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Item 27

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JARBIDGE PROJECT

FINAL REPORT

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INTRODUCTION

Jarbidge is an old mining town and district located 100 miles NNE of Elko, Nevada, in Elko County, 10 miles south of the Idaho border. Gold was discovered at Jarbidge in 1909 and mining began shortly thereafter. The majority of production occurred between 1917 and 1932 when Elkoro Mines was producing, primarily from the Long Hike Mine. Total production from the district was 900,000 tons of ore containing 433,880 oz Au, and 1,279,773 oz Ag valued at $10,110,348.00.

Freeport Exploration Company leased the 38 patented claims owned by Envirotech in August of 1979.

LAND STATUS

Envirotech owns the 38 patented claims (Fig. 1) which cover the Long Hike and North Star Mines and part of the Starlight. Adjacent claims to the east are held by Bourne Mining Co., Moab, Utah, (principals are Clayton Stocks and Hank Ruggerie).

GEOCHEMICAL SAMPLING

During 1980 geochemical sampling on the patented claims included surface and underground rock chip sampling and grab sampling of the various lithologies on the dumps. All surface sample locations are located on Figure 2.

Surface outcrop rock chip samples were taken wherever possible to determine the extent of mineralization at the surface. Outcrops are very

limited (Fig. 2, Appendix A). The only samples that carried precious metal values were from outcropping veins.

Rock chip and soil samples were taken along the road cuts in an effort to get below surface soil and into C horizon or shallow outcrops. Values ran up to 41 ppm Au and 7 ppm Ag. Most of the 232 samples taken, however, carried no gold and only trace silver. Most anomalous samples were in strongly silicified zones along structures. (Appendix 1b., Fig. 2)

Dumps thoughout the district were sampled systematically to give an idea of wallrock grades in the mined areas. The dumps were consistantly anomalous with values up to 12.99 ppm Au and 115 ppm Ag. Indications of wallrock mineralization were encouraging. (Appendix 1c., Fig. 2)

The Mill Tunnel Level was opened and sampled in detail to determine alteration variation with depth, and to look for leakage from the proposed underlying ore body. Sample values were disappointing, though the presence of small quartz flooded breccia veins was encouraging (Fig. 3, Appendix 1d). Strong argillic alteration was wide spread, and did not vary significantly in the tunnel, but old underground mapping did suggest some changes beyond the accessible section of the workings.

GEOLOGIC MAPPING AND AIR PHOTO INTERPRETATION

The Jarbidge District is located along the southern edge of the Snake River Plain and in the northern edge of the Basin and Range. PreCambrian(?) and Paleozoic rocks were intruded by Cretaceous quartz monzonite and uplifted significantly to outcrop east of the crest of the Jarbidge Range and west toward the Mountain City highway. Tertiary rhyolites and younger basalts overlap the sedimentary assemblage from the north. These Tertiary rhyolites are the rocks which outcrop in the Jarbidge District. A sliver of

Cambrian(?) quartzite occurs along a major fault and quartz monzonite was intersected in some drill holes though it does not crop out on the surface.

Geologic mapping was completed with the help of old maps, color air photos and ground checking. Attemps to identify and map the various flows separated on the old maps were only moderately successful, so flows were lumped into older and younger rhyolites. The older rhyolites are the hosts for mineralization at Jarbidge and are quartz porphyry rhyolites which are strongly altered to clay-sericite assemblages. The younger rhyolites are not affected by the alteration related to the mineralization.

The old geologic maps (Fig. 4,5) show very complex structure and were certainly drawn with the aide of much underground information from areas now inaccessible. No explanation of the differences between the various mapped flows was discovered among the old maps.

Geologic mapping utilized color and black and white air photos which helped in the definition of lineaments as shown on Fig. 6. The major fabric consists of two sets of faults, northeast and northwest striking. Ground checking identified additional faults and allowed some distinguishing of "veins" which contained adularia in addition to the silicified breccia found cropping out locally along the faults. Figure 7 shows faults which were ground checked as well as those inferred from air photo work. Veins are located primarily on the basis of underground information reported in the literature.

Alteration in the Jarbidge District is strong and extensive. Thin section work shows strong argillic alteration at the surface and in the accessible underground workings over the area of the old mines. The rhyolites were devitrified and altered to a clay (montmorillonite or

kaolinite) - sericite assemblage. In most samples the groundmass was a fine grained quartz-feldspar aggregate in which the feldspar had been replaced by even finer grained clays. These rhyolites have been cut locally by quartz flooded zones where brecciated rhyolite porphyry has been almost totally replaced by silica. Very fine grained sulfides are locally present in these zones. Hematite, limonite and jarosite are all present locally throughout the area. East of the southern quartzite outcrop and in the Pavlak Mine area typical greenish propylitically altered rhyolites are present.

The major faults show two types of alteration. Reefs of strongly iron-stained, mostly silicified, brecciated rhyolite porphyry crop out locally through the area. These are about the only outcrops on the Envirotech claim block. Underground, some faults contain thick zones of pure kaolinite clay with remnant quartz eyes. The best example of this alteration type is at the end of the accessible part of the Mill Tunnel level. In the 6800 level portal and in the Alpha, thin seams of kaolinite along fractures are white to dark red, red-orange, light yellow and yellow brown. Adularia and adularia replaced by quartz are visible locally on the ground but the major indication of the presence of this assemblage in veins comes from the dumps. The veins mined in the past cropped out poorly or not at all which helps explain why the Jarbidge District was discovered so much later than other major producers in the state.

Production at Jarbidge came from rich pockets along the northwest striking quartz-adularia veins. The northeast striking faults which carry the strong clay zones did not contain ore at the levels mined, and offset the mineralized veins. These northwest trending structures are hydrother-

mally altered and are younger than the previous mineralizing episode. This more recent hydrothermal event suggested that a deeper target not directly related to the previously mined veins might exist.

Alteration, structure, dump values and past mineral activity all gave encouragement to drill.

REFERENCES

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REFERENCES - JARBIDGE DISTRICT

Butler, B. S. (1915) Potash in certain Cu-Au ores; U.S.G.S.. Bull. 620-J p. 235
(Jarbidge samples contain an unusual amount of potash - some ores as much as 15%)

Coats, R. R. (1964) Geology of the Jarbidge quadrangle, NV-ID, U.S.G.S. Bull. 1141-M, 24 p.

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Schrader F. C. (1912) A reconnaissance of Jarbidge, Contact, and Elk Mountain mining districts, Elko County, Nevada, U.S.G.S. Bull. 497, p. 1-98
(this is generally less detailed than Bull. 741 and was done earlier, when work in the district had just begun)

---------- (1923) The Jarbidge mining district, Nevada, with a note on the Charleston district, U.S.G.S. Bull. 741, 86 p.

Scott, W. A. (1910) Jarbidge, Nevada; Min. and Sci. Press V.100, p. 613-615
(mainly of historic interest)

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(history and generalized geology - has been updated in more detail)

U.S.G.S. (1968) Aeromag - part of Jarbidge quadrangle, U.S.G.S. Open File Report 1:62,500

USGS Bull 1439 - 1977

Elko's Rpt - Copy

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Expenditures from August 1979 through December 1981 are tabulated below.

Supervisor and labor	$ 17,378.00
Consultant	6,676.35
Air photos	2,254.20
Geochemistry	5,231.00
Cat work	13,738.00
Drilling	83,634.36
Expenses (field)	7,394.14
Expenses (office)	3,946.26
TOTAL	$ 148,475.81

SUMMARY AND CONCLUSIONS

The large lowgrade disseminated precious metal target sought by Freeport does not exist. Potential remains for small highgrade pockets of ore along narrow veins, but the potential tonnages will not meet Freeport's requirements. No further work by Freeport is warranted at this time.

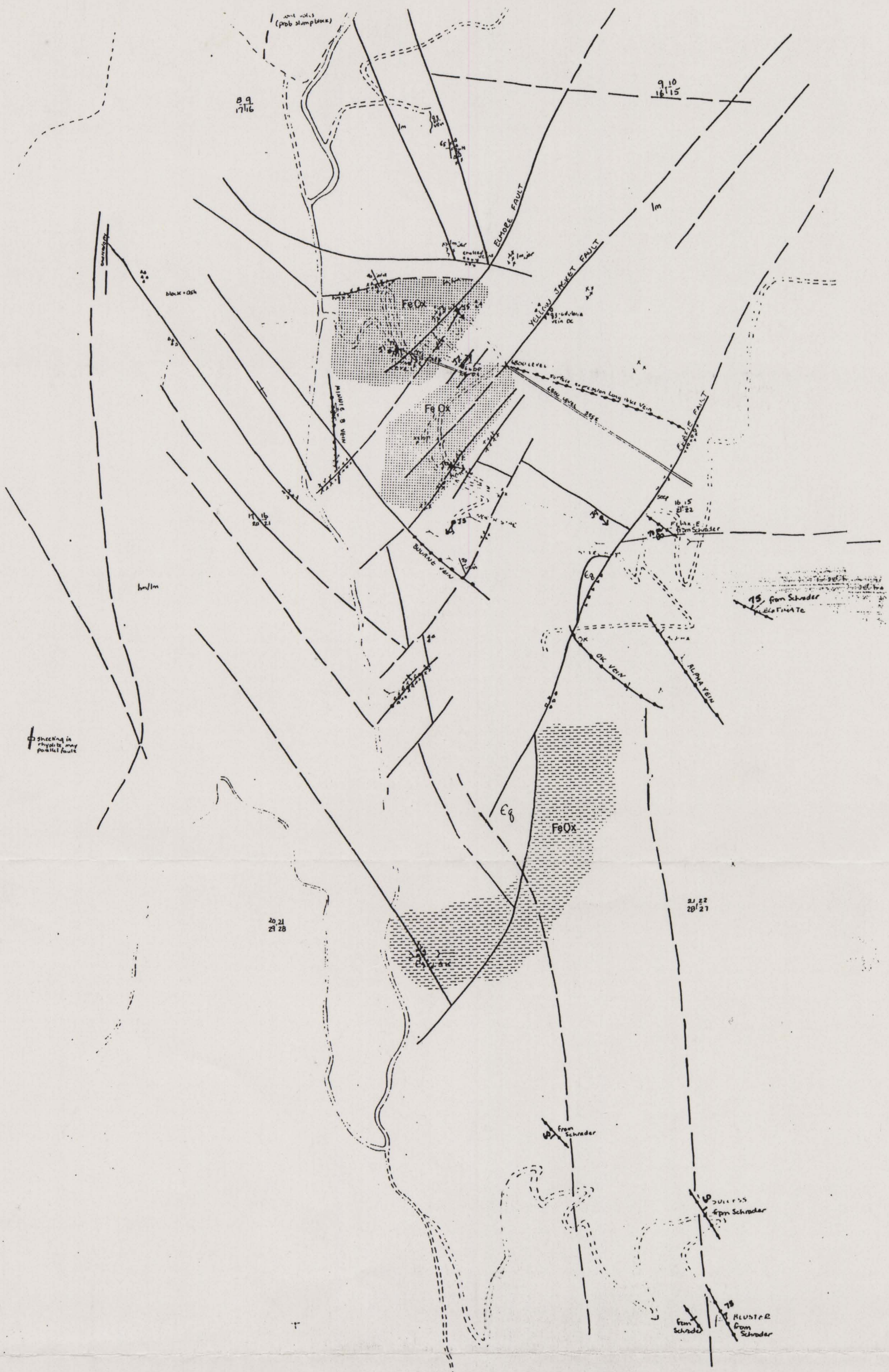
KTH/dt

more recent hydrothermal event suggested that a deeper target not directly related to the previously mined veins might exist.

Alteration, structure, dump values and past mineral activity all gave encouragement to drill.

DRILLING

Six drill holes were located and drilled in 1981 to test for a zone of extensive silicification containing a bulk tonnage of gold and silver mineralization. Holes (Fig. 7, Appendix 2) were located to test both northeast and northwest trending structures which because of different alteration along them indicated the possibility of two periods of mineralization. Holes J1 and J5 encountered strong silicification and quartz flooding type veinlets with fine grained pyrite ± other sulfides. This was the alteration we were predicting but it was barren. Holes J2 and J3 were drilled though argillically altered rhyolite porphyry into the buried quartz monzonite intrusive and did not encounter any pervasive silicification. Hole J4 was drilled through rhyolite prophyry, through the sliver of Cambrian quartzite and across the Flaxie fault into the buried intrusive. Hole J6 tested a zone of strong argillic alteration and crossed two major faults. The hole was stopped prior to the projected silicified zone. Assays are listed in Appendix 2. The only significant values encountered in the drilling were where Hole J2 crossed a small vein between 640' and 675'. This vein carried .066 oz/t Au and .633 oz/t Ag over 35' (fire assays).



FAULT WITH GROUND SUBSTANTIATION

FAULT. UNCHECKED AIR PHOTO LINEATION

QUARTZ - ADULARIA VEIN OR EXPRESSION

BRECCIATION

SILICIFICATION

lm, hm LIMONITE, HEMATITE

STRIKE, DIP ON STRUCTURES, JOINTS (NOT BEDDING)

ϵq CAMBRIAN QUARTZITE

DRILL HOLE (WITH DIRECTION DRILLED)

PROPYLITIC ALTERATION

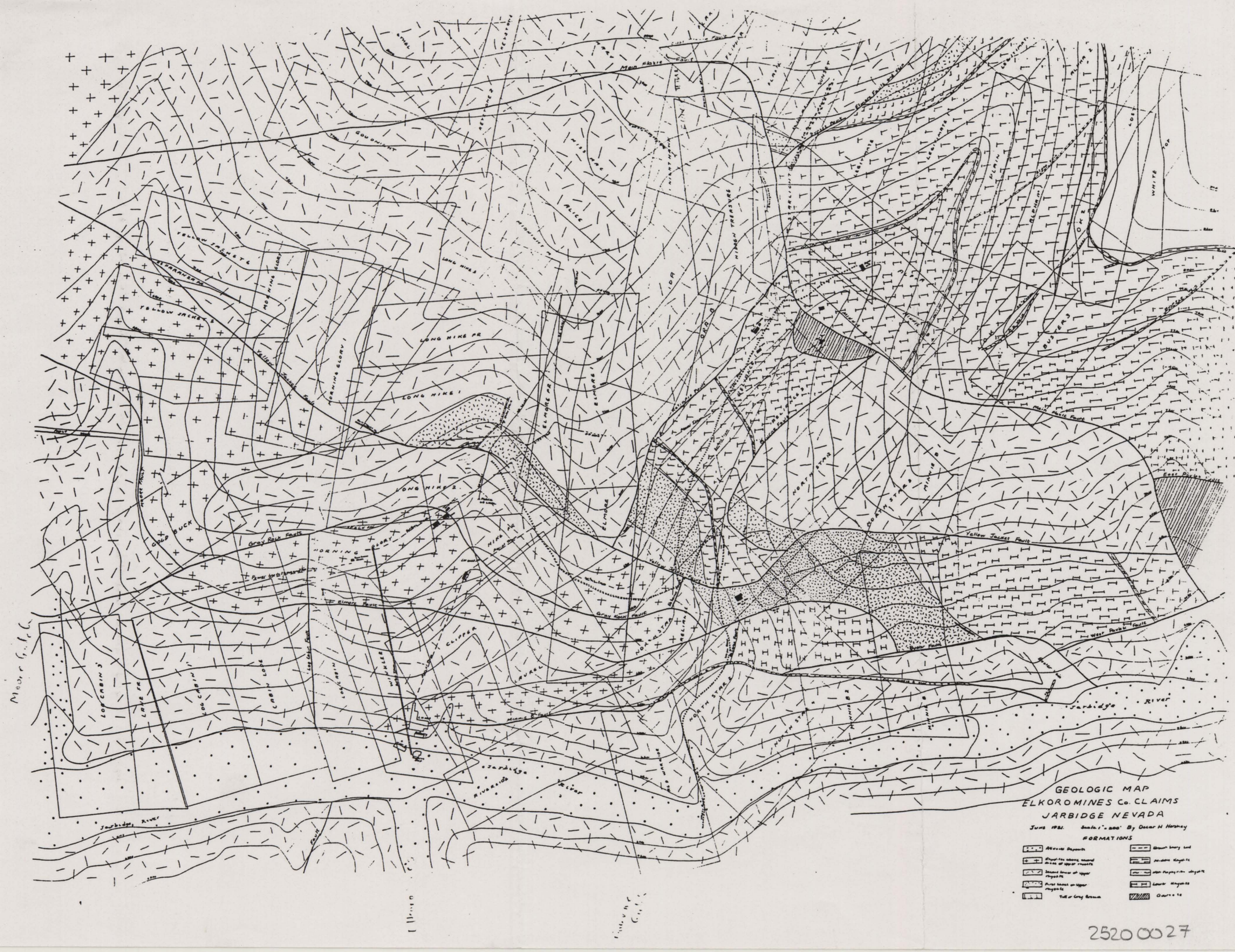
JARBIDGE PROJECT

ELKO COUNTY, NEVADA

T46N, R58E

SCALE 1" = 1000'

1000'


Main Fabre Fault
Gold Bug
Gray Rock Faults
Yellow Jacket Fault
Jarbidge River
Jarbidge River
GEOLOGIC MAP
ELKOROMINES Co. CLAIMS
JARBIDGE NEVADA
June 1981 Scale 1" = 200' By Oscar H Hershey
FORMATIONS

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