104-P

Geological, Geochemical and Geophysical Report

KIRK CLAIM GROUP
McDame Creek Area, NE. B.C.

metals, petroleum & hydraulic resources *consulting limited*
SUITE 907, 100 ADELAIDE ST. W., TORONTO 1, ONT./(416) 362-1265

GEOLOGICAL, GEOCHEMICAL AND GEOPHYSICAL REPORT

K I R K C L A I M G R O U P

McDame Creek Area, NE. British Columbia
(18 miles south of McDame Post, 123M, 59°N-128°W)

for

W. S. Kennedy, 409-25 Wellington Street W.
Toronto 1, Ontario

Toronto, Ontario.
March 1, 1968.

E. D. Black
Consulting Geologist

Bob Kerr 782-5201
Phone

I N D E X

APPENDICES

MAPS SHOWING -

SUMMARY

The Kirk prospect comprises a group of 56 mining claims in the Cassiar Mountains of Northeastern B.C.

The property is located approximately 100 miles from Watson Lake, Y.T., and is accessible either by road and tote trail from the Watson Lake-Cassiar highway or by light fixed-wing aircraft or helicopter from Watson Lake.

Five copper-zinc-silver showings lie within an area of approximately 3,000 feet square, 1,000 feet from a rough gravel airstrip bulldozed out of the bush at the end of the access road. The mineralization comprises varying amounts of pyrite, chalcopyrite and sphalerite, with minor galena and malachite. Generally it occurs as steeply dipping silicified and carbonitized shears in volcanic rocks of Devonian or Mississipian Age.

The best mineralization zone assayed 0.79% copper, 4.28% zinc and 1.30 ounces of silver over a true thickness of 21 feet. Fifteen feet up dip and twenty feet along strike the same zone ran 1.30% copper, 5.50% zinc and 1.44 ounces of silver over a true thickness of 10 feet. Rapid thickening of the mineralization zone with depth, without any appreciable grade change, offers good possibilities for a sizeable zone of potential ore. Nearby mineralization zones of smaller dimensions, but equivalent or better grades, offer good exploration targets as well.

Geochemical and geophysical (E.M.) surveys carried out in October and November of 1967 demonstrated the expression of a mineralized zone, beneath the overburden, continuing southeastward from the main outcrop showing for a strike length of 900 feet. The width and tenure of this indicated mineralization is not known. Drilling and trenching will be required to evaluate the zone as a whole.

A winter exploration programme involving 1,500 feet of diamond drilling is recommended.

Total estimated cost of the recommended exploration programme for the Kirk prospect is $47,300.00. Cost of Stage I completed to date is $5,857.80 leaving an estimated $41,442.20 for Stage II.

RECOMMENDED EXPLORATION PROGRAMME
and
COST ESTIMATES

A two-staged exploration programme was envisaged for this property. The initial stage, which was completed in November, included a reconnaissance geochemical survey picked up overburden covered mineralization zones and roughly outlined buried extensions of the known showings. Follow-up work with a detailed E.M. survey served as a means of delimiting indicated mineralization.

The second stage includes a 1,500 foot wireline diamond drilling programme to be carried out in the winter months.

Contingent upon successful results in the drilling, work in the property would be staged up into a major development programme in preparation for production, at which time major financing would be required.

COST ESTIMATES

STAGE I (completed)

Geochemical Survey	$ 2,000.00
Geophysical E. M. Survey	2,000.00
Field Support - estimated	1,500.00
Administration, Fees, Reports, etc.	1,500.00
	7,000.00
Contingency 10%	700.00
	$ 7,700.00

COST ESTIMATES

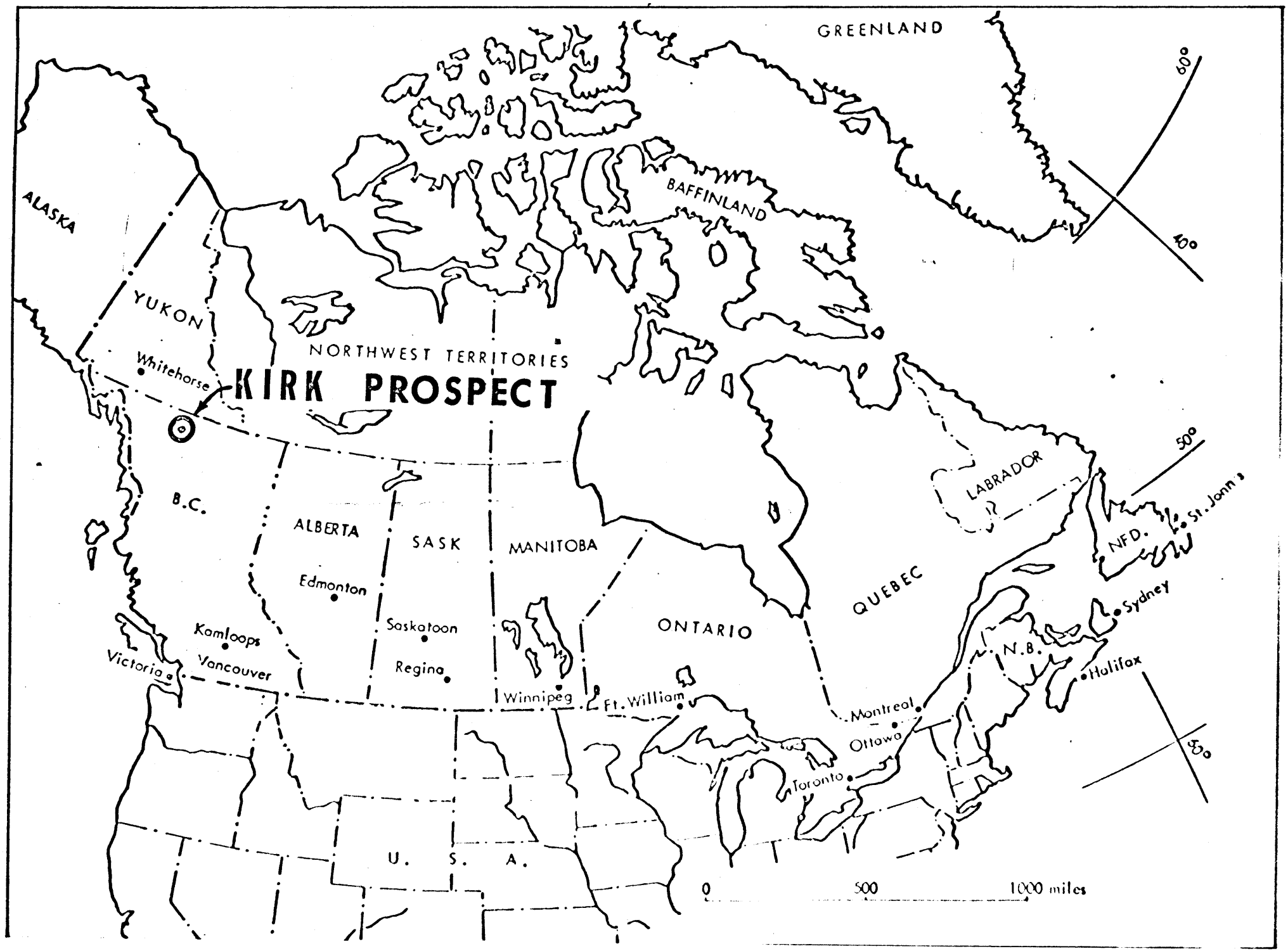
STAGE II

Surface Diamond Drilling & Support- (Wireline) 1,500 ft. @ $15.00	$ 22,500.00
Bulldozer Trenching, Road & Airstrip Work D-6 Cat. 200 hrs. @ $20.00	4,000.00
Field Support - including flying (est'd)	5,000.00
Administration, Assaying, Fees, etc.	4,500.00
	36,000.00
Contingency 10% (approx.)	3,600.00
	$ 39,600.00

TOTAL ESTIMATED EXPLORATION PROGRAMME COST	$ 47,300.00

Toronto, Ontario
March 1, 1968.

E. D. Black, M.Sc.


GREENLAND
BAFFINLAND
ALASKA
YUKON
NORTHWEST TERRITORIES
KIRK PROSPECT
Whitehorse
B.C.
ALBERTA
SASK
MANITOBA
ONTARIO
QUEBEC
LABRADOR
NFD.
St. John's
Edmonton
Saskatoon
Regina
Winnipeg
Ft. William
Kamloops
Victoria
Vancouver
Montreal
Ottawa
Toronto
N.B.
Sydney
Halifax
U. S. A.
60°
50°
0
500
1000 miles

INTRODUCTION

Property

The prospect comprises 56 mining claims located in the Liard Mining Division of the Province of British Columbia.

The property was staked by Robert (Bob) Kirk of Lower Post, British Columbia, and is now held jointly between Mr. Kirk and a Mr. Robert Keen of Dawson Creek, British Columbia. The claims, held in the name of North Central Mining Limited, are enumerated as follows (see Plate I):-

Kirk 1- 4 (18601/04)D	Bob 1-14 (21929/42)B
Kirk 5-10 (19728/33)B	Pete 1-14 (21947/60)D
Kirk 11-12 (21943/44)D	Tom 1-14 (21961/74)D
Kirk 13-14 (21945/46)D	

Location

The Keen prospect is situated near the forks of Nizi Creek and Fourmile River, eighteen tote-road miles south of McDame Post. The latter being four miles south of the Cassiar Road at a point along the road approximately 100 miles from Watson Lake.

Access

The claim group can be reached by road or air from Watson Lake.

The last eighteen miles of road is only a bulldozed tote-trail and a four-wheel drive vehicle is needed to reach the property. There is no bridge across the Dease River, however the river can be crossed on an ice bridge in the winter or forded during the low water period in the fall and early winter.

A rough 100 foot by 1,200 foot landing strip has been bulldozed out of the bush at the end of the tote trail, approximately 1,000 feet from the prospect. This strip is rough and narrow and is only marginally safe for landings with a light wheel-equipped aircraft.

Resources

The area is well forested with a fairly mature stand of pine and aspin, some of which could be useful for construction, mine timbering and fuel.

Gravel is abundant in the valley near the showing, however this material is generally coarse and bouldery near the deposit. Except for the occasional boulder-bed, road building from the Cassiar-Watson Lake road would not be difficult.

No hydroelectric power is available in the area and mine development would have to rely on a diesel plant as a source of electric power.

A liberal supply of water is available from nearby streams such as Nizi and Fourmile Creek. The density of the local vegetative cover indicates that the rainfall is plentiful and, as a consequence, the creeks probably run for 6 to 9 months of the year. A small pond-lake lies within 1,500 feet of the airstrip and 900 feet from the main mineralized showing. This pond would be an ideal source of water for drilling and hydraulicing as it lies at a higher elevation than the terrain surrounding the main showings.

Work Completed & Related Cost Statement

Technical work on the property carried out in 1967 and 1968 by the exploration staff of Metals, Petroleum and Hydraulic Resources Consulting Limited totals 73 man-days.

The breakdown of this work is as follows:-

Phase	Individual	Dates From	Dates To	Man-Days	Total Fees and Expenditures
Property Examin. & Recon. Geology	E.D. Black	July 20	28	7	1,397.36
Geochemical Survey	G.R. Ferrill	Oct.29	Nov. 1	4	
	G.W. Goodyear	Oct.16	Oct.28	13	
	A. Mercer	Oct.16	Oct.28	13	2,294.49
Geophysical Survey	G.R. Ferrill	Nov. 2	Nov. 8	7	
	G.W. Goodyear	Oct.29	Nov. 8	11	
	E.D. Black	Oct.16	Nov. 8	3	1,945.95
Supervision, Admin. & Reports	G.R. Ferrill	Nov. 9	Nov.12	4	
	G.W. Goodyear	Nov. 9	Nov.12	4	
	E.D. Black	Nov.12	Mar. 1	3	
Drafting and Misc.				4	220.00
	TOTAL OF FEES & EXPENDITURES				$5,857.80

This statement is certified correct -

Ian C. Campbell C.A.

Ian C. Campbell

G E O L O G Y

General Settings

According to the regional geological picture described by geologists of the Geological Survey of Canada, the Kirk prospect lies within an area generally considered to be underlain by sedimentary and volcanic rocks of Upper Devonian or Mississipian age. These host rocks flank the younger intrusive granitic rocks of the Cassiar Batholith along its eastern margin and mark the front of the Cassiar Mountain range.

Local Geology

Locally, the showings occupy strong parallel to subparallel shears in volcanic rocks within a mile or two of the eastern contact between the Cassiar granite and the intruded sedimentary and volcanic sequence.

The shears comprise irregular to tabular, silicified or carbonatized dyke-like bodies. Their trend is generally northwest southeastward with steep northerly to near vertical dips.

Five separate mineralized outcrops occur within a radius of 3,200 feet. These are illustrated on the attached sketch map (Plate 2) which shows the relative locations, attitudes and points of samling.

The mineralization is variable from one zone to another but comprises essentially a mixture of the sulphides of copper, lead, zinc and iron.

Pyrite, chalcopyrite and sphalerite predominate; galena is present but generally scarce. Considerable malachite surface staining is also visible in places. Both the sphalerite and galena are almost entirely missing in several of the mineralization zones, particularly in the silicified shears.

Description of Mineralization

Showing #1

A very strong mineralized shear zone in carbonitized andesite. Sulphides occur across the full width of the shear in varying

amounts, from as little as 5-10% to as much as 50% by volume of the mineralized rock.

The exposure is well displayed on the face of a steep outcrop bluff 30-50 feet high. The vertical exposure being measured from the bulldozed road at the base of the outcrop face to the bush and overburden cover at the crest of the rock ledge.

Considerable overburden and some sloughed-in spoil banks on the side of the road-cut cover most of the exposure area at the base of the outcrop slope. Fifteen feet up-slope, however, a good view of the mineralization is available and at this point a continuous sample was obtained over a measured 30 foot width (21 feet in true thickness). The 30 foot width would be a minimum since the footwall was covered by overburden and the full width was not observed or sampled. Assays across this 30 foot section (Sample #1) ran 0.79% Cu, 0.22% Pb, 4.28% Zn, 1.30 oz/ton Ag and a trace of gold.

Up slope another 15 feet the zone narrows to 10 feet in true thickness. Here a sample taken across a measured 12 foot width (Sample #2) contained 1.30% Cu, 0.34% Pb, 5.50% Zn and 1.44 ounces Ag - no gold was detected in this sample.

A further 10-15 feet up the slope the zone is erratically exposed at the edge of the soil and tree cover. No meaningful sample could be recovered from this point of final exposure.

Bob Kirk stated that the mineralization zone widened rapidly to 60 feet or more at its lowest point, i.e. where the bulldozer had made the road-cut. While this could not be confirmed, there is strong evidence of a rapid downward widening of the mineralized zone. This pyramiding effect of the mineralized zone is well supported by the increase in width between samples #1 and #2. Also, it seems reasonably evident from the width of the visible sulphide bearing debris in the road-cut that the zone is wider at the road level (the lowest point) than it is 15 feet up the face, i.e. at the point where sample #1 was taken.

Showing #2

At a point approximately 200 feet south of Showing #1 a narrower mineralized shear, roughly parallel to Showing #1, lies exposed along the same outcrop face. This is a silicified steeply dipping dyke in the same volcanic rocks. It differs from Showing

#1 in that it contains a preponderance of pyrite and chalcopyrite as the main sulphide minerals.

The best and widest exposure of this zone is in the bulldozed road-cut at the base of the slope. Here, a measured five-foot width was sampled. Assay results gave the following contained metals:-

Copper	-	0.94%
Lead	-	0.12%
Zinc	-	0.96%
Silver	-	2.14 ounces
Gold	-	Nil

The #2 shear zone also shows signs of narrowing eastward along strike and upward in the direction away from the dip. At the ridge top, approximately 35 feet from the road-cut exposure, the mineralization zone splits into two 2-foot shears separated by a 2 to 3 foot band of waste rock. Here again, as in the case of Showing #1 the zone appears to become wider with increasing depth and/or in the westerly strike direction.

Showing #3

Heavy sulphide mineralization occurs in a partially stripped outcrop exposure 600 feet east of Showing #1. Although Showings #1 and #3 do not appear to be directly related their alignment along the same general strike direction suggest continuity or related shearing.

The No.2 showing comprises a one-foot thick layer of massive chalcopyrite and pyrite bounded on either side by one and one-half feet of mineralized wall-rock. A rough east-west strike and steep (65°) northerly dip is apparent, but no more than 8 feet of strike length is visible because the east end is truncated by a southeast trending cross-shear and the west end disappears below the overburden cover.

Metal values in this zone were measured across a four-foot section (Sample #4) and gave the following assay results:

Copper	-	7.24%
Silver	-	2.98%
Gold	-	Nil

No lead or zinc assays were run because no noticeable amounts of

sphalerite or galena were evident in the mineralized rocks from this showing.

Showing #4

On a southwesterly facing slop of a forested hill 3,200 feet to the north of Showing #1 a small exposure of sulphide rubble and outcrop occurs some 100 feet up-slope from the end of the bull-dozer trail.

At this point, two mineralized outcrops, each approximately two feet in width, are exposed 10 feet apart on the hillside. These were taken as combined samples because of their obvious low sulphide content.

This zone resembles Showings #3 and #4, in that it is comprised of silicified volcanics containing considerable pyrite and noteable amounts of chalcopyrite. Assays for the combined four foot section of mineralization - excluding the intermediate ten-foot band of waste - contained 0.66% Cu and 0.18 ounce silver. No gold was detected.

This showing is of interest only because it lies along the same general strike trend of Showings #1 and #3 and suggests a rather extensive distribution of mineralization in the general prospect area.

TABLE I

RESUME OF SAMPLE ANALYSES

Showing No.	Sample No	Dip Angle	Width	Thickness	Cu %	Pb %	Zn %	Ag Oz/Ton	An Oz/Ton
1	1	75°	30 ft	21 ft	0.79	0.22	4.28	1.30	Tr
1	2	75°	12 ft	10 ft	1.30	0.34	5.50	1.44	Nil
2	3	60°	5 ft	5 ft	0.94	0.12	0.96	2.14	Nil
3	4	65°	4 ft	4 ft	7.24	N.A.	N.A.	2.98	Nil
4	5	90°	4 ft (two 2-ft zones)		0.66	N.A.	N.A.	0.18	Nil

Note: N.A. means not assayed.

GEOCHEMICAL SURVEY

Scope

During the last two weeks in October and first week of November 1967, a geochemical survey was carried out over the general area in the vicinity of the showings to determine the distribution of basemetals in the soils. Claims involved in this work were Kirk 1, 2, 3, 4, 5 and 6.

A total of 3,100 feet of grid line was surveyed with sampling at 50 foot intervals, 22,400 feet of line with sampling at 100-foot intervals, and 49,300 feet of line with sampling at 200-foot intervals. The approximate total area covered by this survey was 1/8th square mile, i.e. 1/4 mile by 1/2 mile.

Equipment and Technique

The geochemical method used was the standard dithizone cold extraction colorimetric technique. A Mogensen Trail Kit was used for this survey. Total heavy metal content of the soil at sample points was estimated in parts per million by color chart comparisons.

Results

Results of this survey showed a broad pattern of anomalous basemetal values in the vicinity of the showings lying to the west of Pond Lake (see Plate 4). Here, a generally anomalous area having a basemetal content in excess of 50 ppm covers a zone approximately 900 feet by 1,200 feet. Within this area of above background metal content a zone of medium intensity (100 - 150 ppm) covers an area of 800 feet by 100-500 feet. This produces an outline of what appears to be a continuous zone of mineralization from Showing #1 to Pond Lake. The trend of this zone being northwest-southeast. A series of higher values (i.e. above 150 ppm), along the same general trend, forms the central part of this anomalous zone.

A separate medium-range geochemical anomaly also occurs within the general area of above background values. This zone lies some 500 feet to the northeast of Showing #1.

To the east of Pond Lake another irregular area of low to medium range basemetal values has been outlined on the local hillside. This area measures roughly 700 feet by 200-400 feet. Also, some 400 feet to the northeast of this hillside zone, two separate medium range anomalies (100-150 ppm) trend eastward along a 1,600 foot by 200 foot zone. These two anomalous areas are each approximately 600 feet in length.

Recommendations

The geochemical survey proved to be a practical and effective method of prospecting overburden covered areas. Only six claims of the total 56 claim group were involved in this phase of the work but the method was so effective that it is recommended for the balance of the property in the adjoining claims.

GEOPHYSICAL SURVEY

Scope

To further evaluate the prospect a ground E.M. geophysical survey was conducted over the central part of the main geochemical anomaly to the west of Pond Lake, on claims - Kirk 1, 2, 3, 4, 5 and 6.

Ten traverse lines each approximately 1,200 feet long and 100 to 200 feet apart were surveyed at ~~100~~ 50 station intervals with a Ronka 16 E.M. unit. Total coverage was 12,700 linear feet. The results of this work appear on the accompanying geophysical plan (Plate 5) and profiles (Plates 6-15).

Equipment and Technique

The Ronka 16 is a reconnaissance ground E.M. instrument capable of detecting and measuring a vertical secondary electromagnetic field produced by a metallic deposit when it is threaded by a horizontal primary electromagnetic field. The primary field used in the present work was the U.S. Naval communication signal NPG from Seattle, Washington. Other stations such as Maine and Hawaii did not prove suitable in this remote northern area.

Results

By virtue of the alignment of various anomalies encountered on the separate traverse lines two distinctive conductive zones have been outlined. One of these is a 1,100-foot long northwest-southeast tending conductor which coincides well with the main part of the geochemical "high" that runs between Showing #1 and Pond Lake. The other is a parallel 800-foot long conductor that follows the same trend through the south end of the Lake.

Time did not permit further geophysical work over the remaining geochemically anomalous areas to the east and northeast of Pond Lake.

Recommendations

The equipment and technique proved sufficiently effective to recommend their future use for basemetal prospecting in this area.

CONCLUSIONS

Although the value of commercial metals found in the mineralization zones of this prospect are not high there is a sufficient copper, zinc and silver content to make the discovery attractive. More important, from an economic interest standpoint, is the apparent widening of the mineralized zones with depth - as noted in Showings #1 and #2. Any continuation of this thickening with depth, particularly in the case of Showing #1, could produce an important metal deposit. The wide distribution of mineralization is also considered an important plus factor in the prospect's favour.

As it now stands the prospect merits further attention and progressive exploration work. A semi-detailed geochemical survey over the balance of the claim group and a detailed E.M. geophysical coverage of resulting geochemically anomalous areas is recommended. These surveys are best carried out during the field season and are recommended for July or August of 1968.

Drilling is recommended to test Showing #1 and other nearby anomalous areas. A winter programme of 1,500 feet of drilling should be carried out in early 1968. A late summer drill programme is an alternative. Road and airstrip improvement and surface trenching and stripping with a D-6 or D-7 bulldozer would be useful in conjunction with a summer drilling programme.

CERTIFICATE

I, E. D. Black, of Suite 907, 100 Adelaide Street West, Toronto, Ontario, certify that:-

1) I graduated from McGill University in Montreal in 1958 and hold a degree of Master of Science in Geology.

2) I am a member of the Geological Association of Canada, and have practiced my profession for twelve years.

3) I have based my Summary and Recommendations on my experience, on knowledge gained during a visit to the property in July of 1967 and on the results obtained by staff geological personnel who carried out the geochemical and geophysical work cited in this report.

4) I hold no interest directly or indirectly in this property or the Companies mentioned in this report and I do not except to receive any such interest.

E. D. Black, M.Sc.

Toronto, Ontario.

March 1, 1968.

• CHEMICAL RESEARCH AND ANALYSIS
• INSTRUMENT SALES AND SERVICE

TECHNICAL SERVICE LABORATORIES
DIVISION OF BURGENER TECHNICAL ENTERPRISES LIMITED
355 KING ST. W., TORONTO 2B, ONT., CANADA
TELEPHONE : 362-4248

Representing . . .
JARRELL-ASH COMPANY
HILGER & WATTS LIMITED
SADTLER RESEARCH
ULTRA CARBON CORPORATION
METALS RESEARCH LIMITED

CERTIFICATE OF ANALYSIS

SAMPLE(S) FROM Metals Petroleum & Hydraulic Resources Laboratory Ltd.,
907 - 100 Adelaide Street,
Toronto 1, Ontario.

REPORT NO. T-07781

SAMPLE(S) OF SULPHIDES

Attn: Mr. E.D. Black

Sample No.	Gold(Au) oz:ton	Silver(Ag) oz:ton	Copper (Cu)%	Zinc(Zn)%	Lead(Pb)%
1	trace	1.30	0.79	4.28	0.22
2	nil	1.44	1.30	5.50	0.34
3	nil	2.14	0.94	0.90	0.12
4	nil	2.98	7.24	--	--
5	nil	0.18	0.66	--	--

ples, Pulps and Rejects discarded after six months

DATE July 28/67

SIGNED _____
C.S. JOYCE, B.Sc., Manager of Laboratories

CTA

• CHEMICAL RESEARCH AND ANALYSIS
• INSTRUMENT SALES AND SERVICE

TECHNICAL SERVICE LABORATORIES
DIVISION OF BURGENER TECHNICAL ENTERPRISES LIMITED
355 KING ST. W., TORONTO 2B, ONT., CANADA
TELEPHONE: 362-4248 — AREA 416

Representing . . .
JARRELL-ASH COMPANY
HILGER & WATTS LIMITED
SADTLER RESEARCH
ULTRA CARBON CORPORATION
METALS RESEARCH LIMITED

CERTIFICATE OF ANALYSIS

Semiquantitative Spectrographic

SAMPLE(S) FROM Metals Petroleum & Hydraulic Resources Laboratory Limited, 907 - 100 Adelaide St., Toronto 1, Ont.

REPORT NO. T-07781

SAMPLE(S) OF SULPHIDES

Attn: Mr. E.D. Black

	Sample # 1	Sample	Sample		Sample # 1	Sample	Sample
Antimony	–			Phosphorus	–		
Arsenic	–			Platinum	–		
Barium	.01%			Rhenium	X		
Beryllium (BeO)	–			Rhodium	–		
Bismuth	.01%			Rubidium	X		
Boron	–			Ruthenium	–		
[illegible]mium	.02%			Silver	2oz:ton		
[illegible]m (CeO_2)	–			Strontium	–		
Caesium	X			Tantalum (Ta_2O_5)	–		
Chromium	.03%			Tellurium	–		
Cobalt	.01%			Thallium	–		
Columbium (Cb_2O_5)	–			Thorium (ThO_2)	–		
Copper	.5-1%			Tin	–		
Gallium	.002%			Titanium	.2%		
Germanium	–			Tungsten	–		
Gold	.1oz:ton			Uranium (U_3O_4)	–		
Hafnium	–			Vanadium	.02%		
Indium	–			Yttrium (Y_2O_3)	–		
Iridium	–			Zinc	M3%		
Lanthanum (La_2O_3)	–			Zirconium (ZrO_2)	.03%		
Lead	.2%			ROCK FORMING METALS			
Lithium (Li_2O)	–			Aluminum (Al_2O_3)	MH20%		
Manganese	LM1%			Calcium (CaO)	M7%		
Mercury	–			Iron (Fe)	MH20%		
Molybdenum	–			Magnesium (MgO)	LM2%		
Neodymium (Nd_2O_3)	–			Silica (SiO_2)	H		
Nickel	.003%			Sodium (Na_2O)	.1%		
Palladium	–			Potassium (K_2O)	.5%		

Figures are approximate: - : not detected

CODE

H — High — 10 — 100% approx.
MH — Medium High — 5 — 50% approx.
M — Medium — 1 — 10% approx.
LM — Low Medium — .5 — 5% approx.
L — Low — .1 — 1% approx.
TL — Trace Low — .05 — .5% approx.
T — Trace — .01 — .1% approx.
FT — Faint Trace — approx. less than .01%.
PT — Possible Trace — Presence not certain.
XXXXXXXXXX — Elements looked for but not found.
X — Not looked for

DATE July 28/67

SIGNED C.S. Joyce

C.S. JOYCE, B.Sc., Manager of Laboratories

CTA

KIRK PROSPECT

GENERAL CLAIM DATA

Name:	"BOB" Claims
Numbers:	1 to 14 inclusive
Division:	Liard Mining Division of British Columbia
Tag No:	638355-64 inclusive and 459321-23 inclusive
F.M.C. No:	36136
Record No:	21929 - 21942 inclusive
Description:	On the Four Mile River near Nizi Creek
Date Located:	27th of March, 1966.
Date Completed To: (Assessment Work)	"Bob" 1 - 10 : April 14, 1968 "Bob" 11 - 14 : April 14, 1968

Name:	"KIRK" Claims
Numbers:	1 to 10 inclusive
Division:	Liard Mining Division of British Columbia
Tag No:	18601, 18602, 18603, 18604, 19728, 19729 19730, 19731, 19732, 19733.
F.M.C. No:	36136
Description:	Situated on Four Mile River, 1½ miles south of Nizi Creek, Liard Mining Division
Date Completed To: (Assessment Work)	"Kirk" 1 - 4 : August 11, 1968 "Kirk" 5 - 10 : November 8, 1967

Name:	"KIRK" Claims
Numbers:	11, 12, 13, 14
Division:	Liard Mining Division of British Columbia
Tag No:	638351 - 54 inclusive
F.M.C. No:	36136
Record No:	21943 - 21946 inclusive
Description:	On the Four Mile River near Nizi Creek
Date Located:	27th of March, 1966.
Date Completed To: (Assessment Work)	"Kirk" 11 - 14 : April 14, 1968

Name:	"TOM" Claims
Numbers:	1 to 14 inclusive
Division:	Liard Mining Division of British Columbia
Tag No:	459339 to 459352 inclusive
F.M.C. No:	36136
Record No:	21961 - 21974 inclusive

Description:	2½ miles upstream from Nizi Creek on Four Mile River
Date Located:	30th of March, 1966
Date Completed To:	"Tom" 1 - 4 : April 14, 1968
(Assessment Work)	"Tom" 5 - 14 : April 14, 1968

Name:	"Pete" Claims
Numbers:	1 to 14 inclusive
Division:	Liard Mining Division of British Columbia
Record No:	21947 for Pete No.1 to 21960 for Pete No.2 inclusive
Tag No:	459325 to 459338 inclusive
F.M.C. No:	36136
Description:	On the Four Mile River near Nizi Creek
Date Located:	28th of August, 1966.
Date Completed To:	"Pete" 1 - 10 : April 14, 1968
(Assessment Work)	"Pete" 11 - 14 : April 14, 1969

EM 16 OPERATING MANUAL

PRINCIPLE OF OPERATION

The VLF-transmitting stations operating for communications with submarines have a vertical antenna. The antenna current is thus vertical, creating a concentric horizontal magnetic field around them. When these magnetic fields meet conductive bodies in the ground, there will be secondary fields radiating from these bodies. This equipment measures the vertical components of these secondary fields.

The EM16 is simply a sensitive receiver covering the frequency band of the new VLF-transmitting stations, with means of measuring the vertical field components.

The receiver has two inputs, with two receiving coils built into the instrument. One coil has normally vertical axis and the other is horizontal.

The signal from one of the coils (vertical axis) is first minimized by tilting the instrument. The tilt-angle is calibrated in percentages. The remaining signal in this coil is finally balanced out by a measured percentage of a signal from the other coil, after being shifted by 90^{0}. This coil is normally parallel to the primary field.

Thus, if the secondary signals are small compared to the primary horizontal field, the mechanical tilt-angle is an accurate measure of the vertical real-component, and the compensation $\pi/2$–signal from the horizontal coil is a measure of the quadrature vertical signal.

SELECTION OF THE STATION

The magnetic field lines from the station are at right angles to the direction to the station. Always select a station which gives the field approximately at right angles to the main strike of the ore bodies or geological structure of the area you are presently working on.

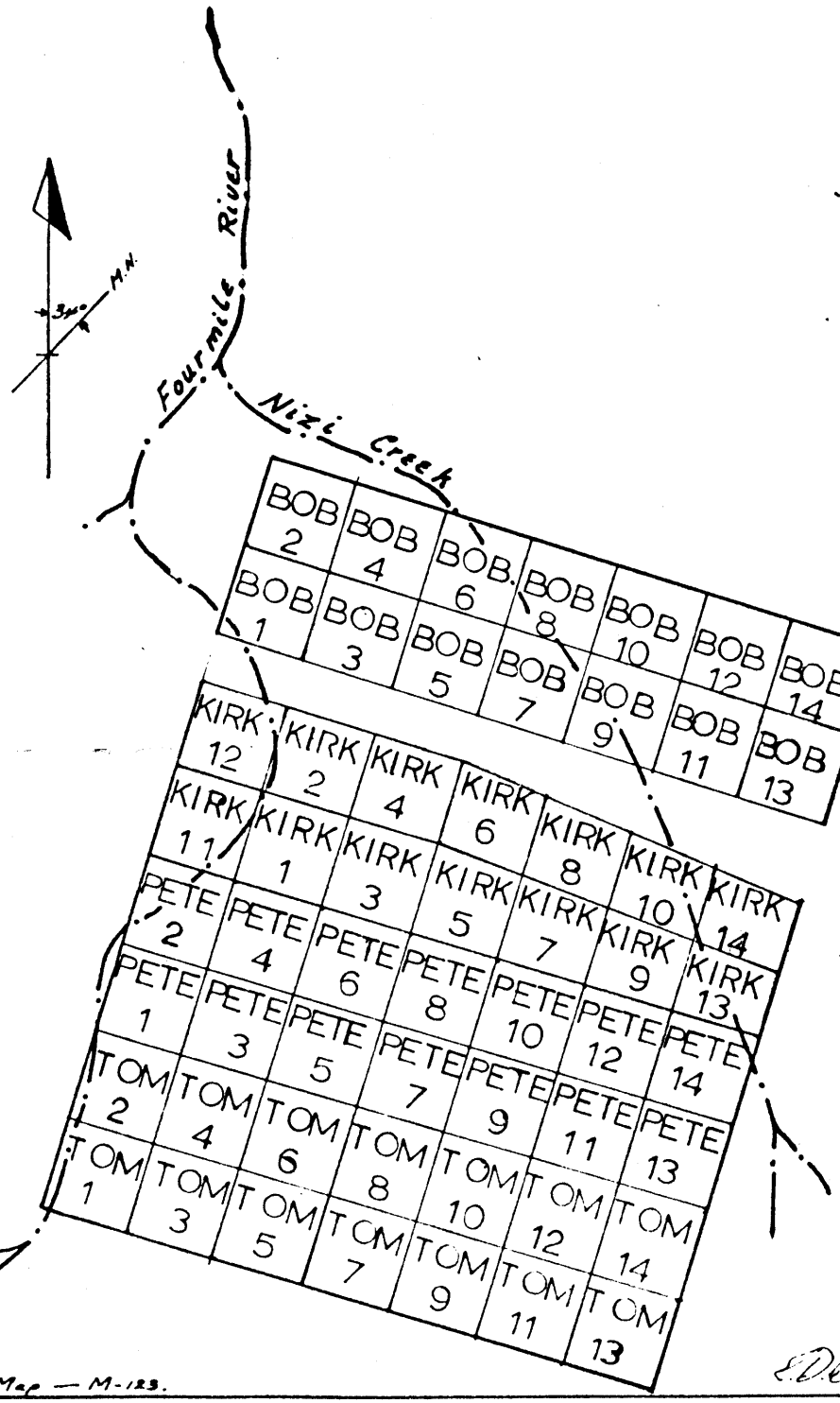
The selection of the proper transmitting station is done by plug-in units inside the receiver. The equipment takes two selector-units simultaneously. A switch is provided for quick switching between these two stations.

To change a plug-in unit, open the cover on top of the instrument, and insert the proper plug. Then close the cover again.

Here is a list of some of the stations useful in Canada and United States.

Station NAA:	Cutler, Maine	Freq. 17.8 kHz
Station NPG:	Seattle, Washington,	Freq. 18.6 kHz
Station WWVL:	Fort Collins, Colorado	Freq. 20.0 kHz
Station NSS:	Annapolis, Maryland	Freq. 21.4 kHz
Station NBA:	Panama	Freq. 24.0 kHz
For European use GBR:	Rugby, England	Freq. 16.0 kHz

When ordering an instrument, consult Geonics for latest information for best selection of stations.



E.D.Black

...er B.C. Bureau of Mines Map — M-123.

metals petroleum & hydraulic resources consulting limited

map showing

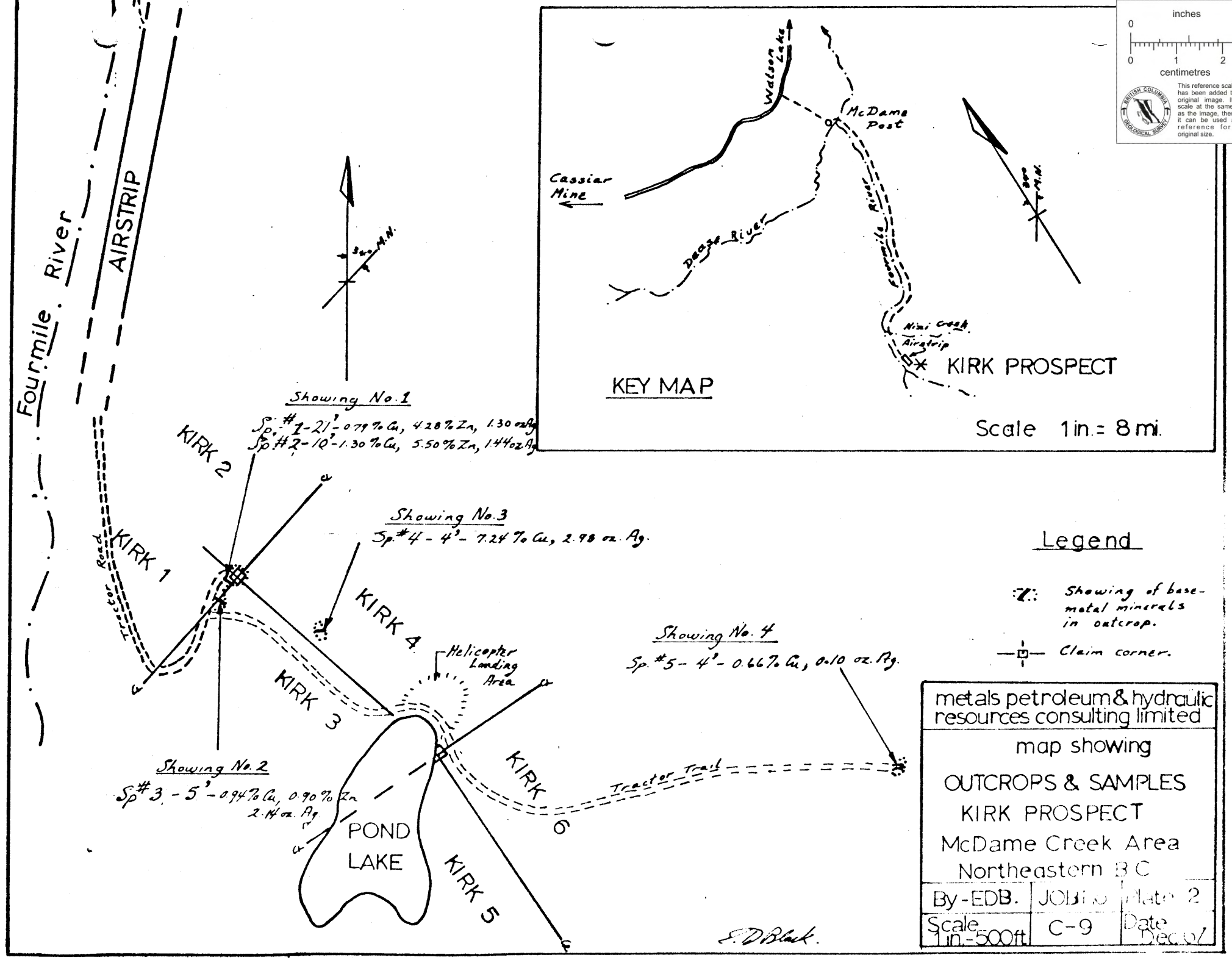
MINING CLAIMS

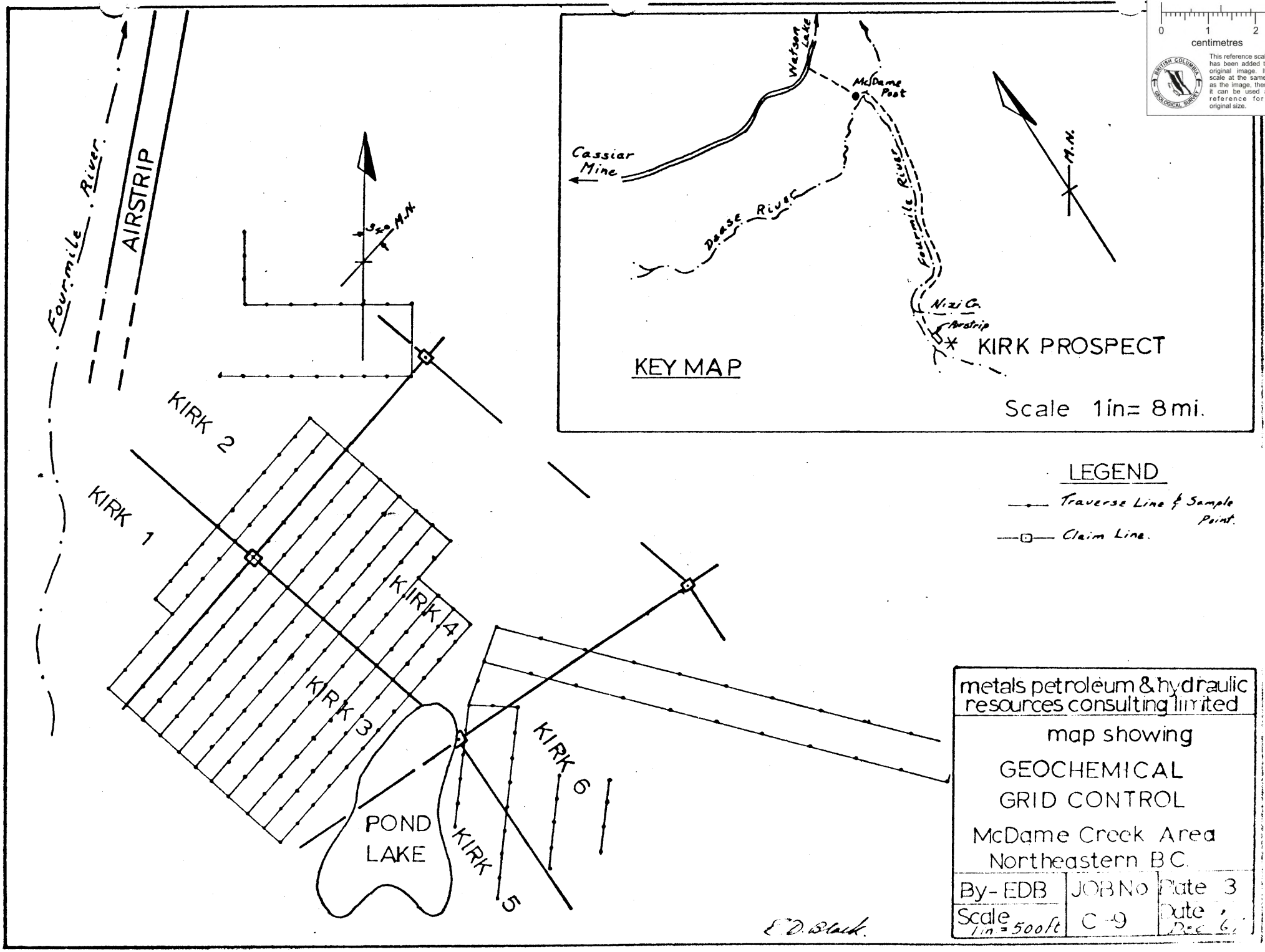
KIRK PROSPECT

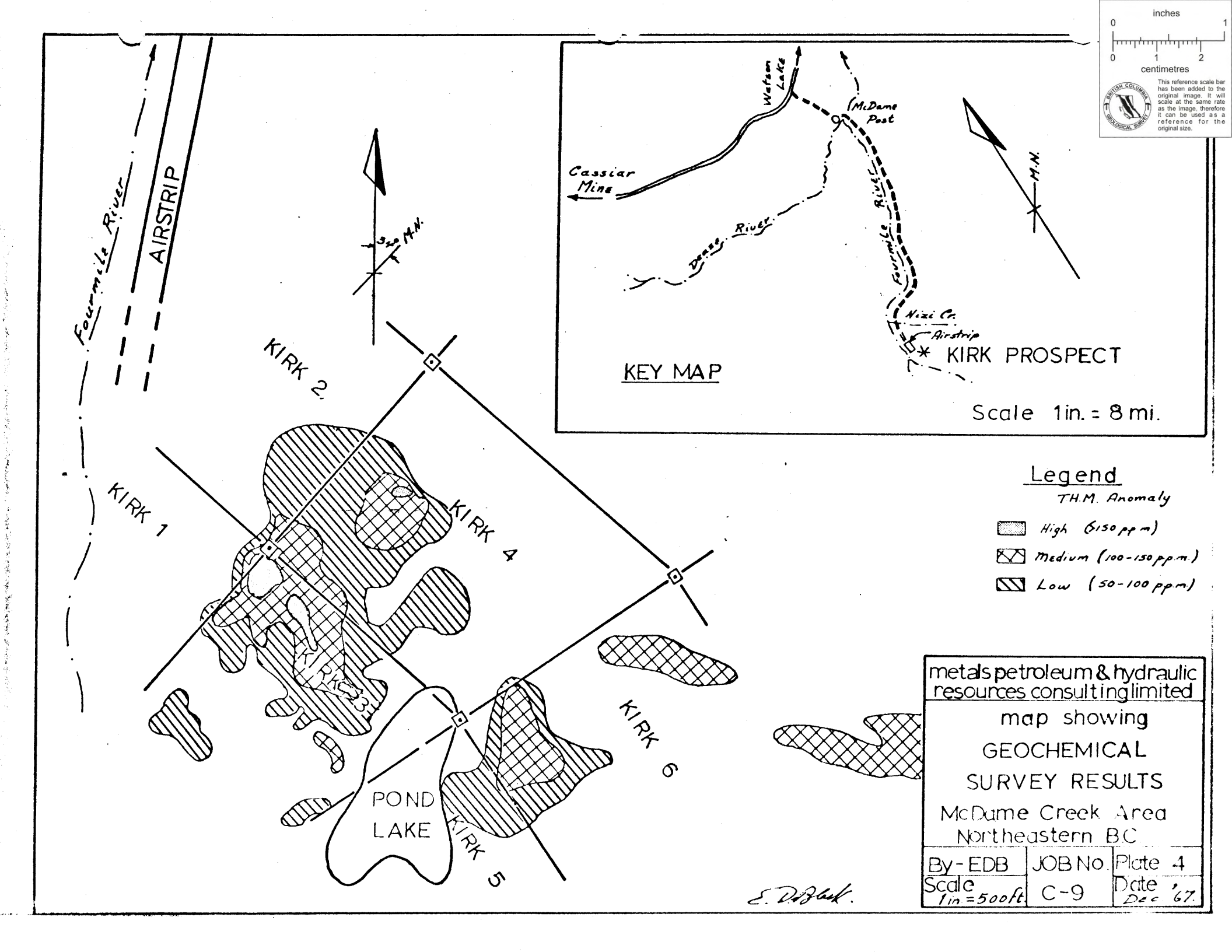
McDame Creek Area

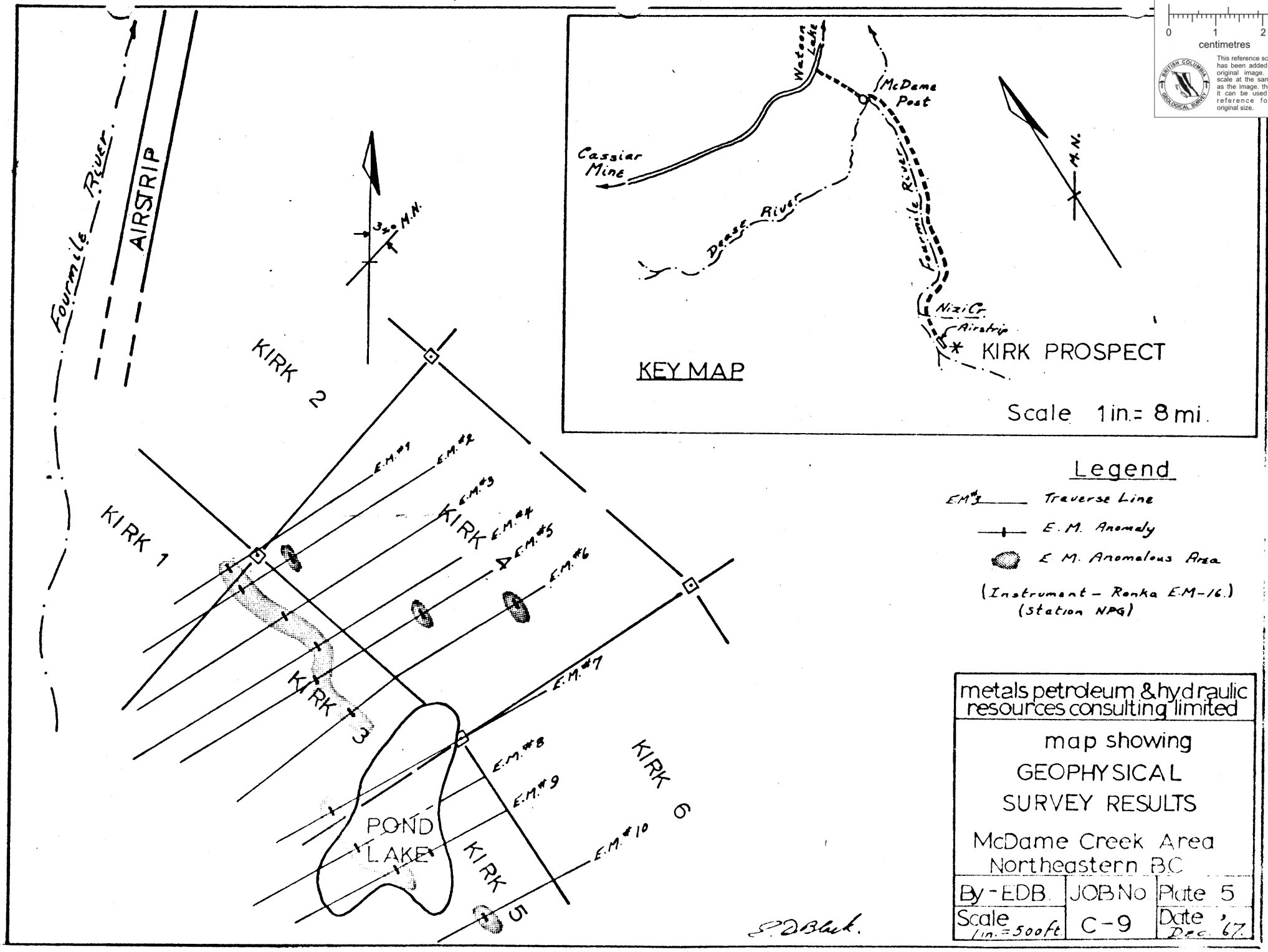
Northeastern B.C.

By-EDB	JOB No	Plate 1
Scale 1 in = ½ mi.	C-9	Date Dec. 67


Fourmile River
AIRSTRIP
Tractor Road
KIRK 1
KIRK 2
KIRK 3
KIRK 4
KIRK 5
KIRK 6
Tractor Trail
Helicopter Landing Area
POND LAKE
Showing No. 1
Sp. #1 - 21' - 0.79 % Cu, 4.28 % Zn, 1.30 oz Ag
Sp. #2 - 10' - 1.30 % Cu, 5.50 % Zn, 1.44 oz Ag
Showing No. 2
Sp #3 - 5' - 0.94 % Cu, 0.90 % Zn
2.14 oz. Ag.
Showing No. 3
Sp. #4 - 4' - 7.24 % Cu, 2.98 oz. Ag.
Showing No. 4
Sp. #5 - 4' - 0.66 % Cu, 0.10 oz. Ag.
KEY MAP
Watson Lake
McDame Post
Cassiar Mine
Dease River
Fourmile River
Nizi Creek
Airstrip
KIRK PROSPECT
Scale 1 in. = 8 mi.
Legend
Showing of base-metal minerals in outcrop.
Claim corner.
inches
centimetres
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
metals petroleum & hydraulic resources consulting limited
map showing
OUTCROPS & SAMPLES
KIRK PROSPECT
McDame Creek Area
Northeastern B C
By - EDB.
JOB No.
Plate 2
Scale 1 in. = 500 ft
C-9
Date Dec. 07
E. D. Black.


Fourmile River
AIRSTRIP
KIRK 1
KIRK 2
KIRK 3
KIRK 4
KIRK 5
KIRK 6
POND LAKE
Watson Lake
McDame Post
Cassiar Mine
Dease River
Fourmile River
Nizi Cr.
Airstrip
KIRK PROSPECT
KEY MAP
Scale 1in = 8mi.
LEGEND
Traverse Line & Sample Point.
Claim Line.
E.D. Black.
metals petroleum & hydraulic resources consulting limited
map showing
GEOCHEMICAL
GRID CONTROL
McDame Creek Area
Northeastern B.C.
By - EDB
JOB No C-9
Plate 3
Scale 1in = 500ft
Date Dec 6.


Fourmile River
AIRSTRIP
KIRK 1
KIRK 2
KIRK 3
KIRK 4
KIRK 5
KIRK 6
POND LAKE
340 M.N.
KEY MAP
Watson Lake
McDame Post
Cassiar Mine
Dease River
Fourmile River
Nizi Cr.
Airstrip
KIRK PROSPECT
M.N.
Scale 1in. = 8 mi.
Legend
T.H.M. Anomaly
High (150 ppm)
Medium (100-150 ppm.)
Low (50-100 ppm.)
inches
centimetres
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
metals petroleum & hydraulic resources consulting limited
map showing
GEOCHEMICAL
SURVEY RESULTS
McDame Creek Area
Northeastern B.C.
By - EDB
JOB No. C-9
Plate 4
Scale 1 in = 500 ft
Date Dec '67
E. D. Black.

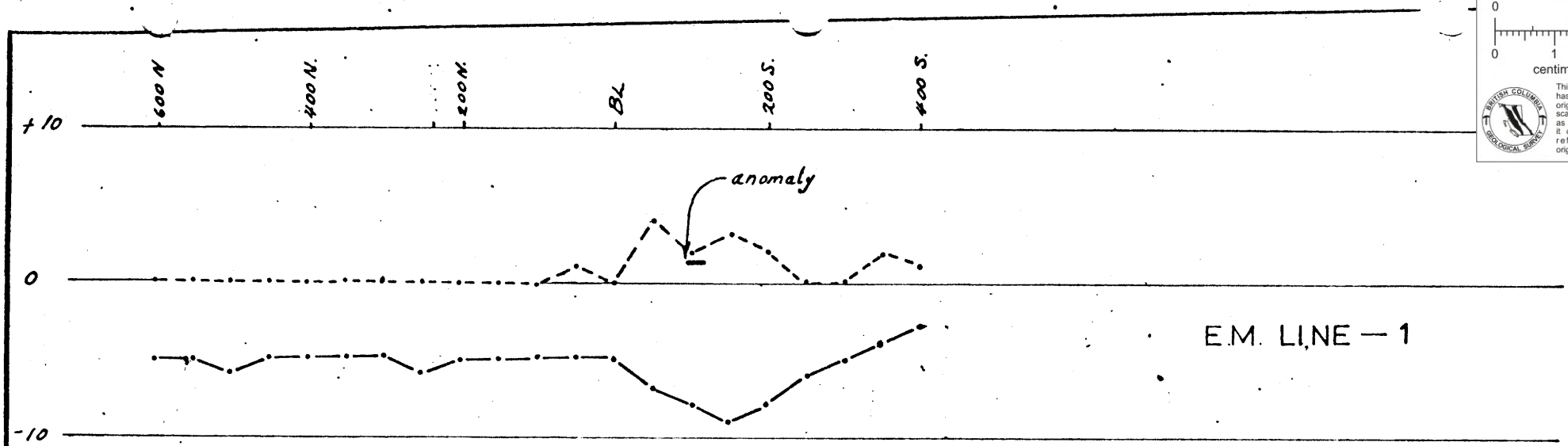


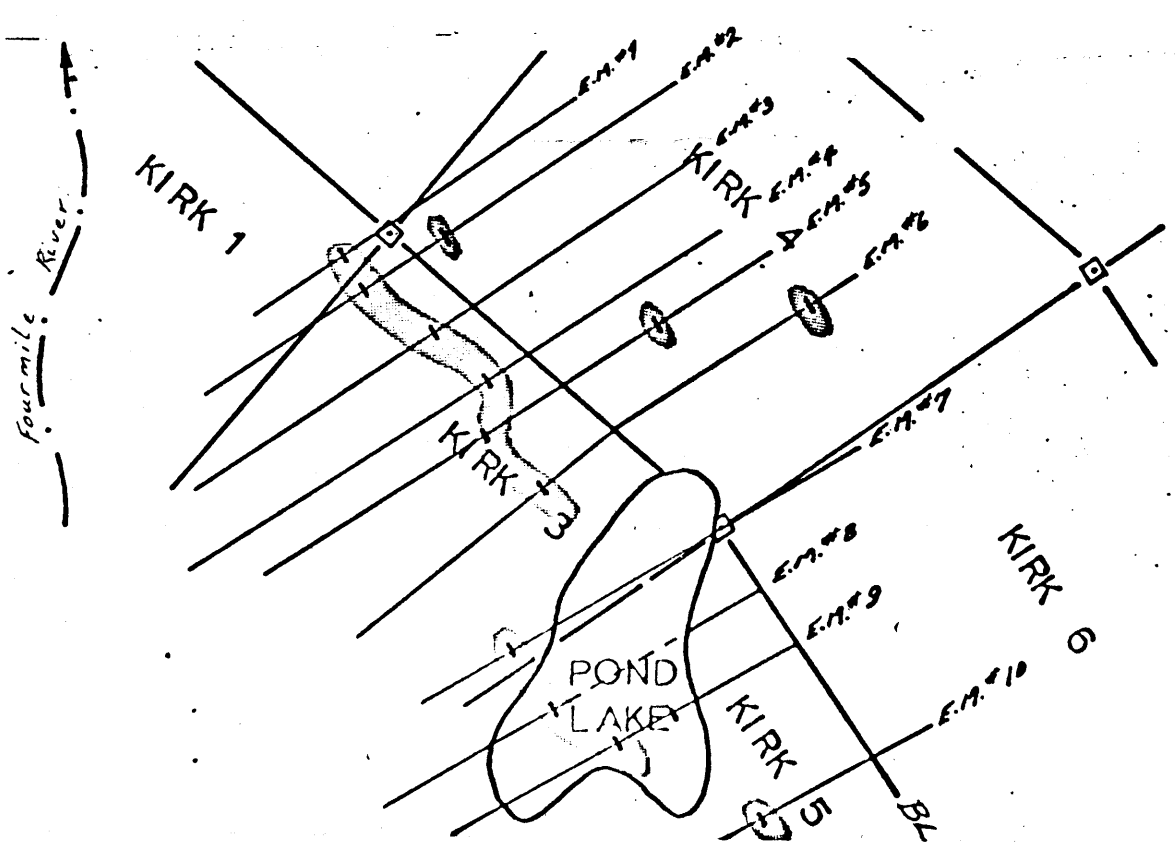
metals petroleum & hydraulic resources consulting limited

map showing
GEOPHYSICAL
SURVEY RESULTS

McDame Creek Area
Northeastern B.C.

By - EDB.	JOB No	Plate 5
Scale 1 in. = 500 ft.	C-9	Date Dec. '67.





E.M. Quadrature Curve.
E.M. In-put Curve.
E.M.'s Traverse Line.
E.M. Anomaly.
E.M. Anomalous Area.

(Instrument - Ronka EM-16.)
(Station NAA)

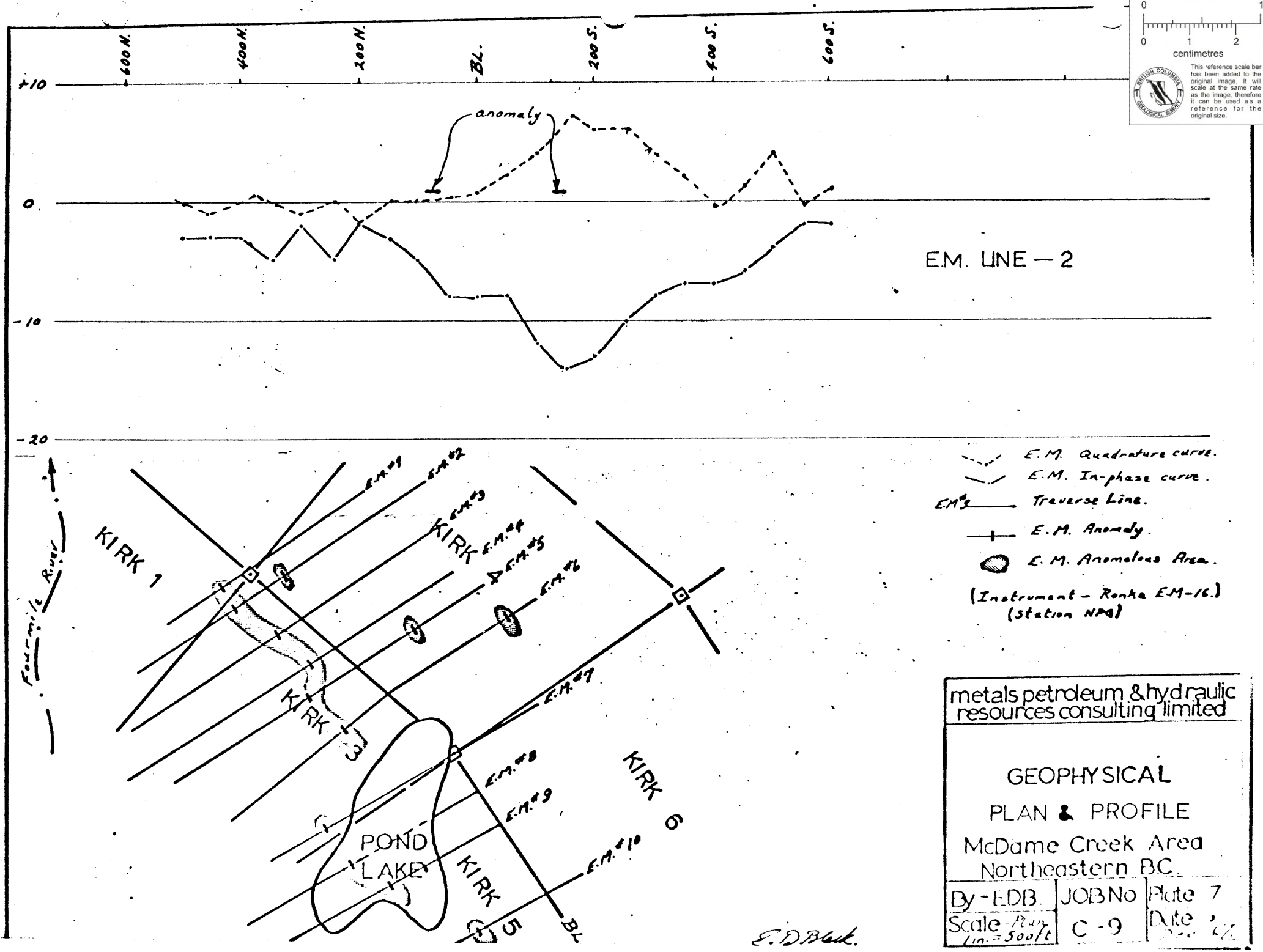
E.D.B.

metals petroleum & hydraulic resources consulting limited

GEOPHYSICAL PLAN & PROFILE

McDame Creek Area
Northeastern BC.

By - EDB.	JOB No	Plate 6
Scale Plan 1in. = 500ft	C-9	Date '67



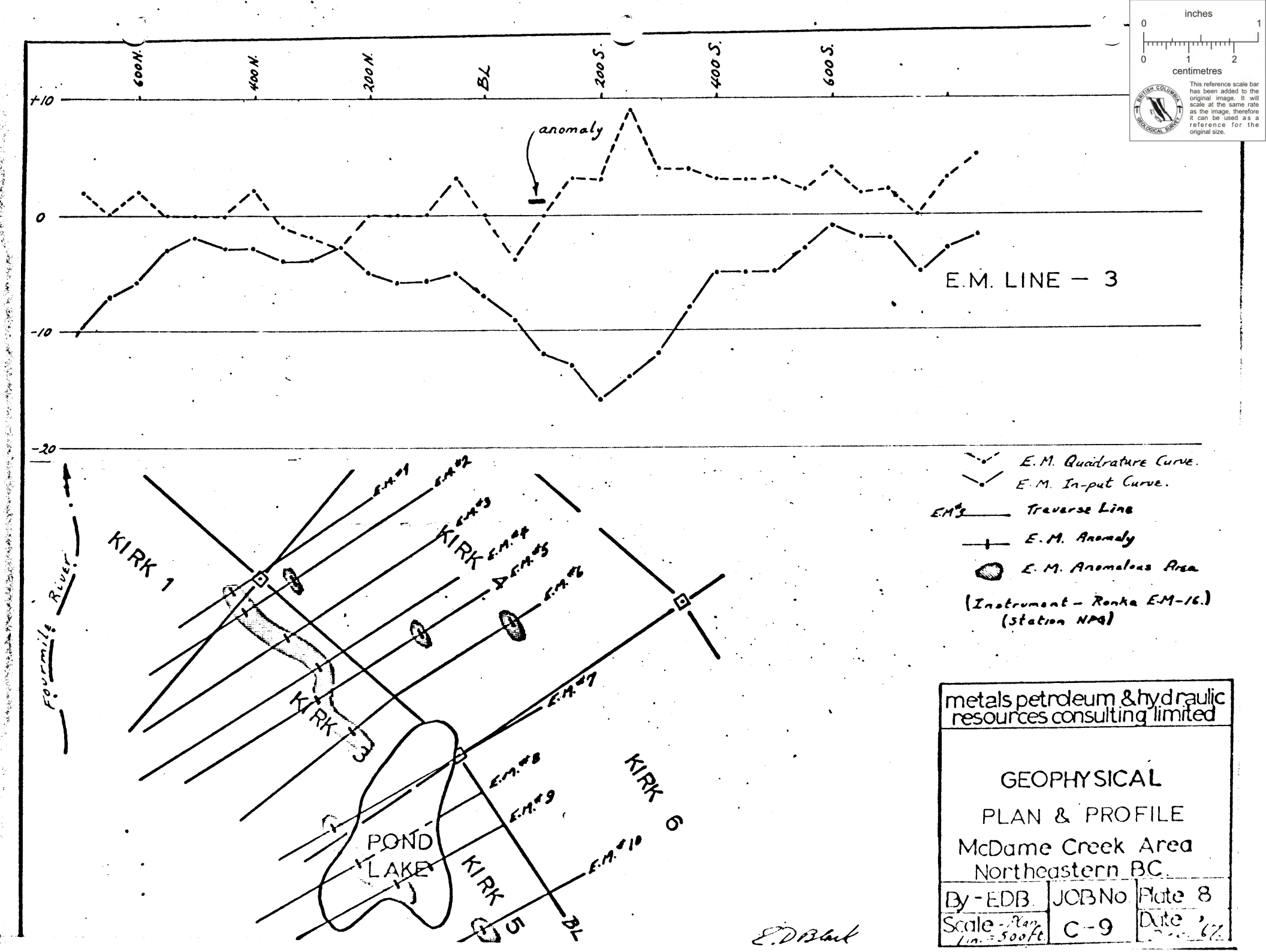
metals petroleum & hydraulic resources consulting limited

GEOPHYSICAL

PLAN & PROFILE

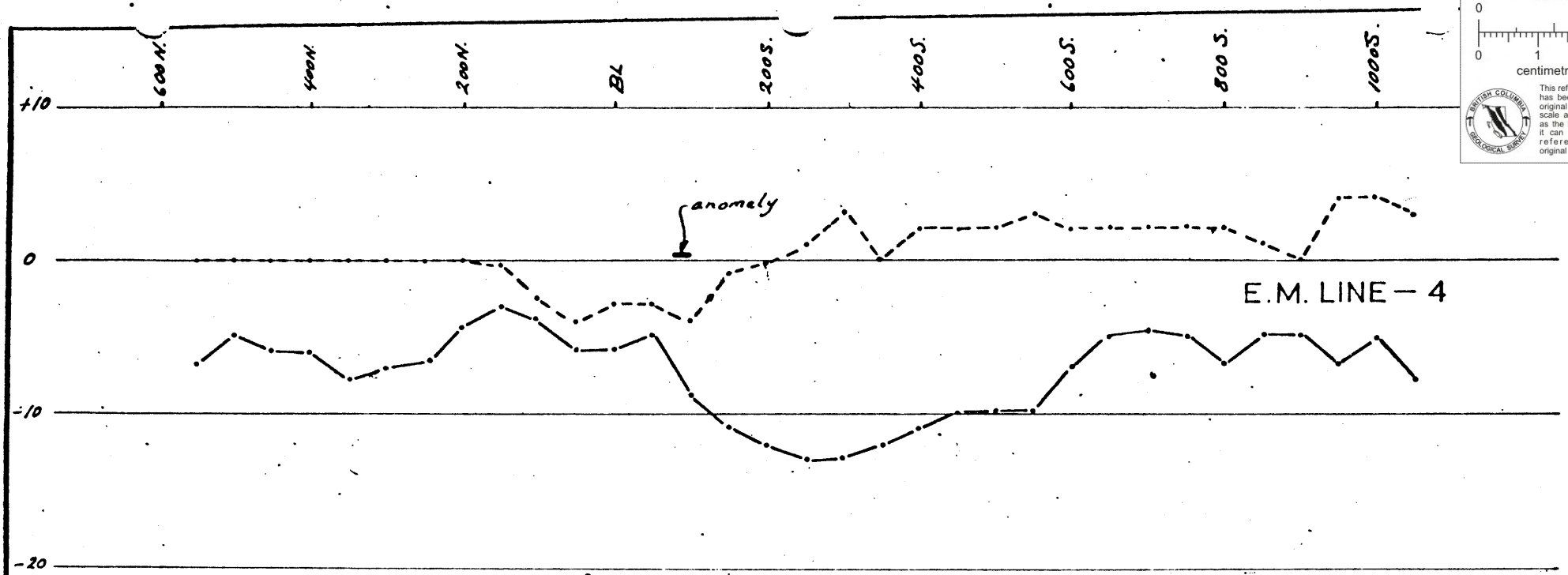
McDame Creek Area
Northeastern BC.

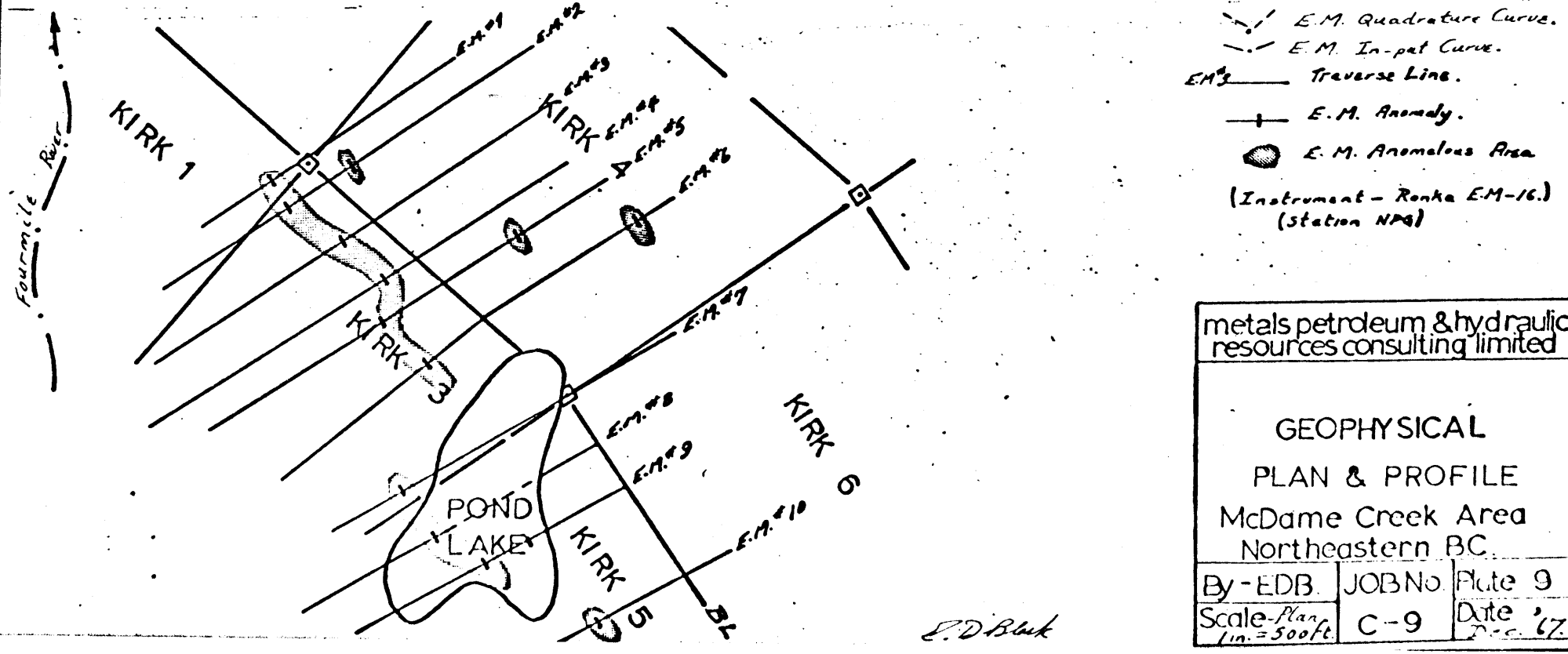
By - E.D.B.	JOB No	Plate 7
Scale - Plan 1 in. = 500 ft	C - 9	Date [illegible] '72



E.D. Black

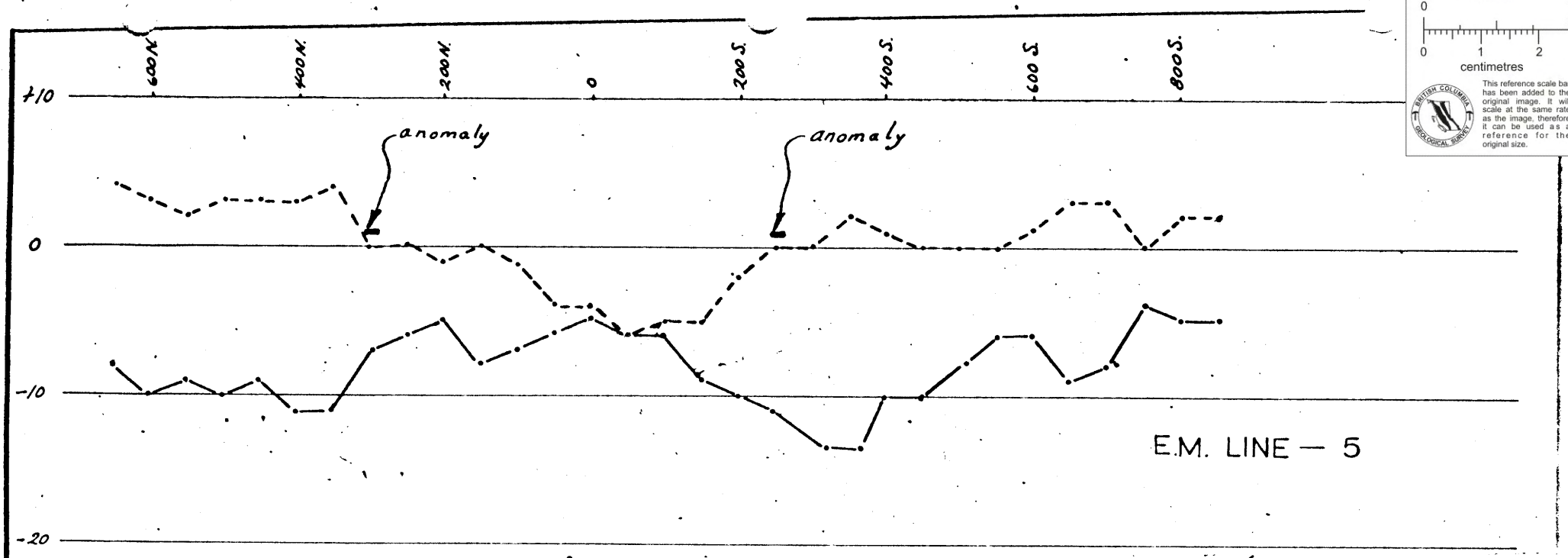
metals petroleum & hydraulic resources consulting limited		
GEOPHYSICAL PLAN & PROFILE McDame Creek Area Northeastern BC.		
By - EDB.	JOB No	Plate 8
Scale - Plan 1 in. = 500 ft	C-9	Date '67

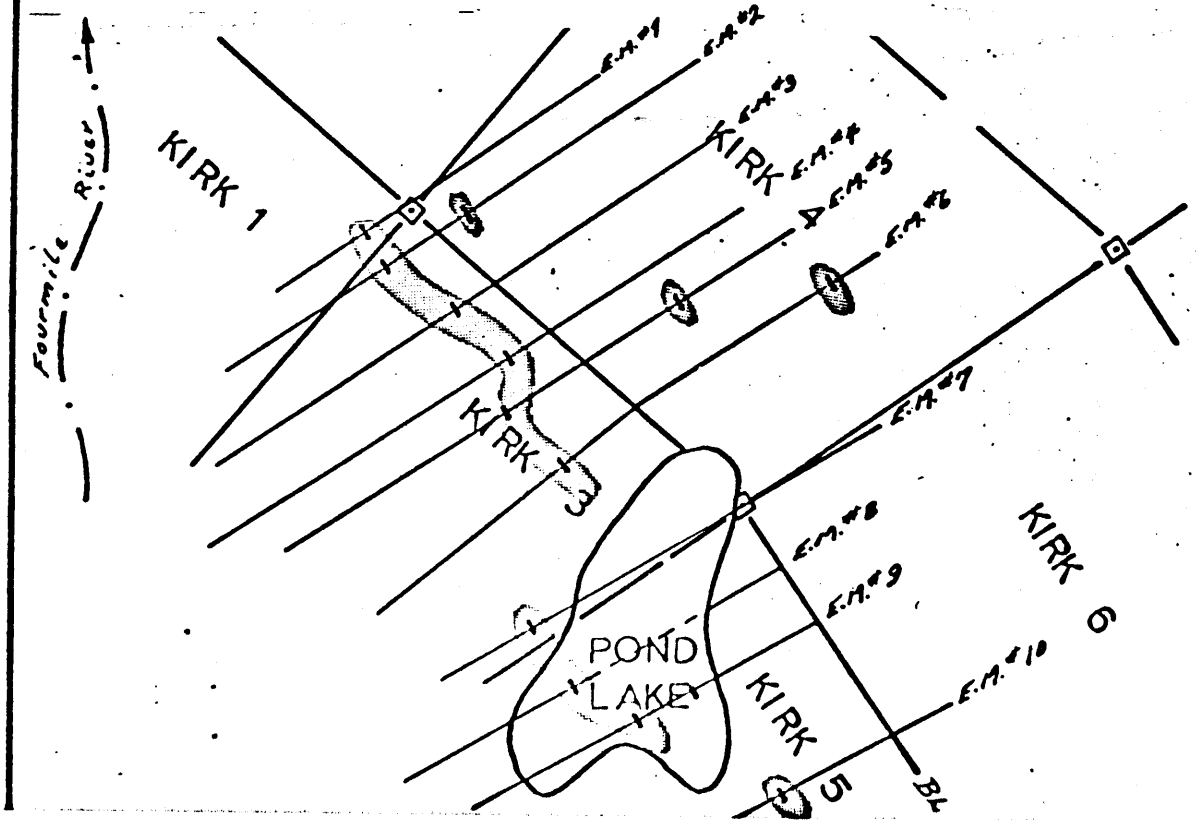




E. D. Black

metals petroleum & hydraulic resources consulting limited		
GEOPHYSICAL PLAN & PROFILE McDame Creek Area Northeastern BC.		
By - EDB.	JOB No.	Plate 9
Scale - Plan 1 in. = 500 ft.	C-9	Date Dec. '67.

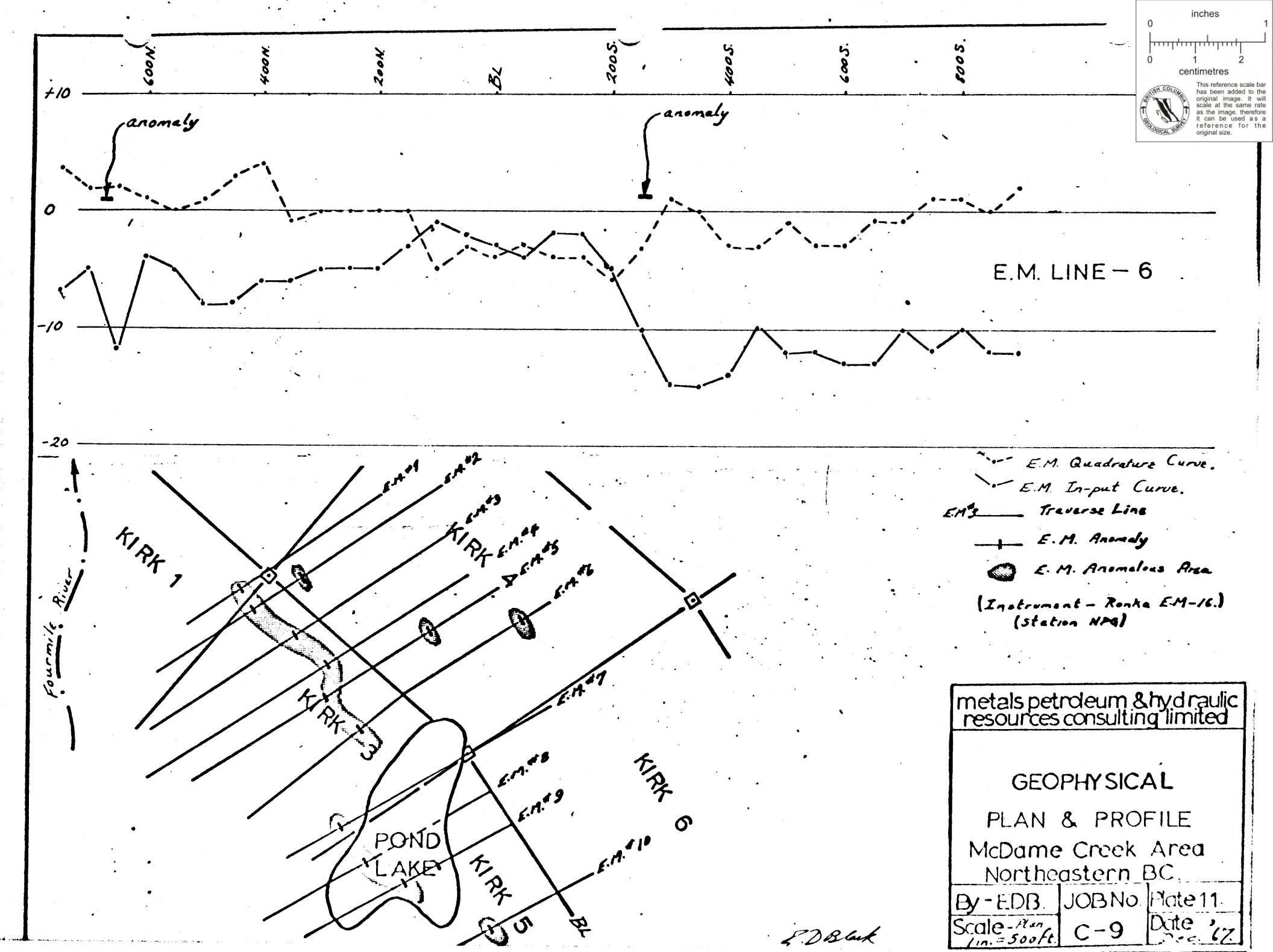




E.M. Quadrature Curve.
E.M. In-put Curve.
E.M.#3 Traverse Line.
E.M. Anomaly.
E.M. Anomalous Area.
(Instrument - Ronka E.M-16.)
(Station NPG)

E.D. Black

metals petroleum & hydraulic resources consulting limited		
GEOPHYSICAL PLAN & PROFILE McDame Creek Area Northeastern BC		
By - EDB.	JOB No.	Plate 10
Scale - Plan 1 in. = 500 ft.	C-9	Date '67.



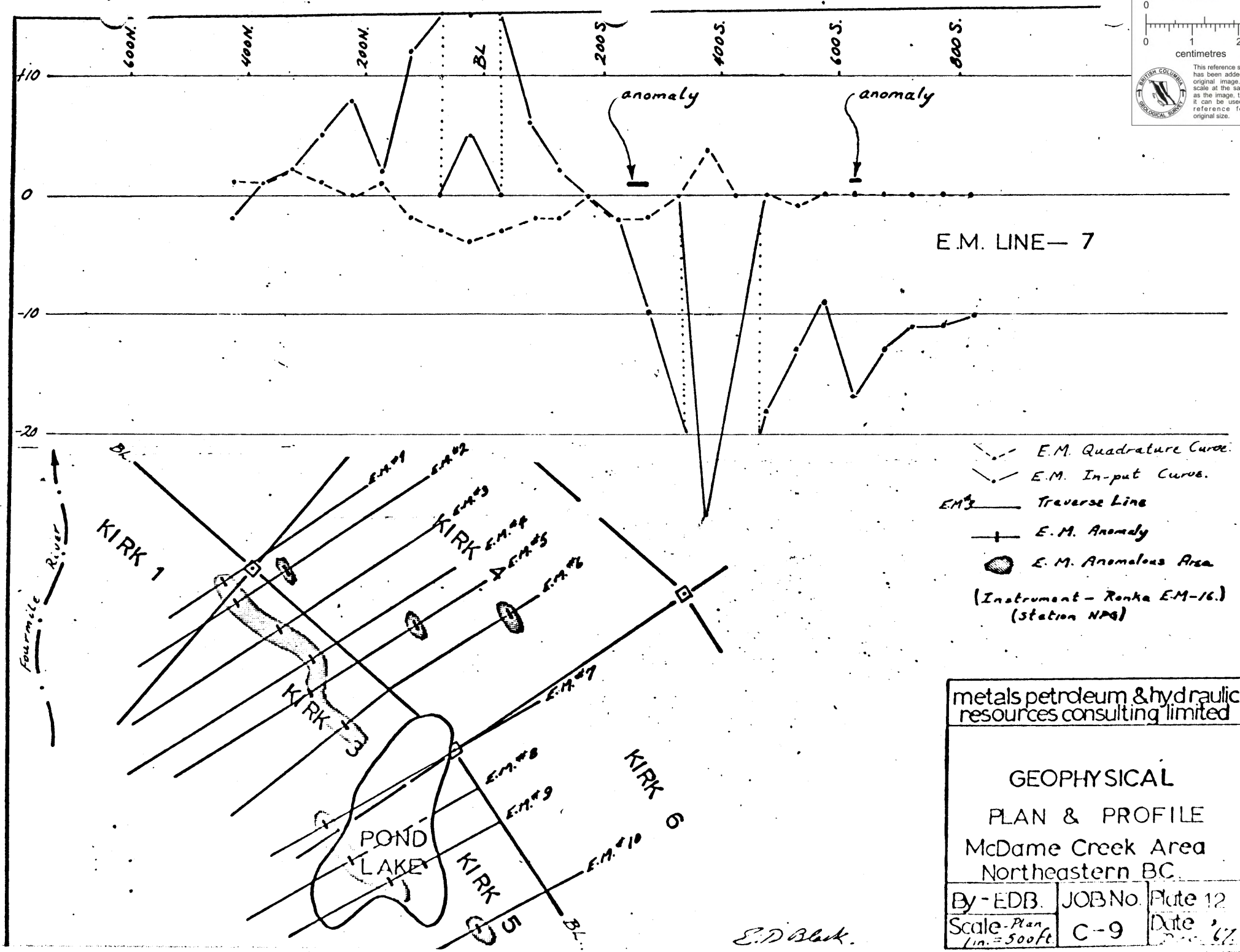
metals petroleum & hydraulic resources consulting limited

GEOPHYSICAL

PLAN & PROFILE

McDame Creek Area
Northeastern BC.

By - E.D.B.	JOB No.	Plate 11.
Scale - Plan 1 in. = 500 ft.	C-9	Date Dec. '67

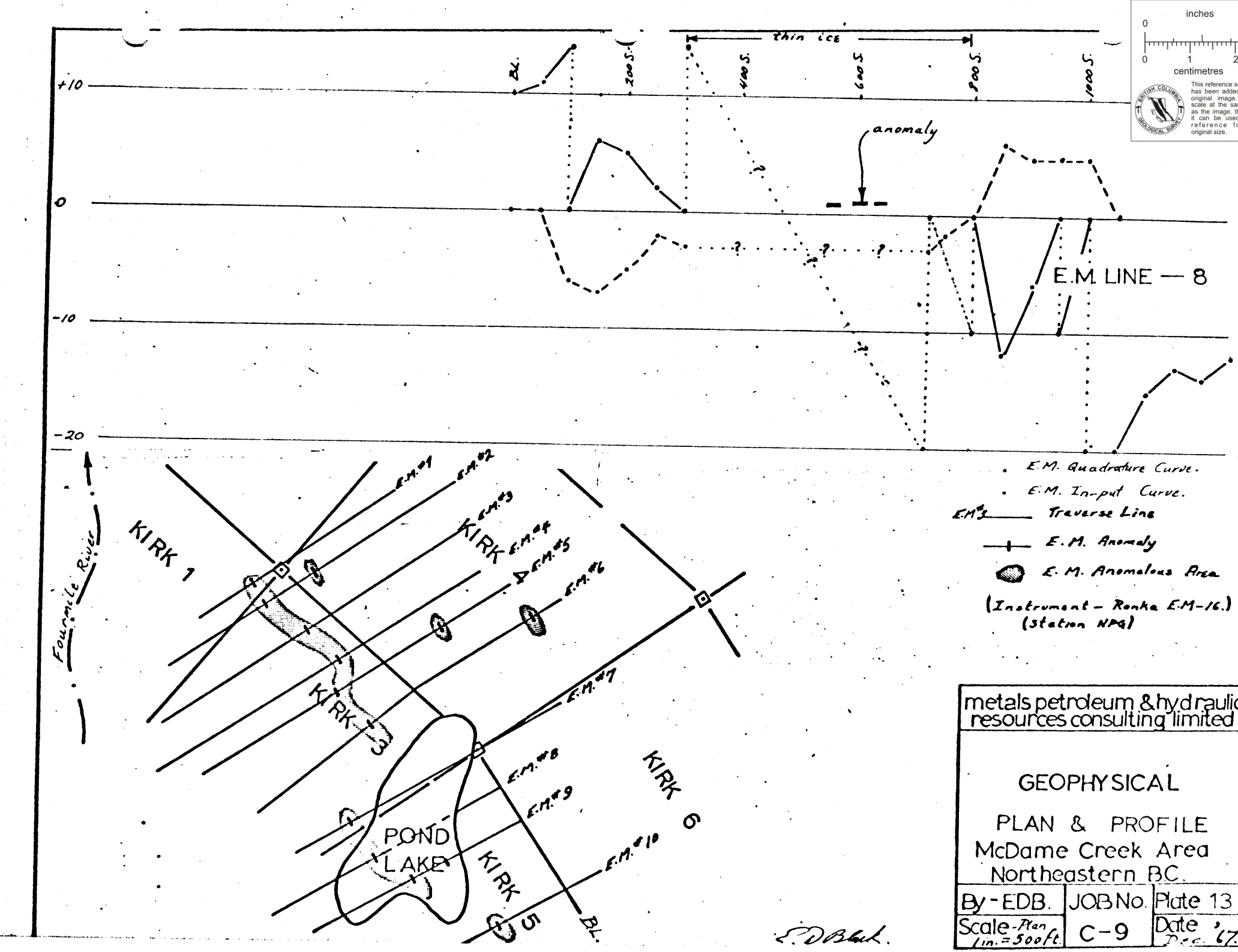


metals petroleum & hydraulic resources consulting limited

GEOPHYSICAL PLAN & PROFILE

McDame Creek Area
Northeastern BC.

By - EDB.	JOB No. C-9	Plate 12
Scale - Plan 1 in. = 500 ft.		Date '67



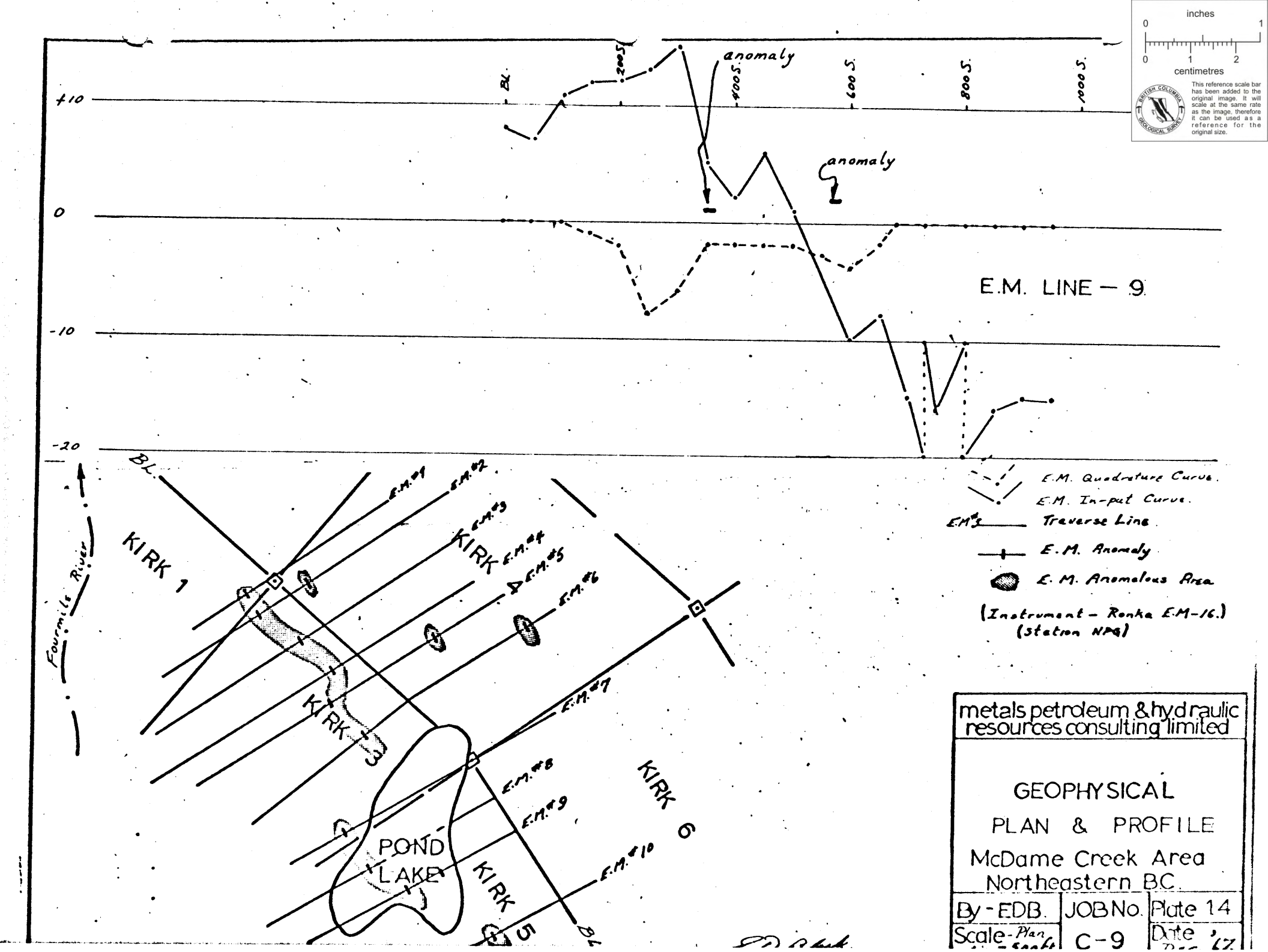
metals petroleum & hydraulic resources consulting limited

GEOPHYSICAL

PLAN & PROFILE

McDame Creek Area
Northeastern B.C.

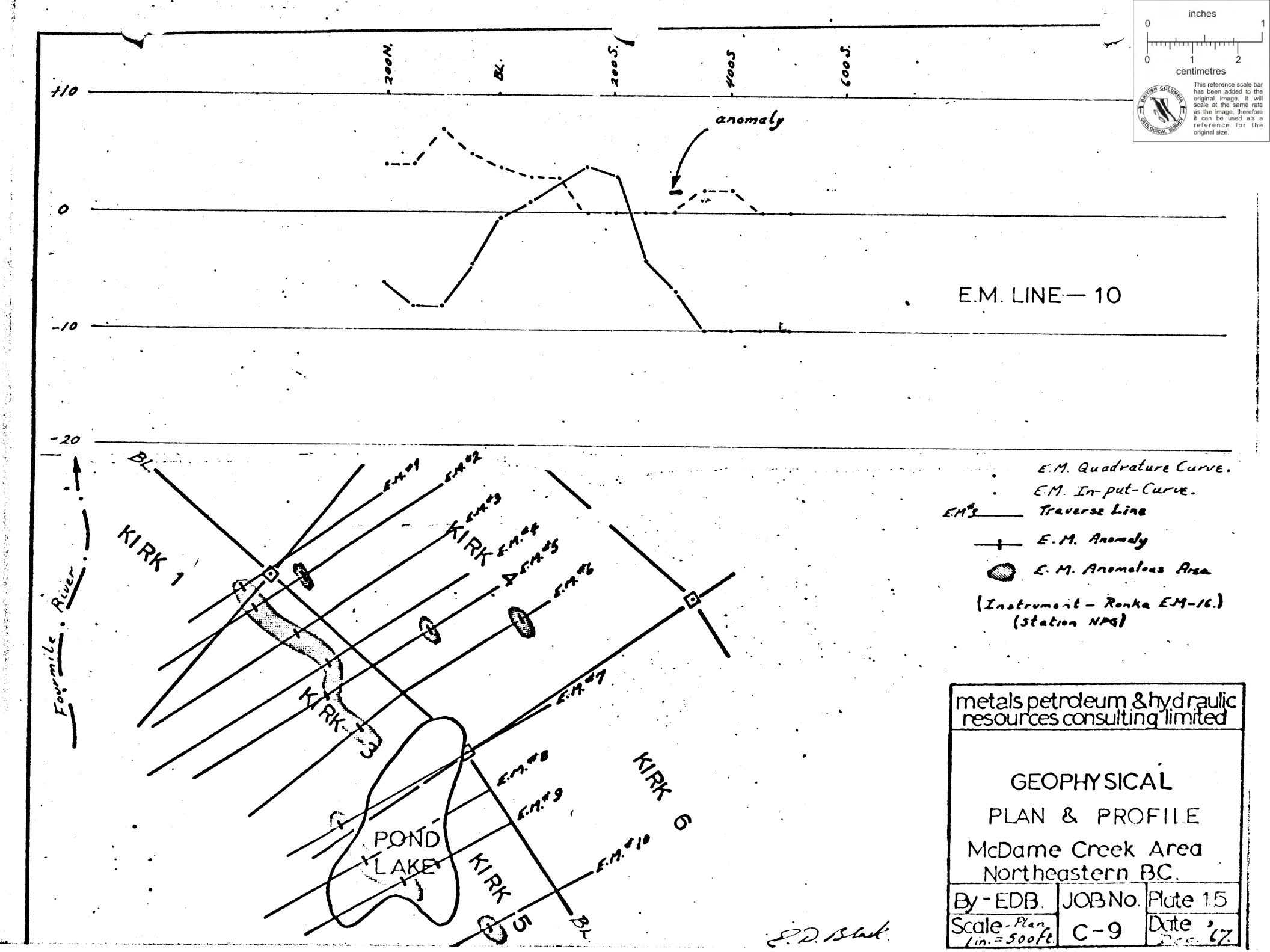
By - EDB.	JOB No.	Plate 13
Scale - Plan 1 in. = 500 ft.	C-9	Date Dec. '67.



metals petroleum & hydraulic resources consulting limited

GEOPHYSICAL
PLAN & PROFILE
McDame Creek Area
Northeastern BC.

By - EDB.	JOB No.	Plate 14
Scale - Plan	C-9	Date '77



E.D. Black

metals petroleum & hydraulic resources consulting limited		
GEOPHYSICAL PLAN & PROFILE McDame Creek Area Northeastern B.C.		
By - EDB.	JOB No.	Plate 15
Scale - Plan 1 in. = 500 ft.	C-9	Date Dec. '67.