

GEOLOGICAL SURVEY OF WYOMING

GEOLOGY AND MINERALIZATION OF THE DEPASS
(Williams-Luman) MINE, LOCATED AT COPPER
MOUNTAIN, FREMONT COUNTY, WYOMING
(Reconnaissance field report)

by

W. Dan Hausel and Karl G. Albert

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INTRODUCTION

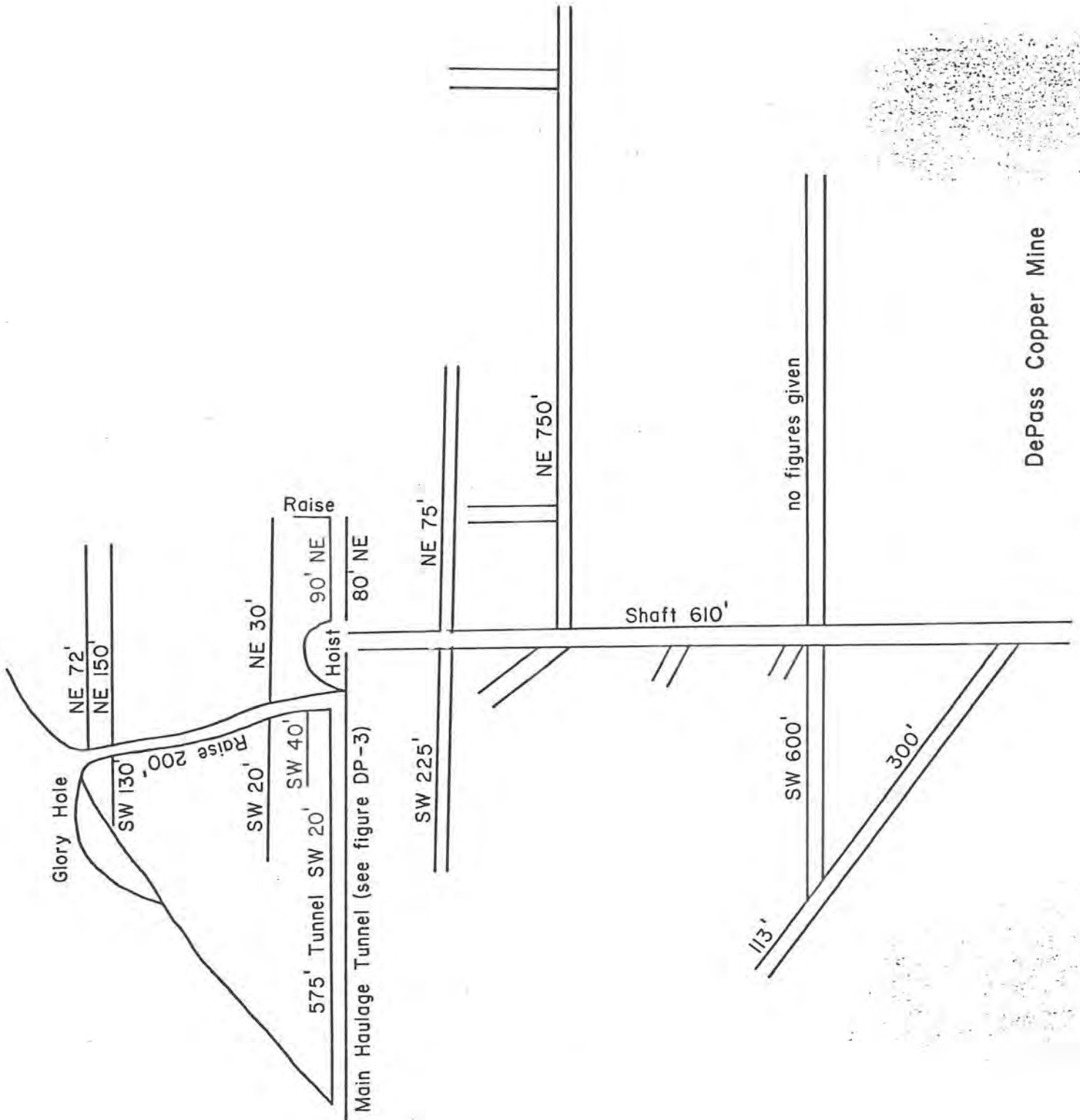
The DePass Mine, also known as the Williams-Luman Mine, was operated as a copper, gold, and silver mine near the turn of the century. According to Yellich and others (1978), the property was sporadically operated between 1879 to 1918 and some copper, gold and silver concentrates were shipped. Although production records are available, it is not known how complete they are.

LOCATION

The DePass Mine is located along a tributary of the East Fork of Dry Creek and near the eastern edge of Copper Mountain and on the U.S. Geological Survey DePass 7½ minute quadrangle. Patented claims that cover the property are: Willow Grove, Eagle Nest, Melinda, Copper Glance, Lone Tree, and Fraction Eagle Nest (Lowell and Moore, 1956). The mine workings are located in the S/2 section 14, T.40N., R.92W.

DEVELOPMENT

The mine was developed from a glory hole located at the present site of the shaft. This shaft was later intersected by a production portal. Overall, it is estimated that the total amount of mine workings are in excess of 11,000 feet (Osterwald et al., 1966). Figure (DP-1) is a generalized



DePass Copper Mine

Figure DP-1

cross-section of the DePass workings. The source of this illustration is assumed to be Bowdin (1918). During our examination of the mine workings, only the main haulage level and drifts were entered. None of the stopes or raises above this level were entered because of unstable mine conditions, nor were the lower levels entered due to flooding. The water level extends up to the main haulage level (Figure DP-2) and the collar the the winze and all associated lower drifts are flooded.

PRODUCTION

Production records do not appear to be complete. A general mine examination record (Lindsley, 1956) suggested that only 260 tons were shipped in 1917-1918. However Beeler (1906) reported that 16 tons of ore (probably concentrates) were shipped from the Copper Glance Group in 1906. The entire production appears to have been concentrates, first milled at the mine site prior to shipment to the American Smelting and Refining Company smelter in Omaha.

The following is a record of known ore shipments:

Date	Pounds Shipped	Percent or Copper Value	oz/ton or Gold value	oz/ton or Silver value
Aug. 4, 1906	31,209	\$874.67(1906 prices)	\$65.54(1906 prices)	\$61.21(1906)
1906(?)	809	\$127.89(1906 prices)	\$3.64(1906 prices)	NONE
Feb. 17, 1917	40,485	11.26%	0.07 oz/ton	0.43 oz/ton
Apr. 13, 1917	36,358	8.94%	0.09 "	NONE "
May 2, 1917	28,343	8.90%	1.05 "	0.34 "
June 6, 1917	28,739	7.25%	0.11 "	0.39 "
Jly. 19, 1917	6,565	9.14%	0.11 "	0.42 "
Jly. 19, 1917	30,261	10.84%	1.45 "	0.60 "
Dec. 10, 1917	92,912	2.52%	0 "	0 "
Dec. 11, 1917	783	49.50%	0 "	0 "
Feb. 6, 1918	85,410	2.30%	0 "	0.08 "
Feb. 8, 1918	80,488	2.62%	0 "	0 "
Feb. 8, 1918	62,499	1.10%	0 "	0.40 "
Jly. 27, 1918	21,484	3.40%	0 "	0 "
Jly. 27, 1918	21,265	0.65%	0 "	0 "

ASSAYS

Available assay reports for the DePass Mine suggest that the property carries some precious metals in association with copper mineralization. Although copper values appear to be fairly consistent throughout the ore shoot, gold and silver are apparently spotty. Reported assays, however, suggest that the DePass Mine is a viable exploration target and should be examined in greater detail. The following is a summary of assays and sampling reported by Bowdin (1918) in the DePass Mine:

"Commencing at the Glory Hole, which is 20 feet deep, (Figure DP-1) the drift which runs in a northeasterly direction on the strike of the vein 72 feet, was sampled its full length for an average width of 5 feet. Sample no. 1 carried 2.32 percent copper. Twenty-five feet deeper (or 45 feet from the surface) there are two drifts, one to the northeast 150 feet, and one to the southwest 130 feet, showing the same mineralization as the one above. At the foot of the raise, which extends to the surface, there has been a lot of exploratory work done showing nice looking ore. Twenty-five feet above the tunnel on the southwest drift the ore runs five feet across. Samples no. 2 and 3 were taken from the back of this drift. Sample no. 2 was taken from a two foot width with visible native copper ran 3.10 percent. Sample no. 3 was taken along the entire length of the drift with a 3 foot width carried 2.02 percent copper. The later sample was taken from altered diorite. Similar conditions were found in the northeast striking drift. This has been opened up for about 90 feet.

Fifty feet above the tunnel there are two drifts, one to the northeast showing native copper and chalcite" (? ,possibly chalcocite) "in a 5 feet wide vein. The other drift running to the southwest 20 feet, shows similar mineralization.

Commencing from the tunnel station in the northeast 72 feet from the station, there are two feet of schist" (? possibly Bowdin means mafic dike) "with native copper sampled for a distance of 8 feet. The vein matter here was about 12 feet wide. Sample no.4 carried 3.48 percent copper. In the southwest drift from the station a strong body of ore was exposed. It consists of chalcocite, chalcopyrite and pyrite.

The vein on this drift was six feet wide and samples no. 5, 6, and 7 were taken along it. Sample no. 6 carried 1.30 percent copper, was taken from the footwall about one foot wide. No. 5 was taken from the width of five feet of vein emitting the iron sulfides and assayed 1.68 percent copper. No. 7 was taken across the floor of the drift across the vein 6 feet in width and carried 3.46 percent copper."

No assays were reported below the main haulage level. According to Bowdin (1918) the mineralization in the lower workings are as good, if not better, than the workings above.

Sample no.3 taken at tunnel level, where the ore body is 12 feet wide, assayed \$2.80 (1918 prices) in gold per ton (0.14 oz/ton). Apparently, the gold continues and at the bottom of the shaft it runs \$1.50 to \$2.00 in gold (0.08 to 0.10 oz/ton). The ore carries some silver. Smelter returns suggest that the ore runs none to 0.80 oz/ton in silver.

Three samples were collected by the authors and later assayed. One sample was a selected quartz vein sample collected from the northeast vein exposed in the Glory Hole. This sample ran 0.96 percent copper and <0.01 oz/ton gold, < 0.1 oz/ton silver. The second sample was a chip sample collected across the exposed width of the mafic dike. Chip samples were collected on a 2 foot spacing over a 30 foot width and assayed 1.79 percent copper, < 0.01 oz/ton gold, < 0.1 oz/ton silver and 74ppm nickel (Table 1).

In addition to base and precious metals, Love (1954) has reported some uranium from mine dump samples. A cursory scintillometer survey of the mine workings and surface workings revealed no unusual amounts of radioactivity during our field examination.



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Request No.: 1788-063
Date: September 15, 1983

REPORT OF ANALYSIS

Customer ID	AM-1-83 8/26/83	Hub Mine HBM -3-83, 7/27/83	DPM-24-83	De Pass, DPM-26-83 Chip sample 8/26/83
Lab No.	A1873	A1874	A1875	A1876
Gold	oz/ton	<0.01	<0.01	<0.01
Copper	%	1.37	0.41	0.96
Silver	oz/ton	2.9	4.4	<0.1
Nickel	mg/kg	--	--	74.0

DPM-24-83: Chip sample of cupriferous vein from the north vein exposed in the Glory Hole

DPM-26-83: Composite chip sample across 30 ft. width of mafic dike south of Glory Hole. Chips were collected every two feet. Both cupriferous mafic dike and quartz vein were taken in chips.

Sonja G. Ringen
Sonja G. Ringen
Chemist

GEOLOGY

The DePass Mine was developed along a late intruding mafic dike which shows no evidence of metamorphism. The entire Copper Mountain belt consists of N50E to N80E trending foliated metamorphics that have been extensively invaded by granites. This dominant trend of foliation is well expressed in the metamorphic rocks intersected by the DePass Mine workings. The mafic dike which plays host to the copper mineralization cuts across the foliation trend of the metamorphic rocks (Figure DP-2).

The Copper Mountain belt lithology is typical of high-grade Archean metamorphosed terrains as described by Windley (1979). Although a number of authors have suggested that Copper Mountain is a fragment of a greenstone belt, Hausel and Graff (1983) pointed out that the lack of any definite greywackes which are so prominent in the South Pass greenstone belt as well as other greenstone belts worldwide, and the characteristic marble-quartzite-pelite association recognized at Copper Mountain is suggestive of a shelf-type environment rather than the island arc-eugeoclinal terrain so typical of greenstone belts. Hausel and Graff's (1983) assumption is based on the premise that the intercalated quartzofeldspathic gneisses do not have greywacke affinity.

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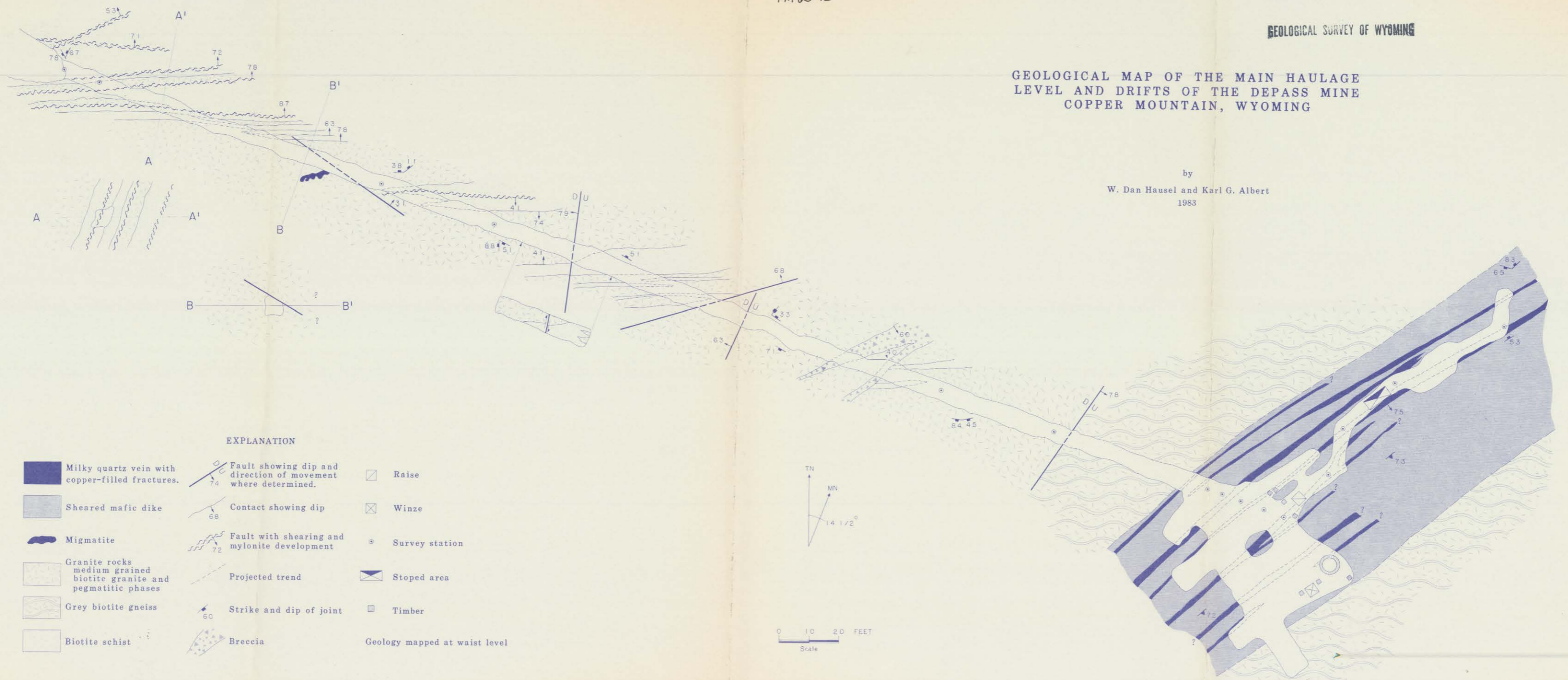
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MR-83-13

GEOLOGICAL SURVEY OF WYOMING

GEOLOGICAL MAP OF THE MAIN HAULAGE LEVEL AND DRIFTS OF THE DEPASS MINE COPPER MOUNTAIN, WYOMING

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EXPLANATION

- | | | |
|--|---|-------------------------------|
| Milky quartz vein with copper-filled fractures. | Fault showing dip and direction of movement where determined. | Raise |
| Sheared mafic dike | Contact showing dip | Winze |
| Migmatite | Fault with shearing and mylonite development | Survey station |
| Granite rocks medium grained biotite granite and pegmatitic phases | Projected trend | Stoped area |
| Grey biotite gneiss | Strike and dip of joint | Timber |
| Biotite schist | Breccia | Geology mapped at waist level |

0 10 20 FEET
Scale

TN
MN
14 1/2°