GEOLOGICAL, GEOPHYSICAL AND GEOCHEMICAL REPORT

ON THE

ST. MARY CLAIM GROUP

Fort Steele Mining District
NTS: 82F/9
Lat: 49°36'N Long: 116°15'W

Owned by:
Esso Minerals Canada
A Division of Esso Resources Canada Limited
1600 - 409 Granville Street
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Operated by:
Esso Resources Canada Limited

Report by:
Keenan Dom

February 17, 1988

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1.0 INTRODUCTION

1.1 General Objectives

The objectives of the 1987 field season were to evaluate the massive sulphide potential of the St. Mary claims staked in late 1986. Work consisted of 1:10,000 scale geological mapping, rock and stream sediment sampling and a 3000m reconnaissance EM survey. A total of 40 rock, 32 silt and 2 panned concentrates were collected.

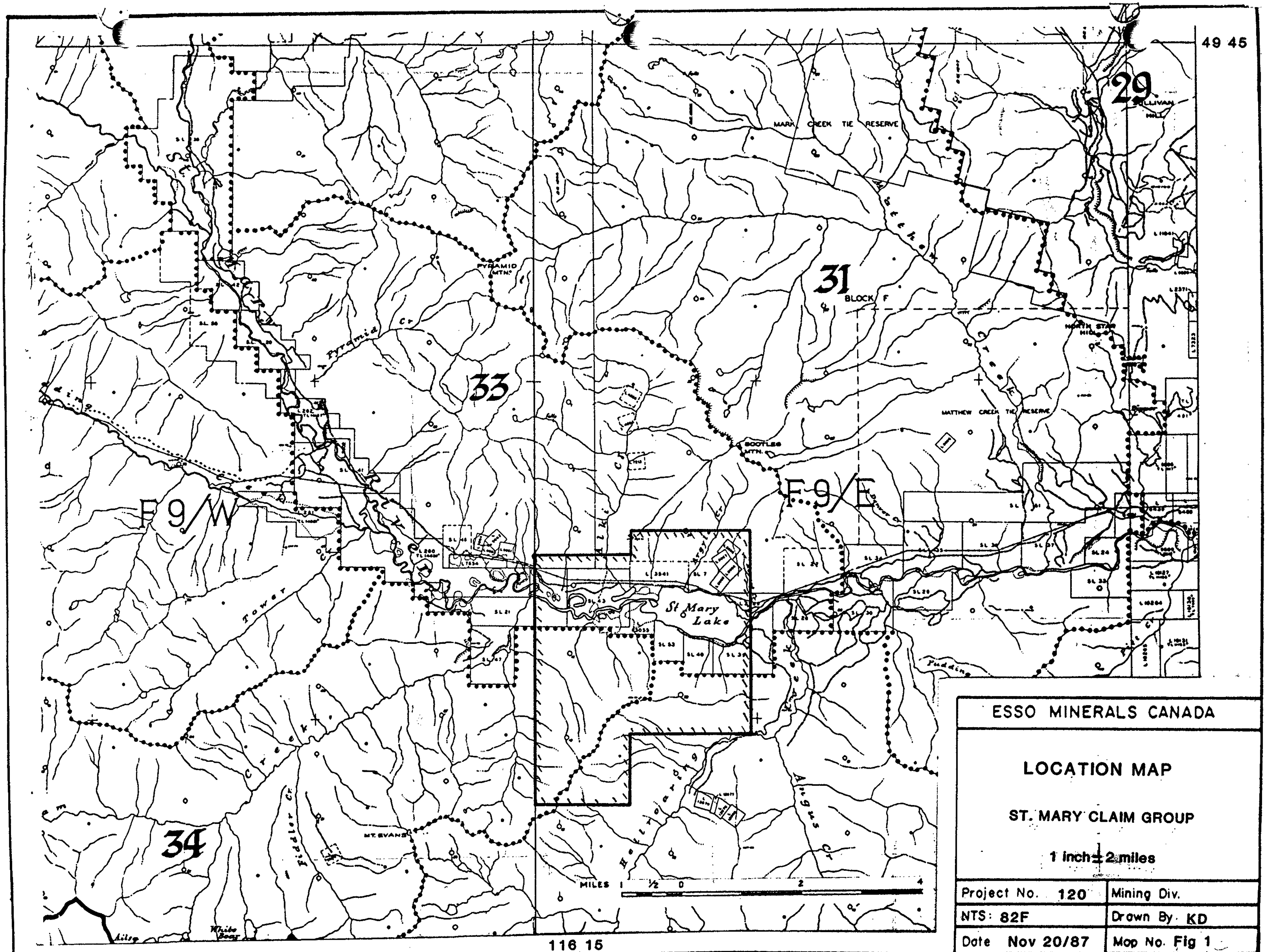
A recently exposed outcrop along a logging road on the south side of St. Mary Lake contains intraformational conglomerate near an undefined contact between the Lower Aldridge and the Middle Aldridge Formation. Multiple horizons, or stacking, of conglomerate is rare in the Aldridge Formation but is associated with the Sullivan Mine.

1.2 Location and Access

The St. Mary Lake Claims are located approximately 16km along the paved St. Mary Road off of Highway 93A. This area is between 15 and 20km southwest of the Sullivan Mine (Fig. 1). High voltage powerlines are located on the north shore of the lake. The claim area lies within NTS area 82F/9.

1.3 Claims and Property Management

A total of 10 claims consisting of 161 units were staked in November, 1986. The claims are 100% owned and operated by Esso Resources Canada Limited. Details are as follows:



ESSO MINERALS CANADA

LOCATION MAP

ST. MARY CLAIM GROUP

1 inch = 2 miles

Project No. 120	Mining Div.
NTS: 82F	Drawn By KD
Date Nov 20/87	Map No. Fig 1

TABLE I

LIST OF CLAIMS

Name	Record No.	No. of Units	Record Date
MAC 1	2771	18	24/11/86
MAC 2	2772	18	24/11/86
MAC 3	2773	15	24/11/86
MAC 4	2774	20	24/11/86
MAC 5	2775	12	24/11/86
MAC 6	2776	3	24/11/86
MAC 7	2777	18	24/11/86
MAC 8	2778	18	24/11/86
MAC 9	2779	18	24/11/86
MAC 10	2780	18	24/11/86

1.4 Labour

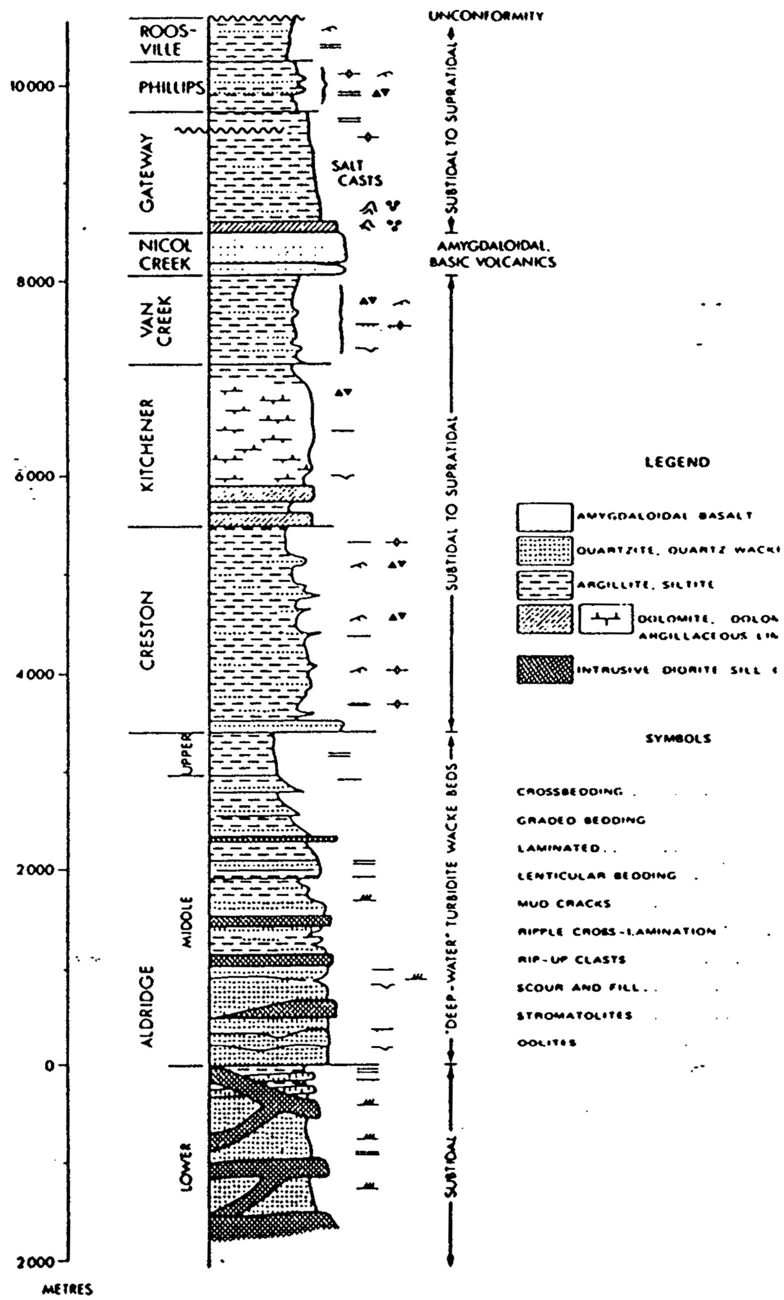
Field work was carried out by Keenan Dom of Vancouver, assisted by Chris Sywulsky of Cranbrook. Work was done over the period of June 31 to July 11. The work was supervised by John Macleod.

2.0 REGIONAL GEOLOGY

The St. Mary Claims cover the transition between the Lower and Middle Aldridge Formations of the Purcell Supergroup (Fig. 2). This section of stratigraphy contains the Sullivan Mine, Kootenay King and North Star deposits.

2.1 The Lower Aldridge Formation

The Lower Aldridge Formation is greater than 1500M thick with base unexposed. The Lower Aldridge is characterised by rusty-weathered argillite, siltstone and quartzite. The contact between the



From Hoy, et al, 1983

REVISIONS

By	Date	Approv. By

ESSO MINERALS CANADA

Stratigraphic Column of the Purcell Supergroup

To accompany a report by K. Dom

Project No: 120	Report No:
Mining Div:	NTS: 82F/9
Survey By:	Drafted By:
Date: Nov. 20/87	Map No: Fig. 2

Lower and Middle Aldridge is gradational over ten's to hundred's of metres. Locally an intraformational conglomerate occurs at or near the top of Lower Aldridge.

2.2 The Middle Aldridge Formation

The Middle Aldridge is composed of thick beds of quartz wacke and interlayered laminated siltstone. The base of the Middle Aldridge is marked by the first appearence of turbidite Bouma sequences. These sequences become less apparent and die out higher in the section.

Numerous internal sedimentary structures such as laminations, cross bedding and ripple marks are found in the Middle Alderidge. The turbiditic nature suggest that the Lower and Middle Aldridge were deposited during continental rifting. Total thickness of the Middle Aldridge approximates 3000M. Several marker horizons have been identified the Middle Aldridge and are characterized by alternating light and dark laminate less than 1 millimetre to a few millimetres in width. These band be correlated up to 300kms in distance and offer the most reliable means to identify stratigraphic positions within the thick Middle Aldridge sediments.

2.3 The Creston Formation

The Creston Formation is a light green, brown and pale purple argillaceous quartzite, siltstone and argillite with shallow water structures.

2.4 The Kitchener and Later Formations

The Kitchener and Later Formations are characterized by shallow water carbonates and clastics.

2.5 Moyie Intrusive

The Moyie Intrusive are laterally extensive gabbroic sills intruding the Lower and part of the Middle Aldridge Formations. They are dated at 1400Ma and are believed to have been intruded early into water-saturated sediments.

2.6 Structure

Important structures in the St. Mary Lake region are the Moyie and St. Mary faults. These deep-rooted crustal structures have been reactivated during Purcell time affecting sedimentation patterns and mineralization. These faults may have acted as channel ways for the outflow of metal charged fluids.

2.7 Metamorphism

The Aldridge is metamorphosed to Lower Amphibolite grade. The high temperature-low pressure type metamorphism is believed to have been caused by the intrusion of Moyie sills.

3.0 PROPERTY GEOLOGY

3.1 Lithology

There are four main rock units exposed on the property. Exposure is dominated by Lower and Middle Aldridge sediments with variable amount of Moyie sills and minor exposures of Pegmatite intrusions (Fig. 3).

Lower Aldridge

Locally the Lower Aldridge is dominated by medium to coarse grained wacke/quartzites with occasional siltstone and minor amounts of argillite. Weakly disseminated pyrite is often found in some beds. In some instances the wacke/quartzite may have originally been a silt or argillite but has been coarsened by metamorphism. Segregation migration of biotite grains towards bedding planes is common near sill intrusions. Colour is somewhat variable ranging from a rusty-weathering to medium brown and medium to dark grey. Bedding ranges from less than 5cm to massive. Thick beds with internal laminations are the most common exposure.

The Lower Aldridge in the St. Mary area contains poorly defined internal sedimentary structures. Lamination and cross beds are moderately common with the latter rarely exposed well enough to identify tops-up. Station 100 (Fig. 3) has good cross bed exposure and indicates tops-up. Occasional ball and pillow structures, rip-up clasts and ripple marks are observed within the Lower Aldridge unit.

The approximate thickness of the Lower Aldridge on the property is 1500M to 2000M. It is estimated that 30% of this section is composed of Moyie sills.

Middle Aldridge

The Middle Aldridge is fine to medium-grained, occasionally coarse, quartzite/wacke with lesser amounts of siltstone. The beds resemble turbidites and range in thickness from 15 to 50cm occasionally reaching a semi-massive appearence. Colour is medium to dark grey combined with infrequent rusty-weathering. The actual contact between the Lower and Middle Aldridge is covered and undefined.

The predominant exposures of Middle Aldridge are in the western and south areas of the claim block. Thickness of the Middle Aldridge sediment is not known in this area. Generally these sediments have less than 5% of Moyie sill intrusion.

Moyie Sills

The Moyie sills have an overall gabbroic/mafic composition ranging from metadiorite to horndlende granite. Textures of the sills range from fine-grained, more mafic near the margins to coarser grained towards the centre. Colour is black to dark grey depending on the feldspar content. Sills are occasionally weakly mineralized with disseminated pyrite.

The thickness of the sills range from a few metres to greater than 100M. The average thickness is 20-30M. Moyie sills predominantly intrude Lower Aldridge and are dominantly exposed in the northern and eastern areas of the property.

Pegmatite

Two small exposures of Pegmatite have been mapped on the property. The outcrops are located on the ridge south of the lake and on the north side of Hellroaring Creek. The Pegmatite is characterized by megacrysts of feldspar, micas and quartz. Colour ranges from a pale grey to whitish grey. The intrusion is broadly dated as Mesozoic or(?) Cenozoic. The exposures on the property are presumably intrusive fingers originating from a larger Pegmatite/Granodiorite intrusive body located to the south.

3.2 Structure and Metamorphism

Regional block faulting has locally created a gently dipping homocline of sediments and sills dipping approximately 20-25 degrees to the west. Stratigraphy is younger from east to west going from Lower Aldridge to Middle Aldridge. The northern area of the claim block is moderately faulted with variable bedding dips. Minor north and northeast trending normal faults are present often with quartz-vein mineralization. Shearing or faulting is commonly found along Aldridge/Moyie sill contacts. Minor folds are found near sheared contacts with broader, less common folds increasing to the west. This is possibly due to a decrease in Moyie sill frequency westward. All features indicate that stuctural movement occurred after the implacement of the Moyie sills. The St. Mary fault system is located approximately 2-3 kms south of the claim block.

Metamorphism in the St. Mary area is Lower Amphibolite grade. This high-temperature low-pressure type of metamorphism is believed to have been caused by the Moyie sills. Segregation and migration of biotite crystals towards bedding planes is visible in higher grade metamorphic areas. Hornfelsing commonly occurs in sediments along sill margins.

3.3 Mineralization

Four types of mineralization were found or are suspected to occur on the property.

Type A: Transgressive shears/faults
Type B: Conformable shears/faults
Type C: Mineralized mafic intrusives
Type D: Sullivan-type massive sulphides

Type A

Shear/faults trending north and northeast cross cut stratigraphy. These faults are generally normal and are followed by late quartz veining primarily restricted to the area of the shearing.

Mineralization is semi-massive to massive pyrrhotite, pyrite and minor chalcopyrite. Tetrahedrite and galena occur in some areas. Examples of types of mineralization are found on the northeast end of the claim group near and on old crown grant claims.

Type B

Mineralization also occurs in shears/faults the along geologic contact between Moyie Instrusives and the Aldridge Formation. Late block faulting and tilting has caused shearing between units of different competency, Moyie sills and Aldridge sediments respectively. These shears acted as conduits for mineralized quartz fluids which deposited massive pyrite, pyrrhotite, galena, minor chalcopyrite, bornite and possible tetrahedrite. The Dan Howe showing is an example of this type of mineralization. Both Type A and B mineralization are probably related to the same tectonic event and mineralizing episode. This style of mineralization holds low potential for developing significant ore grades.

Type C

Mineralization in the Moyie sills is quite rare but was investigated for Platinum Group metal potential. Weakly disseminated pyrite and pyrrhotite was occasionally found within the sills. The Moyie sills contain somewhat variable percentages of mafic and felsic components. These compositional differences are probably related to evolutionary phases of the intrusion and the spatial relationship within the intrusive itself. Sample KDR-87-06 showed anomalous values of platinum and palladium and was of a felsic character with glomero-porphyritic textures. Unfortunately, one sample cannot substantiate if there is a relationship between the felsic nature and potential mineralization.

Type D

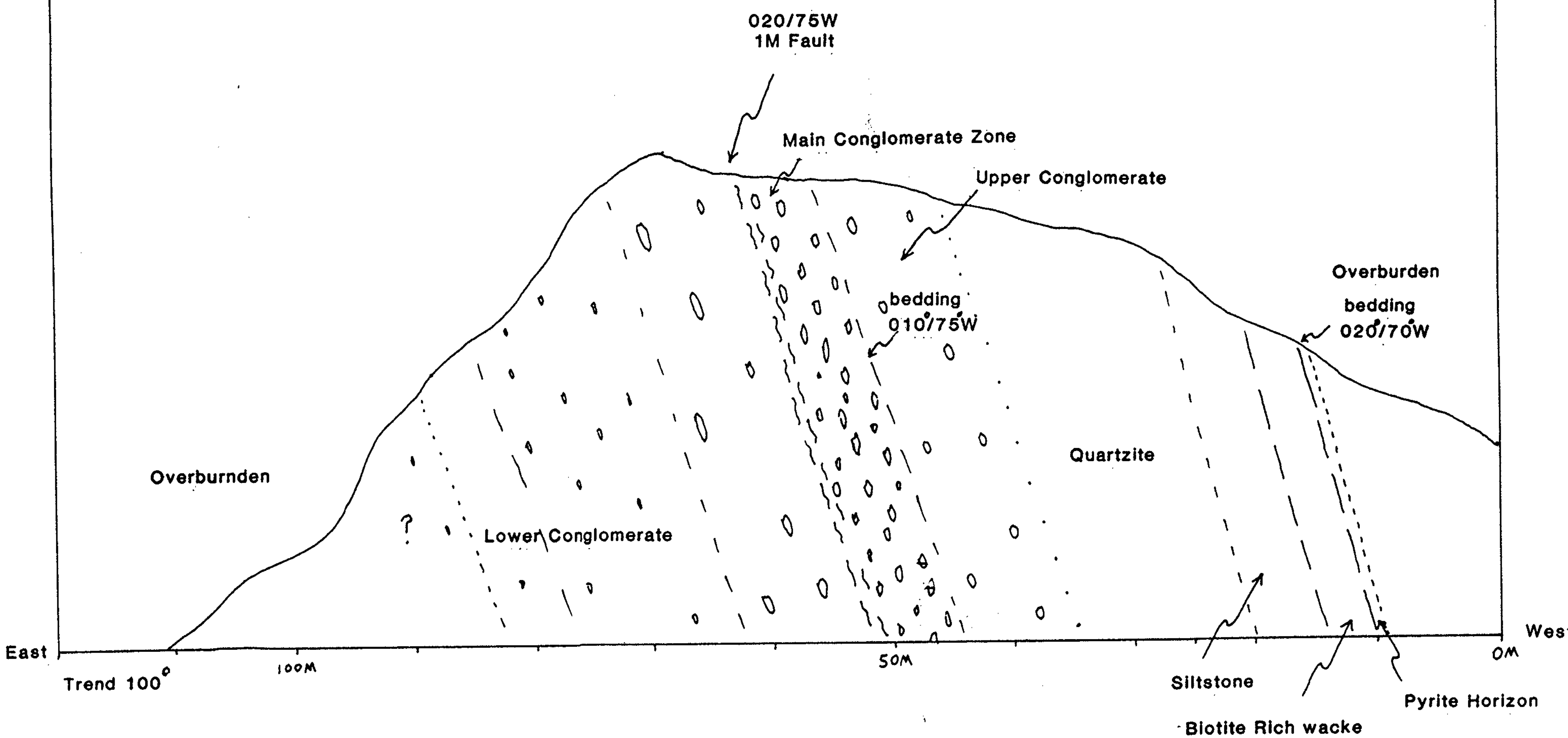
Although no exposures of Sullivan-type base metal mineralization were found, a pyritic intraformational conglomerate zone located 2.5 kms southwest of St. Mary Lake (Station M-70) indicates that paleotectonic activity potentially capable of producing a Sullivan-type deposit has occurred.

The entire conglomerate-bearing zone is approximately 30-35m in width. The main conglomerate zone is 3-5m wide consisting of mottled white and grey monolithic clasts. Clasts are matrix supported, eliptical, well rounded pebbles and cobbles ranging in size from 2-5cm. Clasts and matrix are essentially the same material. Weak alteration helps outline and accentuate the fragments. Some clasts appear to be boudinaged. The conglomerate is moderate to very silicious and may have been finer-grained before metamorphism. Approximately 2-4% pyrite is present within the main conglomerate zone. Cut rock sections reveal pyrite/pyrrhotite disseminations and veinlets in the conglomerate clasts as well as separate pyrite patches or clasts floating in the matrix. Some of these patches resemble pyritic fragments slightly stretched by later metamorphism.

Stratigraphically below the main conglomerate is a transition zone of alternating conglomerate/grit and quartzite. Fragments are smaller and only show on weathered surfaces. The transitional zone is greater than 20m thick. Above the main conglomerate is 7-10m of quartzite with occasional pebble/cobble clasts. Figure 4 is a sketch cross section of the conglomerate zone.

ESSO MINERALS CANADA	
St. Mary Lake Claim Area	
Project No. 120	Mining Div.
NTS. 82F/9	Drawn by: KD
Date: Nov. 20, 1987	Fig. No. 4

CROSS SECTION OF CONGLOMERATE ZONE



The contact between the Lower and Middle Aldridge is often transitional over ten's to hundred's of metres. On the St. Mary Lake Property the contact is covered and undefined. Projections indicate that the contact is less than 1-1.5 kms away from the conglomerate horizon.

Both the nature of the conglomerate and its stratigraphic position hold several similarities to the Sullivan deposit. The Sullivan is conformable with the top of the Lower Aldridge. Bodies of discordent and conformable fragmental sediments underlie much of the ore body and extend for several kilometres. The conglomerate is associated with hydrothermal feeder zone just below the main body. Where unaltered, the composition of the matrix and clasts are indistiguishable from enclosing Lower Aldridge strata. The conglomerate thickness ranges from 15-50m and is separated from the main ore body by 12M of laminated wacke.

4.0 GEOCHEMICAL SURVEYS

4.1 Field and Analytical Methods

Geochemical sampling consisted of sediment sampling, heavy mineral sampling and bedrock sampling. A total of 32 sediment samples were taken from all flowing creeks draining the property with additional samples taken up each drainage system, where possible. The samples consisted of fine to coarse-grained sediments obtained by hand/grab method. Standard Kraft paper bags were used with the average sample weighing approximately 10 grams. Samples were air-dried before shipping to the lab.

Two heavy mineral samples were taken from the two major drainages. Samples consisted of hand-panned fine-grained material. Standard Kraft paper bags were used with the samples weighing approximately 10 grams.

A total of 40 bedrock samples were collected. Each sample, where possible, consisted to two chip samples approximately 3-5m apart along a definable horizon. This ensured better representation of the horizon being sampled. Eight by ten inch plastic bags were used with the average sample weight being 1-2 kilograms.

All samples were analyzed by Acme Analytical Laboratories at 852 East Hastings Street, Vancouver. The assayer was Dean Toye. Samples were variously analyzed for 30 elements by geochemical I.C.P., geochemical gold mercury and P.G.E., and gold and silver assay.

For each geochemical sample a .500 gram sample is digested with 3ml 3-1-2 HCl-HN03-H20 at 95 degrees C for one hour and is diluted to 10ml with water. This leach is partial for Mn, Fe, Ca, P, La, Cr, Mg, Ba, Ti, B, W and limited for Na and K. Au detection limit by I.C.P. is 3 ppm. Hg analysis was by flameless AA. Geochemical gold analysis was by AA.

Assay samples were crushed and pulverized to -100 mesh. Ag, Au, Pt and Pd were fire assayed.

4.2 Results

Sample locations are plotted on a 1:10,000 plan (Fig. 5) included with this report. Results are listed on the plan and in Appendix I. Anomalous results were visually estimated.

Approximately 12 samples gave anomalous results worth further investigation. The anomalous samples have been arranged into four groups either based on sample type or spatial relationships.

(A)
Sample KDR-87-01, located approximately 1.5 kms past the southwest end of St. Mary Lake, was a diorite/ Moyie intrusive float boulder with quartz veining. Patches of massive pyrrhotite, pyrite and minor chalcopyrite were visible. Lab analyses was .083 oz/ton Au, 0.1 oz/ton Ag, 8823 ppm Cu and 159 ppm Zn.

(B)
The following rock samples all occur in relative proximity to the conglomerate horizon and possible transition zone between Lower and Middle Aldridge. KDR-87-06 was a felsic phase of the Moyie intrusives which contained high PGM's: 39 ppb Pt and 30 ppb Pd. KDR-87-42 was a dark green biotite/sericite-rich wacke with 189 ppm Ni, 235 ppm Sr, 504 ppm Cr and 1363 ppm Ba. Several other samples had moderately anomalous results with elevated values of zinc and mercury.

(C)
Rock samples from the Dan Howe Showing had visible mineralization which gave anomalous results. KDR-87-50 was a galena float boulder found below the old mine workings. Results were 0.82 oz/ton Ag, 2.98% Pb, 0.02% Zn, 31 ppm Sb. KDR-87-51 was a sample from the mine dump of the lower adit. Massive pyrite, pyrrhotite and galena with minor chalcopyrite and bornite and possibly tetrahedrite were noted. Results were 0.01 oz/ton Au, 1.46 oz/ton Ag, 4.48% Pb, 0.36% Zn and 20 ppb Hg.

Samples KDR-87-54 and 55 were taken from the upper pit of the Howe Showing. The former sample was quartz and silicified rock from a shear zone within the pit. Results were 0.06 oz/ton Ag, 284 ppm Pb and 12418 ppm As. The latter sample was taken from the muck pile and ran 110 ppb Hg.

(D)
Silt samples KDS-87-66, 69, 79, 81 and 84 are located in the southwest region of the claim block. All samples produced moderate anomalous values of mercury. The range was 20-60 ppb Hg. These samples

were from creeks draining an area mapped as Middle Aldridge. There could be some possibility that the higher mercury values are related to the original chemical composition of the Middle Aldridge rock. It could also indicate the proximity of a mineralized horizon near the transition between the Lower and Middle Aldridge.

5.0 ELECTROMAGNETIC SURVEY

One 3 km reconnaissance EM line was run along the east-west new road south of St. Mary Lake, between kilometer markers 4 and 7 (Fig. 3). The objective was to locate a conductor within the Lower-Middle Aldridge transition.

Details of the survey are given in a memorandum attached as Appendix II. Results are plotted in profile on Fig. 6.

One anomaly was detected. It is coincident with the east side of the conglomerate horizon. The response suggests improved conductivity at depth.

6.0 CONCLUSIONS

The intraformational conglomerate southwest of St. Mary Lake shows favourable textures and geochemistry, a good stratigraphic position and a coincident EM anomaly. When compared with the Sullivan mine numerous similarities were noted. The area covering the Lower-Middle Aldridge transition and the conglomerate zone holds good potential for Sullivan-type massive sulphide mineralization.

Field evaluation of the Dan Howe Showing and the four crown grants on the northeast side of the lake indicates that their potential for economic mineralization is low.

7.0 RECOMMENDATIONS

1) Drop claims in the eastern portion of the claim block: Mac 3,4, and 7. These claims cover Lower Aldridge and Moyie sills that are below the target horizon. The down-dip potential is to the west.

2) Implement additional GENIE EM surveys over the conglomerate horizon and the Middle-Lower Aldridge contact area to further define the eletromagnetic conductors.

3) A soil grid testing the conglomerate and transitional contact between Middle and Lower Aldridge. Samples should be analyzed for 30 Element I.C.P. and ppb Hg.

4) Fill-in coverage of geological and lithogeochemical sampling traverses over the transition area.

5) Follow-up the Platinum and Palladium anomaly (KDR-87-06) in a Moyie sill to evaluate its validity and potential.

February 17, 1988

Keenan Dom
Project Geologist

8.0 REFERENCES

Hoy, T., Berg, N., Balla, J., Fyles, J.T., Hamilton, J.M., Hauser, R.L., Ransom, P.W. (1983): Stratabound Base Metal Deposits in Southeastern British Columbia and Northwestern Montana, Geological Association of Canada, Field Trip Guidebook, Vol. II.

APPENDIX I

ANALYTICAL RESULTS

Esso Minerals Canada, 1987   Geochemical Results   SEDIMENTS   St. Mary Claims

SAMPLE#	MO PPM	CU PPM	PB PPM	ZN PPM	AG PPM	NI PPM	CO PPM	MN PPM	FE %	AS PPM	U PPM	AU PPM	TH PPM	SR PPM	CD PPM	SB PPM	BI PPM	V PPM	CA %	P %	LA PPM	CR PPM	MG %	BA PPM	TI %	B PPM	AL %	NA %	K %	W PPM	HG PPB
KDH-87-037 P	1	70	22	59	.1	30	17	552	7.66	29	5	ND	20	22	1	2	2	104	1.19	.027	65	36	.75	56	.52	6	1.57	.11	.26	12	10
KDH-87-073 P	1	21	14	65	.1	15	7	259	3.05	26	5	ND	10	17	1	2	2	20	.26	.020	24	12	.46	48	.10	2	1.05	.02	.26	2	5
KDS-87-008 P	1	33	22	96	.1	20	8	293	3.08	18	5	ND	8	14	1	2	2	19	.24	.029	28	20	.54	4	.10	2	1.26	.02	.28	1	10
KDS-87-013 P	1	41	25	120	.1	19	9	380	3.68	16	5	ND	9	16	1	2	3	20	.28	.039	37	21	.64	67	.11	3	1.53	.02	.37	1	20
KDS-87-014 P	1	57	21	102	.1	23	9	343	3.12	20	5	ND	6	18	1	2	2	23	.34	.042	35	23	.68	70	.11	3	1.78	.02	.46	1	30
RE KDS-87-073	1	18	16	58	.1	10	6	217	2.27	18	5	ND	8	10	1	2	3	15	.10	.017	21	11	.38	42	.08	2	.91	.02	.22	1	5
KDS-87-027 P	1	24	17	90	.1	16	9	381	3.39	35	5	ND	9	14	1	3	3	21	.20	.025	22	12	.53	54	.10	2	1.21	.02	.29	1	5
KDS-87-028 P	1	24	21	67	.1	16	8	334	2.78	30	5	ND	11	11	1	2	2	17	.15	.019	30	13	.47	58	.10	2	1.21	.01	.32	1	20
KDS-87-029 P	1	24	19	82	.1	15	10	361	3.21	35	5	ND	10	15	1	2	2	20	.20	.022	27	14	.49	59	.10	5	1.23	.02	.30	2	10
KDS-87-030 P	1	25	15	99	.1	21	10	420	3.25	15	5	ND	10	14	1	2	2	22	.23	.025	26	15	.62	51	.11	2	1.28	.02	.33	1	5
KDS-87-031 P	1	22	20	77	.1	15	8	317	3.17	26	5	ND	11	14	1	2	2	19	.22	.024	23	12	.50	53	.10	2	1.17	.02	.30	1	5
KDS-87-032 P	1	20	11	62	.1	14	7	264	2.94	52	5	ND	10	11	1	2	2	19	.23	.020	22	14	.51	53	.10	2	1.14	.02	.32	1	5
KDS-87-033 P	1	26	21	77	.1	17	7	256	2.48	45	5	ND	6	12	1	2	2	21	.36	.021	21	27	.50	38	.07	2	1.23	.02	.20	1	10
KDS-87-034 P	1	19	12	46	.1	16	6	254	1.95	26	5	ND	3	18	1	2	2	18	.63	.030	18	21	.43	44	.06	4	1.06	.02	.17	1	30
KDS-87-035 P	1	24	19	76	.1	17	7	326	3.18	21	5	ND	11	10	1	2	3	22	.28	.024	21	19	.66	54	.10	2	1.31	.03	.36	1	5
KDS-87-036 P	1	68	16	55	.1	15	8	259	2.51	15	5	ND	10	11	1	2	2	29	.39	.024	27	17	.58	48	.12	4	1.13	.04	.24	1	5
KDS-87-037 P	1	55	14	50	.1	15	7	246	2.43	12	5	ND	7	10	1	2	3	26	.36	.025	22	17	.55	45	.10	2	1.04	.04	.22	1	5
KDS-87-038 P	2	16	10	44	.1	11	5	187	2.17	9	5	ND	9	6	1	2	6	15	.17	.018	17	10	.43	49	.08	4	.92	.02	.28	1	5
KDS-87-059 P	2	27	17	72	.1	17	9	291	3.28	26	5	ND	6	11	1	2	6	25	.36	.024	13	28	.62	39	.08	4	1.39	.04	.22	1	5
KDS-87-066 P	3	76	22	250	.1	65	52	486	3.01	85	5	ND	1	18	1	2	3	16	.21	.061	32	14	.35	54	.08	2	2.54	.02	.22	1	60
KDS-87-067 P	2	25	14	89	.1	12	11	330	3.16	45	5	ND	3	14	1	2	7	39	.41	.020	15	11	.59	40	.10	3	1.47	.03	.16	1	20
KDS-87-068 P	1	40	19	179	.1	19	7	416	2.24	33	5	ND	1	39	1	2	2	30	.57	.059	50	14	.64	60	.12	4	2.19	.02	.20	1	50
KDS-87-071 P	1	59	21	76	.2	22	8	377	2.54	45	5	ND	4	19	1	2	2	22	.72	.031	31	16	.56	52	.07	2	1.32	.02	.25	1	30
KDS-87-072 P	1	133	24	101	.1	19	17	485	5.34	79	5	ND	5	13	1	2	2	67	.68	.054	14	10	.87	33	.15	2	1.71	.04	.19	1	10
KDS-87-073 P	1	17	15	59	.1	12	6	229	2.33	14	5	ND	9	11	1	2	2	15	.17	.019	22	11	.39	43	.08	3	.92	.02	.23	2	5
KDS-87-074 P	1	74	63	265	.1	27	18	582	5.11	51	5	ND	7	12	1	2	3	41	.42	.034	23	23	.87	49	.11	2	1.75	.02	.22	7	30
STD C#	18	56	34	122	6.7	63	27	847	3.89	34	13	7	36	45	17	15	24	49	.47	.079	35	54	.88	158	.07	32	1.85	.06	.10	13	-
KDS-87-075 P	1	20	25	64	.1	14	8	315	2.91	59	5	ND	7	10	1	3	2	21	.33	.019	17	25	.50	44	.07	2	1.25	.02	.23	1	10

SAMPLE#	MO PPM	CU PPM	PB PPM	ZN PPM	AG PPM	NI PPM	CO PPM	MN PPM	FE %	AS PPM	U PPM	AU PPM	TH PPM	SR PPM	CD PPM	SB PPM	BI PPM	V PPM	CA %	P %	LA PPM	CR PPM	MG %	BA PPM	TI %	B PPM	AL %	NA %	K %	W PPM	AU# PPB	HG PPB
KDS-87-76	1	52	27	100	.1	20	12	479	3.39	16	5	ND	8	14	1	2	3	28	.30	.030	48	24	.62	62	.12	5	2.01	.01	.27	1	2	40
KDS-87-79	1	41	36	111	.1	23	24	1235	2.87	10	5	ND	1	26	1	2	4	22	.60	.096	89	26	.61	53	.07	2	2.02	.01	.19	1	1	60
KDS-87-81	1	32	29	109	.1	20	15	862	2.93	10	5	ND	3	24	1	2	3	26	.47	.063	49	24	.58	62	.09	2	1.73	.01	.19	1	1	40
KDS-87-82	1	21	15	99	.1	13	9	466	2.81	7	5	ND	10	8	1	2	2	19	.17	.019	20	20	.63	52	.13	9	1.17	.01	.34	1	1	5
KDS-87-84	1	21	15	134	.1	14	12	506	2.67	14	5	ND	4	16	1	2	2	21	.51	.072	25	16	.53	55	.12	2	1.49	.02	.20	1	1	30
KDS-87-85	1	25	20	95	.1	14	9	428	2.99	12	5	ND	13	12	1	2	2	21	.24	.026	25	17	.64	138	.12	8	1.35	.02	.38	1	1	20
KDS-87-86	1	13	19	62	.1	7	5	228	1.86	17	5	ND	6	11	1	3	2	15	.31	.018	15	14	.39	29	.08	2	.92	.01	.20	1	1	10
KDS-87-87	1	18	20	58	.1	13	7	319	2.51	13	5	ND	12	9	1	2	2	20	.24	.020	20	15	.54	39	.10	2	1.12	.02	.31	1	2	5

Esso Minerals Canada, 1987 **Geochemical Results** **ROCK** **St. Mary Claims**

SAMPLE#	MO PPM	CU PPM	PB PPM	ZN PPM	AG PPM	NI PPM	CO PPM	MN PPM	FE %	AS PPM	U PPM	AU PPM	TH PPM	SR PPM	CD PPM	SB PPM	I PPM	V PPM	CA %	P %	LA PPM	CR PPM	MG %	BA PPM	TI %	B PPM	AL %	NA %	K %	W PPM	PB %	ZN %	OZ/T	AU OZ/T	HG PPB
KDR-87-001	5	8823	15	159	2.5	381	243	183	14.08	5	5	ND	2	3	2	6	27	22	.31	.001	2	9	.27	2	.05	26	.31	.03	.03	5	.01	.02	.10	.083	5
KDR-87-007	2	20	2	66	.4	40	16	719	4.01	52	5	ND	2	11	1	2	2	56	.56	.031	3	109	3.86	8	.01	3	2.56	.01	.05	4	.01	.01	.01	.001	20
KDR-87-009	5	525	25	12	.5	50	183	1355	15.20	314	5	ND	1	32	2	2	2	7	15.48	.003	2	7	.05	1	.01	16	.01	.01	.03	2	.01	.01	.06	.003	5
KDR-87-010	5	385	4	11	.3	7	46	324	14.51	151	5	ND	5	6	1	2	2	10	1.55	.008	2	8	.05	17	.08	13	.16	.01	.14	2	.01	.01	.02	.004	5
KDR-87-011	5	1146	30	18	.6	45	225	381	12.31	367	5	ND	9	9	1	2	2	11	3.29	.011	10	16	.37	11	.06	16	.60	.01	.30	2	.01	.01	.02	.002	5
KDR-87-039	3	29	36	127	.2	21	7	272	2.65	5	6	ND	13	5	1	2	2	5	.29	.029	8	8	.61	64	.08	5	.72	.02	.51	2	.01	.01	.01	.001	5
KDR-87-041	4	42	18	56	.2	13	6	230	2.18	4	5	ND	13	8	1	2	2	21	.28	.020	8	18	.62	65	.14	6	.80	.03	.35	1	.01	.01	.01	.001	5
KDR-87-043	3	33	43	151	.1	11	7	197	2.44	2	5	ND	13	5	1	2	2	9	.11	.023	12	11	.71	68	.09	2	.95	.02	.64	2	.01	.01	.01	.001	5
KDR-87-044	3	26	59	151	.2	21	7	408	2.73	14	5	ND	13	6	1	3	2	10	.21	.025	17	13	.77	67	.13	2	1.10	.02	.65	1	.01	.01	.01	.001	5
KDR-87-048	2	33	44	223	.2	22	9	350	2.56	5	7	ND	19	2	1	2	2	8	.14	.043	29	10	.38	51	.08	2	.93	.01	.44	2	.01	.02	.01	.001	5
KDR-87-049	2	29	8	43	.1	9	9	812	3.10	11	5	ND	1	59	1	2	2	15	4.42	.006	2	6	.53	6	.01	8	.35	.01	.09	1	.01	.01	.01	.001	5
KDR-87-050	3	15	24551	265	28.1	1	1	39	.46	104	5	ND	1	1	3	31	5	1	.01	.001	2	1	.01	1	.01	2	.01	.01	.01	1	2.98	.02	.82	.001	10
KDR-87-051	8	1227	38591	3070	54.8	9	83	90	22.54	652	5	ND	2	1	12	19	33	5	.04	.001	2	5	.02	1	.01	30	.01	.01	.02	12	4.48	.36	1.64	.001	20
KDR-87-053	2	34	390	60	.4	9	4	242	2.16	6	5	ND	17	3	1	2	2	8	.07	.020	25	11	.32	64	.14	3	1.01	.02	.63	1	.03	.01	.01	.001	10
KDR-87-054	9	11	284	47	2.2	32	10	53	3.08	12418	5	ND	4	31	1	2	2	1	.01	.004	6	3	.01	36	.01	8	.20	.01	.07	1	.02	.01	.06	.003	5
KDR-87-055	5	52	189	95	.3	81	18	736	4.91	344	5	ND	18	7	2	3	2	2	.02	.022	37	10	.07	27	.01	15	.65	.01	.15	2	.02	.01	.01	.001	110
KDR-87-062	3	31	43	42	.3	7	2	280	2.66	61	5	ND	11	27	1	2	2	25	.26	.033	24	27	1.06	60	.20	2	1.35	.04	.73	2	.01	.01	.01	.001	5
KDR-87-063	4	27	33	50	.1	15	10	312	2.75	8	5	ND	12	9	1	5	2	13	.17	.034	44	15	.96	38	.17	2	1.15	.02	.66	1	.01	.01	.01	.001	5
KDR-87-065	4	195	21	555	.1	13	9	710	5.77	15	8	ND	10	3	5	4	6	31	.09	.016	14	32	1.00	62	.18	7	1.97	.03	.75	2	.01	.06	.01	.002	5
KDR-87-069	3	10	89	149	.1	13	7	498	2.83	17	5	ND	11	7	1	2	2	24	.26	.047	19	22	.51	55	.13	9	1.06	.04	.46	1	.01	.01	.01	.001	20
KDR-87-070	3	33	52	175	.2	13	8	423	2.86	12	5	ND	12	13	1	2	2	18	.36	.019	20	24	.75	57	.17	4	1.11	.02	.37	1	.01	.02	.01	.002	5

SAMPLE#	MO PPM	CU PPM	PB PPM	ZN PPM	AG PPM	NI PPM	CO PPM	MN PPM	FE %	AS PPM	U PPM	AU PPM	TH PPM	SR PPM	CD PPM	SB PPM	BI PPM	V PPM	CA %	P %	LA PPM	CR PPM	MG %	BA PPM	TI %	B PPM	AL %	NA %	K %	W PPM	HG PPB
KDR-87-004	2	233	3	39	.2	9	23	472	4.41	2	5	ND	3	11	1	2	3	167	1.84	.033	5	2	.91	25	.30	3	1.78	.18	.18	1	5
KDR-87-040	4	29	144	109	.1	11	5	234	2.57	3	5	ND	14	5	1	2	2	10	.18	.026	14	11	.57	99	.17	4	1.02	.03	.62	1	5
KDR-87-042	3	40	42	149	.2	189	27	686	4.94	6	5	ND	7	235	1	2	2	112	2.31	.423	28	504	4.48	1363	.25	2	3.56	.04	3.32	4	5
KDR-87-045	4	59	168	118	1.0	17	13	530	4.91	12	5	ND	12	15	1	2	4	20	.72	.026	19	22	.91	99	.17	4	1.34	.04	.79	1	5
KDR-87-046	4	24	45	39	.1	17	11	291	2.92	7	5	ND	13	20	1	2	2	9	.60	.030	8	14	1.21	69	.03	2	1.32	.02	.56	1	5
KDR-87-047	3	22	87	194	.3	11	5	440	2.78	4	5	ND	13	8	1	2	2	13	.28	.027	20	15	.85	78	.13	2	1.28	.03	.64	1	10
KDR-87-052	2	11	10	23	.1	8	5	1329	2.08	8	5	ND	7	13	1	2	2	4	.20	.028	18	7	.15	52	.01	2	.50	.03	.26	1	5
KDR-87-056	2	41	9	28	.1	7	3	131	2.70	2	5	ND	11	15	1	2	2	16	.31	.026	23	19	.78	53	.13	3	1.02	.03	.47	1	5
KDR-87-058	1	6	2	2	.1	1	1	75	.31	5	5	ND	1	2	1	2	3	1	.11	.036	2	1	.01	2	.01	2	.28	.04	.14	1	5
KDR-87-060	5	38	36	69	.1	14	6	212	3.34	7	5	ND	12	7	1	2	3	29	.23	.033	29	26	1.22	56	.19	3	1.43	.03	.75	1	5
KDR-87-061	1	8	2	5	.1	3	1	57	.37	2	5	ND	1	2	1	2	2	1	.05	.011	2	2	.01	4	.01	2	.32	.04	.14	1	5
KDR-87-064	4	50	77	50	.2	23	11	345	4.25	2	5	ND	14	8	1	2	2	38	.23	.033	43	35	1.12	40	.21	5	1.23	.03	.61	1	10
KDR-87-070A	1	13	5	13	.1	5	2	139	1.34	2	5	ND	10	3	1	2	2	7	.06	.013	16	12	.12	44	.05	2	.53	.04	.15	1	5
KDR-87-005	1	45	5	23	.1	27	12	246	4.40	8	5	ND	16	3	1	2	2	20	.16	.028	12	22	.85	120	.18	2	1.37	.03	.99	2	5

SAMPLE	Pb %	Zn %	Ag oz/t	Au oz/t	Pt oz/t	Pd oz/t
KDR-87-005	.01	.01	.01	.001	.001	.001

SAMPLE#	MO PPM	CU PPM	PB PPM	ZN PPM	AG PPM	NI PPM	CO PPM	MN PPM	FE %	AS PPM	U PPM	AU PPM	TH PPM	SR PPM	CD PPM	SB PPM	BI PPM	V PPM	CA %	P %	LA PPM	CR PPM	MG %	BA PPM	TI %	B PPM	AL %	NA %	K %	W PPM	PT** PPB	PD** PPB
KDR-87-003	1	89	2	34	.3	31	21	327	4.68	12	5	ND	3	7	1	2	2	128	1.36	.089	5	4	.87	42	.26	4	1.49	.10	.30	1	2	2
KDR-87-006	1	93	2	21	.2	35	10	183	1.58	10	5	ND	1	15	1	2	2	33	.69	.024	2	11	.63	5	.12	3	1.07	.07	.02	1	39	30
KDR-87-012	1	313	4	39	.4	45	36	290	3.01	11	5	ND	2	9	1	2	2	47	.85	.025	4	15	.87	13	.16	5	1.16	.05	.06	1	2	2

APPENDIX II

ELECTROMAGNETIC SURVEY

M E M O R A N D U M **ESSO MINERALS CANADA**

File: MA20.C.100
January 28, 1988

TO: J.L. MacLeod

FROM: Z. Doborzynski

SUBJECT: **GENIE SURVEY ON THE ST. MARY PROPERTY**

A reconnaissance moving-source GENIE survey was carried out in July, 1987 along a new road put in just south of St. Mary Lake (see map). The target was the conglomerate marker horizon within the Middle Aldridge. Three line kilometers of road were surveyed.

METHOD:

HLEM:

The Scintrex SE88 GENIE EM system uses a portable transmitter consisting of two transmitting coils and power supply and a receiver with signal detection electronics. The transmitter and receiver coils are normally maintained in the vertical axis co-planar mode, commonly referred to as the horizontal loop mode.

The transmitter simultaneously generates two alternating magnetic fields - one referred to as the "signal frequency" and the other as the "reference frequency". The resultant electromagnetic fields set up in the ground are detected by the receiver coil located at a fixed distance from the transmitter. The receiver measures the received "signal frequency" amplitude, Hs, and the received "reference frequency" amplitude, Hr. The value of (Hs/Hr-1) x 100 (referred to as "Ratio") is digitally displayed on the receiver.

The survey plotting point is considered to be at the mid-point of the transmitter-receiver separation which for this survey was 50 m. In non-anomalous areas only the 3037.5/112.5 Hz ratio was measured while in anomalous areas both the 1012.5/112.5 and 337.5/112.5 frequency ratios were also read. Measurements were taken at 25 m intervals.

PRESENTATION:

The data is presented in profile form (see attached map) in three strips, each 1 km in length. The map scale is 1:2500 and the profile is plotted at a scale of 1 cm = 2.5%.

RESULTS:

Only one anomaly has been detected on this line at 5885~~E~~W. It is a very weak, near surface anomaly that dips steeply 60-75 degrees to the west. This response is anomalous because the lowest frequency ratio (337/112 Hz) is significantly stronger than the 1012/112 ratio which may indicate that the lower frequencies are penetrating deeper and detecting much more conductive material at depth. This anomaly correlates with the east side of a 20 m wide horizon of Middle Aldridge conglomerates similar to that hosting the Sullivan deposit.

CONCLUSIONS:

The area between 5700~~E~~W and 6200~~E~~W should be detailed with lines both to the north and south of the 'road line' to trace this conductor. There is an indication the response improves with depth, consequently, a receiver-transmitter separation of at least 100 m should be used in this survey.

Z. Doborzynski /per pvz

Z. Doborzynski

/pvz
184.B

Attach.

APPENDIX III

STATEMENT OF EXPENDITURES

ST. MARY PROSPECT

STATEMENT OF EXPENDITURES

WAGES

J. MacLeod @ $325/day; July 1,2 (2 days)	$ 650.00	
K. Dom @ $135/day; June 31-July 9, Sept, Nov. (15¼ days)	$2,059.00	
C. Sywulsky @ $115/day; July 4-11 (4 3/4 days)	$ 546.00	
Total Wages		$3,255.00

FOOD AND ACCOMMODATION

K. Dom, June 31-July 9; 7¼ days @ $25/day/room, $17.75 meals/day	$ 310.00	
J. MacLeod, July 1,2; 2 days @ $25/day/room, $17.75 meals/day	$ 85.00	
S. Lowe, July 1,2; 2 days @ $25/day, $17.75 meals/day	$ 85.00	
Total		$ 480.00

TRANSPORTATION

Air Travel, Vancouver-Cranbrook-Return

2 @ $314.20 x .7	$ 440.00	
1 @ $314.20	$ 314.20	
2 Taxis @ $50.00 x .7	$ 70.00	
1 Taxi @ $50.00	$ 50.00	
Truck Rental - 268.5 x .7	$ 187.95	
Fuel - 183.63 x .7	$ 128.54	
Total		$1,190.69

GEOCHEMICAL SURVEY

Sample Preparation		
29 silts @ 0.75	$ 21.75	
23 rocks @ 3.00	$ 69.00	
Freight	$ 211.00	
Field Supplies	$ 44.00	
Reproduction and Office Supplies	$ 96.00	
Analysis		
4 rocks, 30 ele ICP+Au+Hg @ 12.50	$ 50.00	
12 rocks, 30 ICP + oz Au + oz Ag + Hg @ 21.75	$ 261.00	
6 rocks, 30 ICP + Hg @ 8.25	$ 49.50	
1 rock, 30 ICP + P.G.M. @ 16.00	$ 16.00	
21 silts, 30 ICP+Au+Hg @ 12.50	$ 262.50	
8 silts, 30 ICP + Hg @ 8.25	$ 66.00	
Total		$1,146.75

GEOPHYSICAL SURVEY

E.M. Survey, 2 days by Quest Canada Exploration	$ 540.00	
Equipment Rental	$ 400.00	
Supervision 0.5 days @ $325/day	$ 162.50	
Total		$1,102.50
Sub-Total		$7,174.94
Overhead (10%)		$ 717.50
TOTAL EXPENDITURES		$7,892.00

November 20, 1987

J.L. MacLeod
Sr. Project Geologist

/pvz
690.B

APPENDIX IV

STATEMENT OF QUALIFICATIONS

STATEMENT OF QUALIFICATIONS

I, Keenan Dom, of 404 - 1705 West 10th Avenue, Vancouver, B.C. hereby certify that:

I graduated from the University of British Columbia in 1986 with a B.Sc. degree in Geological Sciences;

I have practiced my profession in B.C. for the past two years as an employee of Esso Minerals Canada;

The work described herein was conducted under my supervision.

I have no financial interest in the property described herein.

February 17, 1988

Keenan Dom
Project Geologist

ESSO MINERALS CANADA

(A DIVISION OF ESSO RESOURCES CANADA LIMITED)

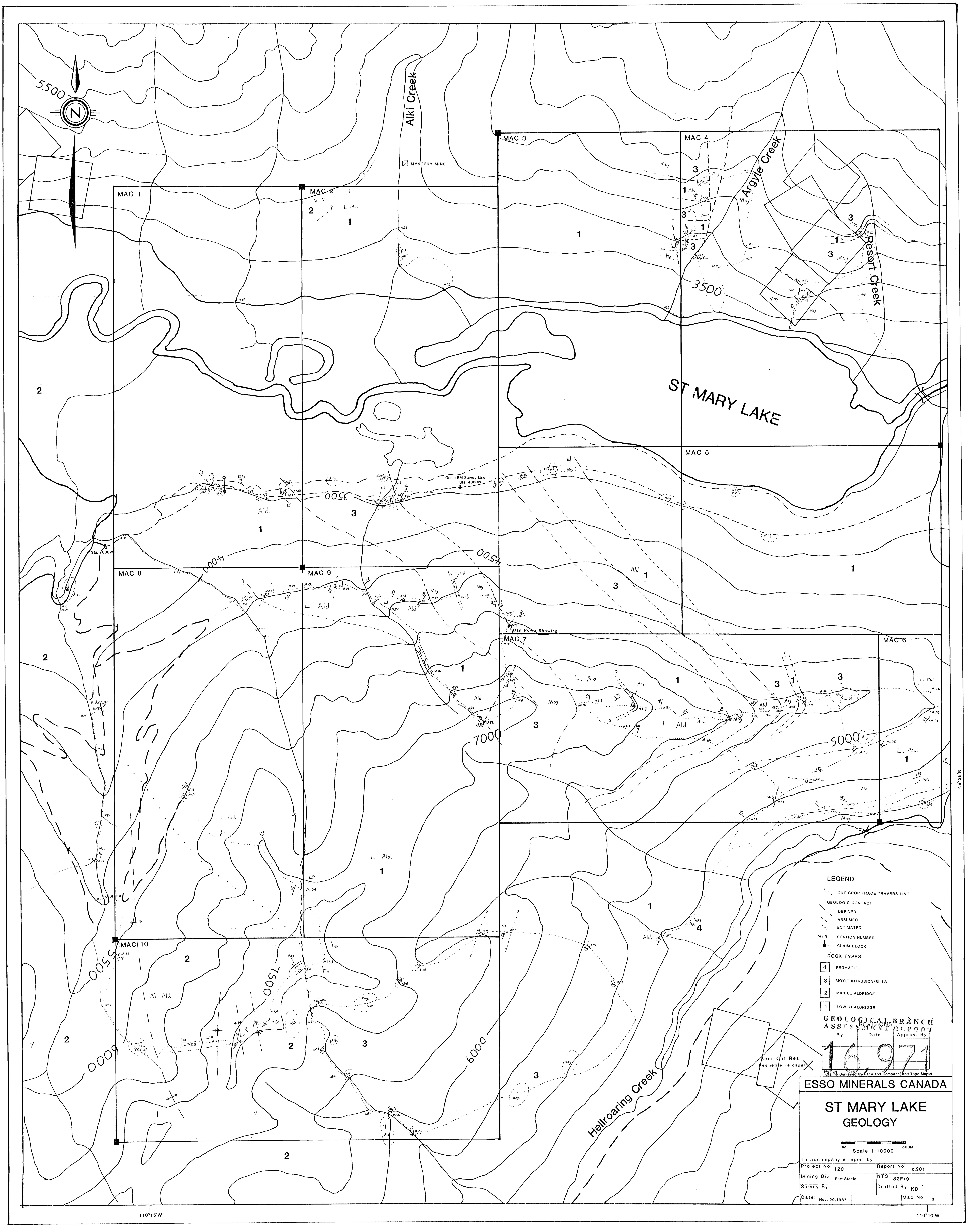
Mr. Keenan Dom has worked in mineral exploration for the past two years as an employee of Esso Minerals Canada.

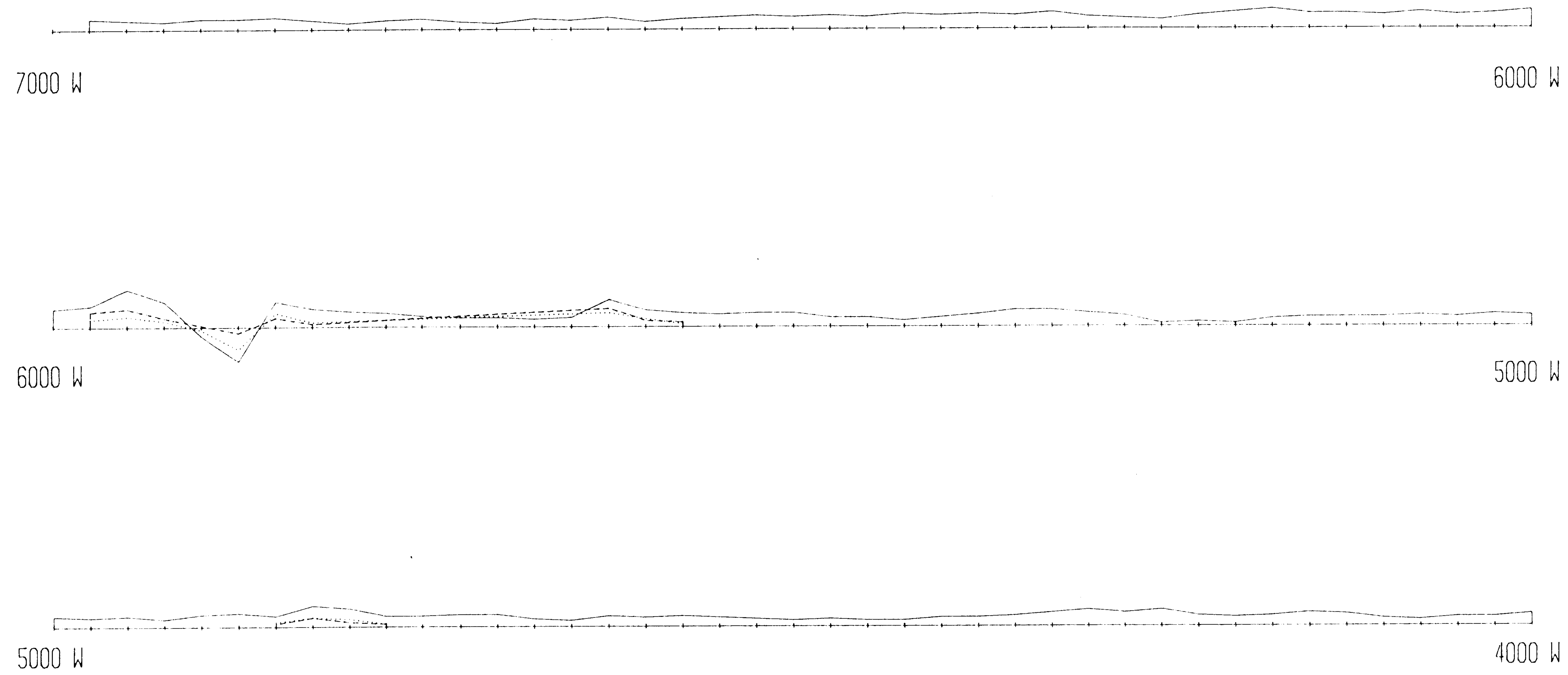
The work described herein was carried out under my supervision.

I consider him qualified to prepare this report.

John L. MacLeod
Senior Project Geologist

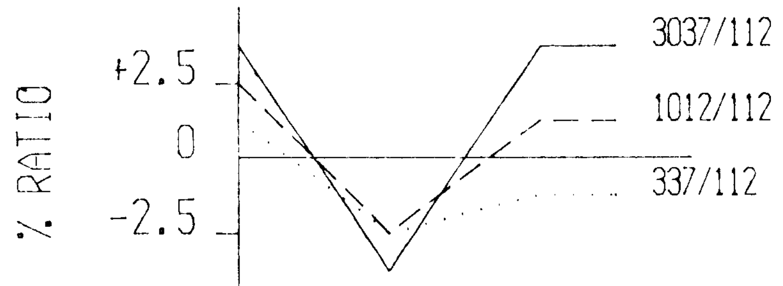
February 17, 1988


5500
N
Alki Creek
MYSTERY MINE
MAC 1
MAC 2
MAC 3
MAC 4
MAC 5
MAC 6
MAC 7
MAC 8
MAC 9
MAC 10
Argyle Creek
Resort Creek
3500
ST MARY LAKE
Genie EM Survey Line Sta. 4000W
Sta. 7000W
4000
4500
Dan Howe Showing
5000
7000
7500
6000
5500
L. Ald.
M. Ald.
Moy
Hellroaring Creek
Bear Cat Res.
Pegmetite Feldspar
49°36'N
116°15'W
116°10'W
LEGEND
OUT CROP TRACE TRAVERS LINE
GEOLOGIC CONTACT
DEFINED
ASSUMED
ESTIMATED
M119 STATION NUMBER
CLAIM BLOCK
ROCK TYPES
4 PEGMATITE
3 MOYIE INTRUSION/SILLS
2 MIDDLE ALDRIDGE
1 LOWER ALDRIDGE
GEOLOGICAL BRANCH
ASSESSMENT REPORT
16,971
REVISIONS
By
Date
Approv. By
Claims Surveyed by Pace and Compass, and Topo Maps
ESSO MINERALS CANADA
ST MARY LAKE
GEOLOGY
0M
500M
Scale 1:10000
To accompany a report by
Project No: 120
Report No: c.901
Mining Div: Fort Steele
NTS: 82F/9
Survey By:
Drafted By: KD
Date: Nov. 20,1987
Map No: 3



* NOTE: Single continuous recon line starting on road at 7km. signpost and surveyed East to 4km. signpost.

Tx to Rx distance = 50 m.



SCALE 1:2500

0 50 100 150 200 meters

ESSO MINERALS CANADA

ST. MARY PROPERTY

SE-88 GENIE-EM

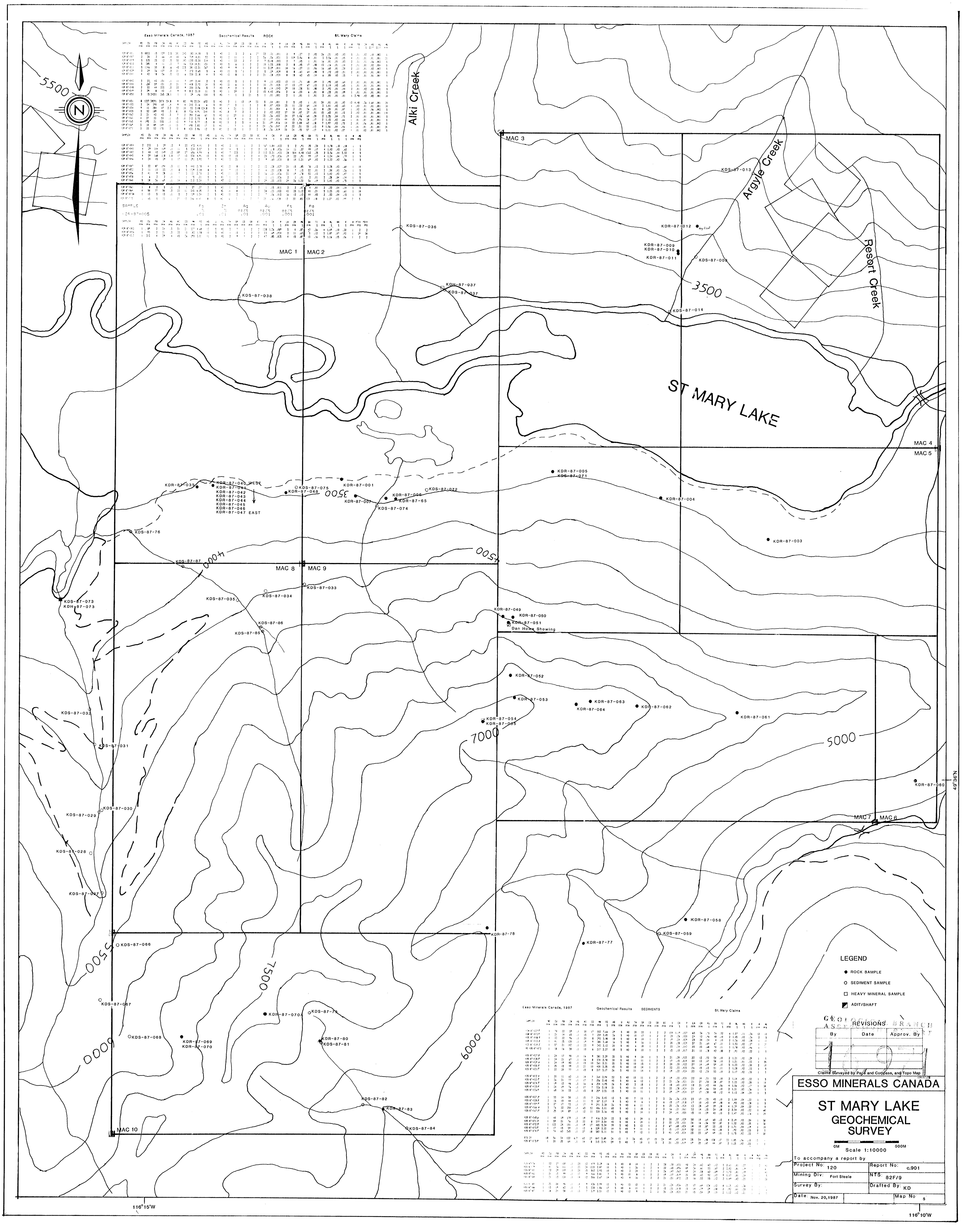
PROFILE MAP

To accompany a report by J.M. & Z.D.

Project No: M120	Report No: c.901
Mining Div: Ft. Steele	N.T.S.: 82F/9
Survey By: S.L.	Drafted By: S.L
Date: Oct. 1987	Map No: 6

REVISIONS

By	Date	Approv.By


Esso Minerals Canada, 1987
Geochemical Results ROCK
St. Mary Claims
Alki Creek
Argyle Creek
Resort Creek
ST MARY LAKE
MAC 1
MAC 2
MAC 3
MAC 4
MAC 5
MAC 6
MAC 7
MAC 8
MAC 9
MAC 10
KDS-87-036
KDS-87-038
KDH-87-037
KDS-87-037
KDR-87-012
KDR-87-009
KDR-87-010
KDR-87-011
KDS-87-008
KDS-87-013
KDS-87-014
KDR-87-005
KDS-87-071
KDR-87-004
KDR-87-003
KDR-87-039
KDR-87-040 WEST
KDR-87-047 EAST
KDS-87-075
KDS-87-048
KDR-87-001
KDR-87-002
KDR-87-006
KDR-87-65
KDS-87-074
KDS-87-072
KDS-87-76
KDS-87-87
KDS-87-073
KDH-87-073
KDS-87-033
KDS-87-034
KDS-87-035
KDS-87-86
KDS-87-85
KDR-87-049
KDR-87-050
KDR-87-051
Dan Howe Showing
KDR-87-052
KDR-87-053
KDR-87-054
KDR-87-063
KDR-87-064
KDR-87-062
KDR-87-061
KDR-87-060
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KDS-87-027
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KDS-87-067
KDS-87-068
KDR-87-069
KDR-87-070
KDR-87-070
KDS-87-79
KDR-87-80
KDS-87-81
KDS-87-82
KDR-87-83
KDS-87-84
3500
4000
4500
5000
5500
6000
7000
7500
49°36'N
116°15'W
116°10'W
Esso Minerals Canada, 1987
Geochemical Results SEDIMENTS
St. Mary Claims
LEGEND
ROCK SAMPLE
SEDIMENT SAMPLE
HEAVY MINERAL SAMPLE
ADIT/SHAFT
REVISIONS
By
Date
Approv. By
Claims Surveyed by Pace and Compass, and Topo Map
ESSO MINERALS CANADA
ST MARY LAKE
GEOCHEMICAL
SURVEY
0M
500M
Scale 1:10000
To accompany a report by
Project No: 120
Report No: c.901
Mining Div: Fort Steele
NTS: 82F/9
Survey By:
Drafted By: KD
Date: Nov. 20,1987
Map No 5