G E O L O G I C A L

A N D

G E O C H E M I C A L R E P O R T

on the

T (1-35) Mineral Claims

by

Robert E. Van Tassell

Sheet No. 105-H-14

Latitude 63°52' N
Longitude 135°00' W
Date: Aug. 4 - Aug. 26, 1965

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Geological Mapping performed by:

Mr. Pat Costin,
2443 South Dahlia Lane,
Denver 22, Colorado, U.S.A.

Geochemical Sampling by:

Mr. Bob Stoddart,
3165 East 50th Avenue,
Vancouver 16, B. C.

Mr. David Mair,
c/o Simon Fraser University,
Vancouver, B. C.

Mr. David Didout,
1840 McNicol Avenue,
Vancouver 9, B. C.

Supervised by:

Dr. Alex Smith, P. Eng.,
Consulting Geologist for U.K.H.M.,
Falconbridge Nickel Mines Ltd.,
1112 West Pender Street,
Vancouver, B. C.

SUMMARY

The T Claim Group 1 to 6 inclusive was staked following the release of results from a G.S.C. Geochemical Survey on March 31st, 1965. Lead and silver results were obtained from the G.S.C. on claims staked and with information obtained from reconnaissance prospecting a further 29 claims were staked.

The main portion of the claim group lies in a valley and contains approximately 10% outcrop. It was felt that a preliminary soil sampling program would give an indication to possible vein zones in the area and would closer define areas for more detailed follow-up work.

In addition to the geochemical survey, a preliminary geological reconnaissance was made to locate information which would aid in the interpretation of geochemical results.

PROPERTY

The T Claim Group was staked for and is held by United Keno Hill Mines Limited, Elsa, Yukon. The Group is made up of the following claims:

T 1 to T 6	Grant Nos.	84328 - 84333
T 7 to T 22	Grant Nos.	84524 - 84539
T 23 to T 27	Grant Nos.	84575 - 84579
T 28 to T 35	Grant Nos.	84618 - 84625

LOCATION

The claim group lies on the north fork of Granite Creek. It is some 12 miles southeast of Elsa and 6 miles north of Mayo Lake. The area is accessible by helicopter.

TOPOGRAPHY

The topography of the area is rugged with elevations varying from 4400 feet to 6200 feet. The claim group for the most part lies above timberline except for the eastern central portion which is covered by scrub spruce, willow and buckbrush.

The claim group is bounded on the south and west by a scarp face which rises from 500 to 1300 feet above the valley floor. The southern scarp face is a shear, near vertical wall with large steep talus slopes.

GENERAL GEOLOGY

The general geology of the area has been described by Keele (1905), Bostock (1947), and Kindle (1955).

The consolidated rocks underlying the T Group area belong to the Yukon group and may be PreCambrian or early Palaeozoic in age. They consist of sericitic and graphitic schists, thick- and thin -bedded quartzites and layers or lenses of greenstone.

The strata of the area lies on the limb of an anticline which has a south-easterly axis, striking from Keno Hill to Mayo Lake and dips from 10° to 30° to the southwest.

I GEOLOGICAL SURVEY

A. Detailed Geology

For the most part the claim group is drift covered. Rock outcrops are not numerous on any of the slopes with the exception of the scarp faces where relatively good geological sections are present; mapping in many instances is done by observing rock float. The area contains approximately 20% outcrop with approximately 20-30% felsenmeer or slide rock.

The area is underlain by thick and thin bedded quartzites, graphite schist, sericite schist and a few lenses of greenstone.

The rocks strike from N38°W to N72°W with local crenulations evident. The dip varies from 10° to 30° to the southwest.

(a) Thick-and Thin-Bedded Quartzites - These consist generally of quartz with minor sericite and graphite. Thick bedded quartzites are usually medium to dark grey and highly jointed which is evident from frost heaved boulders. Thin bedded quartzites are dark grey to black in color and occur in beds an inch to a foot thick, they are generally interbedded with graphite schist.

(b) Graphite Schist - Black in color and contains usually abundant pyrite. They are usually highly contorted and contain many stringers and bulbous masses of quartz which in some cases is crushed and limonite stained.

(c) Sericite Schist - Mainly a light grey green to olive green with some chlorite. These schists are usually highly contorted and contain stringers and bulbous masses of quartz.

(d) Greenstone - A grey green to dark green in color and occur as conformable elongated masses. These bodies are usually highly jointed with numerous quartz stringers and joint fillings of calcite.

B. Structure

The strike of the rocks in the area is fairly consistent with the exception of minor local crenulations. Aerial photos reveal a number of lineations in the area which when checked on the ground represent vein structures with a N60°W strike direction and cross faults with a N5°E to N15°E strike direction. Many of these structures show breccia float. In one case at the NW corner of the claim group a bedding fault was evident with a limonitic breccia.

C. Mineralization

The reconnaissance prospecting done on the claim group found mineralization which indicates 3 definite vein zones. In all cases those vein zones cut the bedding and are associated with favorable quartzites. The mineralization and resulting assays rate the area as a major discovery.

A description of the 3 vein zones found is as follows.

Vein No. 1 on Mineral Claim T-13. Breccia with pyrite, arsenopyrite with heavy limonite stain. Strike N62°W, dip undetermined.
Highest assay returned 1.0 oz. Ag/ton.

Vein No. 2 on Mineral Claim T-10. Galena and siderite. Galena float found over a strike length of 350 feet. Strike N63°W, dip undetermined. Character assays returned (1) 899 oz. Ag/ton, 72% Pb
424 oz. Ag/ton, 75% Pb.
This gives very favorable Ag:Pb ratios of 12.5:1 and 5.7:1.

Vein No. 3 on Mineral Claim T-29. Breccia, galena and cerrusite. Strike N62°W, dip undetermined. Several assays averaged 62 oz. Ag/ton and 17% Pb, giving a Ag:Pb ratio of 3.6:1.

The abundance of aerial lineations and breccia in the southwest corner plus anomalous lead results from soil sampling indicates the possibility for further vein structures.

II GEOCHEMICAL SURVEY

The claim baselines were used for setting up a grid for sampling purposes.

(a) Sampling - A total of 1966 soil samples were taken in 43 man days. Preliminary sampling was done on 300 foot line spacings with samples taken at 100 foot intervals on the lines. The two baselines were sampled at 100 foot intervals.

Samples of approximately one cup size were taken, using a mattock. Holes from 6 to 10 inches deep were dug in order to obtain an "organic free" sample. All samples were tagged and placed in small plastic sample bags.

(b) Lab Procedure for Chemical Analysis of Soil Samples for Lead, Zinc and Copper -

(i) General - The initial laboratory techniques and methods of analysis were set up by Dr. P. M. Delevault of the University of British Columbia, during a three week visit early in 1964. He felt that the techniques as set up were those best applicable to the particular conditions of the area.

(ii) Sampling
1. Place approximately 200 grams of the soil sample on a clean sheet of paper and allow to dry thoroughly.

2. When soil has dried, mix thoroughly and crush.
3. With one gram scoop select a sample which possesses as little organic matter as possible and disregard any rock fragments larger than 1 mm. (a one mm. mesh seive may be used).
4. Place the one gram soil sample in a small aluminum cup (made from aluminum foil) and tag.

(iii) Digestion

1. Place the one gram (well crushed) soil sample into a 22 x 175 mm. test tube, add one ml. of aqua regia and heat gently (about an hour) in the fume hood until the aqua regia has evaporated.
2. Allow the sample residue to cool for 10 or 15 minutes.
3. Add 1 ml. of dilute hydrochloric acid (1HCl:10 H_2O) to the residue and gently heat (approx. 15 minutes) until the soil is just moist.
4. Dilute to 20 mls. with demineralized water and shake well.

(iv) Copper Test

1. Make a series of copper standards by diluting the 100 γ/ml. stock solution to 1/ml., i.e. take 1 ml. of 100 γ/ml. solution and dilute it to 100 mls. with demineralized water. The copper standards should be 0 γ, 0.2 γ, 0.5 γ, 0.7 γ, 1 γ, 2 γ, 3 γ, 4 γ, 6 γ, 10 γ. Therefore measure with a pipette respectively 0.2, 0.5, 0.7, 1.0, 2.0 mls., etc. of the 1 γ solution into separate 18 x 150 mm. test tubes. Add the reagents for this test described below. These standards will keep for days, even weeks, if well stoppered.
2. To an aliquot of the sample solution in a 18 x 150 mm. test tube add 2 ml. of the ammonium citrate-sodium acetate-acetic acid buffer solution, enough demineralized water to make the total volume 6 to 8 mls., mix, and add 1 ml. of the biquinoline solution.
3. Put a plastic stopper on the test tube and shake about 20 seconds or 100 strokes.

(v) Lead Test

1. To an aliquot of the sample solution add 5-10 milligrams of ascorbic acid, wait a few minutes, then add ½ ml. of the potassium cyanide solution, and 1 ml. of ammonium-citrate buffer solution. Wait at least two minutes if much iron is present.
2. Add ½ or 1 ml. of dithizone working solution (dithizone dissolved in chloroform).
3. Shake and compare with the standards unless the color is the pink color of the pure complex. In such case, add more dithizone until a mixed color persists and match to the standards. The amount contained in a matching standard must, of course, be multiplied by the total number of ½ mls. of dithizone used.
4. Prepare a series of standards in the same manner as for copper and add the reagents as in "1" above. The standards should have the following range:
γ's lead, 0, 0.2, 0.5, 0.8, 1, 1.5, 2, 3, 4, 5, 8 mls. of Dz. 1 ml. ½ ml, ½ ml, 1 ml, 1 ml, 2 ml, 2 ml, 3 ml, 3 ml, 4 ml. For higher amounts than 8 γ per ml. add dithizone and shake until color for 8 is reached then there are 2 γ per ml. used. These standards will keep for about 4 hours at normal room temperatures.

(vi) Zinc Test

1. Make a series of nine standards by diluting the 100 γ/ml. stock solution to 1 γ/ml. solution in the same manner as for copper. The zinc standards should be 0 γ, 0.2 γ, 0.5 γ, 0.6 γ, 0.8 γ, 1 γ. Add the reagents for the test described below. These standards will keep for about 1½ hours at normal room temperatures.
2. To an aliquot of the unknown sample solution add 5-10 milligrams of ascorbic acid, wait a few minutes, and then add 2 mls. of the sodium-acetate buffer solution, and 2 mls. of the dithizone working solution (dithizone dissolved in toluene-10 milligrams/liter).
3. Shake from 30 to 40 seconds and compare to standards.

Notes

1. Extreme care must be taken to prevent contamination from any source. This necessitates good cleaning of glassware with metal-free water. Acetone and/or ethyl ether can be used as a rinser. Extreme care must be exercised with these latter organic solvents as they are extremely flammable.
2. Lead and zinc standards are very unstable (at normal room temperatures they keep from 1 to 4 hours), in presence of light and heat the metal dithizonate tends to break down. If standards wish to be preserved for a limited time, they should be put in a cold, dark place, e.g., a refrigerator. The author experimented with artificial standards by mixing suitable colored inks. These artificial standards were found to be unsatisfactory as the colors faded slightly in a short time and the accuracy desired was not possible.

(c) Interpretation of Results

All samples taken were analyzed for lead, zinc and copper. From three years of previous work on Galena and Keno Hills, soil sampling has proved to be an effective tool in locating vein zones in areas of relatively shallow overburden, e.g. less 10 feet. Copper analysis of soil samples is no longer done on local work as values have proved to be very erratic and usually reflect areas of greenstone and sericite schist.

It was felt that a three metal determination (lead, zinc and copper) should be done on our outside property examinations to determine the cause of G.S.C. anomalies which were given as Total Heavy Metals.

In contouring lead values are cut at 50 parts per million (p.p.m.), zinc at 100 p.p.m. and copper at 50 p.p.m. Lead has proven to be the best indicator, whereas zinc values occasionally reflect lead values but in some cases are erratic and widespread making zinc interpretations very difficult. Copper very seldom reflects vein zones but high values (anomalous) have been obtained over areas of greenstone and sericite schist.

In the case of the T Claim Group interpretation is based primarily on the lead plot.

Lead anomalies 1, 2 and 3 (see figure for lead plot) are small but lie on a vein strike direction.

Anomaly No. 1. This anomaly consists of two isolated lead peaks which lie in a vein strike direction but are not supported by zinc or copper analysis. There is no evident surface expression of a vein zone.

Anomaly No. 2. This lies in close proximity to Vein #2 found by reconnaissance prospecting. Lead results are isolated highs lying in a vein strike direction and is supported by isolated zinc highs.

Anomaly No. 3. This is the largest lead anomaly on the T Claim Group and is supported by a more widespread zinc anomaly. The geochemical results lie on the southwest extension of Vein #3.

Minor zinc anomalies are evident along the creeks and may be due to downstream contamination.

Only one major copper anomaly occurs and that is in the southeast corner of the claim group and may be due to greenstone containing minor chalcopyrite.

CONCLUSIONS AND RECOMMENDATIONS

Prospecting located 3 vein zones in the claim group of which two are supported by geochemical anomalies.

Two of the vein zones found may be classed as a major discovery as assays as high as 899 oz. Ag/ton and 72% Pb were obtained.

Mineralization has shown a favorable Ag:Pb ratio ranging from 3.6:1 to 12.5:1.

Hand trenching of Veins #2 and #3 should be done to obtain structural information and for sampling.

Further detailed prospecting and soil sampling should be done to the northwest to define possible vein extensions, and if results are favorable to further follow-up with hand trenching.

Stake, prospect and soil sample the area southwest and northwest of the T Group to locate further possible vein zones.

Lead Anomaly No. 1 should be investigated on a closer grid pattern, e.g. 100 foot line spacings with samples every 25 feet on the lines.

SUMMARY OF WORK

1. Geological Mapping Aug. 4th - August 26th

One man prospected the 35 claim area on a reconnaissance basis using claim lines and aerial photos for a total of 11 man days.

2. Geochemical Survey Aug. 4th - August 26th

Three men collected 1966 samples for a total of 43 man days. All samples were analyzed in the Geochemical Lab at Calumet.

Geological Mapping

1 Party Chief @ $450.00 per month by 11 days		$ 159.72
	Total	$ 159.72

Geochemical Survey

3 soil samplers @ $375.00 per month by 43 days		$ 520.30
1966 soil samples @ $2.00 per sample for 3 analysis (Lead, Zinc and Copper)		$ 3,932.00
	Total	$ 4,452.30

Geological Mapping	$ 159.72
Geochemical Survey	$ 4,452.30
Total	$ 4,612.02

AFFIDAVIT OF COSTS

I, Robert E. Van Tassell, of Calumet in the Yukon Territory, make oath and say:

That the cost statement on page seven of the Geological and Geochemical Report on the T Nos. 1 to 35 Mineral Claims, to the best of my knowledge and belief, is the true amount of money spent on the geological reconnaissance and geochemical survey of the said claims in 1965.

Robert E Van Tassell

Sworn before me at ~~Calumet~~ MAYO in the Yukon Territory this 7TH day of APRIL, 1966.

P M Cunningham

A Commissioner for Oaths for Yukon Territory.

UNITED KENO HILL MINES LTD.

ELSA YUKON

EXPLORATION DEPARTMENT

T CLAIM GROUP - GRANITE CREEK AREA

Latitude : 63°52' N Longitude : 135°00' W

Staking Sheet Nos. 105-M-14 and 15

4 2 0 4 8 12

Scale : 1 inch = 4 miles

029

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EXPLORATION DEPARTMENT

T CLAIM GROUP

GENERAL GEOLOGY

Sediments

1 Limestone

2 Quartzite — 2a Quartzite with Graphite Schist — 2b Quartzite (broken or crushed)

3 Pale Siliceous Quartzite

4 Graphite Schist — 4a Graphite Schist with Quartzite

5 Sericite Schist

Intrusives

6 Greenstone — 6a Greenstone (altered or highly schistose)

7 Acid Dyke

8 Lamprophyre

Vein Material

Vein Material (breccia, siderite, limonite etc.)

Sulfides (galena, sphalerite etc.)

Geological Contact (observed) — Geological Contact (assumed)

Vein (observed) — Vein (projected or possible)

Fault (observed) — Fault (assumed)

Bedding — Lineations

Schistosity

Photo Center — Trail

Spot Height — Cut Line

Buildings — Roads

Bluff — Bulldozer Trench

Swamp — Hand Trench

Stream — Workings

Slide Rock or Frost Heave — Adit

400 200 0 400 800 1200 1600

SCALE: 1 inch = 400 feet

Drawn by T.H. and G.S. Nov. 1965

Geology by C.P. Costin August 1965

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EXPLORATION DEPARTMENT

T CLAIM GROUP

SOIL SAMPLING
LEAD PLOT

CONTOUR INTERVALS IN PARTS PER MILLION (PPM)

	0	-	50
	50	-	100
	100	-	200
	200	-	400
	400	-	800
	800	-	1600
	1600	-	3200
	3200	-	6400
	6400	-	12,800
	over 12,800		

-3 -13 -13
-48 -7 -16 Lead plot in parts per million (ppm)

(5) Anomaly Reference Number

+267 Photo Center

3770 Spot Height

Buildings

Bluff

Swamp

Stream

Slide Rock or Frost Heave

Trail

Cut Line

Roads

Bulldozer Trench

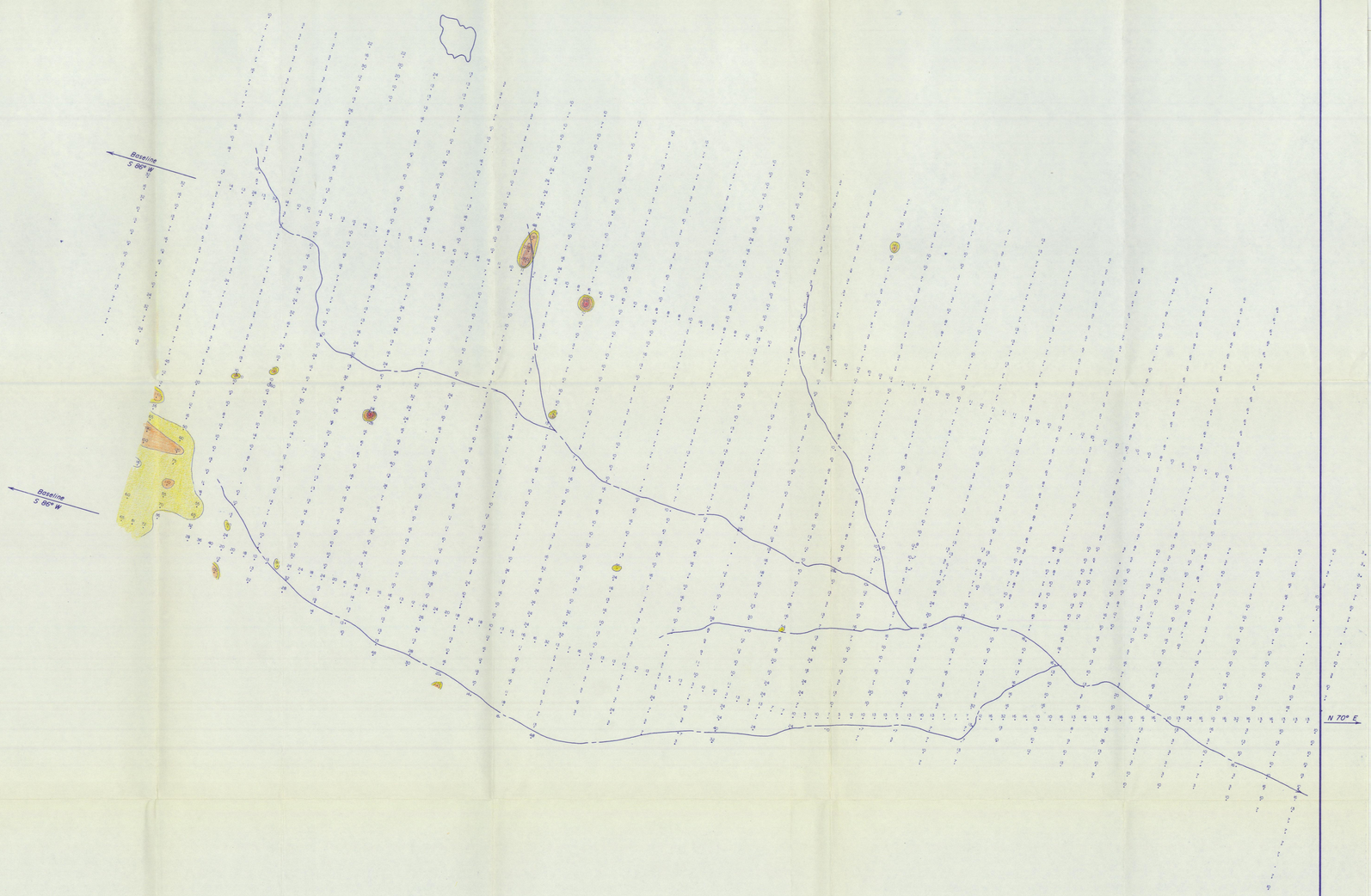
Hand Trench

Workings

Adit

400 200 0 400 800 1200 1600

SCALE : 1 inch = 400 feet



Drawn by T.H. and G.S. Nov. 1965

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EXPLORATION DEPARTMENT

T CLAIM GROUP

SOIL SAMPLING
ZINC PLOT

CONTOUR INTERVALS IN PARTS PER MILLION (PPM)

	0	-	100
	100	-	200
	200	-	400
	400	-	800
	800	-	1600
	1600	-	3200
	3200	-	6400
	6400	-	12,800
	12,800	-	25,600
	over 25,600		

-64 -48 -81
-96 -40 -64

Zinc plot in parts per million (ppm)

+	Photo Center	- - -	Trail
	Spot Height	— · —	Cut Line
□	Buildings	≡≡≡	Roads
	Bluff		Bulldozer Trench
	Swamp	<::::>	Hand Trench
	Stream	□	Workings
	Slide Rock or Frost Heave	⊢	Adit

400 200 0 400 800 1200 1600

SCALE : 1 inch = 400 feet

Baseline
S 86° W

Baseline
S 86° W

N 70° E

Drawn by TH. and GS. Nov. 1965

UNITED KENO HILL MINES LTD.

ELSA YUKON

EXPLORATION DEPARTMENT

T CLAIM GROUP

SOIL SAMPLING
COPPER PLOT

CONTOUR INTERVALS IN PARTS PER MILLION (PPM)

	0	-	50
	50	-	100
	100	-	200
	200	-	400
	400	-	800
	800	-	1600
	1600	-	3200
	3200	-	6400
	6400	-	12,800
	over 12,800		

16 40 32
40 16 48 Copper plot in parts per million (ppm)

+ 247	Photo Center	— — —	Trail
3770	Spot Height	— · —	Cut Line
□	Buildings	≡≡≡	Roads
	Bluff	-----	Bulldozer Trench
	Swamp	<------>	Hand Trench
	Stream	□	Workings
	Slide Rock or Frost Heave	>—	Adit

400 200 0 400 800 1200 1600

SCALE: 1 inch = 400 feet

Baseline
S 88° W

Baseline
S 88° W

N 70° E

Drawn by T.H. and G.S. Nov 1965