EXHIBIT NO. 4

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REPORT OF GEOLOGIC INVESTIGATIONS OF THE JANUARY MINE

Willard D. Tompson, Geologist

June, 1960

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REPORT OF GEOLOGIC INVESTIGATIONS OF THE JANUARY MINE

GENERAL GEOLOGY

Geographic Locality and Geologic Setting

The January mine is in the Winston mining district which lies on the northeast flank of the Elkhorn mountains and 5 miles southwest of Winston, Montana.

The area in which the January mine is located is underlain by andesite and is locally intruded by rocks of diverse character and composition. The intrusive rocks will be generally classified as "monzonite" pending microscopic examination. Various degrees of contact metamorphism are noted in the area.

Faults Identified in the Area

At least five major faults may be identified in the immediate area of the January mine, however, their age and displacement relationships are not clear at the time of this writing. The faults may be divided into two groups; (1) faults identified only on the surface and not found in the underground workings of the January mine and (2) faults identified in the mine and also on the surface. These faults may influence the localization of the vein or may displace the vein.

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1. Two faults have been identified by surface observations and apparently do not influence the January vein. One fault is parallel to Weasel Creek and lies near the stream channel. It was identified because it produced radical changes in the outcrop patterns of the monzonite on either side of Weasel Creek in the vicinities of the January mine and the East Pacific and Freiburg mines. The displacement on this fault has not been determined. It strikes generally northward and apparently is at least 3000 feet in length.

The second fault is nearly parallel to Weasel Creek throughout part of its length, but it changes strike from northward on its north end to about S 50° W on its southern end. Here it can be traced by bulldozer cuts as it crosses Weasel Creek and when it crosses Weasel Creek road it is exposed in the road cut.

About 1000 feet east of the Freiburg mine this fault apparently cuts the monzonite body in which the Freiburg mine is located. The monzonite is nearly 1200 feet wide where it is cut and it ends abruptly at the fault. This fault can be traced through about 4000 feet of its length. It is displayed by a distinct line of depression on the aerial photograph and is readily noted due to a change of vegetation along the fault.

2. At least three major faults are recognized in the January mine and may be identified on the surface. Age and displacement

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relationships are difficult to determine due to inadequate exposures both on the surface and in the underground workings. The three faults may be generally described as (1) a fault which strikes N 65° W to N 90° W and dips 55° N to 75° N. This fault is parallel to the January vein throughout its known extent of approximately 370 feet (2) a fault which strikes N 55° E to N 75° E and which dips 50° N to vertical. This fault apparently displaces the January vein and is encountered in two places in the No. 4 tunnel; first, about 20 feet west of the portal and then about 400 feet west of the portal (3) a fault which strikes about N 35° W and has a nearly vertical dip. This fault has been identified only in the north cross cut in No. 4 tunnel. The fault apparently displaces a N 70° W fault for a distance of about 85 feet along the strike, N 35° W. This fault contains very little gouge as compared to other faults in the January mine. The gouge is about ¼ inch thick and is mostly white or grey clay.

A fourth fault may exist and perhaps is the most difficult to recognize. It strikes N 50° W to N 70° W and dips from 60° N to 85° N. It may easily be confused with the fault which is parallel to the January vein, however, its position in the south-west drift of tunnel No. 3 would seem to indicate that it is distinctly different.

JANUARY VEIN

January Vein Reported Lost in Fault

The January vein was reportedly lost in a N 65° E fault some 400 feet west of the portal of No. 4 tunnel. This area is accessable, however extensive lagging prohibits a close examination of the vein and fault. The vein is also reportedly lost in faults of levels Nos. 1, 2, and 3, but these areas are not longer accessabel.

Probability of Re-discovery of the January vein

Recent bulldozing 200 feet west of the No. 6 tunnels has disclosed a vein believed to be the January vein. It strikes N 85° E and dips 55° N. It is 3 feet to 6 feet wide and consists of numerous quartz veinlets within crushed andesite and clay. The entire vein is heavily stained with limonite. A fault which is exposed in the same pit strikes N 65° W and dips 85° N. This fault has been traced on the surface for a distance of about 800 feet. A fault which appears to be the same fault, i.e., it has about the same type and amount of gouge and has a similar strike and dip, has been tentatively traced in the underground workings for a distance of about 700 feet. The influence of this fault upon the vein is not clear at the time of this writing.

Proposed Exploration Program

The westward extent of the vein which is exposed at the No. 7 level (bulldozer pit) may be a ascertained by geochemical pros-

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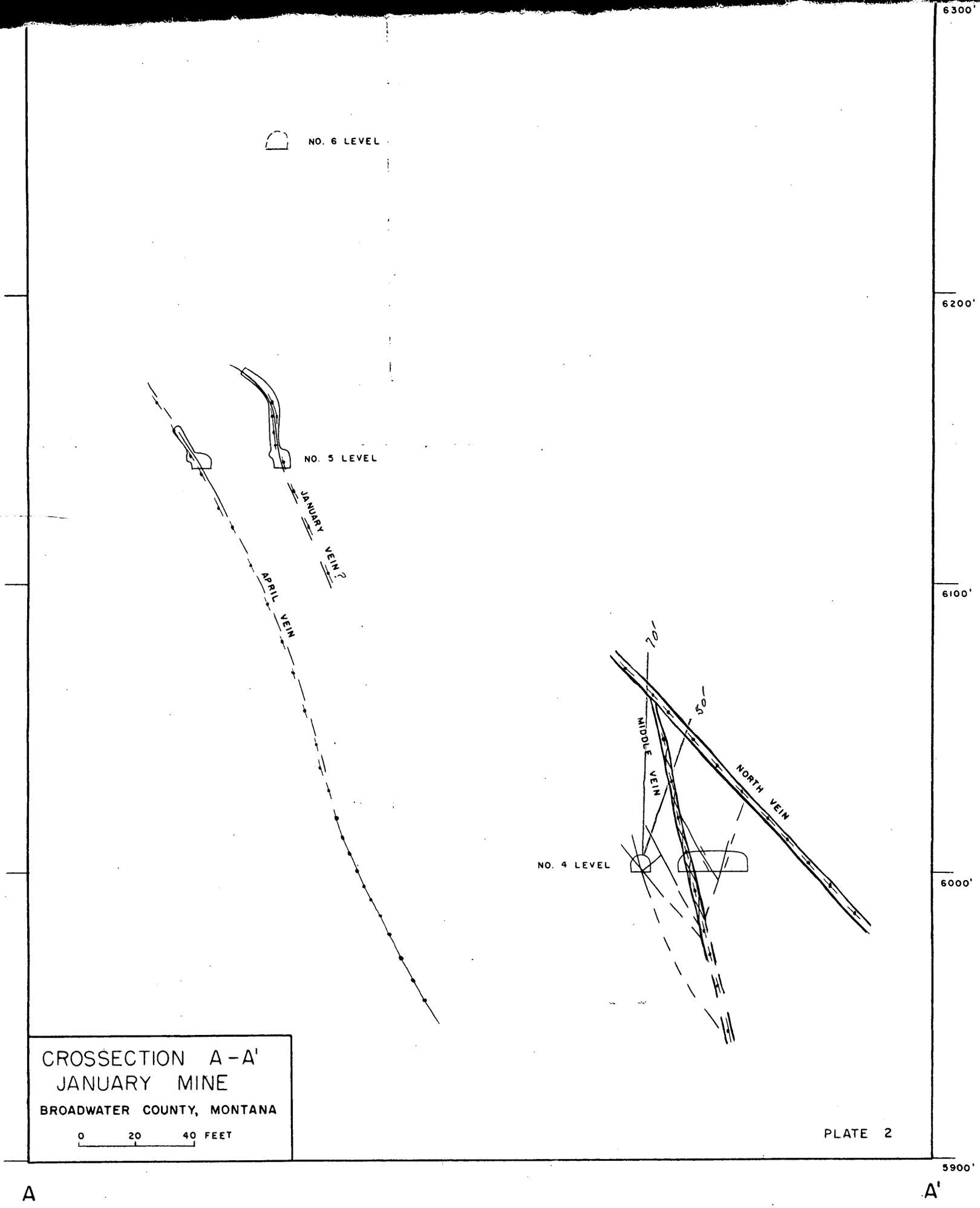
pecting means. Nine lines, 500 feet apart, 200 feet in length and perpendicular to the strike of the vein have been surveyed and will be sampled systematically. The samples will be analyzed for their total heavy metal content. Consistent geochemical anomalies would serve to define the vein and subsequently should be supported by exposure of the vein.

The vein should be located on the level of the 4, 5, or 6 tunnels if possible, however, underground exploration should await further geological investigations.

Respectfully submitted,

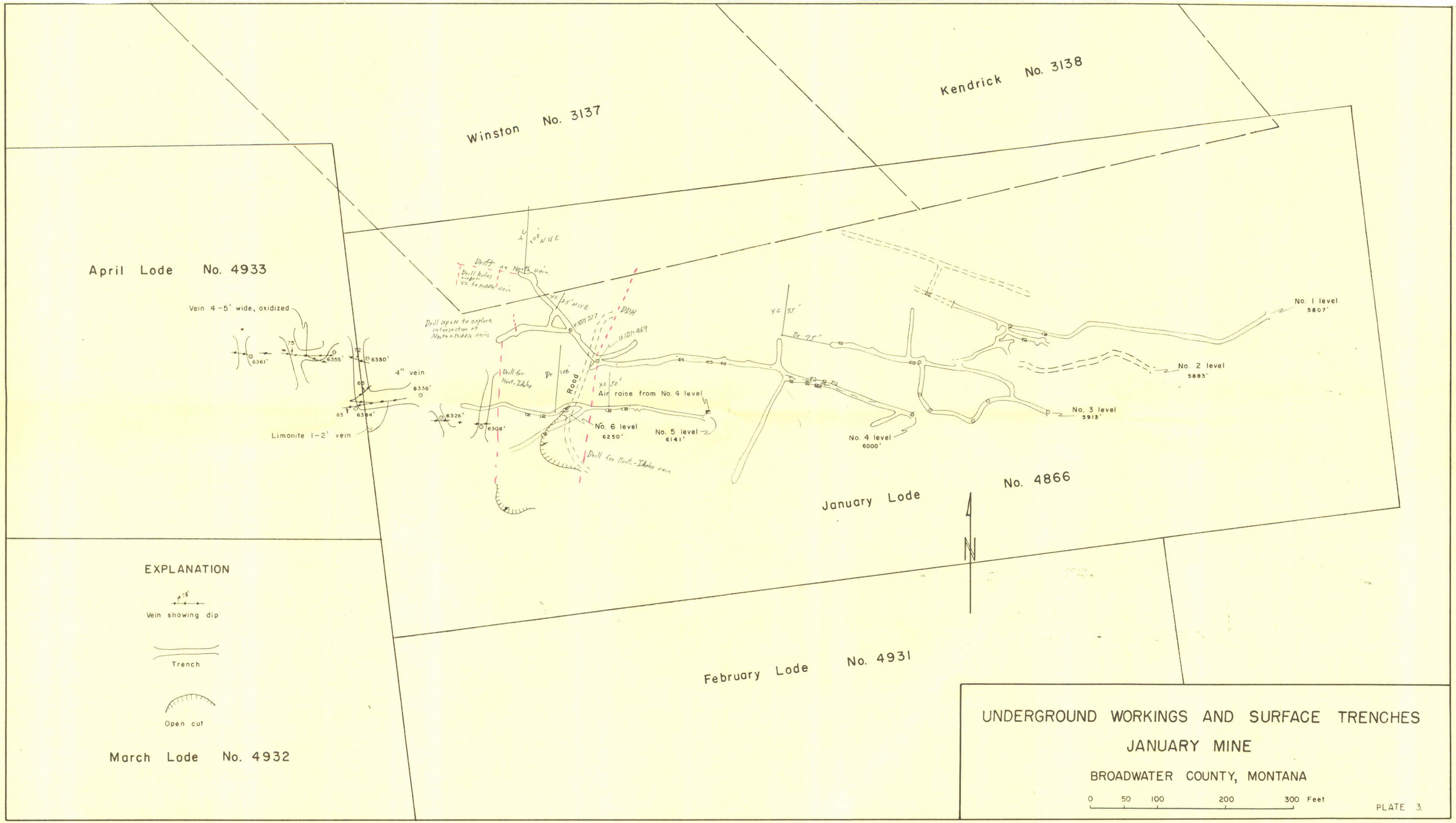
Willard D. Tompson, Geologist

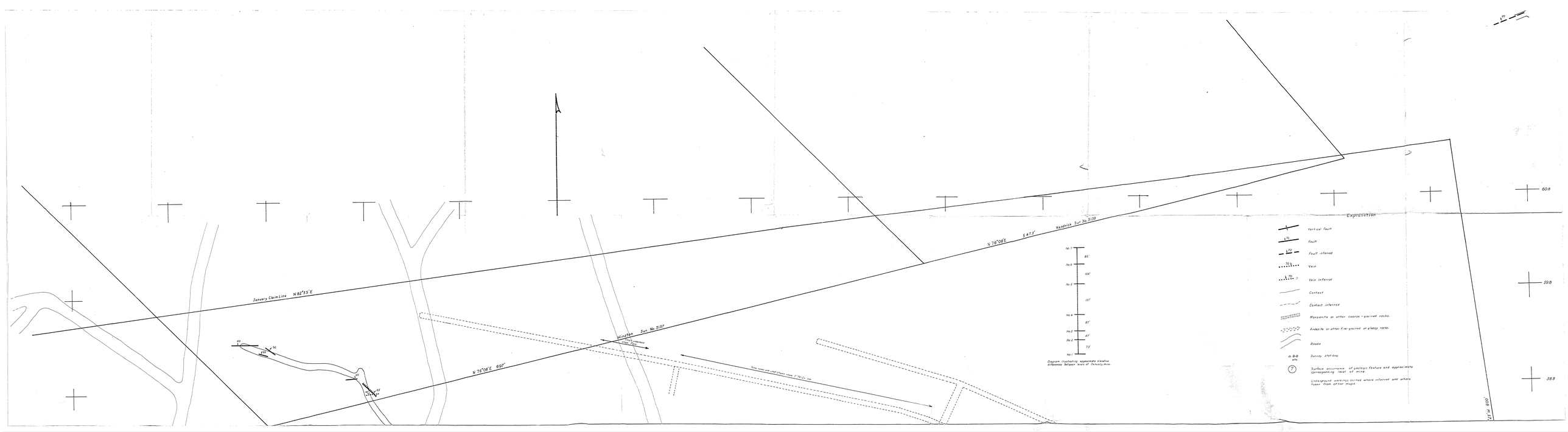


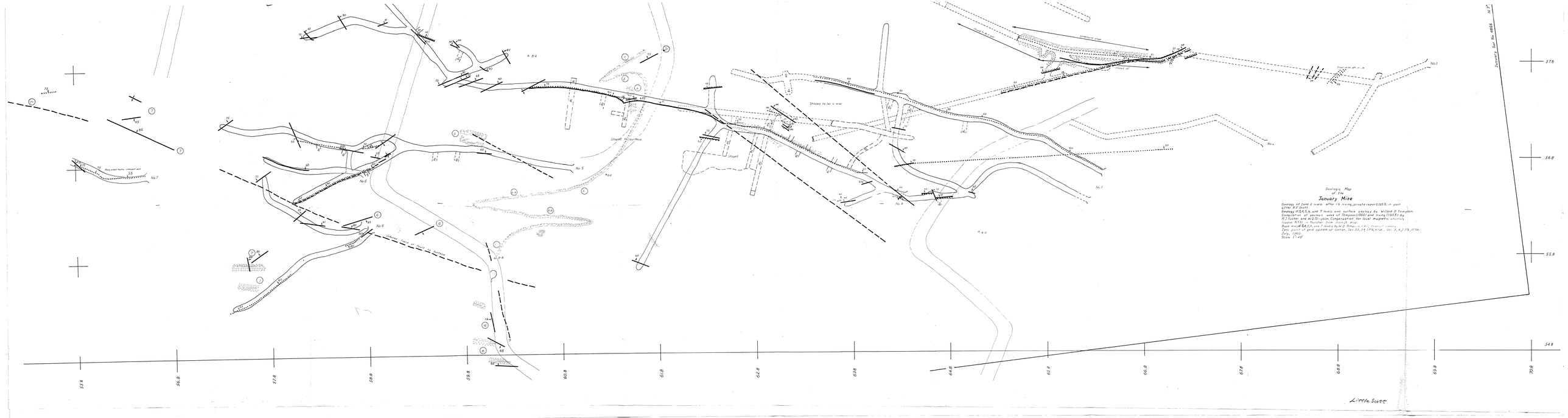
CROSSECTION A-A'
JANUARY MINE
BROADWATER COUNTY, MONTANA

0 20 40 FEET

PLATE 2


Kendrick No. 3138
Winston No. 3137
April Lode No. 4933
Vein 4-5' wide, oxidized
6361'
75
6355'
72
6350'
4" vein
6336'
65
83
6384'
Limonite 1-2' vein
6326'
6308'
Drift on North vein
Drill holes under XC to middle vein
XC 100' N 15 E
XC 25' N 15 E
Drill upon to explore intersection of North & middle veins
DDH
U.S.D.H. 227
U.S.D.H. 469
Drill for Mont.-Idaho
Dr 100'
Road
XC 50'
Air raise from No. 4 level
No. 6 level
6250'
No. 5 level
6141'
Drill for Mont.-Idaho vein
XC 25'
Dr 25'
No. 4 level
6000'
No. 3 level
5913'
No. 2 level
5883'
No. 1 level
5807'
January Lode
No. 4866
N
February Lode No. 4931
March Lode No. 4932
EXPLANATION
Vein showing dip
Trench
Open cut
UNDERGROUND WORKINGS AND SURFACE TRENCHES
JANUARY MINE
BROADWATER COUNTY, MONTANA
0 50 100 200 300 Feet
PLATE 3


January Claim Line N 82°55' E
N 76°06' E 609'
N 76°06' E 547.5'
Kendrick Sur. No. 3139
Winston Sur. No. 3137
Stony creek and small shaft, about 1/16 of a mile
No. 7
No. 6
No. 5
No. 4
No. 3
No. 2
No. 1
85'
104'
137'
87'
47'
75'
Diagram illustrating approximate elevation differences between levels of January mine.
Explanation
Vertical Fault
Fault
Fault inferred
Vein
Vein inferred
Contact
Contact inferred
Monzonite or other coarse-grained rocks.
Andesite or other fine-grained or glassy rocks.
Roads
Survey stations
Surface occurrence of geologic feature and approximate corresponding level of mine.
Underground workings dotted where inferred and where taken from other maps.
60.8
59.8
58.8


Geologic Map
of the
January Mine
Geology of Zone 2 levels after I.G. Irving, private report (1953), in part after R.F. Scott
Geology of 3,4,5,6, and 7 levels and surface geology by Willard D. Thompson.
Compilation of previous work of Thompson (1960) and Irving (1953) by R.J. Foster and W.D. Thompson. Compensation for local magnetic anomaly issues in 3,4,5 & 7 levels from Irving's map.
Base map of 3,4,5,6,7,8,9,10,11 levels by W.D. Thompson. Surface contours from Bureau of Land Mgmt. Survey, Jan. 5, 6, & 7, 1978, NTS.
Base grid based on grid system of corner, Sec. 33, T.8 (N), R.1W., Jan. 5, 6, & 7, 1978, NTS.
Lat. 1 mile
Scale 1" = 40'
January Lot No. 6456
No. 17
Stopes to 1st w. level
Stopes to surface
Stopes
Caved stope
Caved stope
Stope
Stope
Stope
Stope
No. 1
No. 2
No. 3
No. 4
No. 5
No. 6
No. 7
Little Scott
57.8
56.8
55.8
54.8
55.8
56.8
57.8
58.8
59.8
60.8
61.8
62.8
63.8
64.8
65.8
66.8
67.8
68.8
69.8
70.8