

87-39-15774

**THE IRENE FRACTION CLAIM #4912  
SANDON, BRITISH COLUMBIA  
SLOCAN MINING DIVISION**

NTS: 82 F/14 NW  
Latitude: 49° 58' 10", Longitude: 117° 14' 45"

FILMED

GEOLOGICAL REPORT

Prepared for

**DICKENSON MINES LIMITED  
SILVANA DIVISION**

By

**DAVID K. MAKEPEACE, P. ENG.  
SILVANA EXPLORATION GEOLOGIST**

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

15,774

FEBRUARY 10, 1987

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## 1 INTRODUCTION

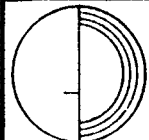
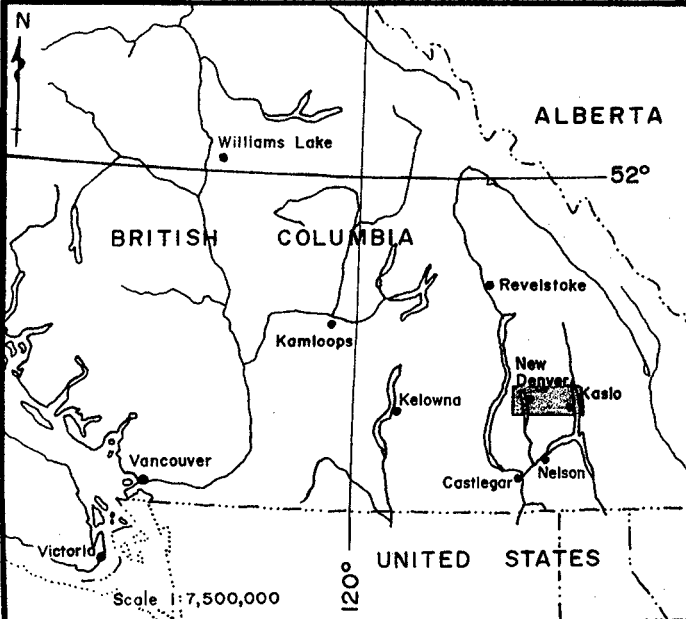
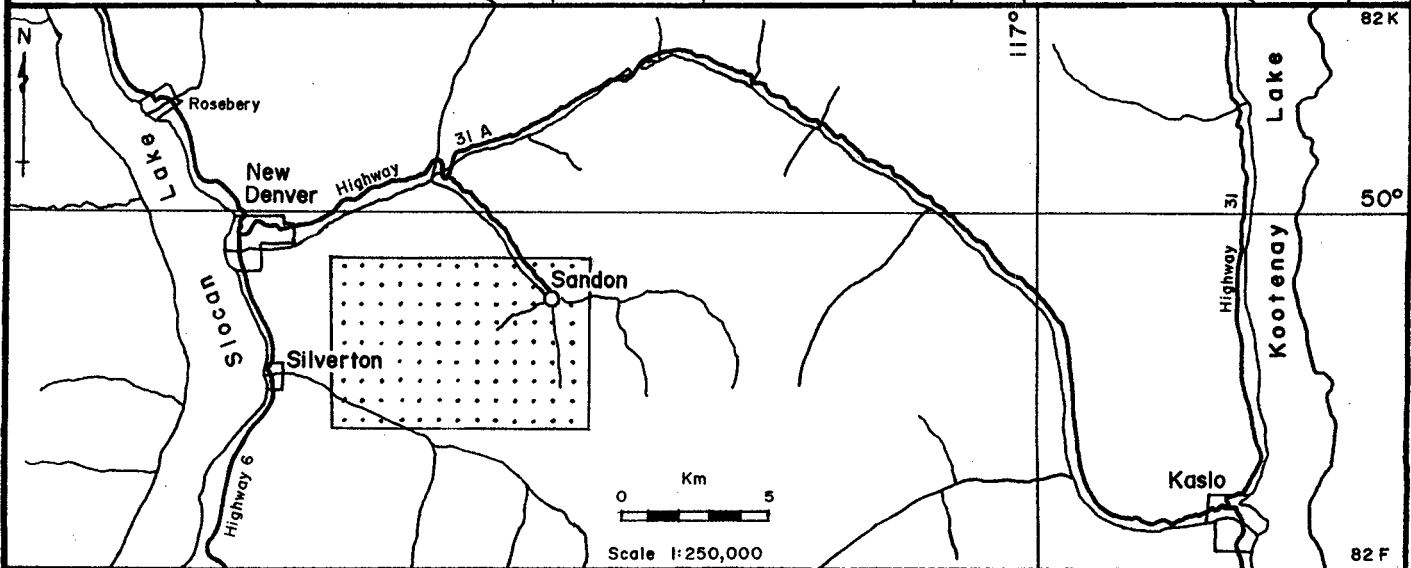
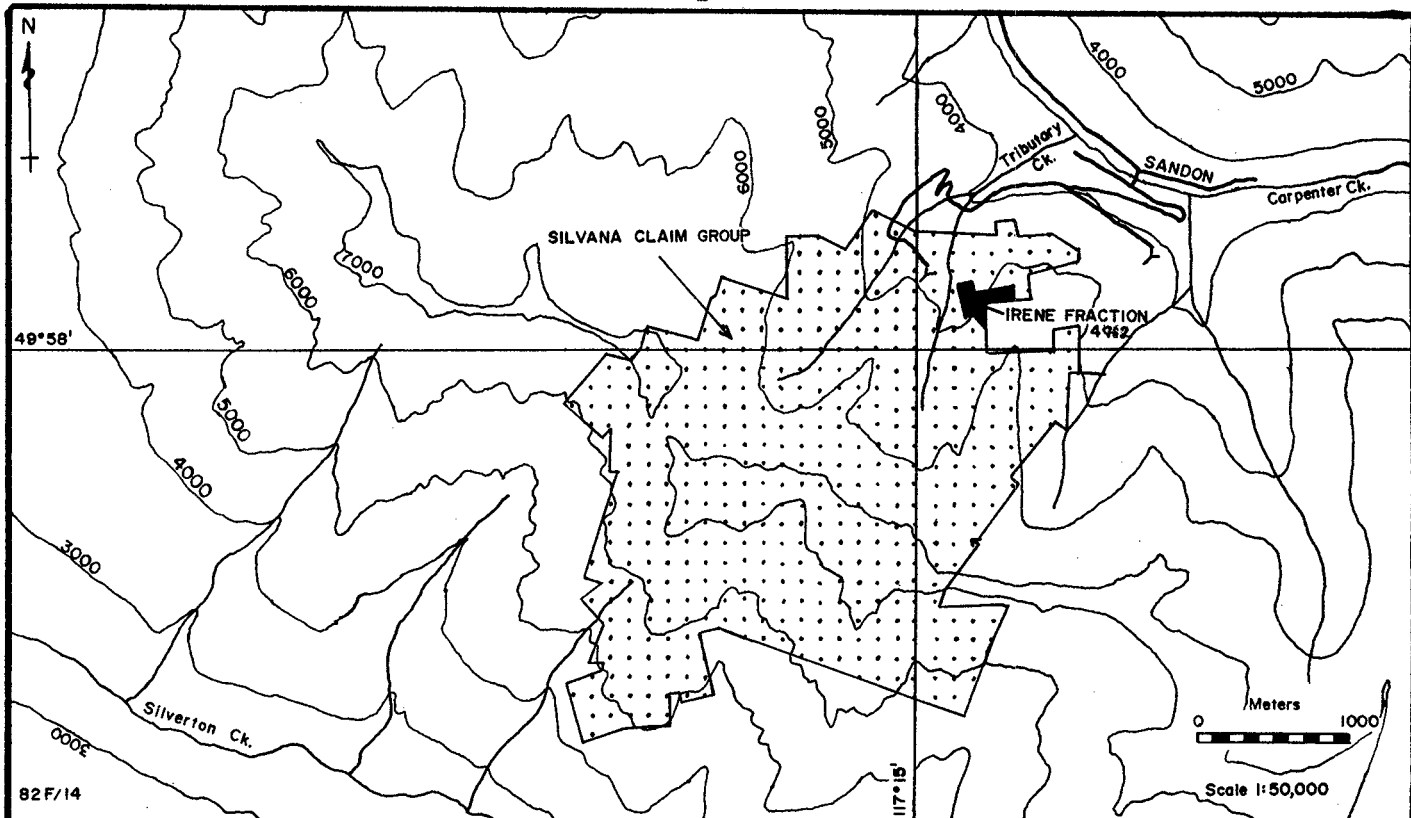
### 1.1 General Description

The Irene Fraction is a reverted crown granted claim. The original crown granted claim was L 4530 and has been changed to 4912. The total area of the fraction is 3.95 hectares. The claim is 1.5 km SW of Sandon and 9.3 km SE of New Denver [see Figure \*1]. It is in the Slocan Mining Division. The Irene Fraction is on the north flank of "Silver Ridge" and is at 5000 feet elevation. Access to the property is via a paved highway [\*31 A] from New Denver, east to Three Forks [6.2 km], then 6.1 km southeast on a good gravel road to Sandon. From Sandon a good gravel road switchbacks to Dickenson Mines 4000 level working [2.1 km]. A four-wheel drive gravel road switchbacks several times up the mountain from the 4000 to the Irene fraction [4.5 km]. This road is called the Mascot-Jennie Basin Road and accesses half of Dickenson Mines' claims.

### 1.2 Property History

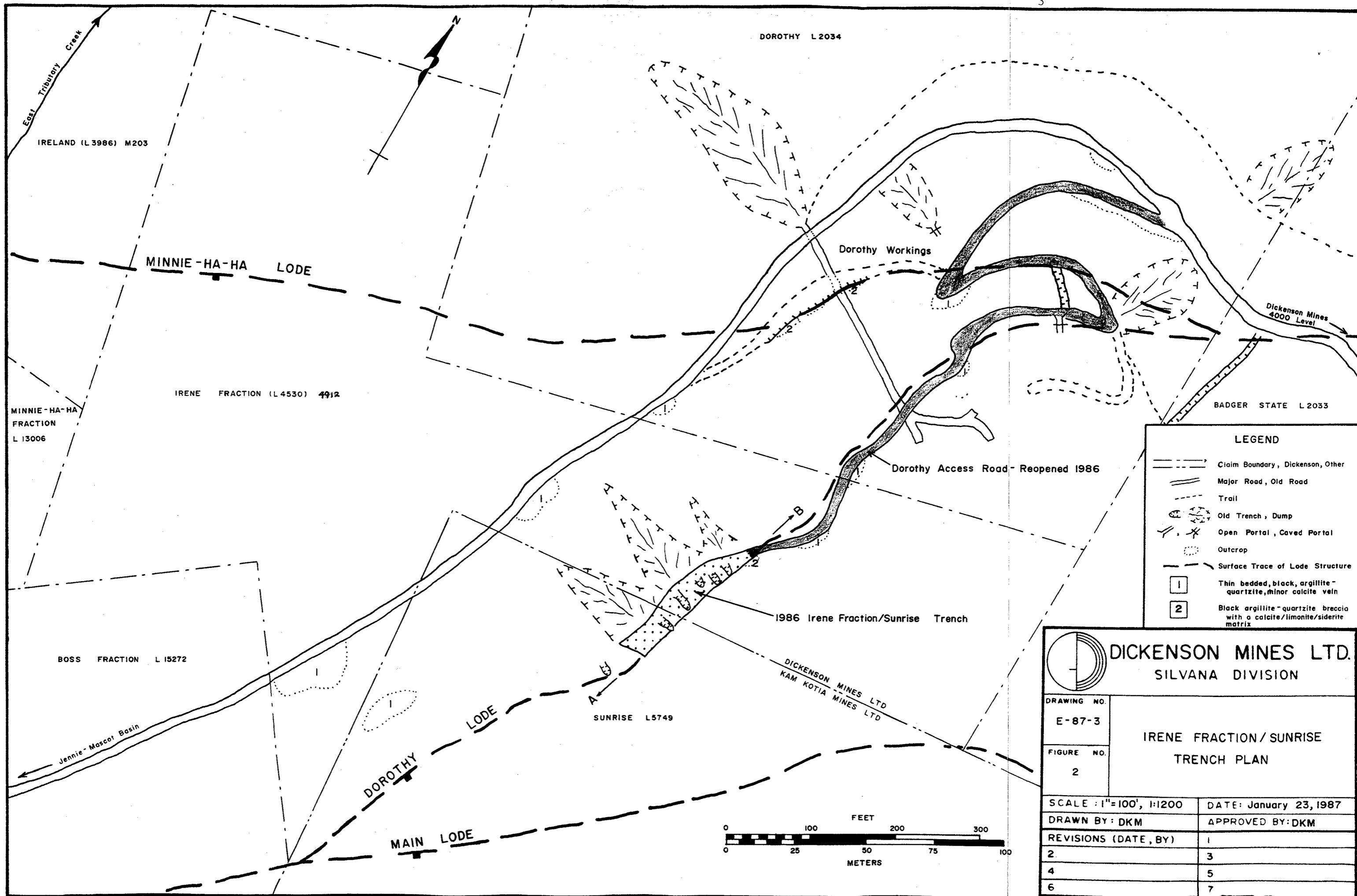
The Irene Fraction claim was originally staked by H. B. Alexander on November 14, 1899. The claim appears to have been worked in conjunction with the Dorothy claim to the north. There are at least two or three portals and several trenches on the Dorothy claim and only four small trenches on the Irene Fraction [see Figure \*2]. In 1926, Mr. J. P. Wilson recorded in the B. C. Annual Report that "further work was done on the Dorothy". In 1935, Mr. C. E. Cairns' report [GSC Memoir \*184] very briefly describes the Dorothy geology. The new owner of the Dorothy claim, Mr. C. B. White had a 400-foot adit and several open-cuts and pits on his property by that time. Mr. M. S. Hedley's report on the Slocan Mining Camp [B. C. Mines Bull. \* 29] very briefly mentions the Dorothy, mostly quoting Cairns' report. Kelowna Exploration was the new owner at that time. A new adit, 125 feet below the adit mentioned in Cairns' report was driven 320 feet and had two raises. Carnegie Mining Corporation did some trenching, surveying and mapping of the Dorothy area in 1966/67. It is unknown when the Irene Fraction claim was inadvertently dropped and reverted back to the crown.

Dickenson Mines, Silvana Division started a long term systematic geochemical survey over its property in 1983. The Dorothy and Irene Fractions were sampled the first year on a 100 by 100-foot grid pattern. The new owner of the Irene Fraction was Mr. J. Chernoff of Nakusp. He was to use Silvana's geochem results as work done on the claim in exchange for permission to sample his claim. He never used the



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DRAWING NO.	E-87-2	
FIGURE NO.	1	
SCALE :	As Shown	DATE : January 15, 1987
DRAWN BY :	DKM	APPROVED BY : DKM
REVISIONS (DATE, BY)	1	
	2.	3
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**LEGEND**

- Claim Boundary, Dickenson, Other
- Major Road, Old Road
- Trail
- Old Trench, Dump
- Open Portal, Caved Portal
- Outcrop
- Surface Trace of Lode Structure
- 1 Thin bedded, black, argillite-quartzite, minor calcite vein
- 2 Black argillite-quartzite breccia with a calcite/limonite/siderite matrix

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DRAWING NO. E-87-3	<b>IRENE FRACTION / SUNRISE TRENCH PLAN</b>
FIGURE NO. 2	
SCALE: 1"=100', 1:1200	DATE: January 23, 1987
DRAWN BY: DKM	APPROVED BY: DKM
REVISIONS (DATE, BY)	
2.	3
4.	5
6.	7

geochemical data and let the claim lapse. The claim was picked up by Mr. A. Matovich of Montrose but no work was done on the property. Dickenson Mines picked the claim up the year after and still holds the claim.

### 1.3 Current Property History

There have been a total of 34 soil samples taken on the Irene Fraction in 1983 and 1984. The interpretation from the soil sampling and geological reconnaissance of the area lead to identifying three lode structures in the area of the claim [see Figure \*2]. The "Main" lode strikes east-west, dips south and is south of the Irene Fraction. The "Minnie-Ha-Ha" lode strikes east-west, dips to the south and runs through the northern part of the fraction. The "Dorothy" lode strikes northeast-southwest, dips to the southeast and cross-cuts the claim. The four pits on the Irene Fraction mentioned above are on the Dorothy lode. A geochemical anomaly was centered around these pits. An outcrop of calcite-argillite breccia is exposed at the north end of this series of old pits. A trench was proposed to uncover the Dorothy lode along strike, using the lode outcrop and the trenches as a starting point. The trench would be partly on the Irene Fraction and partly on the Surprise claim [Kam Kotia Mines Ltd., L 5749]. The trench was designed to examine the lode's surface mineral potential.

### 1.4 1986 Exploration Summary

The trench was done in the summer of 1986. Some roads had to be widened to gain access to the trench site. The road widening and the trench were done with Dickenson Mines' D6C Cat bulldozer. The total length of the trench was 170 feet [51.8 m] of which 100 feet [30.5 m] is on the Irene Fraction. The lode was exposed over the entire length of the trench. A fault cut the lode and displaced it by approximately 34 feet. There were 13 samples taken systematically along the strike of the lode and assayed for silver, lead and zinc. A 30-foot long, narrow, lead-rich stringer was discovered sandwiched between lode breccia at the end of the trench.

## 2 GEOLOGY

### 2.1 General Geology

The Irene Fraction lies in the Slocan Series sediments of late Triassic age. Generally the sediments are predominantly interbedded black argillites and medium to dark grey quartzites. Limestones and slates are also found in varying proportions in the sequence. The Kaslo Series volcanic formation is to the north of the sediments and is early

Triassic in age. The Nelson Batholith of Jurassic age is immediately south of the Slocan Series and is the cause of the granitic/pegmatitic sills and dykes in the sediments. Late stage lamprophyre dykes intrude the metamorphosed sediments.

The Slocan sediments have been severally folded, fractured and faulted. The regional northwest-southeast trending asymmetric "Slocan Syncline" is thought to be Middle Jurassic and is the first recognizable deformation in the sediments. The Nelson Batholith probably caused most of the pre-lode faulting in the area. The lode structures themselves are faults. Some of the structures appear to have normal-type faulting while others appear to have thrust-type faulting. The "Main" lode, where most of the production of the Slocan Mining Camp has come from, appears to have both types of faulting. The lodes strike east-west or northeast-southwest and crosscut the synclinal axis. The Nelson Batholith is thought to be the heat engine used to inject the mineralized hydrothermal fluids into these lode-faults. The source of the mineralization itself is not known. Late stage faulting and shearing chopped up, deformed and remobilized the lode structures to their present state.

The sediments have been metamorphosed to a chlorite grade regional greenschist facies. Silicification is present in the sediments and the lodes. Graphitisation from the late stage shearing mentioned above is present throughout the lode structures.

The lode structures are hydrothermal in origin. There are two types of breccia found in the lodes. The first type is the "fragmental" or "vein" breccia. This breccia contains very angular fragments of country rock with a calcite, siderite and minor quartz matrix. The fragments have a varying degree of coarseness. The second type is the "sheared" or "flow" breccia. This breccia is characterized by elongated, mylonitic-style argillaceous-quartzite fragments in a graphite/groundmass matrix with or without calcite and siderite. This type of breccia is derived from the late stage shearing deformation mentioned above. This post-depositional shearing deformed "fragmental" breccia and previously non-brecciated material into new "flow/sheared" breccia. This deformed breccia-type not only altered the texture of the rocks but shredded and boudinaged the ore minerals. Lode structures are less than 50 feet [15.24 m] wide and most are approximately 2 to 10 feet [0.61 to 3.05 m] wide. Within the lode structure there can be up to 4 mineralized veins present.

The mineralogy of the lode structures can be represented by what is found in the "Main" lode. The main ore mineralization consists of argentiferous galena and sphalerite. There are minor amounts of

chalcopyrite, tetrahedrite, native silver, pyrargyrite and very minor amounts of stephanite, argentopyrite and acanthite. Other metallic minerals present in varying amounts are pyrite, pyrrhotite and arsenopyrite. The gangue minerals are calcite, quartz, orthoclase feldspar, siderite, tourmaline, chlorites, clay minerals and laumontite. Other minerals that have been identified in the area include smithsonite, anglesite, chrysocolla, malachite, manganese wad, limonite and hematite.

## 2.2 Property Geology

There are very few outcrops on the Irene Fraction even though the slope of the terrain is 35° to 42°. A combination of geological mapping and geochemical soil sampling has been used to interpret the geology on the claim. The sediments are predominantly thin-bedded argillaceous quartzites that have up to 3% graphite. Limonite is present in the exposed outcrops and is derived from the oxidation of the pyrite in the rock. Many small fractures cross-cut the argillitic quartzites. The strike is generally 310° to 330° Az. and the dip ranges from 35° to 75° to the northeast. There are many small veins of calcite and/or quartz with minor pyrite in the outcrops. Pyrrhotite is found throughout the sediments in minor amounts.

There are three lodes in the Irene Fraction area. The "Minnie-Ha-Ha" lode runs through the northwest part of the claim. The lode's strike is roughly east-west and the dip is approximately 30-40° to the south. The "Minnie-Ha-Ha" lode has been unsuccessfully mined in at least two locations [Minnie-Ha-Ha and Dorothy mines]. The geochem profile is very weak over the structure, over its entire strike length. The Silvana 4625 cross-cut adit also intersects the lode and appears as a graphitic gouge with numerous calcite stringers. It appears this lode has very little mineral potential close to surface. The "Main" lode is the most important lode in the entire Slocan Mining Camp. The Silvana Mine is actively mining this structure and has produced over 5 million ounces of silver so far. The "Main" lode is immediately south of the Irene Fraction. The strike length is over 5 miles long and the dip varies from 11° to 68°, to the south. This lode dips away from the Irene Fraction and so is of no importance to the claim's mineral potential. The claim is important with respect to the "Main" lode in its position to the lode only. The third structure is the "Dorothy" lode. This lode is a cross-over between the "Minnie-Ha-Ha" lode and the "Main" lode. It strikes north-south and dips roughly 60° to the east. There is only one outcrop over the strike length and it occurs on the Irene Fraction. It is a fragmental breccia with very few argillite-quartzite fragments with respect to the massive calcite matrix. There is minor siderite and



pyrite in the matrix. A small geochemical anomaly surrounds this outcrop. Four out of five overgrown trenches that were dug to expose the "Dorothy" lode are on the Irene Fraction [see Figure 2]. The trenches were dug immediately south of the lode outcrop in a line following the contour of the hill. They exposed thin bedded argillite-quartzites. No lode material was observed in the trenches. The lode itself is approximately 1300 feet [396.2 m] long.

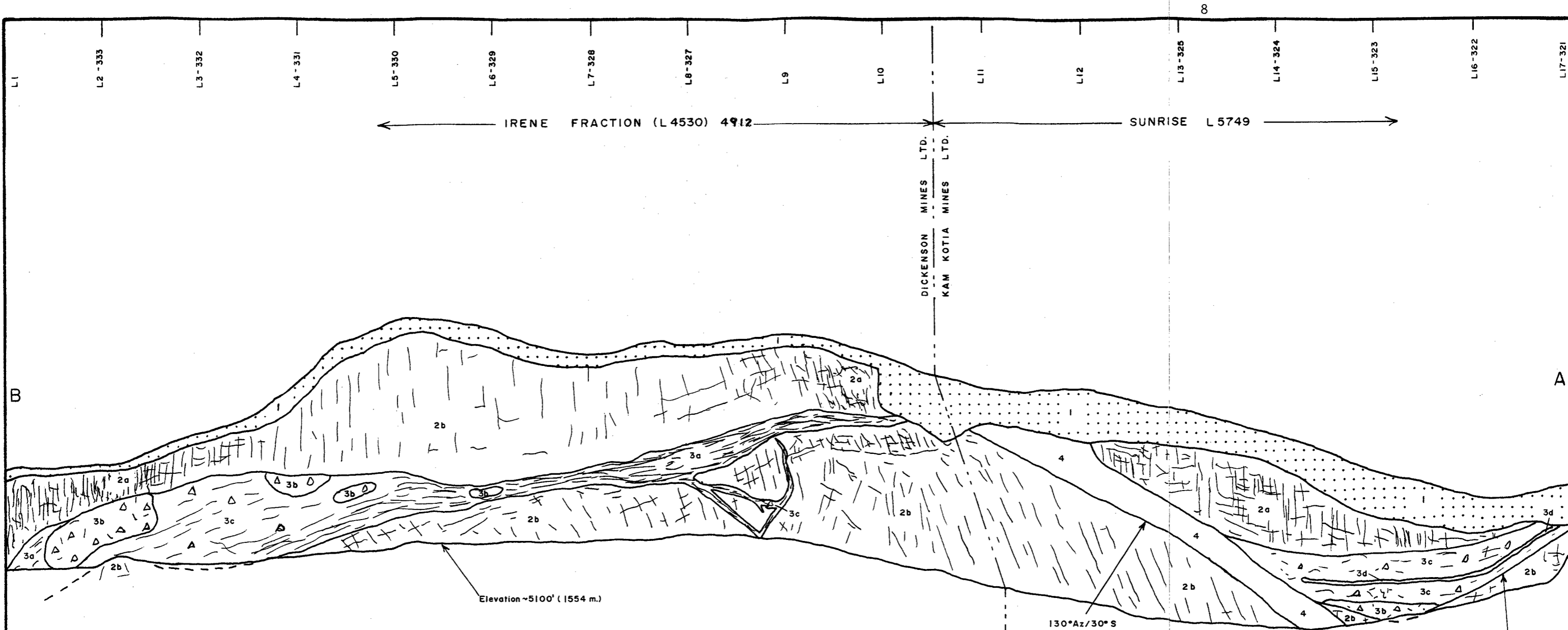
### 3 1986 TRENCH WORK

A trench was proposed in 1985 to expose the "Dorothy" lode starting at the lode outcrop, cutting the geochemical anomaly and continuing south through the old trenches. Dickenson Mines' D6C Cat bulldozer was used to do the trenching. The old Dorothy mine road was reopened and widened to accommodate the Cat and 4-wheel drive vehicles [see Figure 2]. The road had originally been built by a narrow gauge D6 bulldozer. The old road had been built to the lode outcrop, so no new road had to be made. The road was widened to 6 meters from roughly 4 meters. The total length of road widened, on the Irene Fraction is 157 feet [47.9 m]. No new geology was exposed in the road widening.

The trench was 170 feet [51.8 m] long of which 100 feet [30.5 m] was on the Irene Fraction [see Figure 3]. The trench is at approximately 5100 feet [1554 m] elevation. The trench was successful in exposing the "Dorothy" lode over the entire length of the trench. The trench was divided into 10-foot [3.1-m] segments. The lode was sampled across its entire width at each segment division line. Lines #0 and #1 were not sampled because the lode was below the trench elevation. Lines #9 and #10 were not sampled because the lode could not be reached. Lines #11 and #12 were not sampled because no lode was present due to the low angle fault. The rock samples were assayed at Silvana's assay lab in Sandon and were assayed for silver, lead and zinc. The cost of the bulldozer, operator and geologist, etc. are itemized in appendix "A".

### 4 INTERPRETATION

The lode is not well mineralized on the Irene Fraction. There is far more "fragmental"-type breccia on the Irene Fraction side than the Sunrise side. There was a thin but consistent band of galena-rich mineralization between lines #14 and #17 [see Figure #3]. Good results were obtained from a grab sample over the length of this narrow band [sample #326 : 24.62 oz Ag/t, 50.89 % Pb and 8.56 % Zn over 0.2 feet [0.06 m]]. The mineralization of this band included galena [50%], anglesite [2%], sphalerite [10%], limonite [5%], pyrite [5%], calcite [20%], siderite [4%] and chrysocolla [4%]. A weighted average of the assays



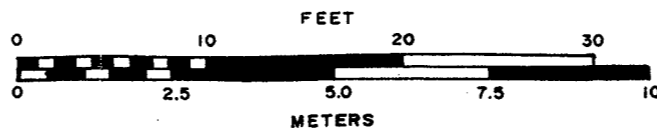
LOOKING EAST - SOUTHEAST

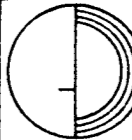
SAMPLED LODE ASSAYS

Sample No.	Line No.	Ag oz/t	Pb %	Zn %	Width ft. (m.)
321	17	11.40	12.13	3.25	1.5 (0.46)
322	16	4.40	3.08	7.04	3.5 (1.07)
323	15	6.70	5.65	8.99	6.0 (1.83)
324	14	4.10	2.98	1.51	3.0 (0.91)
325	13	0.76	0.71	0.97	3.0 (0.91)
326	14-17	24.62	50.89	8.56	0.2-28.0 (0.06-8.53)
327	8	0.30	0.30	0.43	3.0 (0.91)
328	7	0.36	0.41	0.43	2.0 (0.61)
329	6	0.40	0.40	0.65	2.0 (0.61)
330	5	0.40	0.40	0.54	4.5 (1.37)
331	4	0.24	0.46	0.37	8.0 (2.44)
332	3	0.20	0.41	0.32	8.5 (2.59)
333	2	1.60	0.30	0.43	6.0 (1.83)

LEGEND

- Claim Boundary
- 1 Overburden
- 2a Thin bedded, black argillite-quartzite, minor calcite veins, some graphite and limonite in the beds
- 2b Massive, black, argillite-quartzite, minor calcite veins, some limy sections
- LODE
  - 3a Sheared breccia - elongated sediment fragments in a calcite/graphite/groundmass/siderite matrix
  - 3b Fragmental breccia - angular sediment fragments in a massive calcite and minor siderite matrix
  - 3c Sheared and fragmental breccia - limonite-rich
  - 3d Galena stringer - 50% PbS, also limonite, anglesite, minor sphalerite, minor chrysocolla
- 4 Graphitic fault gouge with minor limonite



 <b>DICKENSON MINES LTD.</b> SILVANA DIVISION	
DRAWING NO.	E-87-4
FIGURE NO.	3
IRENE FRACTION / SUNRISE TRENCH SECTION	
SCALE: 1" = 10', 1:120	DATE: February 2, 1987
DRAWN BY: DKM	APPROVED BY: DKM
REVISIONS (DATE, BY)	
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from lines \*14 to \*17 is 6.1 oz Ag/t, 5.1 % Pb and 6.3 % Zn over 3.5 feet [1.1 m]. The assays from the samples taken on the Irene Fraction indicated no surface mineralization was present.

The lode on the Irene Fraction is a combination of "sheared" and "fragmental"-type breccia. The "fragmental" breccia is very hard while the "sheared" breccia is very soft. The "fragmental" breccia is composed of 50 to 75% calcite with minor siderite [ $< 5\%$ ], pyrite [ $< 5\%$ ] and the remainder is argillite-quartzite angular fragments. The "sheared" breccia is graphitic and limonite-rich and has numerous calcite stringers. In the widest sections of the lode [lines \*2 to \*5 and lines \*14 to \*17] both types of lode are present. It appears as if the lode was remobilized after the initial injection of the fluids and the less competent, more graphitic-rich material flowed around the more competent material.

A 3-foot [0.9 m] wide fault has off-set the lode in the trench between lines \*11 and \*14. It is a very graphite-rich [approximately 30%] gouge. There are minor limonite streaks in the fault material. The material itself is very homogeneous and fine grained. There are no lode fragments in the fault material. The fault appears to have off-set the lode by approximately 34 feet [10.4 m]. The fault has a strike of  $130^\circ$  Az and a dip of  $30^\circ$  to the south. The lode appears to be dragged on the hangingwall side of the fault.

The hangingwall side of the lode grades between a thin-bedded to a massive argillite-quartzite. It is badly fractured near the fault. At the north end of the trench, there is a higher percentage of argillite in the quartzite.

The footwall is predominantly massive argillaceous quartzite. Near the claim boundary the quartzite is slightly carbonaceous and has strong bedding characteristics. Between lines \*8 and \*9 in the footwall of the lode, graphite-rich material from the lode seems to have squeezed into some open fractures in the quartzites.

The overburden in the trench on the Irene Fraction is 1 to 2 feet [0.3 to 0.6 m] thick with a maximum of 7 feet [2.1 m] being obtained at the claim boundary. A profile of the overburden shows that most of the soil is composed of "B" horizon. A thin "A" horizon and a weakly developed "C" horizon is present.

## 5 SUMMARY

The "Dorothy" lode is a north-south striking structure. The lode is approximately 1300 feet [396.2 m] long and runs between two east-west striking lodes, the "Main" lode and the "Minnia-Ha-Ha" lode. A 170-foot [51.8 m] trench was dug to explore the "Dorothy" lode in the

vicinity of some old hand-dug trenches and a soil geochemical anomaly. The trench was mapped and sampled. The lode was exposed the entire length of the trench. It was off-set 34 feet [10.4 m] by a graphite-rich fault. No economic mineralization was found in the lode in the trench on the Irene Fraction claim. Non-economic mineralization was found in the lode in the trench on the adjoining Sunrise claim [Kam Kotia Mines Ltd.]. There is potential for economic mineralization along strike and down-the-dip from the trench area. Because of the steep terrain, diamond drilling of the "Dorothy" lode would not be practical. Further trenching along strike of the 1986 trench could be done. Exploration from underground could be done by utilizing the Silvana mine workings or by reopening and rehabilitating the Dorothy workings. The Silvana mine is preferred.

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### Author's Qualifications

I, David K. Makepeace, currently residing in New Denver, British Columbia with mailing address : P. O. Box 337, New Denver, B. C., V0G 1S0, hereby certify that:

1. I am a graduate of Queen's University at Kingston, Ontario with a BSc[Eng.] degree in geological engineering, mineral exploration, graduating in 1976.
2. I am a mining and oil exploration geologist and have practised my profession since 1976.
3. I am a registered Professional Engineer with the Association of Professional Engineers of the Province of British Columbia as well as the Association of Professional Engineers, Geologists and Geophysicists of Alberta.
4. I have worked as the exploration geologist for Dickenson Mines Ltd., Silvana Division since May, 1983.
5. The work described in this report was carried out under my direct supervision.

February 10, 1987.



David K. Makepeace, P.Eng.  
Silvana Exploration Geologist

**APPENDIX "A"**

**Itemized Cost Statement**

ITEMIZED COST STATEMENT

## 1986 Irene Fraction Claim Exploration Program

D6C Cat + operator : -Trench - 100 ft [30.5 m] , 13 hr @ \$50.00/hr [August 14 - 16, 1986]	650.00
-Reopening Dorothy Road - 157 ft [47.9 m] , 1hr @ \$50.00/hr [August 14, 1986]	50.00
-Clean-up Jennie-Mascot Road - 200 ft [61.0 m] , 1 hr @ \$50.00/hr [August 16, 1986]	50.00
	<u>750.00</u>
Geologist : -4 days field work @ \$163.00/day * 60% [ time allocated to Irene Fr.] [August 14 - 17]	391.20
-5 days research and report writing @ \$163.00/day	815.00
-3 days drafting maps @ \$163.00/day	489.00
	<u>1695.20</u>
Sample Assays : -7 samples assayed for silver , lead, zinc @ \$23.00/sample	\$161.00
Total Expenses for the Irene Fraction for 1986	<u><u>2606.20</u></u>