

MEMORANDUM

21 April 1970

LOCATION MAP
PROFILES
1" = 100' GEOLGY

From: J. M. McAndrew

Subject: PROPOSED 1970 PROGRAM FOR JM GROUPIntroduction

Geochemistry and geological mapping resulted in the location of molybdenum, copper and zinc anomalies and a piece of molybdenite bearing float on the JM group in 1967. This work was described in the report "Geology and Geochemistry JM Claim Group" by J. McAndrew dated December 1967. In this report an I.P. survey, geological mapping and geochemical sampling were recommended for 1968 on the JM claims. Due to other commitments only the I.P. survey was completed. No work was done on the claims in 1969. A three week program of soil sampling, geological mapping and X-ray drilling is planned for 1970 to test significant geochemical and geophysical anomalies found in 1967 and 1968. Since the claims are from five to six thousand feet above sea level, snow conditions will probably prevent work starting before May 15. The key claims of this 28 claim group expire August 10, 1970, so physical testing should be done as early in the field season as possible to allow sufficient time to prepare any required assessment reports.

Geochemistry

For reasons of clarity the northern portion of the 1"=400 ft. 1967 geology and geochemistry map of the JM claims was enlarged to 1"=100 ft. To this map, which accompanies this memorandum, were added the I.P. contours for the 200 foot search depth. This was done to show the relationship of the anomalous geochemical samples, areas of float and outcrop to the I.P. anomalies. Referring to this map in claims JM 2, 4, 74 and 75 there is an area approximately 1300 feet by 1800 feet where the I.P. response on the 200 foot spread ranges from 50 to greater than 125 minutes. This area should be sampled at 100 foot intervals from 192N to 208N on lines 200 feet apart (126E to 142E). In claims JM 5, 7, 52 and 54 is another area of insufficient soil sampling where the I.P. response on the 200 foot spread ranges from 100 to greater than 125 minutes. This should be sampled at 100 foot intervals from 192N to 208N along lines 99E, 102E, 105E and 108E.

If excessive drift and poor B1 soil horizon development are encountered in the above two areas, as was observed elsewhere on the claims in 1967, it is unlikely that the soil samples will reflect bedrock conditions. Considering the very limited time and effort required for the above sampling, it is at least worth a try.

The above sampling should take from three to four days. Both the sampling and assaying should precede the drilling of holes numbered 4 and 5.

Although there are some moderately anomalous sediment samples in the southern portion of the claims, because of the very negative results of the I.P. survey in this area and the extensive drift cover, no further geochemical sampling seems warranted at this time.

Geological Mapping

More detailed geological mapping along with minor hand trenching should be done in the vicinity of the northern geochemical and geophysical anomalies. Since this ground was staked once in the thirties and twice in the sixties, an attempt should be made to locate any mineralization other than pyrite which may have motivated this activity. The location lines for this previous staking are marked on the base map.

In the south of claim JM 75 one of the reconnaissance crews noted a small outcrop of granodiorite in 1967. West of this outcrop a soil sample assayed 615 ppm zinc. This outcrop should be checked to see if it is actually an outcrop or just a large drift boulder and whether it contains mineralization which could be the source of the zinc high immediately to the west.

In 1967 samples of float were collected and assayed along with soil samples. The type of float and its assay for molybdenum and copper have been posted on the accompanying 1"=100 feet geology and geochemical map. The plotted quartz diorite, granodiorite, andesite and tuff float may give a rough approximation of the type and distribution of underlying bedrock.

Geophysics (1"=400' contour maps for the 200 and 400 feet I.P. search depths for the northern portion of the claims are attached.)

No geophysics is planned for 1970. The 1968 I.P. low which corresponds to the area of molybdenum highs is flanked to the east and west by arcuate I.P. highs. Within the area of the I.P. low several small outcrops and some float consisting of andesite and tuff locally carry 1 to 5 percent pyrite (some of which appears epigenetic). The covered areas of the I.P. highs could also be underlain by similar pyritic volcanics. The distribution of mapped float suggests that the I.P. low may represent a thin layer of volcanics underlain and intruded by granodiorite. This granodiorite may have been the source of the molybdenite bearing solutions which flooded the crackled andesite picked up as float in the north of claim JM 4.

Diamond Drilling

Depending on snow conditions, X-ray diamond drilling should start as soon as possible after May 15. The drill camp consisting of geologist and helper, two drillers, two drill helpers and a cook, should be established (using a helicopter) as close to the proposed drill holes as possible. One heliport will have to be built at the end of the road in JM 69 and the other at the drill camp. A helicopter can be contracted from Penticton.

Allowing three weeks for this drilling program it should be possible to drill four to five 150' holes. Considering the drainage systems in the area of interest 2000 feet of water line should be adequate to reach any possible drill target.

To:

3 February 1971

J. M. McAndrew

From: G. D. Nordin

Subject: RESULTS 1970 JM X-RAY DIAMOND DRILLING AND SOIL GEOCHEMISTRY

Introduction:

Geochemistry and geological mapping on the JM claims outlined several molybdenum, copper and zinc anomalies, as described in the report "Geology and Geochemistry JM Claim Group" by J. M. McAndrew dated December 1967. Recommendations in this report lead to the completion of an I.P. survey in 1968. The I.P. survey indicated significant anomalous zones of up to 125 minutes in the region of the anomalous geochemical zones. On the basis of this information five X-ray diamond drill locations were spotted to test these zones in the summer of 1970. This drilling was carried out during June-July, 1970 and all but diamond drill location JM 70-3 were completed.

Soil geochemistry was also completed on a number of new lines to test I.P. anomalies.

Diamond Drilling:

See "JM Claims Revised Map 1970" showing 1970 X-ray diamond drill and geochemistry locations. Also see attached diamond drill logs for detailed description.

JM 70-1 N 200 80 - E 11460, N65°E at 45°, 147' drilled to test -

- (1) 20 to 24 ppm molybdenum anomaly
- (2) 50 to 75 minute I.P. anomaly
- (3) possible tuff-granodiorite contact.

Results -

The main rock type is a fresh, light to dark green, massive, very fine grained andesite showing numerous flow structures at 45° to the core. Sulphide content is low throughout 0.2-0.5% and consists primarily of disseminated pyrite with occasional thin veinlets (1/16"-1/8") of pyrite-magnetite. A fracture zone 3.6'-11.6' and a highly brecciated-silicified zone 36'-102' contain increased sulphide content 0.5-1.0% as wispy magnetite-pyrite stringers (1/4"-1.2"). Very minor flecks of molybdenite and chalcopyrite are associated with these wispy veinlets. A fresh barren diabase "sill" cuts the brecciated zone 59'-75' and shows sharp contacts parallel to the visible flow structures. Sulfides are present 102'-122' again as wispy magnetite-pyrite veinlets (1/8") at irregular orientations of average content 0.5%. High assay for molybdenum is 80 ppm for a thin molybdenite stringer at 4.0'. For copper two zones of greater than 100 ppm from 36'-40' and 85'-130' are associated with slightly increased sulphide content found associated with the fracture zones.

JM 70-2 N 19460-E11800, N100°E at -60°, 117' drilled to test -

- (1) if SE flowing stream is surface representation of mineralized structure,
- (2) NE fractures at depth,
- (3) vicinity of molybdenite mineralized float,
- (4) possible andesite - granodiorite contact.

Results -

Main rock consists of a light grey, massive, medium grained, granodiorite. The rock is moderately fractured throughout with a number of small (1'-2') fractured zones with abundant iron stain and pyrite stringers 0.5-1.0%. Sulphide content averages 0.3-0.5% as magnetite-pyrite stringers (1/16"-1/8") with very minor flecks of molybdenite and chalcopyrite. The lower section of the core from 46'-117' shows moderate to intense alteration to chlorite and sericite. From 59'-68.5' this altered zone is cut by a fresh unaltered diabase dyke containing a few siliceous stringers. A strong structure is evident at the bottom of the hole from 115-120' with intense alteration to sericite and very poor core recovery (1%-30%). Assays for copper show very erratic values ranging from 80 ppm - 640 ppm associated with variable visible sulphide content as magnetite-pyrite stringers along fractures.

JM 70-3

Was spotted to be drilled at N190-E12550, N65°E at -45°, 150+. The hole was attempted three times but was not completed due to deep overburden - in excess of 20'.

JM 70-4 N19450-E13100, N55°E at -45°, 100' drilled to test -

- (1) 50 to 75 minute I.P. anomaly,
- (2) possible source of molybdenum in swamps to SW.

Results -

Three rock types were encountered in this hole: 10-40 light grey, massive, medium grained granodiorite; 40-51 dark grey, massive, medium grained quartz diorite; 51-100 light green, fine to very fine grained tuff. Numerous small fractures are present throughout with associated magnetite-pyrite stringers. Sulphide content is fairly high, averaging 0.9-1.2% as wispy magnetite-pyrite veinlets (1/8"-1/4") with a slight increase towards the bottom of the hole. Copper assays have a relatively high constant value of 300 ppm as very minor chalcopyrite within the magnetite-pyrite veinlets.

JM 70-5 B29999-E12930, N90°W at -60°, 79' drilled to test -

- (1) 100 to 125 minute I.P. anomaly,
- (2) possible source area of molybdenum in swamps to SW.

Results -

The main rock consists of a light to dark green, fine - very fine

2 could be dikes of the

grained mottled tuff with a few small (2') intercalated andesite flows. Sulphide content 1.0-1.5% is present as thin (1/8"-1/4") evenly spaced (0.5'-1.0') magnetite-pyrite veinlets with minor chlorite alteration along the veinlets. Assays for copper are constant at approximately 200 ppm as very minor chalcopryrite flecks in the magnetite-pyrite veinlets.

Conclusions:

The 1970 X-ray diamond drilling on the JM claims lead to the following conclusions:

- (1) There is rapid lateral and vertical variation of the major rock types granodiorite, diorite, andesite and tuff with numerous fracture zones.
- (2) Definite association between fracture zones and sulphide mineralization as pyrite-magnetite stringers and disseminations.
- (3) Mineralization is primarily magnetite and pyrite as disseminations or thin veinlets of percentage content up to 1.5% with only very minor associated molybdenite and chalcopryrite.

Seems like a high response for a low % of sulphides.

- (4) The high I.P. responses due to pyrite-magnetite rich zones of 1.0-1.5%.

1970 Soil Geochemistry: (See "JM Claims Revised Map 1970" showing 1970 X-ray diamond drill and geochemical locations)

Sampling done -

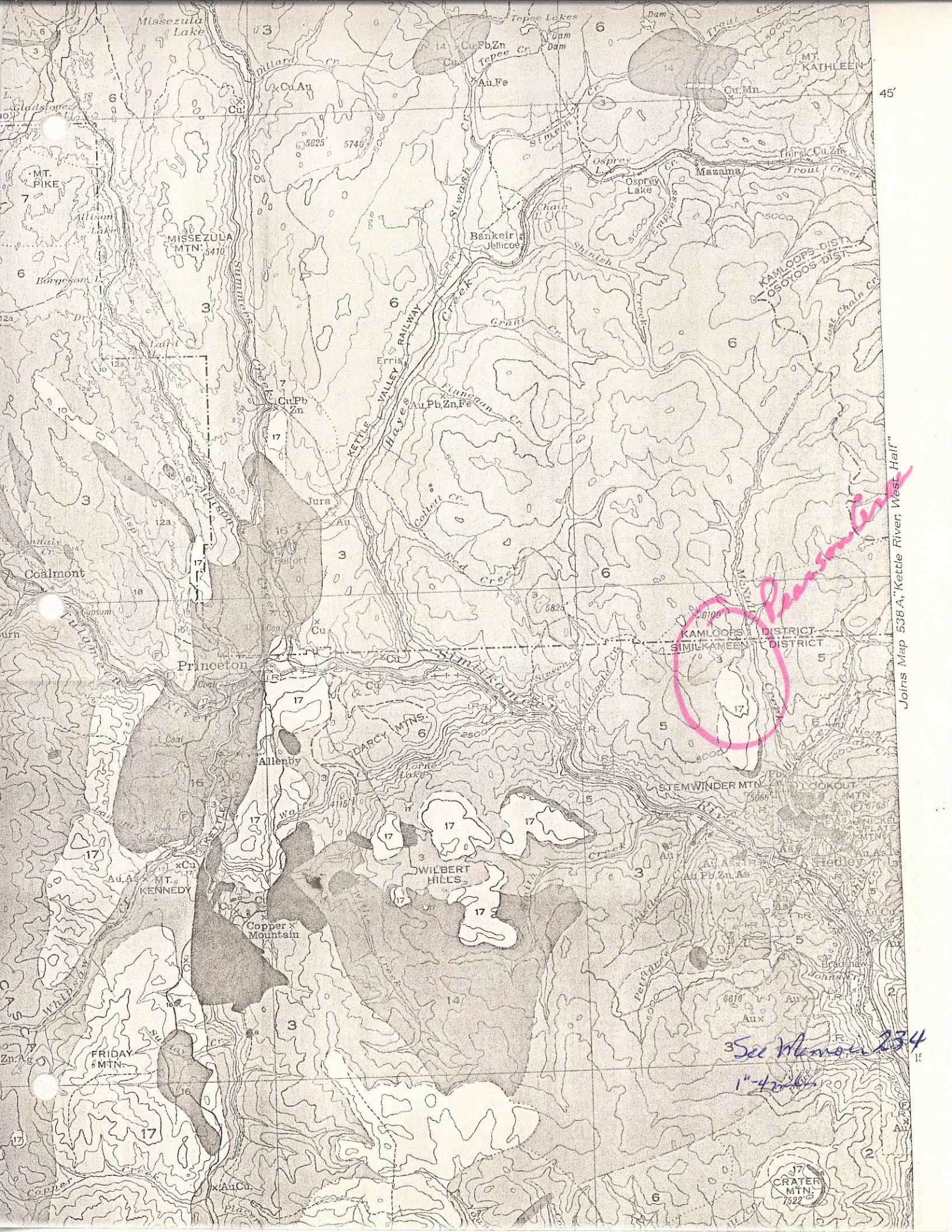
The following lines were cut and soil sampled for B horizons at 100' spacings: E99, E102, E105, E108, E128, E130, E134, E136, E138, E140, E142 from N192-N208; N200 from E102-E145.

Results -

One anomalous copper zone of greater than 100 ppm was outlined. The anomalous zone is elliptical in outline centered on N200-E104 of dimensions 600' x 300' trending SE-NW. This anomalous copper soil zone corresponds almost exactly with the 125 minute I.P. high which is also elliptical and elongate in NW-SE direction. The high assay of 140 ppm copper is also centered on the I.P. high of 125 minutes.

NOTE!
NOT DRILLED

Gary Nordin
Gary Nordin

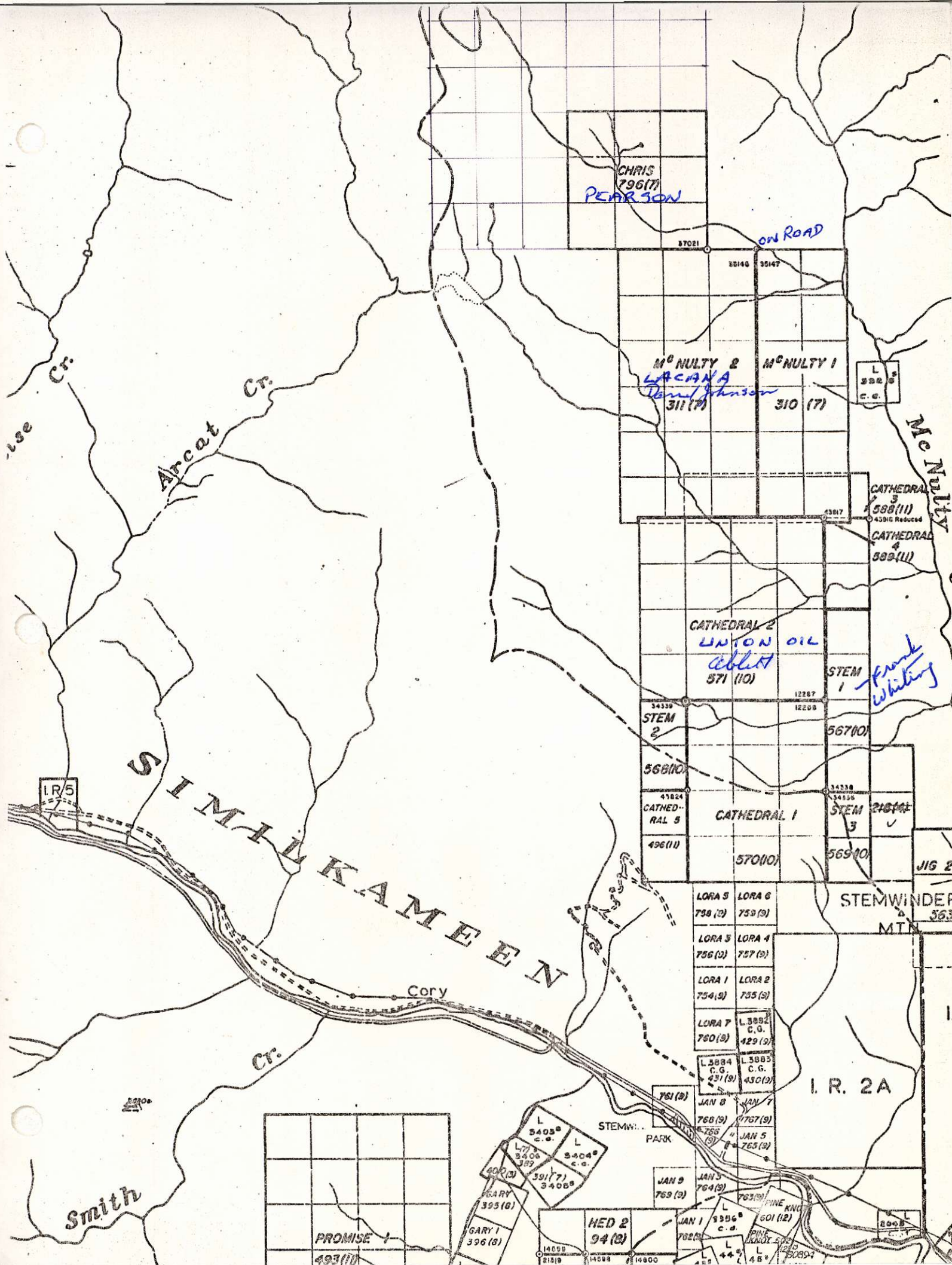


45'

Joins Map 538 A, "Kettle River, West Half"

3 See Memoir 234
1" - 4 miles

37
CRATER
MTN.
7522'



CHRIS
796(7)
PEARSON

ON ROAD

Mc NULTY 2
LACANA
Pearl Johnson
311(7)

Mc NULTY 1
310(7)

L
388
C.G.

CATHEDRAL 3
588(11)
43316 Reduced
CATHEDRAL 4
589(11)

CATHEDRAL 2
UNION OIL
Ablet
571(10)

STEM 1
Frank
Whiting

STEM 2

STEM 3

CATHEDRAL 5
496(11)

CATHEDRAL 1
570(10)

STEM 3
569(10)

LORA 5
758(7)

LORA 6
759(9)

STEMWINDER
563
Mtn

LORA 3
756(2)

LORA 4
757(9)

LORA 1
754(9)

LORA 2
755(9)

LORA 7
760(9)

L. 3884
C.G.
431(9)

L. 3883
C.G.
430(9)

I. R. 2 A

STEMWINDER
PARK

JAN 8
768(9)

JAN 7
767(9)

JAN 9
769(9)

JAN 5
764(9)

JAN 5
765(9)

HED 2
94(8)

JAN 1
762(9)

JAN 2
763(9)

JAN 3
764(9)

JAN 4
765(9)

JAN 6
768(9)

JAN 9
770(9)

PINE KNIFE
501(12)

Smith

PROMISE 1
493(11)

GARY 1
395(8)

GARY 2
396(8)

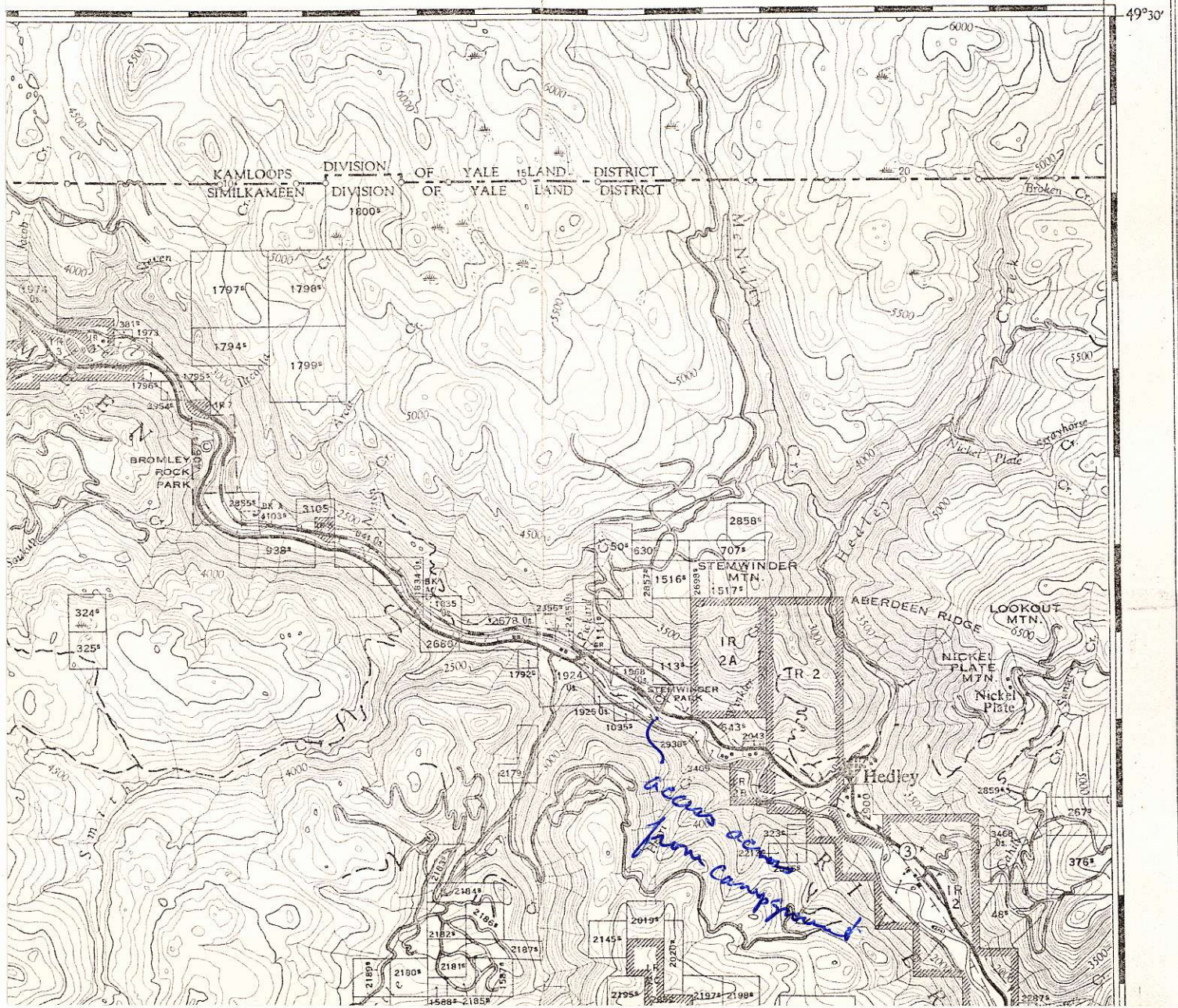
14000
14100
14200
14300
14400
14500
14600
14700
14800

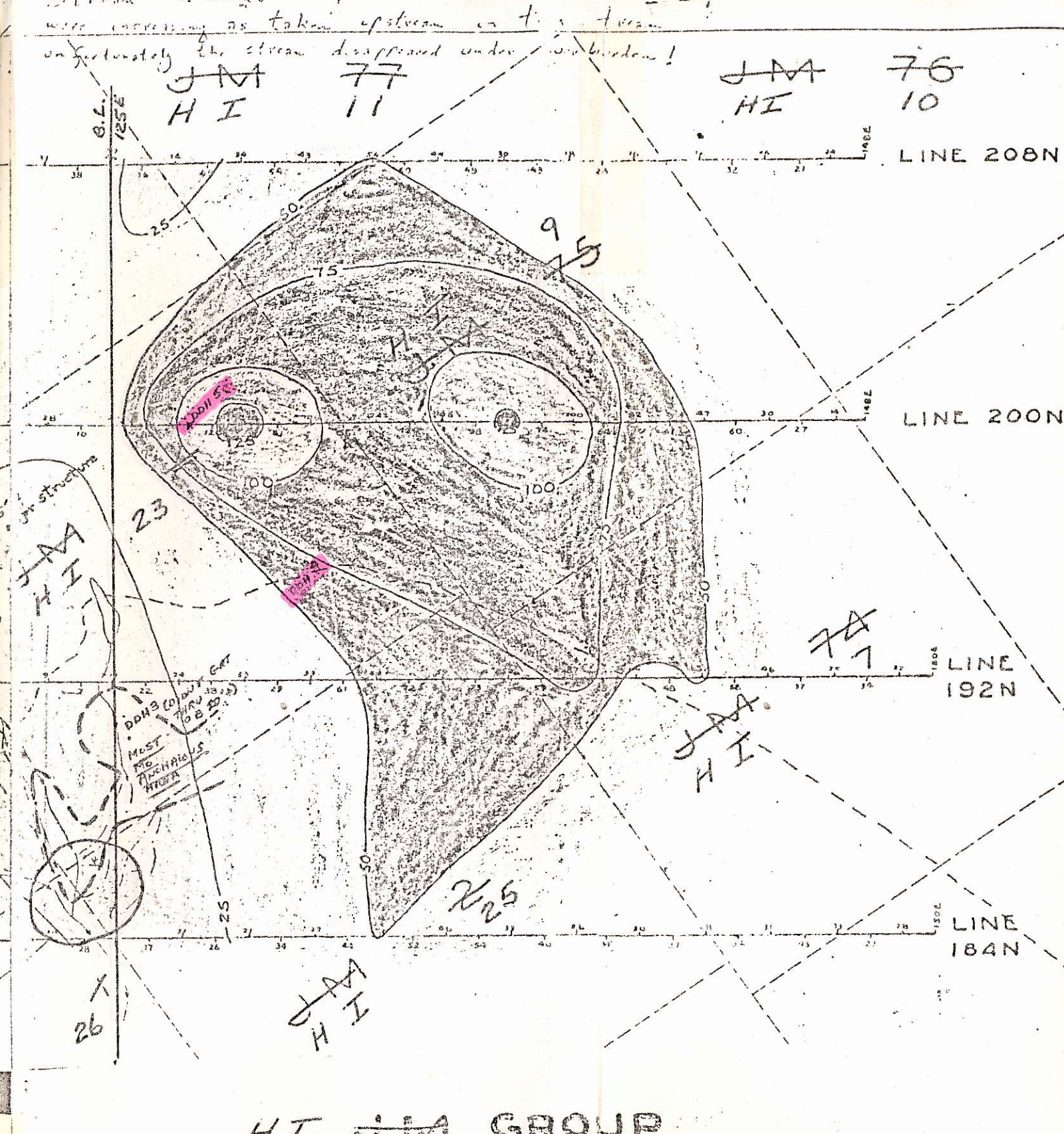
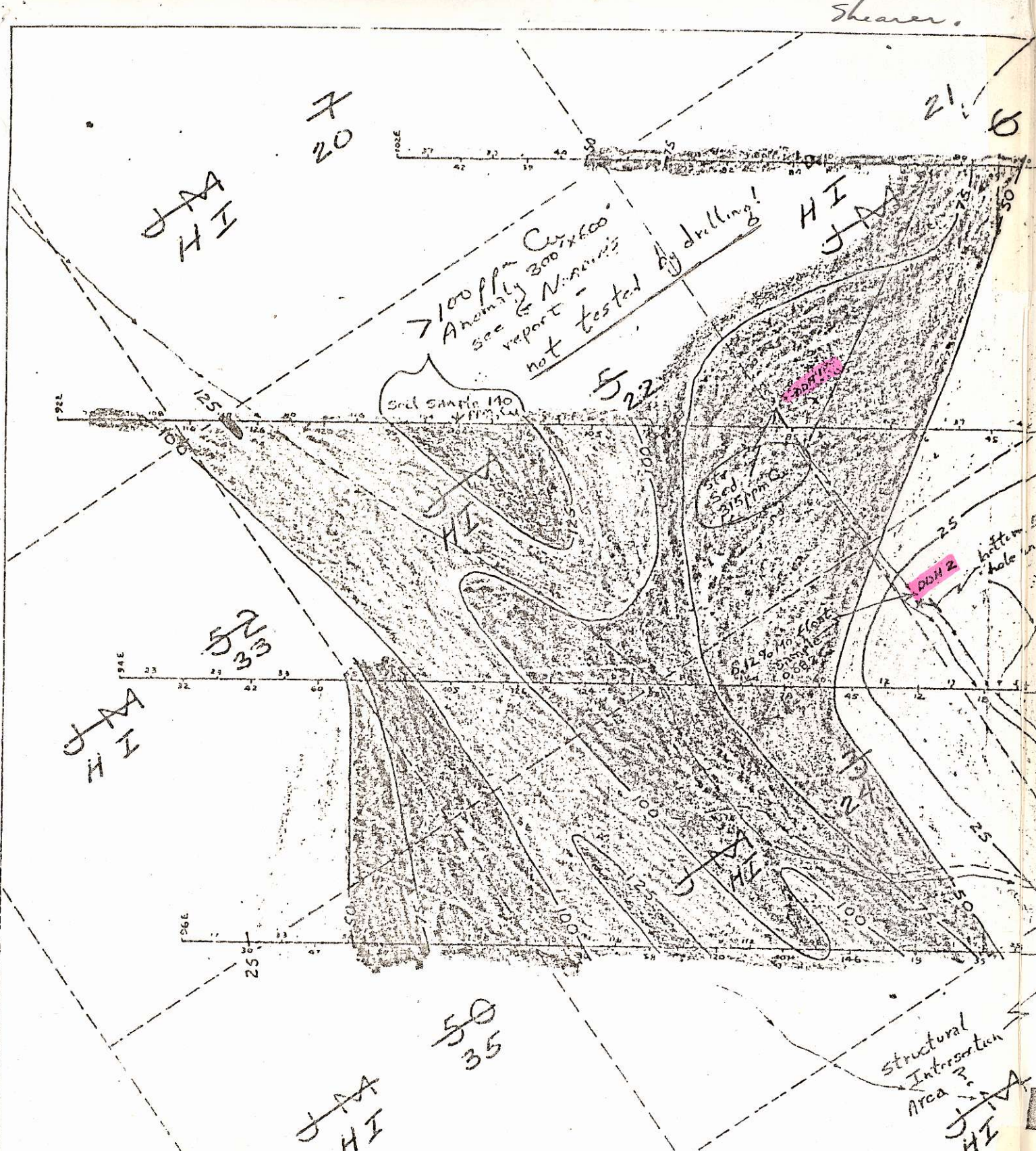
44°
45°
46°

15'

120°00'

49°30'





VALUES FOR THE 200 FOOT SPREAD ARE SHOWN IN MINUTES ABOVE THE PICKET LINE; THOSE FOR THE 400 FOOT SPREAD ARE BELOW THE LINE.

200 FOOT SPREAD CONTOURS

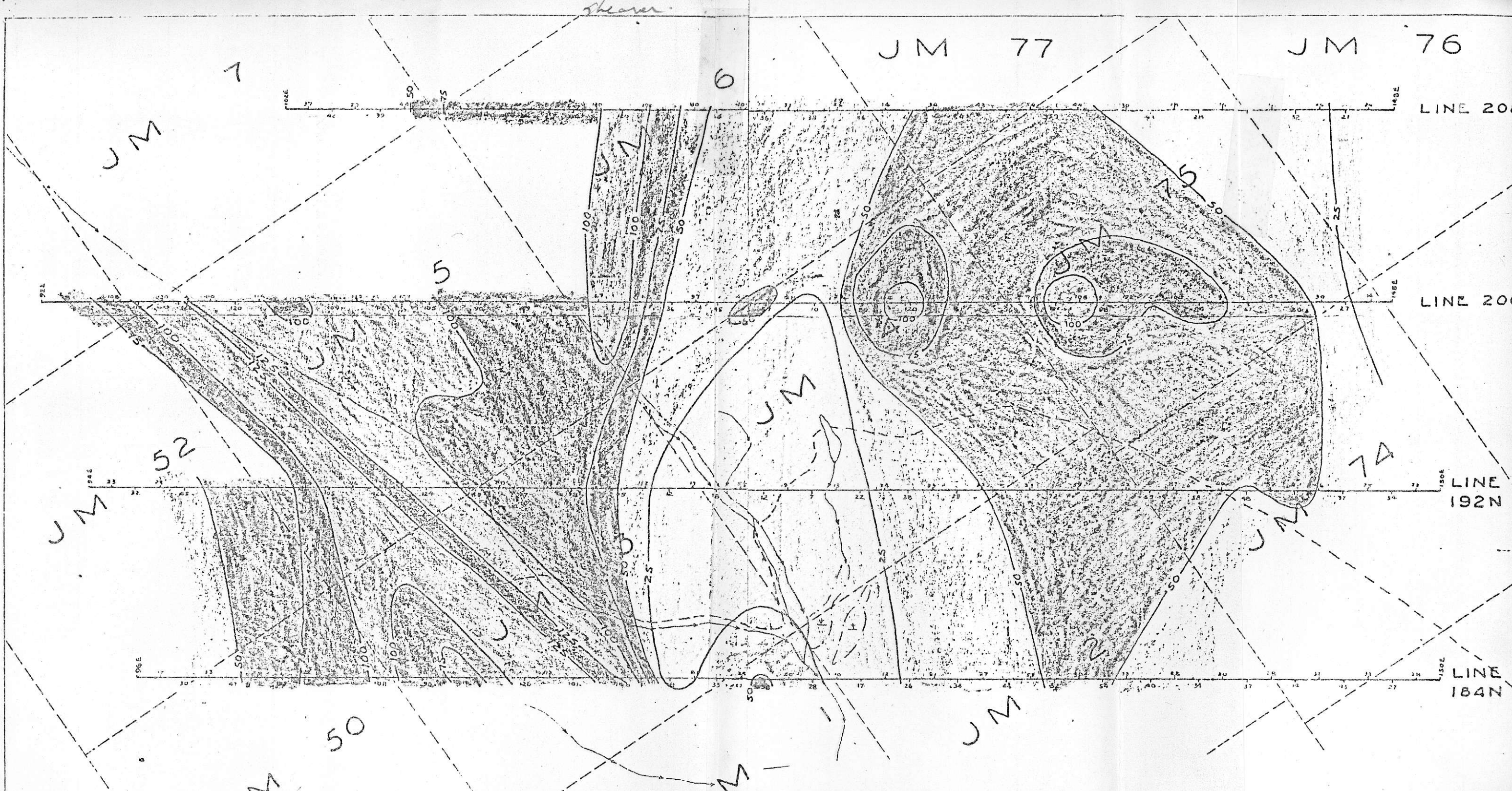
HI JAA GROUP
SIMILKAMEEN M.D., HEDLEY, B.C.

5 SECOND U.L.F.

SCALE: 1" = 400'

DATA BY: DAVE BROSWICK

JUNE 1968



VALUES FOR THE 200 FOOT SPREAD ARE SHOWN IN MINUTES ABOVE THE PICKET LINE: THOSE FOR THE 400 FOOT SPREAD ARE BELOW THE LINE.

400 FOOT SPREAD CONTOURS

HI JM GROUP
SIMILKAMEEN M.D., HEDLEY, B.C.

5 SECOND U.L.F.

SCALE: 1" = 400'

DATA BY: DAVE BROSWICK

JUNE 1968