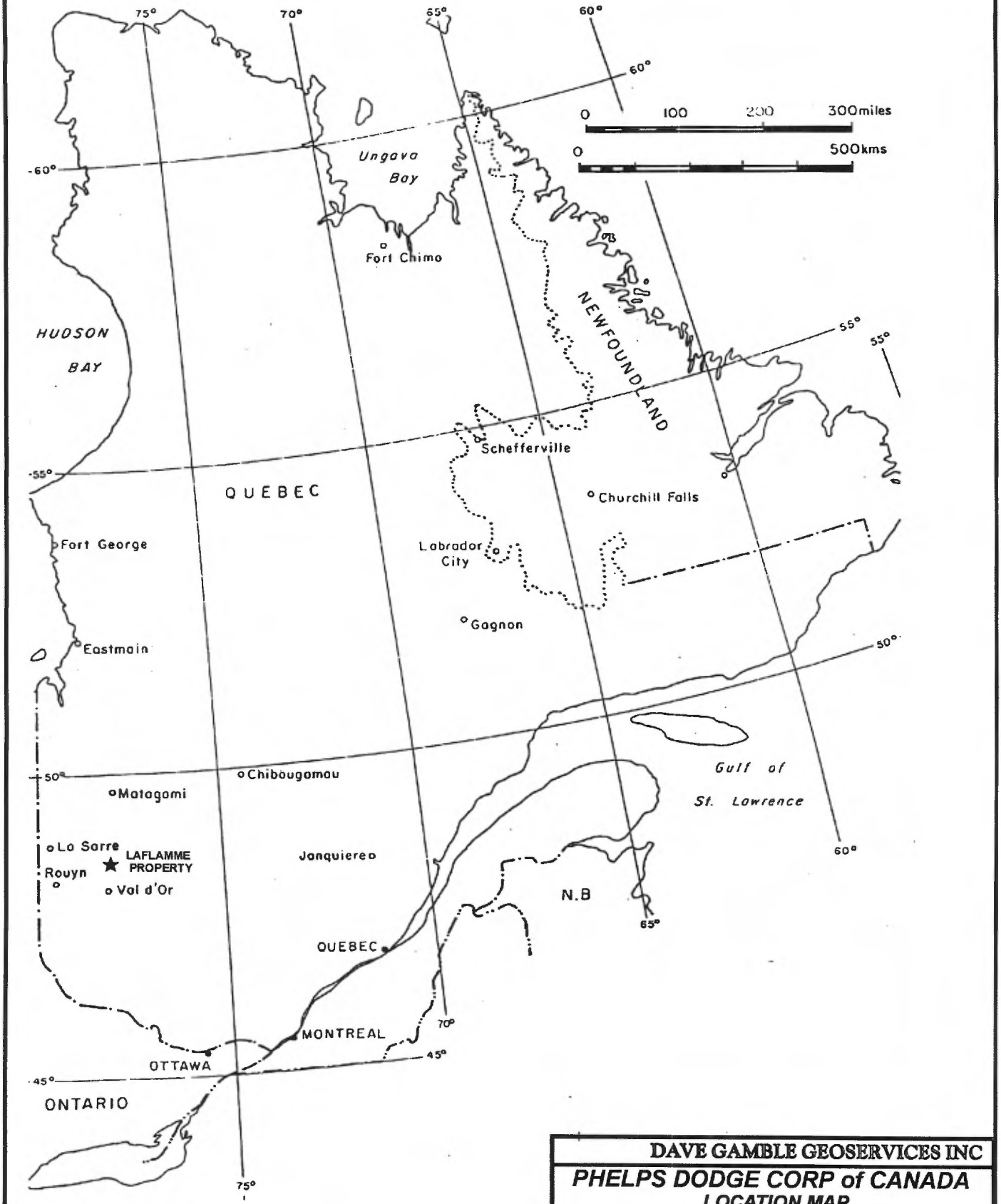
During the period from October 13, to October 28, 1997, a diamond drill program was supervised by Dave Gamble of Dave Gamble Geoservices Inc. for Phelps Dodge Corporation of Canada, Limited

This report contains the results of the geological mapping and lithogeochemical sampling project, and the results of the diamond drill program that was carried out on the Laflamme grid in 1997.

2) LOCATION AND ACCESS

The Laflamme property 1997 grid is located within the north east 1/4 of Fiedmont Township, Quebec, NTS 32C, in the Val d'Or Mining Division. The property is bounded on the north by the Senneterre to Barraute provincial highway # 45, on the west by the Val d'Or to Barraute provincial highway # 64, on the east by the Fiedmont/Courville north-south township line, and on the south by the Fiedmont Township Range VI/VII line. The northwest corner of the property is located at a location that is centered at UTM coordinates of 305,800m East, 5,365,600 m North. approximately 3.0 kilometers south of the village of Barraute, Quebec. See General Location Map Fig 1.

The property grid lies within Fiedmont Township lots 48-54 Range IX, lots 46-62 in Range VIII, and lots 50-62 in Range VII. Access to the property grid is gained via the provincial highways that bound the north and west sides of the property. Cut and surveyed range lines leading due east from the Val d'Or highway provide walking access. As well, an actively used network of ATV trails also provides good access to the western part of the grid area, and to several moose hunting stands located on the grid. A winter road leads south-westerly from highway #45 at a point approximately 3.2 kilometers from the intersection of highways #45 and #64. The winter road trends south-southeasterly across the wet swamp terrain known on some maps as the Uniacke Swamp, and eventually cuts the extreme eastern part of the gridded area. See Property Location Map Fig 2.

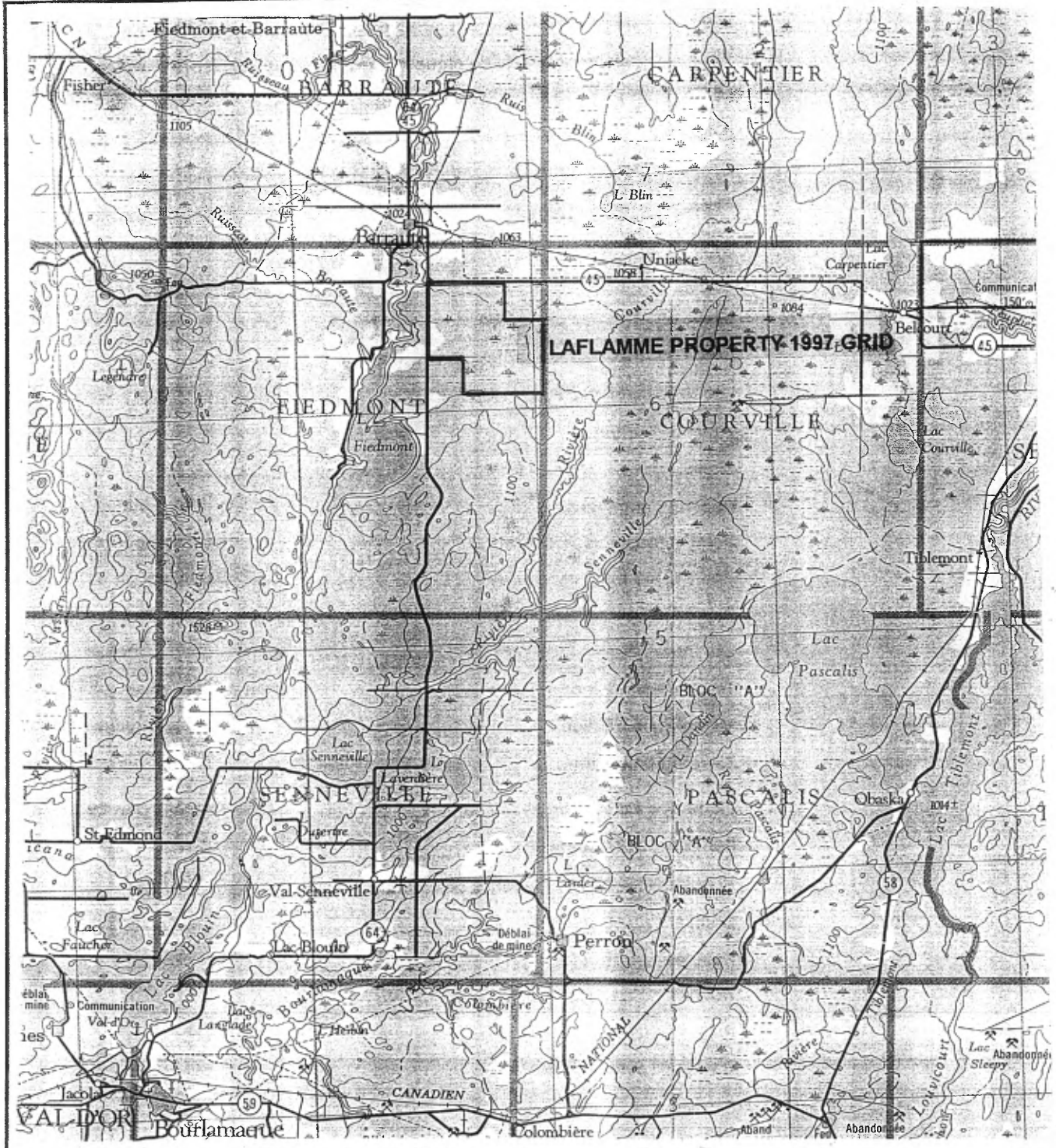


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PHELPS DODGE CORP of CANADA

LOCATION MAP
LAFLAMME PROPERTY
FIEDMONT TOWNSHIP, QUEBEC

Date: December, 1997	*NTS:* 32 C	FIG. 1
Scale: Scale Bar	*Drawn Ref:* S.G.lfmloc.cdr	



Échelle 1:250 000 Scale

Milles 5 0 5 10 15 20 Miles

Kilomètres 5 0 5 10 15 20 25 30 Kilometres

Magnetic declination 1964 varies from 12°51' westerly at centre of west edge to 15°11' westerly at centre of east edge. Mean annual change 2.0'easterly.

SENNETERRE

COMTÉ D'ABITIBI

QUÉBEC

DAVE GAMBLE
GEOSERVICES INC

LAFLAMME PROPERTY 1997 GRID
LOCATION MAP
FIEDMONT TOWNSHIP

Date	Dec 1997	N.T.S.	32C
Scale	1:250 000	Drawn/Reference	Fig. 2

3) CLAIM STATUS

Claims covered by the current geological survey and drill hole program are listed in Table 1 and are shown on the Claim Map, Figure 3.

The Phelps Dodge Laflamme property that lies south of highway # 45 and east of highway # 64 consists of a total of 44 contiguous mining claims. The 1997 gridded portion of the property covers all or parts of thirty-eight contiguous full lot mining claims located in Fiedmont Township in lots 48-54, Range IX, lots 45-62, Range VIII, and lots 50-62, Range VII, see Table 1, Geological Survey-Claim Coverage.

TABLE 1
GEOLOGICAL SURVEY - CLAIM COVERAGE - 1997 GRID

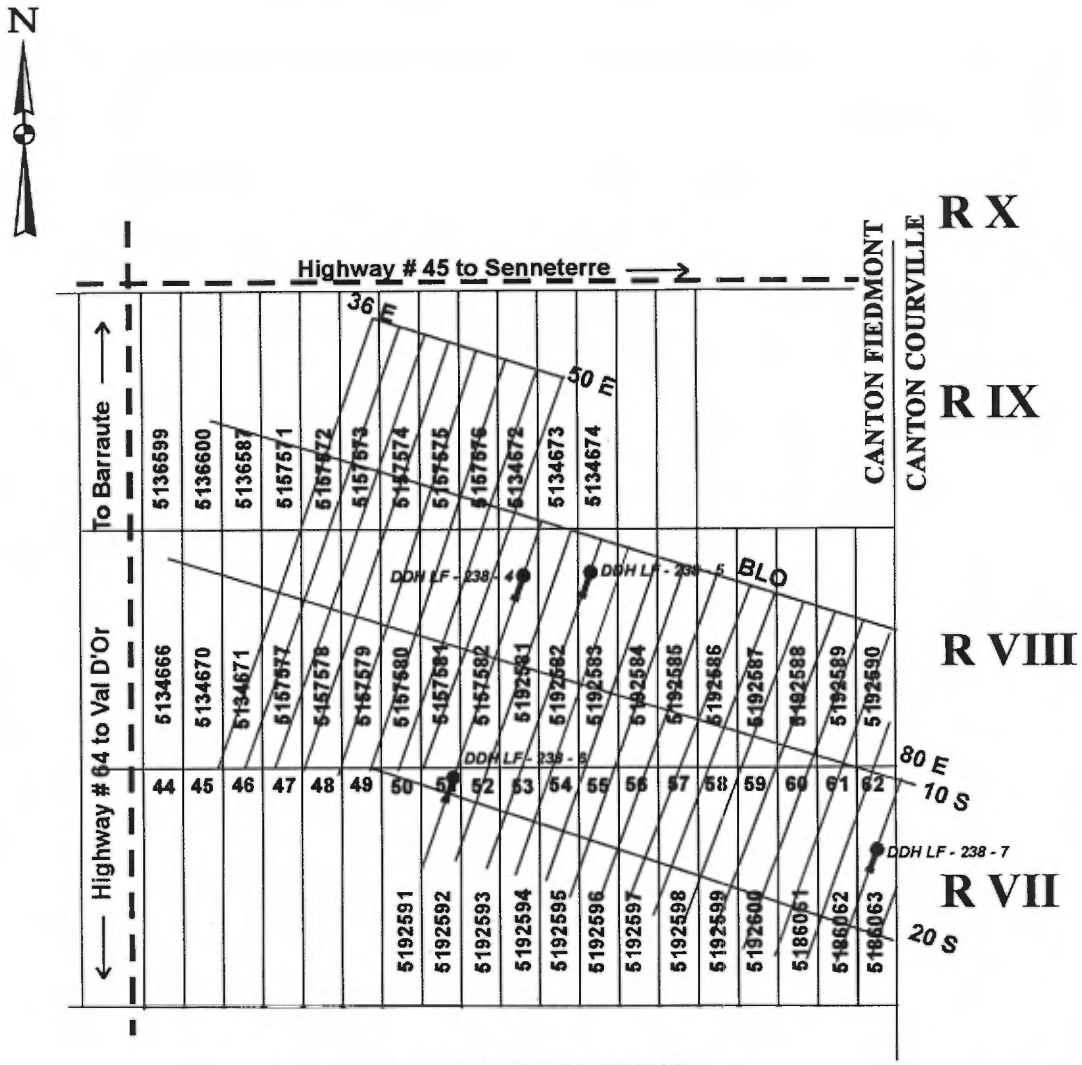
TOWNSHIP	RANGE	LOT	CLAIM NUMBER
Fiedmont	VII	50	5192591
"	VII	51	5192592
"	VII	52	5192593
"	VII	53	5192594
"	VII	54	5192595
"	VII	55	5192596
"	VII	56	5192597
"	VII	57	5192598
"	VII	58	5192599
"	VII	59	5192600
"	VII	60	5186061
"	VII	61	5186062
"	VII	62	5186063
"	VIII	45	5134670
"	VIII	46	5134671
"	VIII	47	5157577
"	VIII	48	5157578
"	VIII	49	5157579
"	VIII	50	5157580
"	VIII	51	5157581
"	VIII	52	5157582
"	VIII	53	5192581
"	VIII	54	5192582
"	VIII	55	5192583
"	VIII	56	5192584
"	VIII	57	5192585
"	VIII	58	5192586
"	VIII	59	5192587

"	VIII	60	5192588
"	VIII	61	5192589
"	VIII	62	5192590
"	IX	48	5157572
"	IX	49	5157573
"	IX	50	5157574
"	IX	51	5157575
"	IX	52	5157576
"	IX	53	5134672
"	IX	54	5134673
		plus contiguous claims below	
"	VIII	44	5134666
"	IX	44	5136599
"	IX	45	5136600
"	IX	46	5136587
"	IX	47	5157571
"	IX	55	5134674

The 1997 diamond drill hole collars are located on the following mining claims on the Laflamme grid, see Table 2, Claim Locations of 1997 Diamond Drill Hole Collars.

TABLE 2
CLAIM LOCATIONS OF 1997 DIAMOND DRILL HOLE COLLARS
FIEDMONT TOWNSHIP

DDH #	MINING CLAIM #	LOCATION FROM NE CORNER
LF - 238 - 4	5192581 LOT 53 RANGE VIII	110 mE and 325 mS from NE corner
LF - 238 - 5	5192583 LOT 55 RANGE VIII	180 mE and 275 mS from NE corner
LF - 238 - 6	5192592 LOT 51 RANGE VII	50 mE and 50 mS from NE corner
LF - 238 - 7	5186063 LOT 62 RANGE VII	80 mE and 520 mS from NE corner



LOCATION MAP SHOWING
1997 LAFLAMME GRID LOCATION
and 1997 DDH LOCATIONS
ON PART OF LARGER CLAIM BLOCK

0 1000 2000 m

Scale: 1 : 50 000

DAVE GAMBLE GEOSERVICES INC

PHELPS DODGE CORP of CANADA

CLAIM LOCATION MAP
showing 1997 LaFlamme Grid Location
FIEDMONT TOWNSHIP

Date: December, 1997	***NTS:*** 32 C	FIG. 3
Scale: 1:50 000	***Drawn Ref:*** S.Glaflamloc.cdr	

4) TOPOGRAPHY

The 1997 grid area is comprised of generally flat, low lying ground, throughout most of the property. Scattered low rising outcrops occur in a corridor from L 40E/22S to L46E/20S and extending northwards to T/L 10S between L40E and L46E; and extending further northwards to BL0 between L42E and L46E; and finally northwards between L36E/5N and L46E/5N. The outcrop areas provide low relief on the grid, in the order of a 3-5 meter difference in elevation from the low flat relief of the surrounding flat spruce swamp, and open swamp land. To the east and to the west of the narrow area of scattered outcrop lie large, flat, wet, spruce swamp, and open bog swamp lands. The grid area is generally clay covered and varies from flat spruce lowland swamp to gently rolling outcrop areas, with some spruce and jack pine in the sand covered areas. A creek flowing west cuts the northwest part of the grid, a second creek flowing northwest cuts the southwest part of the grid, and a third creek flowing south to southeast cuts the west part of the grid.

The availability of scattered outcrop along the narrow corridor described above, is poor to moderate. Elsewhere on the grid, in the swamp areas, no outcrop is reported.

5) PROCEDURE

Detailed geological grid mapping and sampling was conducted by Dave Gamble Geoservices Inc. from September 2 - 3,1997 and from September 20-29, 1997 over the Laflamme 1997 property grid. Several rusty and pyritic outcrops were sampled and submitted to Swastika Laboratories for Cu, Zn, Au, Ag determinations. One sample was submitted for whole rock major oxide analyses. A sample description list of all numbered samples submitted for analysis, as well as all representative samples collected and not submitted for analysis, also accompanies this report. The Swastika Laboratories assay reports for all samples submitted for analysis is also incorporated in this report.

During the course of field mapping, access trails and possible old drill set ups were located. Previous drill holes located and/or reported in assessment files (see GM# in Previous Work) are plotted on the Geological Map G - 1.

During the period from October 13, to October 28, 1997, a helicopter supported four hole diamond drill program totaling 489 meters was carried out to test selected Induced Polarization targets. The drill program was supervised by Dave Gamble of Dave Gamble Geoservices Inc. for Phelps Dodge Corporation of Canada, Limited.

Dave Gamble was assisted in the field mapping by Des Porritt, Kirkland Lake, Ontario, and Dave Gamble Jr., Kirkland Lake, Ontario. Computer drafting the geology map, drill sections, and word processing was carried out by Sue Gamble, Kirkland Lake, Ontario.

6) REGIONAL GEOLOGY

The Barraute-Fiedmont volcano-sedimentary belt lies within the central area in the eastern portion of the east trending Abitibi greenstone belt. See Fig 4 - Regional Geology Map Barraute Area.

The Barraute-Fiedmont assemblage is composed of a eugeosynclinal succession of folded Archean (Keewatin type) volcanic and sedimentary rocks. According to the Quebec Government M.E.R map DP 84-02 by R. Beullac, 1983, the property is underlain by the Heva Formation. This formation is characterized by felsic volcanics that lie 3-4 kilometers west of the property and are found flanking the south side of the granodiorite Mogodor stock. The significance of the felsics proximal to the Mogodor stock is evident with Zn-Cu-Ag mineralization reported as follows;

-Mogodor-Vendome with 1,017,000 t at 7.3% Zn, 0.47% Cu, 55.9g/t Ag, 0.34% Pb, 1.17 g/t Au.

-Barvallee Zone with 200,000 t at 6% Zn, 1% Cu, 34.29 g/t Ag.

-Belfort Zone with Cu, Zn, no figures quoted.

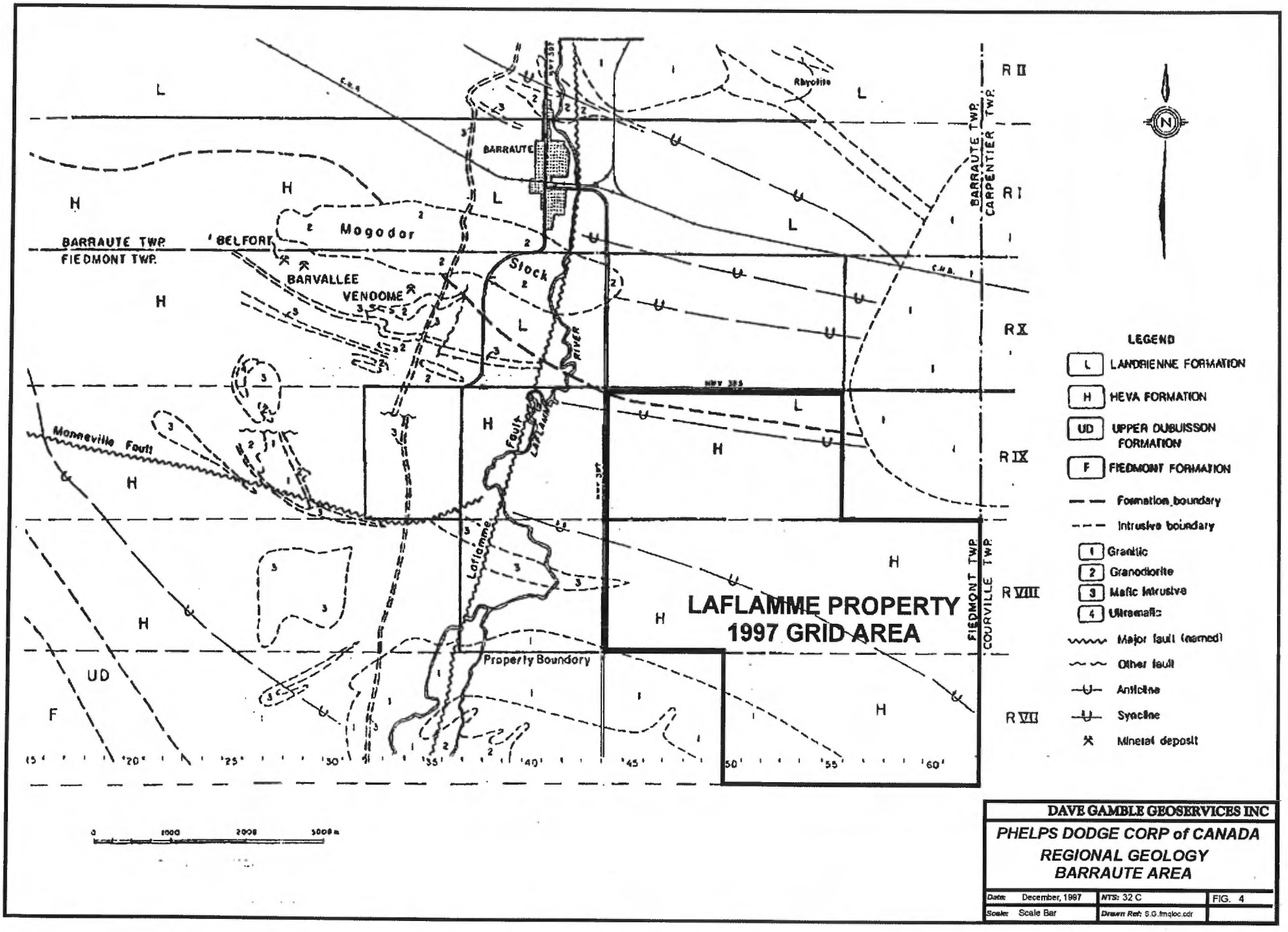
-Mogodor-Vendome Ni with 350,000 t at 0.82% Ni, 0.68% Cu.

The felsic volcanics of the Heva Formation, in the mineralized areas, are reported to consist of rhyodacite to rhyolite flows, flow breccia, and pyroclastic tuff. The Heva Formation also consists of abundant andesite-basalt flow sequences distal from the mineralized felsic volcanic accumulation near the Mogodor stock intrusive center. The Phelps Dodge 1997 grid area appears to lie within a predominantly mafic volcanic assemblage according to M.E.R. Map DP 84-02.

Flanking the Heva Formation to the south is the Dubuisson Formation consisting of amphibolitized mafic to ultramafic volcanics. South of the Dubuisson Formation is the Fiedmont Formation consisting of overturned southwest facing sediments composed of greywacke, quartzite, and conglomerate. The Fiedmont Formation is in contact with the granitic La Corne Batholith that lies to the southwest.

Flanking the Heva Formation to the north is the Landrienne Formation that is characterized by abundant basalt flows which are amygdaloidal, chloritized, and ferro-carbonitized; and by high level sub volcanic intrusives. Minor thin intercalated felsic volcanics are also reported in this formation. The Venus gold showing is located in the Landrienne Formation and consists of pyritic-quartz veins with a reported 50,000 t at grade of 8.9 g/t Au.

To the north of the Landrienne Formation is the Figuery Formation consisting of andesitic to basalt flows and volcaniclastics. Towards the middle of the formation, intermediate to felsic volcaniclastics and fine pyroclastics are reported. Intercalated within the felsic tuff are narrow beds of graphitic sediments with pyrrhotite and pyrite reported.



DAVE GAMBLE GEOSERVICES INC

PHELPS DODGE CORP of CANADA

REGIONAL GEOLOGY

BARRAUTE AREA

Date: December, 1997	NTS: 32 C	FIG. 4
Scale: Scale Bar	Drawn Ref: S.G.fmqloc.cdr	

The regional deformation is polyphase with an early phase trending locally north-northwest and north-northeast, and dipping 10-30 degrees to the east and to the west. The main regional cleavage foliation fabric strikes east-southeast and dips 50-65 degrees to the northeast. This regional foliation fabric corresponds to the axial planar cleavage associated with a series of overturned anticlinal and synclinal fold structures.

Two major faults transect the region. The Mannville Fault strikes east-west and is thought to be synvolcanic. The Laflamme River Fault strikes north-northeast and is thought to represent a late stage structure.

With the exception of unconsolidated glacial deposits of the Quaternary - clay, sand, and gravel, all bedrock formations in the map area are of Precambrian age.

7) PREVIOUS WORK

Previous work on the property has included ground geophysical surveys, geological surveys, with at least two programs of diamond drilling reported in 1971 and in 1980. Drill programs were conducted by Long Lac Minerals Exploration Ltd with one hole reported in 1971 (GM 26952), and by Shell Canada Resources Limited with one hole reported in 1981 (GM 38964).

The results of the previous drilling on geophysical targets reported pyrite-pyrrhotite as the sources of conductivity. For a full description of the previous drilling refer to the above assessment file GM reports.

8) PROPERTY GRID GEOLOGY

Geological mapping the of the Laflamme property has revealed that scattered exposures of bedrock occur in a 600 meter wide corridor in the western part of the grid between lines 40E to 46E from 20S to 5N. Over the rest of the grid no other exposures of bedrock were seen. See Geology Map G -1, back pocket.

From the limited exposures on the gridded part of the property, the bedrock geology predominantly consists of a mafic andesite to basalt pillowed volcanic flow sequence with only minor intercalated mafic tuff-breccia-agglomerate units, and one thinly bedded sedimentary horizon. The volcanic stratigraphy strikes east-southeast at 095 - 110 degrees, and dips northward at 50 - 60 degrees. The one narrow band of siliceous gray sediments is rusty and pyritic, and occurs intercalated in the mafic volcanic flow sequence.

An overturned synclinal structure with the synclinal axial plane striking 100 degrees and dipping 50 - 60 degrees north is located and defined by bedrock exposures along T/L 10S from L 40E to L 46E. The basalt pillow flows north of this axis dip north, but from pillow facing determinations face south, while on the south side of this axis the basalt pillow flows dip north and face north. Lineations on the axial planar cleavage foliation plane along this synclinal axis plunge 45-60 degrees to the east, indicating the east plunge direction and inclination of the synclinal structure. All rocks exhibit a weak to moderate foliation fabric that parallels the regional fabric of the axial planar cleavage of the synclinal fold. Textural features seen include locally developed slaty cleavage, flattening of fragments in the tuff breccia units, and variable pillow stretching and/or partial pillow flattening. Top facing directions have been determined from pillow shapes, and from the abundance of vesicles on some observed pillows.

The mafic volcanic assemblage exposed on the grid consists predominantly of a sequence of fine grained, medium to dark green, andesite to basalt pillowed flows that may locally exhibit gray-white bleached carbonitized altered cores. Some pillow flows are massive and uniform and do not exhibit the altered cores. Some pillows are also vesicular, and contain calcite and quartz amygdules locally. Pillows can range in size up to 2m x 5m, but are generally in the 0.5 X 1.0 m range. The regional foliation has partially flattened some of the pillow structures. Pillow selvages vary generally from 1-2 inches and are usually a darker green. At several locations on L 44E, at 3S and at 5S, there are 2-6 inch pillow selvages that contain sufficient pyrite to cause the selvages to be rusty and extremely gossaneous. The contained sulphide appears to be primary, and is possibly related to sulphide rich waters and interpillow sulphide deposition at the time of the pillow formation.

Within the pillow flow sequence are minor pillow breccia, flow top breccia, and brecciated flow intervals that occur locally and are usually thin and not laterally extensive, e.g. L46E/5+50S

Andesite to basalt breccia-agglomerate also occurs as isolated outcrops and also does not appear to be laterally extensive, e.g. L46E/3+50S, L44E/3+25S, L42E/15+25S, L46E/20S. These fragmental rocks contain 1-10 inch angular to tabular, partially flattened, green, and gray altered basalt breccia fragments set in a fine grained, green basalt tuff matrix. No sulphides were seen in this fragmental unit.

Several small isolated outcrops of feldspar quartz porphyry dykes were observed within the mafic flow sequence at grid coordinates locations 45E/4N, L42E/3N, and at L46E 5+50S. These exposures of felsite dykes are usually small, not extensive, and barren of sulphides.

One exposure of diabase dyke was seen cutting a basalt pillowed flow near L44E/3+25S with a strike of 190 degrees.

Several locations of minor quartz stringers and small veins were observed. The quartz veining is generally barren with the exception of a small narrow vein located at L44E/ 4+75S that carried minor pyrite, (see inset on Geology Map G - 1).

Intercalated within the mafic volcanic flow sequence is one exposed sedimentary horizon of thinly bedded gray sedimentary siltstone to greywacke, located between L44E and L46E at 6+25S. The horizon is conformable and in sharp contact with the enclosing mafic pillowed volcanic flows. The sedimentary band, approximately 5 m thick, strikes at 110 degrees and dips to the north at 60 degrees. The sediments are siliceous and rusty gossaneous containing fine disseminated pyrite. In addition, an old small shallow surface blasted area, located on the furthest west exposed outcrop on this narrow sedimentary band, (See inset detail on Geology Map G - 1), contains massive to semi-massive pyrite. The gray sedimentary rocks are all fine grained varieties of siltstone to graywacke, and exhibit fine primary layering.

The abundance of mafic volcanics, with only one narrow intercalated sedimentary horizon, encountered on the grid does not offer much encouragement for the presence of any major felsic volcanic strata to lie within the grid area. There are however, large gaps of unknown stratigraphy lying to the west and to the east of the outcrop area that would appear to have only a low, limited potential, to host felsic volcanic stratigraphy of significance. However, the presence of pyritic and gossaneous interpillow mineralization seen in the area near L 44E /3+25S to L44E/ 5S, may offer some encouragement for the possible development of massive sulphides nearby as exhibited in the narrow sedimentary horizon at 45E/6S.

9) LITHOGEOCHEMISTRY

Trace Metal Cu-Zn-Au-Ag:

A total of eight samples were collected and submitted for Cu/Zn/Au/Ag assaying at Swastika Laboratories. The samples were taken from selected exposures of pyritic rusty gossaneous interpillow and selvage material, in the basalt pillow flows (sample #'s 14407, 14408, 14412,14413); from a pyritic 4 inch quartz vein and pyritic basalt pillow flow wall rock to the quartz vein (#'s 14414, 14415); and from a rusty pyritic sedimentary horizon and small massive pyrite exposure in the sedimentary horizon (#'s 14417, 14418). The assay results, Swastika Laboratories Report # 7W-3895-RG1 dated Oct 6,1997, reports the analytical results obtained for Cu, Zn, Au, and Ag determinations. A sample list describing each sample also accompanies this report. See Table 3 - Rock Descriptions List, listing sample number, grid coordinate location, field rock type, description of features, mineralization present, and magnetic susceptibility. The sample locations and assay results are also plotted on the accompanying Geological Map G - 1.

The assay results, see Table 4, for the submitted surface rock samples numbered 14407,14408, 14412-14415, and 14417,14418 ranged from nil - 226 ppb Au, 0.1 - 2.5 ppm Ag, 17 - 155 ppm Cu, 08 - 105 ppm Zn. Only one sample, # 14418, taken from the massive pyrite showing at 45E/6S, returned geochemically anomalous Au and Ag values. The assay results from sample # 14418 reported 226 ppb Au, and 2.5 ppm Ag, with low insignificant Cu and Zn values. These were the best assay values obtained from the limited sampling of exposures on the grid.

The results for Cu, Zn, Au and Ag, trace metal determinations are generally low for the small set of samples taken from this grid, and offer little encouragement. In conclusion, only insignificant low levels of Cu and Zn are present from the samples submitted.

Whole Rock Major Oxides:

A number of bleached altered pillow cores were seen throughout the mafic flow sequence. One sample, # 14416, of bleached altered pillow core material from a basalt pillow flow located at 45E/4+75S was submitted for whole rock major oxide analysis (WRA) in an attempt to classify this alteration and to determine the significance of this apparent bleaching, see Table 5 for Whole Rock Analytical results.

The WRA results show SiO2 of 50.48% that would appear to be normal for a basalt composition, and do not seem to represent an increase of SiO2, or a possible silicification event. The CaO result of 15.85%, coupled with and a low LOI (loss on ignition) of 2.53% does not seem to represent a strong carbonitization event either. The bleached pillow core material contains only weak carbonate. Coupled with the Al2O3 at 21.74%, SiO2 at 50.48%, CaO at 15.85%, and Na2O at 0.38%, it would appear that the bleached core to the basalt pillow is most likely a calcic rich

plagioclase segregation, that has coalesced at the time of pillow development. This feature would be similar to the type of development commonly seen where coalescing variolites cluster to form a solid mass in the pillow cores of some basalt flows.

TABLE 3

SURFACE ROCK SAMPLE DESCRIPTIONS

LaFlamme Property Rock Descriptions

H.S. Sample	Grid Coords	Description	SM - 5 Reading in c.g.s.
1.	43 + 50 m E 3 + 40 m S	Andesite pillow flow, fine grained, medium green foliated interpillow material, pillows contain both C02 and quartz amygdules	0.0 c.g.s.
2.	43 + 75 m E 3 + 25 m S	Andesite pillow flow, core of pillow - bleached pale green, weathers buff tan to chalky white, contains C02 and quartz amygdules, pale to medium green on fresh surface. Trace pyrite.	0.0 c.g.s.
14407	43 + 60 m E 3 + 30 m S	Andesite pillow flow, rusty gossaneous fractures and selvages, 2 - 4 % disseminated py + po.	0.0 c.g.s.
14408	43 + 75 m E 3 + 25 m S	Rusty gossaneous andesite, pillow selvages contain 5 - 10 % disseminated py + po, sericitic strong along strong foliation fabric, also black sooty pyrite smears along foliation fabric	0.0 c.g.s.
14412	44 + 00 m E 2 + 50 m N	Andesite pillow flow, trace to 2 % disseminated pyrite, rusty fractures	0.0 c.g.s.
14413	44 + 30 m E 4 + 70 m S	Rusty selvage material to andesite pillow flow, strongly foliated, gossaneous, sericitic and contains 2 - 5 % disseminated py and black sooty pyrite smears along foliation fabric	0.0 c.g.s.
14414	44 + 30 m E 4 + 70 m S	Quartz vein, rusty fractured, locally vuggy, contains disseminated and small masses of pyrite	0.0 c.g.s.

14415	44 + 30 m E 4 + 70 m S	Andesite flow at edge of quartz vein (No: 14414) with 5% disseminated pyrite, rusty gossaneous	0.0 c.g.s.
14417	45 + 20 m E 6 + 10 m S	Sediment, rusty, siliceous siltstone with 5% disseminated pyrite, intercalated within andesite pillow flows. Fine grained grey green on the fresh surfaces.	0.0 c.g.s.
14418	44 + 80 m E 6 + 20 m S	Massive pyrite zone along strike from sedimentary interval (14417), massive strong pyrite and pyrite crystals with minor quartz, locally vuggy.	0.0 c.g.s.
14416 WRA	44 + 30 m E 4 + 70 m S	Altered pillow core of bleached white to cream green, hard, dense looking massive core to andesite - basalt pillow flow. Fine Co2 alteration - interstitial. Submitted for major oxide WRA analysis to determine nature of alteration.	0.0 c.g.s.
A.	L 42 E 3 + 20 m N	Feldspar Porphyry Dyke, coarse grained, up to 1/2 cm white feldspar in a grey fine grained groundmass. Bleaches chalky white on surface, trace to weak C02 alteration. Plagioclase is subhedral both stubby and lath-like.	

TABLE 4

SURFACE ROCK Cu-Zn-Au-Ag ANALYTICAL RESULTS

41932

Swastika Laboratories

A Division of TSL/Assayers Inc.

Assaying - Consulting - Representation

Established 1928

Geochemical Analysis Certificate

7W-3895-RG1

Company: **PHELPS DODGE CORP OF CANADA**
Project: Laflamme
Attn: P. Chamois / D. Gamble

Date: OCT-06-97

We hereby certify the following Geochemical Analysis of 8 Rock samples submitted OCT-01-97 by .

Sample Number	Au PPB	Au Check PPB	Ag PPM	Cu PPM	Zn PPM
14407	Nil	-	0.2	52	105
14408	34	21	0.2	155	88
14412	2	-	0.2	61	67
14413	5	-	0.2	88	77
14414	2	-	0.1	17	8
14415	7	7	0.5	77	76
14417	Nil	-	0.4	98	91
14418	216	226	2.5	73	19

One assay ton portion used.

Certified by _____

1 Cameron Ave., P.O. Box 10, Swastika, Ontario P0K 1T0
Telephone (705)642-3244 Fax (705)642-3300

Swastika Laboratories
P.O. Box 10
Swastika, Ontario
P0K 1T0

INVOICE

NO.: 00041932

DATE: 10/06/97

PAGE: 1

SOLD TO:

PHELPS DODGE CORP.
120 Adelaide St.W
Suite 912

TORONTO, ON M5H 1T1

SHIP TO:

Same

GST Number: R132862640

Proj #/P.O. # Laflamme/Quevillon

ITEM NO.	QUANTITY	UNIT	DESCRIPTION	G	P	UNIT PRICE	AMOUNT
	8		Au			8.00	64.00
	8		Ag			2.50	20.00
	8		Cu			1.50	12.00
	8		Zn			1.50	12.00
	8		Sample Prep			3.50	28.00
			Cert #7W-3895-RG1				
	6		Au			8.00	48.00
	6		Ag			2.50	15.00
	6		Cu			1.50	9.00
	6		Zn			1.50	9.00
	6		Sample Prep			3.50	21.00
			Cert #7W-3896-RG1				
			GST @ 7%				16.66

COMMENTS:
Net 30 Days

TOTAL 254.66

TABLE 5

SURFACE ROCK WHOLE ROCK ANALYSES

TSL\ASSAYERS Laboratories
1270 FEWSTER DRIVE, UNIT 3, MISSISSAUGA ONTARIO L4W 1A4
PHONE #: (905) 602-8236 FAX #: (905) 206-0513

PHELPS DODGE CORPORATION
ATTN:P.Chamois/D.Gamble
PROJ:LAFLAMME
SAMPLE:ROCK
7W-3894-RG1

REPORT No. : M9386
Page No. : 1 of 1
File No. : OC07RA.DN
Date : OCT-10-1997

I.C.A.P. TOTAL OXIDE ANALYSIS

Lithium MetaBorate Fusion

SAMPLE #	SiO2 %	Al2O3 %	Fe2O3 %	CaO %	MgO %	Na2O %	K2O %	TiO2 %	MnO %	P2O5 %	Ba ppm	Sr ppm	Zr ppm	Y ppm	Sc ppm	Nb ppm	Be ppm	Ni ppm	Cr ppm	Cu ppm	V ppm	Co ppm	Zn ppm	LOI %	TOTAL %
14416	50.48	21.74	5.60	15.85	1.30	0.38	0.86	0.72	0.12	0.14	100	310	70	14	31	< 30	2	55	615	10	230	15	25	2.53	99.72

TSL/97

SIGNED :

10) DIAMOND DRILL PROGRAM

During the period from October 13, to October 28, 1997, a helicopter supported, four (4) hole diamond drill program totaling 489 meters, was carried out to test selected Induced Polarization targets. The drilling was contracted to Morrisette Drilling, a Division of Boart Longyear, with helicopter services supplied by Heli-Transit, both of Val d'Or, Quebec. The drill hole statistics, location, and results are listed in Table 6.

Accompanying this report are also the following; four (4) detail diamond drill hole logs; diamond drill hole cross sections for each hole that illustrate the drill hole geology and reported assays (Figs D-1 to D-4); Swastika Laboratories assay report 7W-4248-RG1 dated Oct 31, 1997, (Table 7). Also refer to the accompanying diamond drill logs in Appendix A, and drill hole cross sections in this report for detail geology, all sample numbers, and reported assay results.

TABLE 6
DRILL HOLE SUMMARY

DDH #	Collar Coordinate	Claim #	Attitude Azimuth/Dip	Total Depth	Anomaly Source
LF 238-4	L52E/4S	5192581	200 / - 45	117.0m	dissem/strgs py-po
LF 238-5	L56E/2+10S	5192583	200 / - 45	110.0m	dissem/strgs py-po
LF 238-6	L52E/18S	5192592	200 / - 45	161.0m	dissem/strgs py-po
LF 238-7	L80E/14S	5186063	200 / - 45	101.0m	dissem/strgs py-po

DDH LF - 238 - 4: After 6.6 meters of overburden the hole intersected a sequence of andesite to basalt, massive, uniform flows that exhibit small 1-2 mm isolated buff cream-white variolites to 18.70 m. The ground mass of the flow is green, and contains weak to moderate pervasive interstitial carbonate throughout. From 18.70 m to 19.65 m a green narrow interflow andesite to basalt tuff occurs that also contains weak to moderate interstitial carbonate. From 19.65 m to 117.0 m, the hole intersected a thick andesite to basalt pillowed flow sequence with a minor interflow mafic tuff layer from 68.75 to 69.4 m. The pillow flow sequence exhibits cream white bleached pillow cores that appear to represent coalescing variolites. In addition, the mafic pillow flows contain 1-5 mm white calcite, and 1-3 mm gray quartz, vesicle filled amygdules. Two narrow zones of stringer to disseminated pyrrhotite, with trace chalcopyrite mineralization, were encountered from 19.65 m to 20.45 m and from 77.0 to 77.5 m. Two samples #14409, 14410, were split from this hole and assayed for Cu, Zn, Au, and Ag, at Swastika Laboratories. The assay results were low and insignificant, ranging from 5 - 38 ppb Au, 0.3 - 0.7 ppm Ag, 69 - 301 ppm Cu, and 66 - 189 ppm Zn. The source of the Induced Polarization (I.P.) anomalous response would appear to be explained by the presence of the narrow stringer pyrrhotite sulphide mineralization intersected in this hole.

DDH LF - 238 - 5: After 13.9 m of overburden the entire hole intersected a thick sequence of andesite to basalt flows to 110 m with several minor, less than 1.0 m to 2.0 m, thin, intercalated, interflow mafic tuff and /or flow top breccia-agglomerate intervals. The mafic flow assemblage consists of green massive uniform flows; pillowed flows containing bleached cream white coalesced variolitic pillow cores; and amygdular flows containing abundant 1mm - 1cm white calcite and gray quartz amygdules. Three zones of weakly disseminated pyrite - pyrrhotite, and fine stringers and fracture fillings of pyrite - pyrrhotite were intersected, and occur at the following intervals down the hole: 38-47m, 57-63m, 73-77m. Fifteen samples #14411, 14419-14432, were split from this hole and assayed for Cu, Zn, Au, and Ag, at Swastika Laboratories. See Table 7 - Diamond Drill Hole Assay Results. The assay results were low and insignificant ranging from nil - 17 ppb Au, 0.1 - 0.4 ppm Ag, 25 - 218 ppm Cu, and 77 - 288 ppm Zn. The source of the Induced Polarization (I.P.) anomalous response would appear to be explained by the presence of the disseminated and stringer pyrite-pyrrhotite mineralization intersected in this hole.

DDH LF - 238 - 6: After 14.0 m of overburden the entire hole intersected an alternating sequence of green to gray green, andesite to basalt, uniform, massive flows; and quartz amygdaloidal (I-3 mm quartz amygdules) green, andesite to basalt, flows. Four zones of weakly disseminated pyrite - pyrrhotite, and stringers and fracture fillings of pyrite-pyrrhotite were intersected and occur at the following intervals down the hole: 41 - 42m, 124 - 127m, 139 - 147m, and at 157 - 158m. Nine samples, #14438 - 14446, were split and assayed for Cu, Zn, Au, and Ag, at Swastika Laboratories. The assay results were low and insignificant ranging from nil - 3 ppb Au, 0.1 - 0.3 ppm Ag, 36 - 149 ppm Cu, 58 - 88 ppm Zn. The source of the Induced Polarization (I.P.) anomalous response would appear to be explained by the presence of the disseminated and stringer pyrite-pyrrhotite mineralization intersected in the hole.

DDH LF - 238 - 7: After 4.9 m of overburden the entire hole intersected an andesite to basalt flow sequence, with one interflow carbonitized mafic tuff from 14.7 - 24.75m.
Three narrow, 0.7 - 1.5 m, quartz feldspar porphyry dykes cut the mafic volcanic flow and tuff sequence. The andesite tuff from 14.75 m - 24.75 m is strongly carbonitized with pervasive interstitial calcite, and this unit also contains weakly disseminated pyrite - pyrrhotite, and stringers of pyrite-pyrrhotite mineralization. Five samples, #14433 - 14437, were split and assayed for Cu, Zn, Au, and Ag, at Swastika Laboratories. The assay results were low and insignificant, ranging from nil - nil ppb Au, 0.1 - 0.2 ppm Ag, 29 - 57 ppm Cu, 66 - 81 ppm Zn. The source of the Induced Polarization (I.P.) anomalous response would appear to be explained by the presence of both the disseminated and stringer pyrite-pyrrhotite mineralization, and also from a conductive fault gouge at 43 m down the hole.

Microfilm

PAGE DE DIMENSION HORS STANDARD

MICROFILMÉE SUR 35 MM ET

POSITIONNÉE À LA SUITE DES

PRÉSENTES PAGES STANDARDS

Numérique

PAGE DE DIMENSION HORS STANDARD

NUMÉRISÉE ET POSITIONNÉE À LA

SUITE DES PRÉSENTES PAGES STANDARDS

TABLE 7

DIAMOND DRILL HOLE Cu-Zn-Au-Ag ASSAY RESULTS

42201

Swastika Laboratories

A Division of TSL/Assayers Inc.

Assaying - Consulting - Representation

Established 1928

Geochemical Analysis Certificate

7W-4248-RG1

Company: **PHELPS DODGE CORP CANADA LTD**
Project: Laflamme
Attn: P. Chamois/D. Gamble

Date: OCT-31-97

We hereby certify the following Geochemical Analysis of 31 Core samples submitted OCT-29-97 by .

Sample Number	Au PPB	Au Check PPB	Ag PPM	Cu PPM	Zn PPM
14409	5	-	0.3	69	66
14410	38	-	0.7	301	189
14411	2	-	0.3	45	190
14419	17	-	0.3	43	84
14420	14	-	0.2	30	87
14421	5	7	0.1	58	77
14422	9	-	0.1	59	92
14423	3	-	0.2	77	92
14424	9	-	0.2	25	72
14425	Nil	-	0.2	46	87
14426	Nil	-	0.3	127	86
14427	Nil	-	0.1	46	84
14428	Nil	-	0.3	181	108
14429	Nil	-	0.3	108	95
14430	5	2	0.2	218	91
14431	Nil	-	0.2	106	78
14432	Nil	-	0.4	111	288
14433	Nil	-	0.2	57	66
14434	Nil	-	0.2	43	78
14435	Nil	-	0.1	30	71
14436	Nil	-	0.2	44	81
14437	Nil	-	0.1	29	74
14438	Nil	-	0.3	36	84
14439	Nil	-	0.2	99	76
14440	3	-	0.2	69	61
14441	Nil	-	0.2	149	59
14442	Nil	-	0.1	86	60
14443	Nil	Nil	0.2	39	88
14444	Nil	-	0.3	145	58
14445	Nil	-	0.2	75	63
14446	Nil	-	0.2	54	85

One assay ton portion used.

Certified by G. Leb

1 Camer[illegible], P.O. Box 10, Swastika, Ontario P0K 1T0
Tele[illegible] (705)642-3244 Fax (705)642-3300

Swastika Laboratories
P.O. Box 10
Swastika, Ontario
P0K 1T0

INVOICE

NO.: 00042201

DATE: 10/31/97

PAGE: 1

SOLD TO:

PHELPS DODGE CORP.
120 Adelaide St.W
Suite 912

TORONTO, ON M5H 1T1

SHIP TO:

Same

GST Number: R132862640

Proj #/P.O. # Laflamme

ITEM NO.	QUANTITY	UNIT	DESCRIPTION	GST	PST	UNIT PRICE	AMOUNT
	31		Au			8.00	248.00
	31		Ag			2.50	77.50
	31		Cu			1.50	46.50
	31		Zn			1.50	46.50
	31		Sample Prep			3.50	108.50
			Cert #7W-4248-RG1				
			GST @ 7%				36.91

COMMENTS

Net 30 Days

TOTAL 563.91

11) CONCLUSIONS

The geological survey has confirmed that the Laflamme 1997 gridded area is underlain by a mafic andesite to basalt pillowed flow sequence with only minor interflow mafic tuff-breccia-agglomerate intervals. The volcanic stratigraphy strikes east south-east at 095 to 110 degrees and dips northwards at 50 - 60 degrees. An overturned synclinal structure transects the property near T/L 10S with the axial plane striking at 100 degrees and dipping at 50 - 60 degrees to the north, and from lineations plunges 45 - 60 degrees to the east. The mafic volcanic pillow flows are characterized by bleached coalesced variolitic pillow cores that locally contain calcite and quartz amygdules. Within the mafic volcanic sequence one thin intercalated rusty and pyrite bearing, gray, fine grained, siltstone horizon was located. Assay results for all surface samples submitted returned low and insignificant values for Au, Ag, Cu and Zn.

No acid volcanics were exposed or appear to be present on the 1997 grid area.

The 1997 Diamond Drill program consisting of four (4) holes totaling 489 meters was completed to test four selected Induced Polarization (I.P.) targets. The conductive sources of each of the four I.P. anomalies tested is attributed to weak dissemination's and stringers of pyrite-pyrrhotite. A total of 31 split core samples were submitted for Au, Ag, Cu, Zn assaying, and returned only low and insignificant values for these metals.

12) RECOMMENDATIONS

Based on the 1997 surface geological and geochemical survey results presented in this report, and coupled with the 1997 diamond drill results of the four geophysical I.P. anomalies tested that reported the anomalous sources as py-po barren weak sulphides, no further work is recommended on the Laflamme Property at this time.

Respectfully submitted,



Dave Gamble
Dave Gamble Geoservices Inc.
December 28, 1997

CERTIFICATE OF AUTHOR

I, Dave Gamble, of 70 First Street, Kirkland Lake, Ontario P2N 1N3, hereby certify that:

1. I am a geologist residing at the above address.

2. I am a graduate of the University of Ottawa with an Honours B. Sc. degree in Geology (1973), and have completed two years leading to an M. Sc. degree (Geology) at Laurentian University (1974 - 1976).

3. I have practiced my profession for more than 20 years.

4. I have personally carried out the geological survey and supervised the diamond drilling program presented in this report.

5. I hold no interest in the Laflamme Property.

Respectfully submitted,



Dave Gamble,
Dave Gamble Geoservices Inc.
December 28,1997

APPENDICES

APPENDIX 1 - DIAMOND DRILL HOLE LOGS

DDH No: LF - 238 - 4 Sheet 1 of 2

DAVE GAMBLE GEOSERVICES INC. 70 First Street, Kirkland Lake, Ontario, P2N 1N3 , Tel: 705-567-4381, Fax: 705-567-3801

PHELPS DODGE CORPORATION of CANADA DRILL RECORD

Project: Phelps Dodge Corp. of Canada	Azimuth: 200 deg.	Started: Oct. 15 / 97	Logged For: Phelps Dodge Corp. of Canada
Property: LaFlamme	Dip: - 45 deg.	Completed: Oct. 18 / 97	Logged By: Dave Gamble
Twp/Claim: Fiedmont Lt 53 R VIII cl. 5192581	Location: L 52 + 00 m E/ 4 + 00 m S	Core Size: BQ	Tests: TD: N/A Dip: Az:
Hole No: LF - 238 - 4	Total Depth: 117.0m m (20 boxes)	Drilled By: Morrisette (Div. of Boart Longyear)	TD: Dip: Az:

Purpose of Hole: To test an induced polarization (I.P.) anomaly, centered on L 52 + 00m E / 4 + 50 mS with a coincident mag high response.

Remarks / Results: A sequence of andesite pillow flows were intersected exhibiting bleached carbonitized and silicified cores (coalesced variolites). Calcite and quartz amygdules are present. Two narrow zones of pyrrhotite stringer mineralization were intersected at 20 m (5 cm) and at 70 m (50 cm). Two samples , 14409 and 14410 were split for Au, Ag, Cu, Zn, assaying.

Metres From:	Metres To:	Description	Sample Number:	From:	To:	Length	Au ppb	Ag ppm	Cu ppm	Zn ppm
0.0	6.60	OVERBURDEN (Casing Pulled)								
6.60	18.70	ANDESITE FLOW								
		Fine grained, massive uniform, medium grey - green in colour andesite flow.								
		Locally foliated 6.60 m - 7.20 m at 55 deg. TCA.								
		Pervasive interstitial carbonate weak to moderate throughout.								
		Magnetic susceptibility 0.0 c.g.s. throughout the interval.								
		Minor interflow tuff layer 8.7 - 8.8 m at 45 deg. TCA . Minor calcite stringers 2 - 4 mm at 20 deg.								
		to 60 deg. TCA exhibiting weak dark green chloritic borders. From 17.0 - 17.6 a								
		speckled appearing part of the flow showing some lamination at 70 deg. TCA and possibly								
		representing the first appearance of an altered pillow core of coalescing " variolites".								
		The individual " variolites" are 1- 2 mm in size, are bleached buff cream white								
		in a green andesite flow groundmass that is carbonitized. Lower contact uniform								
		but slightly irregular jagged at 70 deg. TCA.								
18.70	19.65	ANDESITE TUFF								
		An interflow tuff massive, fine grained, weak to moderate interstitial carbonate, with weak								
		colour lamellae at 65 deg. TCA. At upper contact pervasively bleached over 10 cm								
		predominantly carbonate with minor quartz fracture fillings. Lower contact sharp but irregular.								
		This unit may represent a flow top tuff to the underlying flow. Mag susceptibility 0.0 c.g.s.								
		throughout interval.								

DDH No: LF - 238 - 4 Sheet 2 of 2

Metres From:	Metres To:	Description	Sample Number:	From:	To:	Length	Au ppb	Ag ppm	Cu ppm	Zn ppm
19.65	68.75	ANDESITE PILLOW FLOW c/w bleached pillow cores								
		A thick pillowed andesite flow sequence with altered bleached cream white pillow cores that are								
		carbonitized and possibly silicified. The flow is overall pale green with cream white cores to								
		pillows and interpillow material and outer limits of pillows as medium grey - green. Generally								
		fine grained with amygdules of white calcite 1 - 5 mm " eyes" and grey 1 - 3 mm quartz								
		"eyes" within the pillow altered cores. From 19.65 - 20.45 m disseminated pyrrhotite in the								
		bleached pillow core 19.65 - 19.85 and as pyrrhotite stringers at 70 deg. - 80 deg. TCA at								
		19.95 - 20.0 m and at 20.35 - 20.45 m. Trace chalcopyrite and pyrite in the predominantly								
		pyrrhotite stringer mineralization.	14409	19.65	20.45	0.8	5	0.3	69	66
		Broken core, shear minor fault gouge at 25.25 - 25.5 m at 50 deg. TCA.								
		The calcite and quartz " eyes" are most likely vesicle fillings in an original vesicluar pillow flow.								
		Locally some calcite amygdules are up to 1 cm. The actual pillow selvages and pillow								
		rims are narrow 0.5 - 2 cm. The bleached buff cream pillow core or coalesed variolitic core								
		abruptly grades into more normal green andesite pillow flow material that generally only								
		contain white calcite amygdules. Mag susceptibility 0.0 c.g.s. throughout interval								
		Lower contact sharp at 65 deg. TCA.								
68.75	69.40	ANDESITE TUFF								
		Fine grained medium to light green, laminated at 65 deg. TCA. Several conformable quartz +								
		carbonate 1 cm stringers. Lower contact sharp @ 70 deg. TCA. Mag susceptibility								
		0.0 c.g.s. throughout the interval. Narrow interflow tuff unit.								
69.40	117.00	ANDESITE PILLOWED FLOW								
	EOH	Similar to previous pillowed flow with 2 mm to 5mm white calcite " eyes" amygdules as filled	14410	77.0	77.5	0.50	38	0.7	301	189
		vesicles and dark grey 1 - 2 mm quartz "eyes". Minor calcite stringers and weak to moderate								
		interstitial calcite. From 69.4 - 81.0 predominantly medium green massive flow with only								
		minor sections of altered pillow core.								
		From 81.0 - 117.0 m altered pillow cores andesite flow with bleached cream white cores to								
		pillows containing eyes of calcite (white) and quartz (grey) and occasionally chlorite (green).								
		This pillowed flow sequence occurs to EOH. Mag susceptibility is 0.0 c.g.s. throughout interval.								
		Weak fabric at 60 deg. TCA at 95.2 m, weak flattening of carbonate "eyes".								
		Sand seam 107.05 - 107.25 m (may not be real, possible sand from foot of casing).								
		Minor reddish hematite threadlike fracture filaments at 111.5 and at 116.0 - 116.25 m. Minor								
		local biotite flakes at 114.1 m. EOH.								

DDH No: LF - 238 - 5 Sheet 1 of 3

DAVE GAMBLE GEOSERVICES INC. 70 First Street, Kirkland Lake, Ontario, P2N 1N3, Tel: 705-567-4381, Fax: 705-567-3801

PHELPS DODGE CORPORATION of CANADA DRILL RECORD

Project: Phelps Dodge Corp. of Canada	Azimuth: 200 deg.	Started: Oct. 19 / 97	Logged For: Phelps Dodge Corp. of Canada
Property: LaFlamme	Dip: - 45 deg.	Completed: Oct. 20 / 97	Logged By: Dave Gamble
Twp/Claim: Fiedmont Lt 55 R VIII cl. 5192583	Location: L 56 + 00 m E/ 2 + 10 m S	Core Size: BQ	Tests: TD: 55 m Dip: 43 deg. Az:
Hole No: LF - 238 - 5	Total Depth: 110.0 m (17 boxes)	Drilled By: Morrisette (Div. of Boart Longyear)	TD: Dip: Az:

Purpose of Hole: To test an induced polarization (I.P.) anomaly centered on L 56 + 00 m E / 2 + 60 m S with a coincident mag low response.

Remarks / Results: A sequence of andesite flows and minor tuff exhibiting altered bleached carbonitized pillow cores to coalesced variolitic pillow cores, some isolated variolites and also quartz and calcite amygdules. Weakly disseminated pyrite + pyrrhotite in stringers and fractures occur at 38 - 47 m, 57 - 63m, and at 73 - 77m. Fifteen samples 14411, 14419 - 14432 were split for Au, Ag, Cu, Zn, assaying.

Metres From:	Metres To:	Description	Sample Number:	From:	To:	Length	Au ppb	Ag ppm	Cu ppm	Zn ppm
0.0	13.90	OVERBURDEN (Casing Pulled)								
13.90	19.10	ANDESITE FLOW								
		Medium green, fine - medium grained, uniform massive flow, weak to moderate patchy calcite								
		and weak interstitial pervasive carbonate and calcite fracture fillings.								
		Minor dark green chlorite slips and fractures.								
		Magnetic susceptibility 0.0 c.g.s. throughout interval. Lower contact sharp @ 65 deg. TCA.								
		Local patchy lighter medium green with pervasive carbonate.								
19.10	19.30	ANDESITE TUFF								
		Finely laminated grey green to medium green interflow tuff, laminated at 70 deg. TCA.								
		Conformable upper and lower contacts. Moderate interstitial calcite. Magnetic susceptibility								
		0.0 c.g.s. Lower contact sharp @ 70 deg. TCA.								
19.30	21.65	ANDESITE FRACTURED FLOW TO FLOW BRECCIA/ AGGLOMERATE								
		Medium grey green flow to fractured flow with local sections of flow breccia - agglomerate.								
		Contains patchy calcite, occasional stringers and locally bleached paler green flow with								
		pervasive carbonate. Unit appears to be an interflow flow to flow top fractured flow								
		with minor flow breccia/agglomerate features. Lower contact sharp @ 50 deg. TCA. Mag								
		susceptibility 0.0 c.g.s.throughout interval.								

Metres From:	Metres To:	Description	Sample Number:	From:	To:	Length	Au ppb	Ag ppm	Cu ppm	Zn ppm
21.65	38.13	ANDESITE FLOW - PILLOWED c/w BLEACHED PILLOW CORES								
		Fine grained andesite, medium green overall, with bleached cream white sections within the								
		pillow core. The bleached sections contain both 1 - 3 mm white calcite and grey quartz " eyes".								
		The areas of the flow that are not bleached contain calcite "eyes" or calcite filled vesicles i.e.								
		calcite amygdules. The interpillow is darker green in contrast to the bleached altered pillow								
		cores. Minor reddish hematite lined microfractures occur in several bleached pillow cores.								
		The bleaching of the pillow cores to buff white appears to be a mixture of both carbonate + or -								
		silicification or pillow core masses of coalesced variolites. Minor grey								
		glassy quartz veinlets or " sweats" occur at 32.85 - 32.90 and at 35.6 - 35.9 at 60deg. TCA.								
		Mag susceptibility 0.0 c.g.s. throughout the interval.Lower contact sharp @ 75 deg. TCA.								
38.13	38.60	ANDESITE TUFF (as previous)								
		Finely laminated at 75 TCA, medium green fine grained. A narrow interflow tuff bed.								
		Lower contact @ 65 deg. TCA. Mag susceptibility 0.0 c.g.s.								
38.60	75.80	ANDESITE AMYGDALOIDAL FLOW - WEAKLY VARIOLITIC - PILLOWED	14411	38.7	40.0	1.3	2	0.3	45	190
		Medium green, fine grained throughout with numerous white calcite and grey quartz amygdules	14419	40.0	41.0	1.0	17	0.3	43	84
		from 1 mm up to 1 cm in size. Generally round filled vesicles. In addition, local sections	14420	41.0	42.0	1.0	14	0.2	30	87
		of 1 - 2 mm buff cream rounded variolites weakly suggesting cores to possible poorly formed	14421	42.0	43.0	1.0	5	0.1	58	77
		immature pillows. Also in the amygdular parts of the flow possible pillow - like structures	14422	43.0	44.0	1.0	9	0.1	59	92
		hosting the filled vesicles and also interpillow tuff to flow agglomerate locally.	14423	44.0	45.0	1.0	3	0.2	77	92
		From 38.7 - 47.0, 57.8 - 64.0, and 73.87 - 74.7 are narrow sections of andesite interpillow tuff or	14424	45.0	46.0	1.0	9	0.2	25	72
		possible selvage material that host sulphides 1 - 5 % locally disseminated pyrites and pyrrhotite	14425	46.0	47.0	1.0	Nil	0.2	46	87
		that appear as conformable stringers and are threadlike in form.	14426	57.8	58.1	0.3	Nil	0.3	127	86
		Also wispy to lenticular flattened looking pyrrhotite disseminated locally. Trace specks	14427	60.0	60.8	0.8	Nil	0.1	46	84
		chalcopyrite locally.	14428	61.25	61.5	0.25	Nil	0.3	181	108
		At 59.2 - 59.3 white calcite vein irregular at 50 deg. TCA, appears at interpillow or pillow	14429	62.8	63.2	0.4	Nil	0.3	108	95
		breccia narrow interval.	14430	63.7	64.0	0.3	5	0.2	218	91
		Lower contact sharp, conformable at 60 deg. TCA.	14431	73.87	74.7	0.83	Nil	0.2	106	78
		Magnetic susceptibility is 0.0 c.g.s. throughout except where pyrrhotite occurs and is locally up								
		to 0.4 c.g.s.								
75.80	76.70	ANDESITE TUFF (as previous)								
		Medium to light green laminated tuff at 60 deg. TCA and containing semi continuous stringer								

Metres From:	Metres To:	Description	Sample Number:	From:	To:	Length	Au ppb	Ag ppm	Cu ppm	Zn ppm
		like to threadlike disseminated pyrrhotite and pyrite (as previous). Lower contact sharp @ 65								
		deg. TCA. Some white calcite veinlets 0.5 cm to 1.5 cm and chloritic borders, minor	14432	75.8	76.7	0.9	Nil	0.4	111	288
		biotite flecks occur locally and near lower contact.								
76.70	97.35	ANDESITE PILLOW FLOW - BLEACHED CORES								
		Similar to flow 21.65 - 38.13 with carbonitized and / or silicified bleached cream buff pillow								
		cores, resembles zones of coalesced variolites that also contain 1 - 3 mm white calcite and grey								
		quartz " eyes" or amygdules. Lower contact sharp @ 60 deg. TCA.								
		Mag susceptibility 0.0 c.g.s. throughout.								
97.35	105.10	ANDESITE FLOW								
		Fine to medium grained, massive uniform flow, similar to flow at 13.9 - 19.1 m. Magnetic								
		susceptibility 0.0 c.g.s. Conformable upper and lower contacts at 60 deg. TCA.								
		Gradual chilled margin over 20 cm upper contact and over 1.1m at lower contact, could								
		possible be a sill.								
105.10	110.00	ANDESITE FLOW								
	EOH	Fine grained, green contains locally short intervals of buff 1 - 2 mm variolites several darker								
		green narrow intervals (pillows selvages), some minor pale green possible pillow cores and thin								
		interpillow breccia. Fabric layered at 60 deg. TCA. EOH								

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PHELPS DODGE CORPORATION of CANADA DRILL RECORD

Project: Phelps Dodge Corp. of Canada	Azimuth: 200 deg.	Started: Oct. 21 / 97	Logged For: Phelps Dodge Corp. of Canada
Property: LaFlamme, Fiedmont Twp	Dip: - 45 deg.	Completed: Oct. 23 / 97	Logged By: Dave Gamble
Twp/Claim:Lt 51 R VII cl. 5192592	Location: L 52 + 00 m E/ 18 + 00 m S	Core Size: BQ	Tests: TD: 140 m Dip: 44 deg. Az:
Hole No: LF - 238 - 6	Total Depth: 161.0 m (26 boxes)	Drilled By: Morrisette (Div. of Boart Longyear)	TD: Dip: Az:

Purpose of Hole: To test an induced polarization (I.P.) anomaly centered at L 52 + 00 mE / 18 + 75 m S with a coincident flat mag response.

Remarks / Results: A sequence of andesite quartz amygdaloidal flows and massive uniform flows were intersected. Weakly disseminated pyrite + or - pyrrhotite, and within calcite fracture stringers occurs at 41 - 42 m , 124 - 127 m, 139 - 147, and 157 - 158 m. Nine samples 14438 - 14446 were split for Cu, Zn, Au, Ag, assaying.

Metres From:	Metres To:	Description	Sample Number:	From:	To:	Length	Au ppb	Ag ppm	Cu ppm	Zn ppm
0.0	14.00	OVERBURDEN (Casing Pulled)								
14.0	84.05	ANDESITE FLOW - QUARTZ AMYGDALOIDAL								
		Green fine grained uniform groundmass with numerous 1 - 3 mm grey quartz filled								
		vesicles imparting a quartz amygdaloidal textured andesite flow. Local patches of pale apple								
		green caused by pervasive interstitial carbonate, also minor calcite lined fractures. The quartz								
		amygdules are clustered in intervals of high density suggesting possible pillow like structures								
		with the dense packing of filled vesicles in the pillows parts of the flow.								
		Cut locally by narrow white to grey white calcite veinlets, some carry minor quartz and								
		occasionally epidote and minor reddish hematite.								
		Magnetic susceptibility 0.0 c.g.s. throughout.								
		Broken core recovery 40.9 - 41.0 and at 42.5 - 43.0.								
		Trace - 1% pyrite 41.8 - 42.3, weakly disseminated.	14438	41.8	42.3	0.5	Nil	0.3	36	84
		Quartz vein 47.0 - 47.1 at 45 deg. TCA								
		Quartz - calcite - epidote - hematite patchy vein at 53.75 - 53.85 with upper contact at								
		60 deg. TCA and lower contact irregular.								
		Weak foliation fabric 70 - 75 deg. TCA and also tends to be the primary layering and as								
		well the orientation of the slightly elliptical amygdules.								
		Strong shear at 62.2 - 62.3 @ 70 deg. TCA and with minor quartz + calcite 4 cm veinlet.								
		Calcite + quartz + epidote + reddish hematite in stringers 73.1 - 73.15.								
		Lower contact sharp & conformable at 80 deg. TCA.								

DDH No: LF - 238 - 6 Sheet 2 of 3

Metres From:	Metres To:	Description	Sample Number:	From:	To:	Length	Au ppb	Ag ppm	Cu ppm	Zn ppm
84.05	88.85	ANDESITE FLOW								
		Fine grained, massive uniform with little to no amygdules, grey green in colour, weak								
		layering fabric at 75 - 80 deg. TCA. Lower contact sharp at 60 deg. TCA. Cut by narrow calcite.								
		stringers and threadlike fracture fillings. Mag susceptibility 0.0 c.g.s.								
88.85	89.95	ANDESITE FLOW - QUARTZ AMYGDALOIDAL (as previous)								
		Upper and lower contact at 60 deg. and 65 deg. TCA respectively.								
89.95	106.98	ANDESITE FLOW								
		Massive, fine grained, grey to grey green in colour, fractured with calcite healed								
		fractures, as 1 mm to threadlike throughout.								
		Mag susceptibility 0.0 c.g.s. throughout.								
		At 93.3 - 93.4 white calcite + quartz with trace pyrite at 50 deg. and 40 deg. upper and								
		lower contact.								
		Trace specks pyrite isolated throughout.								
		Occasional cream white subhedral 1 - 2 mm plagioclase crystals.								
		Quartz veinlets 2 - 3 cm thick generally at low angles to core axis, at 100.5 - 100.9 at 15								
		deg.TCA, 104.16 - 104.19 @ 65 deg. TCA, 104.53 - 104.71 @ 15 deg. TCA as								
		grey white glassy barren quartz.								
		Lower contact sharp and conformable flow contact at 70 deg. TCA.								
106.98	117.45	ANDESITE FLOW - QUARTZ AMYGDALOIDAL (as previous)								
		Upper contact sharp at 70 deg. TCA, lower contact sharp at 70 deg., conformable layered								
		contacts.								
		Flow unit contains quartz amygdules as previous, local pale green bleached sections								
		with pervasive carbonate, threadlike stringers of calcite throughout, some amygdules are								
		also calcite, and some of the quartz amygdules have a calcite speck as a core and are								
		also rimmed by a very thin carbonate envelope.								
		Unit is locally rubbly to flow breccia over narrow intervals. Mag susceptibility 0.0 c.g.s.								
117.45	128.50	ANDESITE FLOW								
		Massive, uniform, fine grained grey green in colour, fractured and healed by calcite	14439	124.25	125.25	1.0	Nil	0.2	99	76
		stringers with 2 mm chloritic shadows to the fracture fillings.	14440	126.8	127.8	1.0	3	0.2	69	61
		Trace to 1 % finely disseminated pyrite locally from 124.25 - 125.25 and 126.8 - 127.8.								

DDH No: LF - 238 - 6 Sheet 3 of 3

Metres From:	Metres To:	Description	Sample Number:	From:	To:	Length	Au ppb	Ag ppm	Cu ppm	Zn ppm
		Lower contact sharp at 45 deg. TCA.								
		Mag susceptibility 0.0 c.g.s. throughout interval.								
128.50	156.10	ANDESITE FLOW - QUARTZ AMYGDALOIDAL	14441	139.8	140.8	1.0	Nil	0.2	149	59
		As previous, with locally fine disseminated pyrite and occasionally pyrrhotite first	14442	140.8	141.8	1.0	Nil	0.1	86	60
		appearing in calcite stringers at 137.0. Also locally bleached with calcite, epidote and	14443	143.9	144.9	1.0	Nil	0.2	39	88
		quartz, also carrying trace specks of pyrite.	14444	144.9	145.4	0.5	Nil	0.3	145	58
		Locally biotite wispy flecks to occasional lamellae also occur @ 50 deg. TCA.	14445	146.0	147.0	1.0	Nil	0.2	75	63
		Pale green epidote sausseritization from 145 to 154.0 carrying locally, specks of pyrite.								
		Quartz veinlet at 154.24 - 154.30 at 55 - 70 deg. TCA.								
		Lower contact sharp at 45 deg. TCA.								
156.10	161.00	ANDESITE FLOW	14446	157.0	158.0	1.0	Nil	0.2	54	85
	EOH	Fine grained grey green massive uniform flow, similar to 117.45 - 128.5 m. Local interval								
		157.0 - 158.0 carries fine flecks of trace - 1 % disseminated pyrite and also trace pyrite								
		and pyrrhotite 160.3 - 160.5.								
		Magnetic susceptibility 0.0 c.g.s. and up to 0.3 c.g.s. where pyrrhotite occurs.								
		Unit lacks pervasive carbonate, only fracture related calcite. EOH								

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PHELPS DODGE CORPORATION of CANADA DRILL RECORD

Project: Phelps Dodge Corp. of Canada	Azimuth: 200 deg.	Started: Oct. 24 / 97	Logged For: Phelps Dodge Corp. of Canada
Property: LaFlamme	Dip: - 45 deg.	Completed: Oct. 26 / 97	Logged By: Dave Gamble
Twp/Claim:Fiedmont/Lot 62 R VII cl. 5186063	Location: L 80 + 00 m E/ 14 + 00 m S	Core Size: BQ	Tests: TD: 55 m Dip: 44 deg. Az:
Hole No: LF - 238 - 7	Total Depth: 101 m (17 boxes)	Drilled By: Morrisette (Div. of Boart Longyear)	TD: Dip: Az:

Purpose of Hole: To test an induced polarization (I.P.) anomaly centered at L 80 + 00 m E / 14 + 50 m S with a coincidental mag low.

Remarks / Results: A sequence of andesite flows and tuffs intruded by feldspar porphyritic (+ minor quartz) dykes were intersected. The andesite tuff from 14 - 25 m is heavily carbonitized and contains minor disseminated pyrite + pyrrhotite. A conductive fault gouge at 43 m was also intersected. Five samples 14433 - 14437 were split for Cu, Zn, Au, Ag, assaying.

Metres From:	Metres To:	Description	Sample Number:	From:	To:	Length	Au			
0.0	4.90	OVERBURDEN (Casing Pulled)								
4.90	10.60	ANDESITE FLOW								
		Fine grain, medium green, massive uniform flow, cut by minor white calcite 1mm +								
		threadlike stringers and fracture fillings at 45 deg. TCA.								
		Occasional grey white amygdules of quartz and calcite. Weakly fractured at 60 deg. TCA.								
		Magnetic susceptibility 0.0 c.g.s. throughout.								
		Lower contact sharp at 60 deg. TCA.								
10.60	11.30	FELDSPAR PORPHYRY DYKE + MINOR BLUE QUARTZ "eyes"								
		Medium grey in colour, fine grained ground mass with 1 - 2 mm subhedral white								
		plagioclase lathes and minor blue 1 - 2 mm quartz "eyes". Also contains fine biotite								
		and minor pyrite along fractures. Upper and lower contacts are sharp at 60 deg. TCA.								
		Magnetic susceptibility 0.0 c.g.s.								
11.30	14.70	ANDESITE FLOW (as previous)								
		Lower contact sharp at 45 deg. TCA.								
14.70	24.75	ANDESITE TUFF - carbonitized (Mag Low)								
		Fine grained, finely laminated with light and medium green lamellae at 50 - 55 deg.								
		TCA with numerous white calcite stringers parallel to the bedding lamellae,								
		Contains fine dark brownish to black wisps and flecks of biotite.								

Metres From:	Metres To:	Description	Sample Number:	From:	To:	Length	Au ppb	Ag ppm	Cu ppm	Zn ppm
		At 15.5m fine disseminated pyrite and pyrrhotite seam 1 - 2 mm. Unit also contains	14433	15.0	16.0	1.0	Nil	0.2	57	66
		locally trace specks of pyrite.								
		Bedding / foliation fabric is strong throughout at 50 deg. TCA. Increasing biotite lamellae	14434	17.0	18.0	1.0	Nil	0.2	43	78
		from 22.0 m to end of interval.								
		Irregular quartz vein 23.87 - 24.01m with 3 cm green chloritic borders.	14435	20.0	21.0	1.0	Nil	0.1	30	71
		Minor folding 23.7 - 23.8 m as small S - folds.	14436	22.0	23.0	1.0	Nil	0.2	44	81
		From 24.1 - 24.3 strong presence of white calcite lacy and paralleling foliation fabric and	14437	23.5	24.5	1.0	Nil	0.1	29	74
		contain 1 % disseminated pyrite.								
		Lower contact sharp at 45 deg. TCA, delineating an abrupt change from foliated								
		laminated tuff to a rubbly flow top.								
		Magnetic susceptibility 0.0 c.g.s. throughout and where minor sulphides are present mag								
		susceptibility increase, to 0.3 c.g.s. over short intervals.								
24.75	26.35	**ANDESITE FLOW and FRACTURED FLOW TOP**								
		From 24.75 - 25.8 rubbly andesite flow top and changing to a uniform flow down the								
		interval. The flow top is a fractured flow top breccia with minor epidote and calcite								
		alteration locally.								
		Lower contact is sharp at 45 deg. TCA.								
		Magnetic susceptibility 0.0 c.g.s. throughout.								
26.35	27.60	**FELDSPAR PORPHYRY DYKE + Minor Blue Quartz " eyes"**								
		As previous, grey fine grained groundmass with white 1 - 2 mm subhedral plagioclase								
		lathes and minor blue quartz 1 - 2 mm quartz eyes. Magnetic susceptibility 0.0 c.g.s.								
		Lower contact irregular and scalloped invading the underlying unit and approximating								
		45 - 50 deg.								
27.60	33.20	**ANDESITE FLOW (as previous)**								
		Massive green, fine grained flow with patchy epidote + quartz + calcite pale green								
		narrow zones that appear to be related to minor quartz + calcite veining and stringers.								
		The largest quartz + calcite + chlorite vein is 30 deg. TCA at 28.8 - 28.9 m.								
		Magnetic susceptibility 0.0 c.g.s. Lower contact sharp at 55 deg. TCA.								
33.20	34.75	**FELDSPAR PORPHYRY DYKE (as previous)**								
		Upper contact sharp @ 55 deg. TCA. Lower contact wavy to irregular at 50 - 80 deg. TCA.								

DDH No: LF - 238 - 7 Sheet 3 of 3

Metres From:	Metres To:	Description	Sample Number:	From:	To:	Length	Au ppb	Ag ppm	Cu ppm	Zn ppm
34.75	101.00	ANDESITE FLOW + MINOR FLOW BRECCIA								
	EOH	A thick sequence of fine grained to aphanitic, green andesite flow with locally minor								
		quartz amygdules, no interstitial carbonate, minor lacy to fracture filled calcite stringers								
		and threadlike fracture fillings only, minor quartz stringers and veinlets with epidote and								
		restricted to the rubbly interflow fractured flow and "flow top" rubbly breccia to blocky								
		flow material. Minor chlorite tension gash fracture fillings locally.								
		The rubbly intervals occur at 34.75 - 35.74, 36.17 - 37.2, 38.7 - 39.3, 42.6 - 42.95, and at								
		42.95 - 43.0 CONDUCTIVE FAULT GOUGE at 45 deg. TCA with calcite strongly foliated								
		section from 43.0 - 43.4 @ 65 deg. TCA, possible tuff.								
		Quartz vein 41.1 - 41.15 @ 55 deg. TCA, 51.95 - 52.0 @ 55 deg. TCA , irregular with trace								
		pyrite. Chlorite tension gash fillings 41.4 - 41.8 m.								
		Fractured core 45.8 - 46.2 with calcite and minor hematite along fractures @ 15 deg. TCA.								
		Interflow rubble 47.3 - 47.5 with trace splash of pyrrhotite in calcite veinlet.								
		Interflow rubble 48.5 - 49.2, 50.5 - 50.9, 52.0 - 52.25, 53.5 - 54.2 with trace splash of								
		pyrrhotite + trace chalcopyrite in calcite stringer, 54.5 - 55.1, 56.4 - 56.5, 67.7 - 68.1,								
		71.45 - 71.6, 80.5 - 80.6, 83.0 - 83.4, 84.3 - 84.9, 85.6 - 86.3, 88.0 - 88.2, 91.4 - 92.0, 94.5 -								
		94.7. Intervening sections are fine grained massive to weak quartz amygdaloidal andesite flow								
		material.								
		Several small quartz veins 68.0 - 68.2, 68.15 - 68.20, 68.27 - 68.30 irregular. Trace splash								
		pyrrhotite + pyrite + chalcopyrite at 69.7 in calcite stringer.								
		Throughout most of this flow sequences the quartz filled 1 - 3 mm amygdules are only								
		weakly scattered. From 93.8 - 94.5 locally abundant amygdules.								
		There appears to be irregular flow banding also throughout at 50 - 70 deg. TCA.								
		Mag susceptibility 0.0 c.g.s. throughout.								
		EOH								