SHAMROCK MINE Jackson County

Report of Investigations 4895: Investigation of Shamrock copper-nickel mine, Jackson County, Oregon, by R. H. Hundhausen, is available from the U. S. Bureau of Mines. July 1952.

STATE OF OREGON DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
ASSAY LABORATORIES

REQUEST FOR SAMPLE INFORMATION

The State law governing free analysis of samples sent to State Assay Laboratories requires that certain information be furnished the Laboratory regarding samples sent for assay or identification. A copy of the law will be found on the back of this blank. Please fill in the information called for as completely as possible, and submit it along with your sample. Keep a copy of the information on each sample for your own reference.

Your name in full H. D. Wolfe

Post-office address P. O. Box 417, Grants Pass, Oregon

Are you a citizen of Oregon yes Date on which sample is sent 5-24-48

Name (or names) of owners of the property R. D. Semon

Name of claim sample obtained from Shamrock

Location of property or source of sample (describe as accurately as possible below):

County Jackson Mining district Gold Hill

Township 34S Range 2W Section 20 Quarter section

How far from passable road on road

For what minerals or elements do you wish the sample(s) analyzed Ni, Cu, Co

	Channel (length)	Grab	Pipe	Description
Sample No. 1		x		
Sample No. 2				

IMPORTANT: A vein sample should be taken in an even channel across the vein from wall to wall. Location of sample in the workings, together with the width measured, should be recorded.

(Signed) H. D. Wolfe

DO NOT WRITE BELOW THIS LINE - FOR OFFICE USE ONLY - USE OTHER SIDE IF DESIRED

Description

Sample Number	GOLD oz./T.	GOLD Value	SILVER oz./T	SILVER Value	COBALT	NICKEL	COPPER	
IG-111					0.07%	1.60%	1.10%	
~~IG-112~~					~~0.17%~~	~~1.88%~~	~~1.70%~~	
IG-113					0.12%	2.19%	0.50%	

Report issued Card filed Report mailed Called for

SIR-5

Simon Nickel Survey

— 4 —

1762.17 (Δ11)
+4.6
1766.77
−4.61
1762.16 (Δ12)
+4.8
1766.96
−3.95
1763.01 Δ13
+5.3
1768.31
−4.16
1764.15 Δ14
4.3
1768.45
+5.42
1773.87 Δ15

1764.15 Δ14
+4.3
1768.45
−4.49
1763.96 Δ16
+5.2
1769.16
−4.
1765.16 FACE

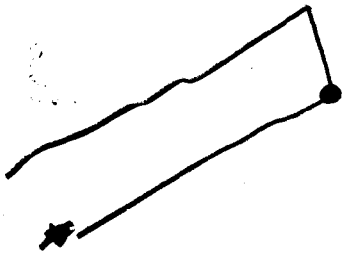
1773.87 (15)
+5.5
1779.37
+12.36
1791.73
−2.04
1789.73 PRISM

1768.53
−4.00
1764.53

1773.87
+5.50
1779.37
−4
1775.37

1809.82 (10)
+4.6
1814.42
+19.06
1833.48
−1
1832.48 (Δ17)
+3.4
1835.88
−4.07
1831.81
−1.
1830.81 (Δ18)
4.
1834.81
−47.28
1787.53 (PRISM)

1830.81 (Δ18
−21.82
1808.99
+4
1812.99 DRIFT



SURVEY | Date | Page No.

Topographer | **Checked by**
Rodman | **Recorder**

	From	To	Rod	H. C.	Corr. Dist.	Bea. Arc	Prod.	Rod Corr.	Elev. Diff.	H. I.	Elev.	Description of Station	
1													
2													
3													
4													
5													
6													
7													
8													
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10													
11													
12													
13													
14													

AFD -36

SURVEY | Date | Page No.

Topographer | **Checked by**
Rodman | **Recorder**

	From	To	Rod	H. C.	Corr. Dist.	Bea. Arc	Prod.	Rod Corr.	Elev. Diff.	H. I.	Elev.	Description of Station	
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													

AFD -36

SEMON MINE SURVEY

2-10
179° 60'
169 26
-10° 34'
49° 60
N 39° 26' E

2-PORTAL
194° 08'
180
+14° 08'
50°
N 64° 08' E

2-11
194° 33'
180
14° 33'
50
N 64° 33' E

11-12
179° 60
130° 24
-49° 36'
64 33
N 14° 57 E

64 33
49 36
14 57

12-13
231° 31'
180
+51° 31
14° 57
N 66° 28' E

13-14
179° 60'
125° 09'
-54° 51'
66° 28'
N 11° 37 E

(13) 14-16
179 60
168 33
-11° 27'
+11 37
N 0° 10' E

16-FACE
249° 10'
180
+69° 10'
-0° 10'
N 69° 00' E

(13) 14-15
179° 60'
145° 07
-34° 53'
11° 37
N 23° 36' W

358 60
-23 36
336 24

15-RAISE
329°
180
+149
336 24
485° 44'
360
125 44
179 60
S 54° 16 E

14-15-FACE
231°
180
+51
336 24
387 24
360
N 27° 24 E

10-17 179° 60'
+164 20
-15° 40' 39 86 / 15 40 / 23° 46'
39° 26'
N 23° 46' E

17-18 202° 04'
180
+22° 04'
23° 46'
N 45° 50' E

17-18-RAISE 296° 30'
180
+116° 30'
45 50
162 20
179 60
S 17° 40' E

ASSUMED ELEV OF Δ1 IS 1700 FT.

1700
3.5
1703.5
+56.08
1759.58 Δ2

1703.50
-4.96
1698.54 Δ3

1698.54 (Δ3)
-4.96
1693.58
+4.9
1698.48 (Δ4)
+5.00
1703.48
-3.50
1699.98 Δ5
+5.10
1705.08
-3.79
1701.29 (Δ6)
+5.00
1706.29
-3.90
1702.39 Δ7
+4.90
1707.29
-3.80
1703.49 Δ8
+5.10
1708.59
-3.59
1705.00 Δ9
+5.4
1710.40
-4.
1706.40 FACE

1759.58 (Δ2)
+4.5
1764.08
+45.74
1809.82 (Δ10)

1759.58 (Δ2)
4.5
1764.08
-1.91
1762.17 (Δ11)

SEMON NICKEL SURVEY

STA	C.L. DIST	VERT ∠	DIFF ELEV (SIN)	HOR DIST (COS)	M. POINT
1-2	99.05	+37°52'	+56.08	80.49	1759.58
1-3	59.95	-4°45'	- 4.96	59.75	1693.54
1-PORTAL	12.0	0°	0	12.0	—
3-4	16.2	-17°50'	- 4.96	15.42	1698.48
4-5	66.55	-3°11'	- 3.50	66.46	1699.98
5-6	63.65	-3°25'	- 3.79	63.53	1701.29
6-7	63.75	-3°30'	- 3.90	63.63	1702.39
7-8	48.4	-4°30'	- 3.80	48.35	1703.49
8-9	28.1	-7°20'	- 3.59	27.87	1705.00
9-FACE	49.	0°	0°	49.	1706.40
2-10	103.8	+26°09'	+ 45.74	93.17	1809.82
2-PORTAL	38.5	0	0	38.5	
2-11	72.8	-1°30'	- 1.91	72.77	1762.17
11-12	40.7	-6°30'	- 4.61	40.4	1767.16
12-13	45.3	-5°	- 3.95	45.1	1763.01
12-CUT	6	00	0	6	—
13-14	30.85	-7°45'	- 4.16	30.57	1764.15
14-15	24.70	+12°40'	- 5.42	24.10	1773.87
14-16	17.30	-15°03'	- 4.49	16.71	1763.96
16-FACE	38.	00	0	38	1765.16
15-RAISE	24	+31°	+12.36	20.57	1789.73
15 FACE	8	00	0	8	1775.37
10-17	87.7	+12°33'	+19.06	85.60	1832.48
17-18	18.1	-13°	- 4.07	17.63	1830.81
18 RAISE	65	-46°40'	-47.28	44.50	1787.53
18 RAFT	30	-46°40'	-21.82	20.58	1812.99

Bureau of Mines
Report of Investigations 4895

INVESTIGATION OF SHAMROCK COPPER-NICKEL MINE, JACKSON COUNTY, OREG.

BY R. H. HUNDHAUSEN

United States Department of the Interior——July 1952

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* * * * * * * * * * **Report of Investigations 4895**

UNITED STATES DEPARTMENT OF THE INTERIOR
Oscar L. Chapman, Secretary
BUREAU OF MINES
J. J. Forbes, Director

Work on manuscript completed February 1952.

July 1952

INVESTIGATION OF SHAMROCK COPPER-NICKEL MINE JACKSON COUNTY, OREG.

by

R. J. Hundhausen[1]

CONTENTS

ILLUSTRATIONS

1/ Mining engineer, Mining Division, Bureau of Mines, Albany, Oreg., Branch.

Report of Investigations 4895

INTRODUCTION AND SUMMARY

The Shamrock copper-nickel mine in Jackson County, Oreg., was formerly a part of the Chisholm mercury property. In 1948 new owners advanced the old workings 40 feet to reveal encouraging widths of copper-nickel sulfide ore on the Shamrock claim. When the owner's funds became exhausted, the Bureau of Mines carried on the development in 1949-50, completing 1,650 feet of bulldozing trenching, 396 feet of drifting, and 3,419 feet of diamond drilling.

The Bureau's trenching disclosed a separate surface deposit 600 feet south of the mine deposit. This and the previously known deposit subsequently were diamond-drilled.

The underground deposit has a known length of 100 feet, a dip length of 100 feet and a width varying from 1 to 25 feet. The surface deposit is 200 feet long, 200 feet deep, and 5 to 38 feet wide. Neither deposit has been entirely delimited by development to date.

Routine metallurgical tests on a composite sample indicate that the Shamrock ore, because of intimate association of the sulfide minerals, is not amenable to concentration into separate nickel and copper products; however, a 90-percent recovery of copper and nickel was made in a bulk concentrate. This report describes the results of the Bureau of Mines investigation and is the first published description of nickel-copper occurrences in this area.

ACKNOWLEDGMENTS

Investigations at the Shamrock mine were under general supervision of S. H. Lorain.[2/] Field work was under direct supervision of the author. This report was prepared under the general supervision of M. E. Volin.[3/]

Samples from the mine were submitted to the Bureau's Northwest Electrodevelopment Laboratory at Albany, Oreg. Chemical analyses were supervised by M. L. Wright[4/]; spectrographic analyses were performed by D. M. Mortimore[5/]; ore-dressing tests were performed by T. Hendrickson[6/]; A. J. Kauffman[7/] and H. D. Hess[7/] performed petrographic studies on the ore.

2/ Formerly chief of Mining Division, Albany Branch, Bureau of Mines.
3/ Chief, Mining Division, Region II, Bureau of Mines.
4/ Chief, Technical Services Branch, Bureau of Mines, Region II.
5/ Spectrographer, Albany Branch, Metallurgical Division, Bureau of Mines.
6/ Metallurgist, Albany Branch, Metallurgical Division, Bureau of Mines.
7/ Petrographer, Albany Branch, Metallurgical Division, Bureau of Mines.

Mr. R. D. Semon, Medford, Oreg., provided useful information and rendered valuable assistance in the field investigations.

LOCATION AND ACCESSIBILITY

The Shamrock mine (fig. 1) is in secs. 19 and 20, T. 34 S., R. 2 W., W. M., Jackson County, Oreg. It is on a steep hillside overlooking Evans Creek, a tributary of the Rogue River.

The mine is accessible from Gold Hill, Oreg. by following State Highway 234 for 6 miles, then turning north on a graveled road up Ramsay Canyon for 10 miles. A route from Medford, Oreg., follows Crater Lake Highway 62 north 14 miles to a junction with Highway 234, then 6 miles west, and 8 miles north on the Meadows graveled road, a total distance of 28 miles from Medford (fig.2).

The nearest railroad point is Gold Hill on the Southern Pacific. Road grades from the mine to the railroad are not excessive, but, in wet winter weather and during thaws, truck loads must be restricted.

HISTORY AND PRODUCTION

The Shamrock copper-nickel mine was developed intermittently from 1900 to 1929 by the late Dr. W. P. Chisholm of Gold Hill, Oreg. During this period four adits were driven, and a 60-foot inclined shaft was sunk. Oxidized copper-nickel showings in the shaft and in an intermediate adit were not encouraging; the nickel content of the ore was not considered important. Subsequently, the shaft filled with water. Later Chisholm's sons started the main adit to intersect and drain the shaft, but this work was abandoned when hard rock was encountered 40 feet from the shaft bottom.

In 1945 R. D. Semon of Medford and his partner, Stanley Hyde, of Hood River, Oreg., purchased the Shamrock claim from the Chisholm estate. They completed the main adit to the shaft in 1948. Nickel sulfide ore found at this elevation between two flat faults was drifted on for an additional 40 feet before work was suspended owing to lack of funds. The Bureau of Mines continued development in 1949 and 1950. The property has had no production.

TOPOGRAPHY

Southwestern Oregon is a deeply dissected, heavily forested, rugged, mountainous area. The Rogue River is the master drainage from the area. According to Diller2/ the region has been peneplaned, uplifted and eroded to a mature rolling topography, and finally rejuvenated, so that the rivers are now actively eroding their valleys. Stream terraces are prominent along the Rogue River.

The Shamrock mine (fig. 3) is on the steep, heavily timbered east slope of Evans Creek at an elevation of 1,700 feet. East of the mine ridge, Evans Creek flows south in a broad valley. South of the mine, the creek makes a

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2/ Diller, J. S., Mineral Resources of Southwestern Oregon: Geol. Survey Bull. 546, 1914, 147 pp.

Figure 2. - Location map of the Shamrock mine, Jackson County, Oreg.

horseshoe bend around the ridge and flows north for 3,000 feet where it turns abruptly southwestward in a youthful, steep-walled valley to join the Rogue River 22 miles away. Evidence of a wind gap on the main divide due south of the mine and the change in the nature of the canyon indicate that Evans Creek formerly drained directly south into the Rogue River.

Evans Creek would provide ample water for a large mining and milling operation. To provide good tailings disposal, a mill would be located east of the mine ridge where the valley is much broader than it is farther downstream.

CLIMATE

Winter and spring weather is cool, with frequent rains; there is little rain in other seasons. Summer temperatures are as high as 100° F.; the nights are always cool. Winter temperatures are mild, seldom below freezing. The winter of 1949-50 was marked by unusually heavy snows; 4 feet accumulated at the mine, but this melted soon after the rains began again. At Medford, the average annual precipitation is 16.77 inches. Temperatures average 54°, about the same as at the mine.

INVESTIGATIONS BY BUREAU OF MINES

Before development, it was necessary to build 4,000 feet of mine road from the county road to the portal of crosscut 1. Mining equipment then was installed, and two adits were rehabilitated with track and pipe. Drifting and crosscutting by the Bureau of Mines totaled 396 feet; these workings are shown in figure 4.

The headings driven by the Bureau were sampled each time a round was blasted. Figure 5 shows the underground sample locations and assay results. In addition to the chemical analyses shown, the samples were assayed spectrographically to check for other elements.

Eleven diamond-drill holes were drilled, totaling 3,419 feet. The drill-hole locations are shown in figure 3. Core and sludge samples were submitted for assay whenever sulfide concentrates were found. The geologic and assay sections of the drill holes are shown in figures 7, 8, 9, and 10.

Topographic and geologic maps were prepared. Five bulldozer trenches were excavated to prospect for additional ore bodies. Surface samples were taken over the outcrop area (see fig. 12).

Petrographic examinations were made on selected samples, and a composite sample of development ore was submitted to the Bureau of Mines Northwest Electrodevelopment Laboratory at Albany, Oreg., for metallurgical testing.

DESCRIPTION OF DEPOSIT

Regional Geology

General

The complex geology of the region has been studied by several geologists. The areal geology surrounding the Shamrock deposit was mapped by Wilkinson.[10] Wells and Waters,[11] Federal Geological Survey, mapped the geology of the Meadows district and described this property in connection with quicksilver investigations. Schuette also described the Chisholm claims in his report.[12] In 1914 Winchell[13] examined the Chisholm mine. None of these investigations, however, mention the occurrence of nickel ore on this property.

Formations and Structures

The data below are based on published information supplemented by observations made during the Bureau investigation.

The formations may be classified conveniently into older rocks of pre-Cretaceous age and younger rocks of Tertiary and recent age. Nickel ore is found in the older rocks.

The pre-Cretaceous formations constituting a series of overturned rocks, trend north-northeast, with regional dips southeast. Peridotite sills follow faults parallel to the regional trend of the formations. The peridotites have been involved in regional folding and represent some of the earliest intrusions (Jurassic).

Granitoid rocks, generally elliptical in plan, cut the formations irregularly but with major axes usually northward.

Faults

Major northerly fault structures are indicated by the topography, as well as by the alinement of the basic intrusives.

A marked unconformity between the upturned pre-Cretaceous and overlying younger rocks has a northerly direction and, as seen about 1/2-mile east of the mine (fig. 1 overlay), apparently marks a zone of high-angle reverse faulting.

10/ Wilkinson, W. D., Reconnaissance Geologic Map of the Butte Falls Quadrangle: Oregon State Dept. of Geol. and Min. Industries, 1941.

11/ Wells, F. G., and Waters, A. C., Quicksilver Deposits of Southwestern Oregon: Geol. Survey Bull. 850, 1934, 58 pp.

12/ Schuette, C. N., Quicksilver in Oregon: Oregon State Dept. of Geol. and Min. Industries Bull. 4, 1938.

13/ Winchell, A. N., Petrology and Mineral Resources of Jackson and Josephine Counties, Oreg: Oregon Bureau of Mines and Geol. Min. Resources of Oreg., vol. 1, No. 5, 1914.

Local Geology

The deposit is in quartz-mica schist designated by Diller[14] as the May Creek formation of Paleozoic (Devonian) age.

The schistosity is northeast, with southeast dips, but large variations are common owing to crumpling and drag folds. Typically, the schist is a fine-grained, blue gray quartzitic rock containing hornblende and mica, locally exhibiting lit-par-lit injections of silica and feldspar.

The schist has been intruded by various types of igneous rocks, including peridotite, norite, hornblende-quartz diorite, pegmatite, and granodiorite. The peridotite and related serpentine rocks were found in the diamond-drill holes as narrow dikes and asbestos veinlets. The quartz-diorite occurs as dikes cutting the schist at small angles. These diorites are massive, hard rocks broken by joints in rather definite patterns.

Short, narrow pegmatite dikes are numerous, especially along thrust faults in the mine area. The dikes strike about N. 10° E. and dip about 50° to the west. Movements along the thrust faults in places offset the pegmatite dikes, causing them to thin or overlap.

Lit-par-lit injections in the schist are minute quartz-feldspar intrusions. All stages of this intrusive action may be seen in the drill cores, from minute veinlets to almost complete replacement of the schist. The feldspar crystals seem to be related in size to the width of the pegmatite intrusion; the smaller the intrusion, the smaller the feldspar crystals, and vice versa.

No large granodiorite bodies were seen in the mine workings or drill cores, but some metamorphosed rocks near igneous contacts, particularly with norite and pegmatite, have a granitic appearance.

Quartz-rhodonite masses or dikes of irregular lengths and widths occur in the mine area; but their relation to the nickel ore, if any, is not known (see fig. 3).

THE ORE

Mine Ore Body

The mine ore body is developed on two short levels 50 feet apart, connected by an inclined shaft (fig. 4). Along the upper (intermediate) level, leaching is so intense that vein widths are indeterminate. Assays are necessary to determine the width of the ore body (fig. 5).

Along the lower (Shamrock) level the ore body strikes N. 60° E. and dips 55° to the southeast; in size it ranges from 80 to 100 feet in strike length, 3 to 25 feet in thickness, and 75 to 100 feet on the dip.

14/ Diller, J. S., and Kay G. F., Geol. Survey Geologic Atlas, Riddle Folio, No. 218, 1924.

Figure 6 depicts the deposit in three dimensions, showing it to be terminated at either end by cross faults represented as thrust faults 2 and 3, and cut off in depth just below the main level, probably by fault 2.

Between the two levels, the ore body is displaced by thrust fault 1, striking N. 30° E. and dipping 30° northwest (fig. 6).

The vertical displacement is 20 feet; a horizontal movement also is indicated, displacing the footwall block to the southwest with respect to the hanging wall.

Surface Ore Body

The surface ore body was discovered while trenching with the bulldozer (trench 2). The trenching uncovered an indefinite mineralized zone having a long axis of 190 feet and a short axis of approximately 20 feet. Trench 3 was cut across the projected strike of the zone farther up the slope, but the ore body was not exposed. Steep, rocky slopes prevented trenching down hill from trench 2.

Seven diamond-drill holes were drilled under the outcrop to delimit the ore occurrences further. All but one hole (No. 11) disclosed disseminated nickel sulfide mineralization. Hole 11 cut considerable norite, but it was virtually barren of sulfides. Results of the drilling are interpreted in figures 7, 8, 9, and 10.

The surface ore zone was not delimited in length or depth by drilling. The deposit is at least 200 feet long, 200 feet deep, and 5 to 38 feet wide.

Other Indications

A 4-foot vein of nickel sulfide ore was found at the bottom of a road cut 500 feet southwest from the surface ore body but was not drilled. An old adit had been driven less than 40 feet away from this vein but was not on the structure.

A weakly mineralized zone was indicated by soil sampling 500 feet north of the mine workings. This was explored further by a single bulldozer trench (5), but the results were not encouraging enough to warrant drilling this exposure.

Ore Mineralization

Weak sulfide mineralization is disseminated throughout most of the schist. The strongest mineralization, however, occurs in a coarse-grained norite, whose dominant constituents are labradorite, andesine, hypersthene, late magmatic hornblende, and biotite. Irregular grains of quartz and magnetite and chlorite and sericite are present also. Pyrrhotite, pentlandite, and chalcopyrite occur as disseminations, blebs, veinlets, and masses in the norite. Petrographic studies show that the sulfides cut and embay all other minerals.

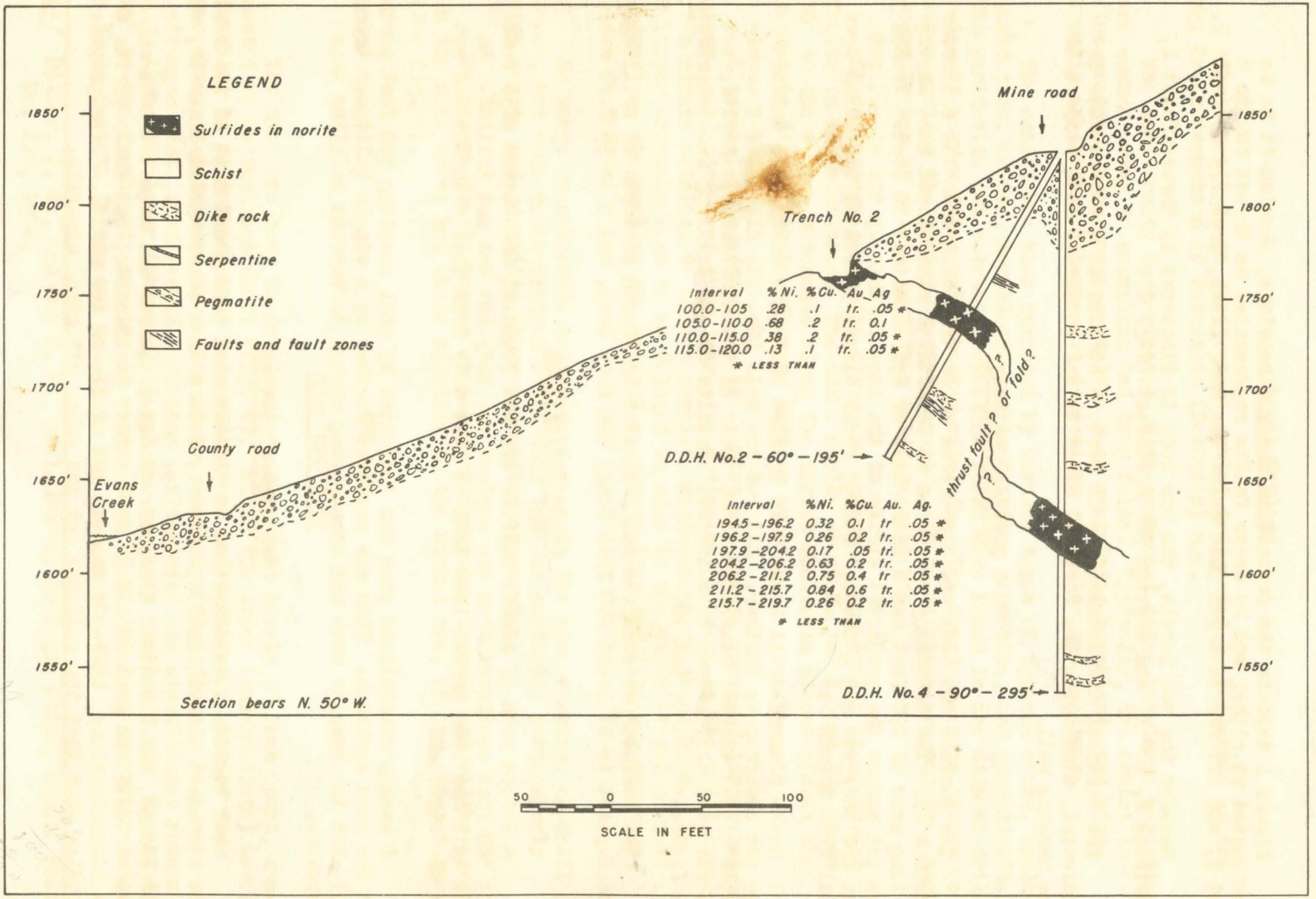


Figure 7. - Geologic and assay section of diamond-drill holes 2 and 4.

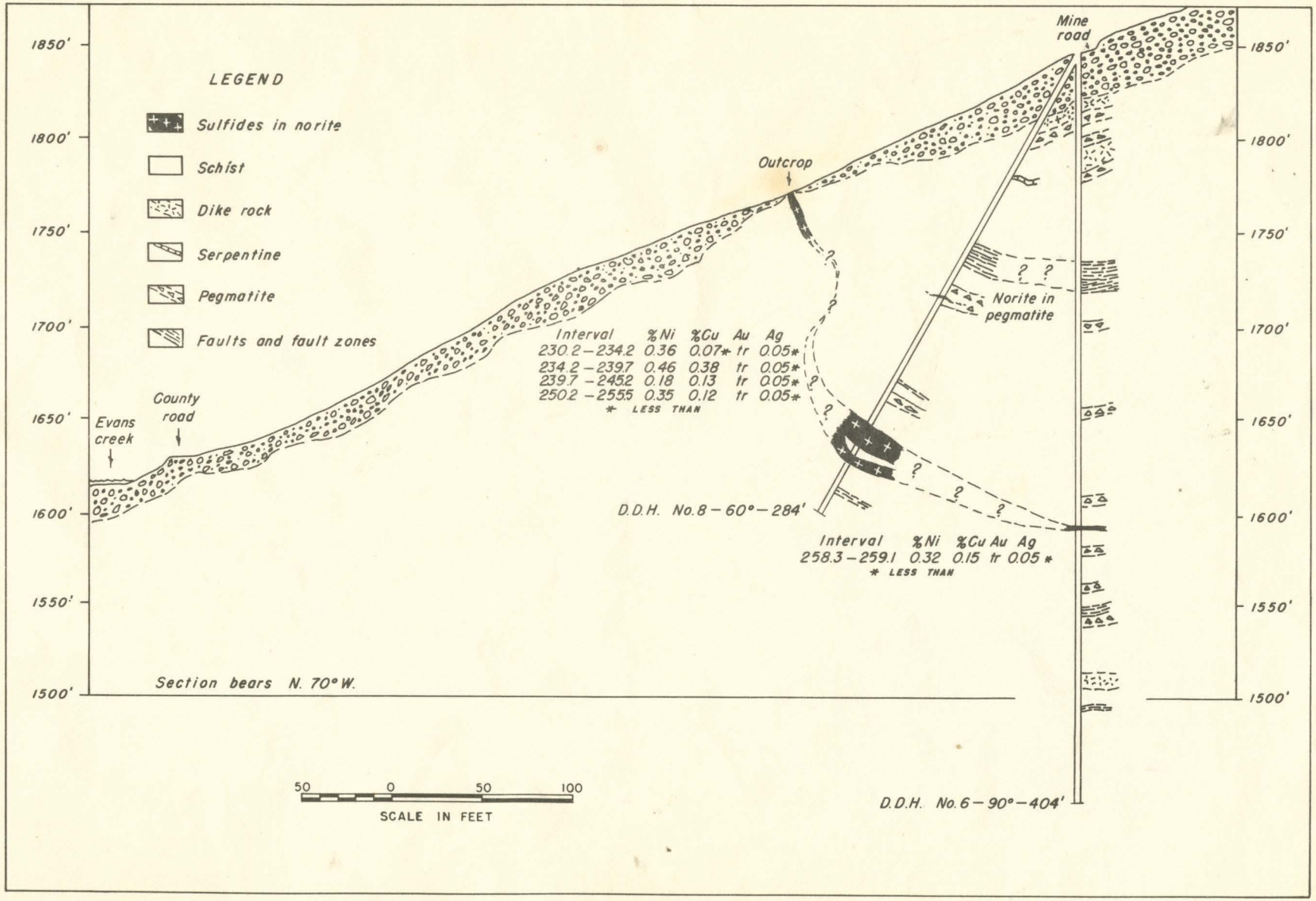


Figure 8. - Geologic and assay section of diamond-drill holes 6 and 8.

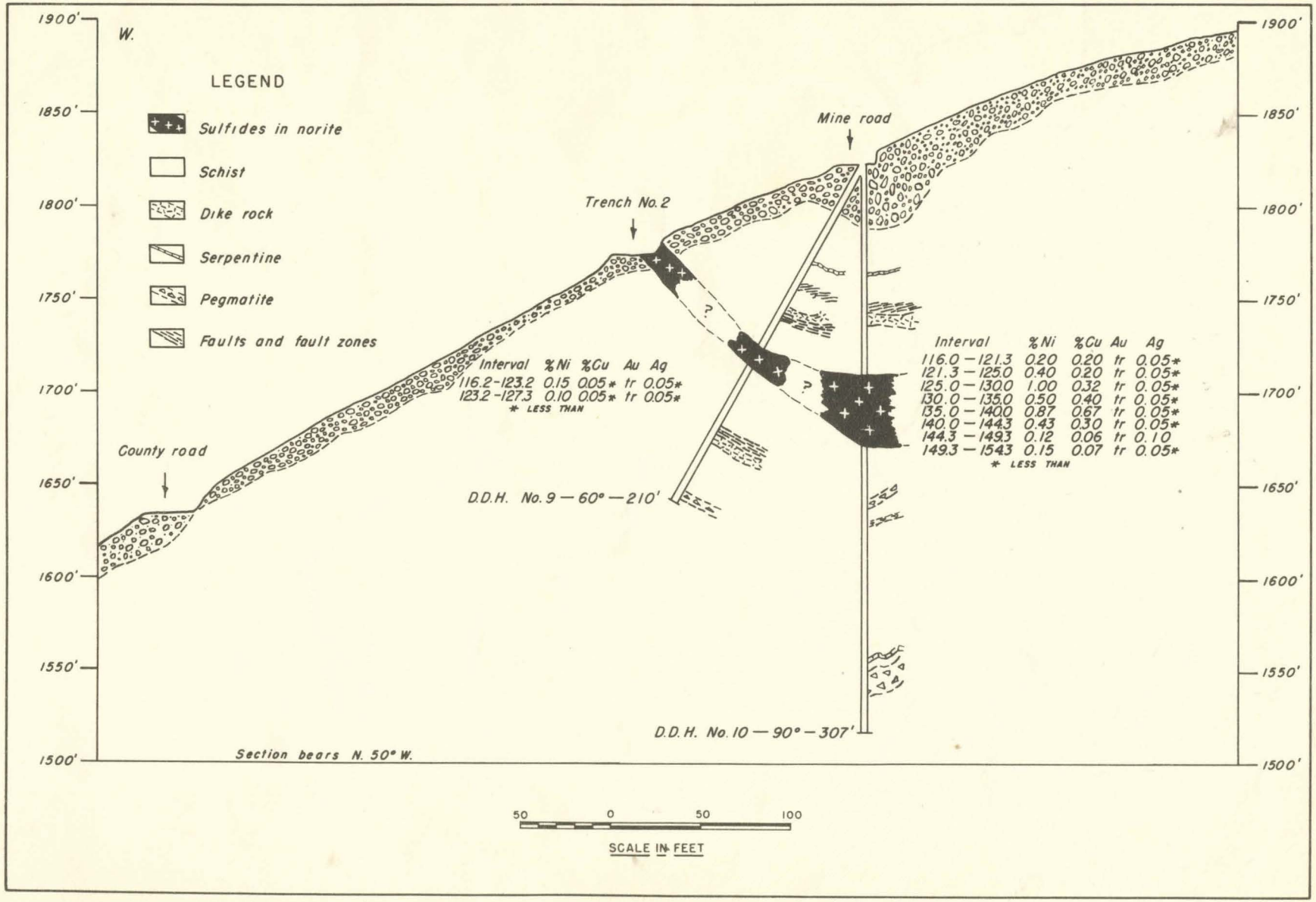


Figure 9. - Geologic and assay section of diamond-drill holes 9 and 10.

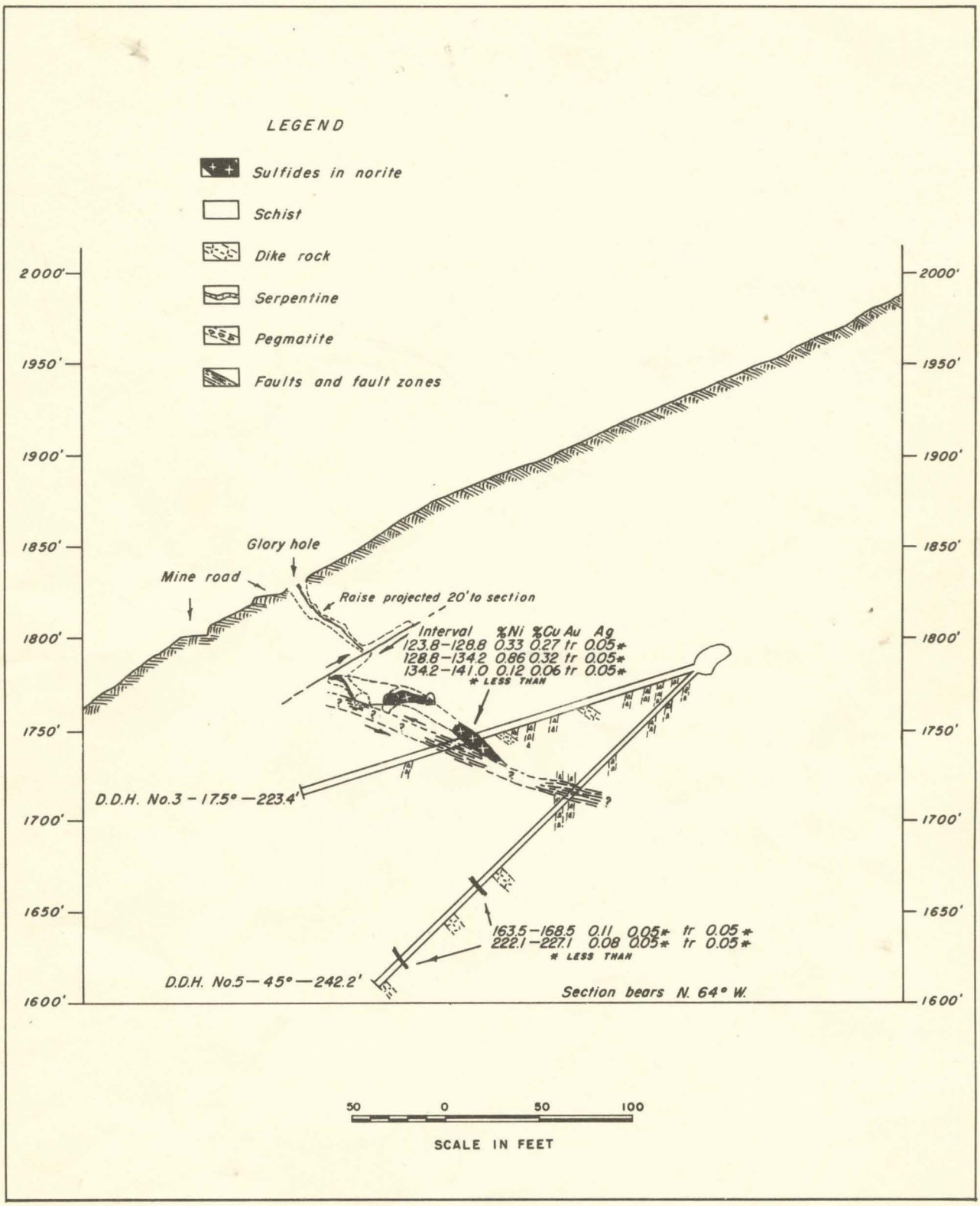
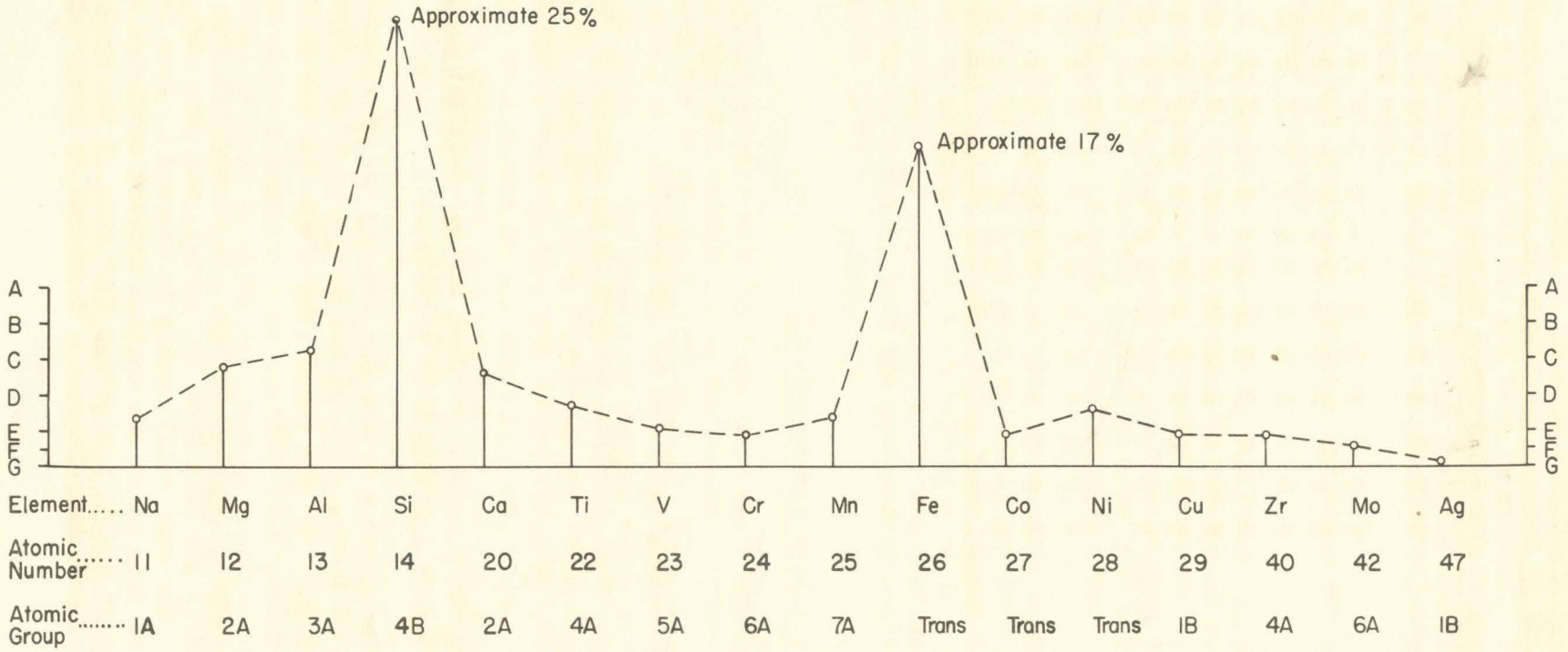


Figure 10. - Geologic and assay section of diamond-drill holes 3 and 5.



EXPLANATION OF GRADE

A = over 10%
B = 5 to 10%
C = 1 to 5 %
D = 0.1 to 1 %
E = 0.01 to 0.1 %
F = 0.001 to 0.01 %
G = under 0.001 %

Figure 11. - Average relative abundance of 16 elements in 265 samples from the Shamrock mine area.

Minor quantities of cobalt are present in the ore, about 0.07 percent, but the cobalt mineral has not been identified. Platinum group metals also occur, the composite sample submitted for metallurgical tests averaged 0.03 ounce of platinum per ton. Enough graphite occurs to interfere with the flotation tests. Small lenses of granular calcite 1 or 2 feet in length, are present also.

Field and laboratory evidence indicates two generations of sulfides. Kauffman[15] reports:

> Pyrrhotite appears to be the first sulfide mineral introduced. It was introduced by widespread replacement of the rock-forming minerals. Corroded fragments of rock are seen as islands in the sulfide. It appears that the introduction was slow or that the conditions were just right for this replacement, probably the entire mass stewed for a while.
>
> The introduction of the pentlandite seems entirely different. The rock mass evidently had been fractured and the new sulfide admitted along these channels. The resulting veins range from about 5-30 microns in width and show no evidence of replacement of the non-sulfides. There is evidence, however, that the pentlandite replaces the pyrrhotite.

Spectrographic Analyses

Spectrographic data indicate that the rocks are closely related chemically. For example, when the Bureau of Mines reopened crosscut 1 to search for the faulted portion of the mine ore body, 11 samples were taken along the walls of the crosscut and assayed spectrographically as shown in table 1. The last four samples taken close to the face of the adit ran higher in magnesium, iron, manganese, titanium, vanadium, chromium, cobalt, and nickel than the first seven. It was believed, therefore, that the breast of this heading was in the vicinity of the faulted ore body. When the heading was driven ahead 10 feet, a zone of low-grade banded sulfides was encountered that assayed 0.2 percent copper and 0.07 percent nickel over a width of 5.5 feet. Extensions of this zone could not be found laterally or vertically by subsequent diamond drilling. The spectrographic analyses, nevertheless, offered encouragement as an aid to exploration. This type of assay consequently was made on 265 samples from the mine area. Sixteen elements were commonly detected in the samples. It was possible from the spectrographic assay data to compute the relative abundance of each element present, although the exact percent composition was not available. Figure 11 shows the average relative abundance of the 16 principal elements arranged in ascending order of their periodic numbers.

15/ Petrographer, Bureau of Mines, Albany, Oreg.

TABLE 1. - Spectrographic analyses of samples

Sample No.	Length	Description	Na	Mg	Al	Si	Ca	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zr	Mo
Fig. 4																	
1	5.0	Schist, minor sulfides.	E	D	C	A	D	D	E	-	E	C	F	E	G	E	-
2	5.0	do.	E	D	C	A	D	D	E	-	E	C	F	E	F	E	-
3	5.0	do.	E	C	C	A	C	D	E	E	E	C	F	E	F	F	-
4	5.0	do.	E	D	C	A	D	D	E	E	E	C	F	F	G	F	-
5	5.0	do.	E	D	C	A	E	E	E	-	E	C	F	F	G	F	E
6	5.0	do.	E	D	C	A	E	E	E	-	E	C	F	F	G	E	-
7	5.0	do.	E	D	C	A	D	E	E	-	E	C	F	F	G	E	-
11	5.0	Black schist, minor sulfides.	E	C	C	A	C	D	D	E	E	B	E	E	G	F	F
12	5.0	do.	E	C	C	A	C	D	D	E	D	B	E	E	G	E	F
13	5.0	do.	E	C	C	A	C	D	D	E	D	A	E	E	G	E	F
14	1.5	do.	E	C	C	A	C	D	D	E	D	A	E	E	G	F	F

Legend

A - over 10 percent.
B - 5 to 10 percent.
C - 1 to 5 percent.
D - 0.1 to 1 percent.
E - 0.01 to .1 percent.
F - 0.001 to 0.01 percent.
G - under 0.001 percent.

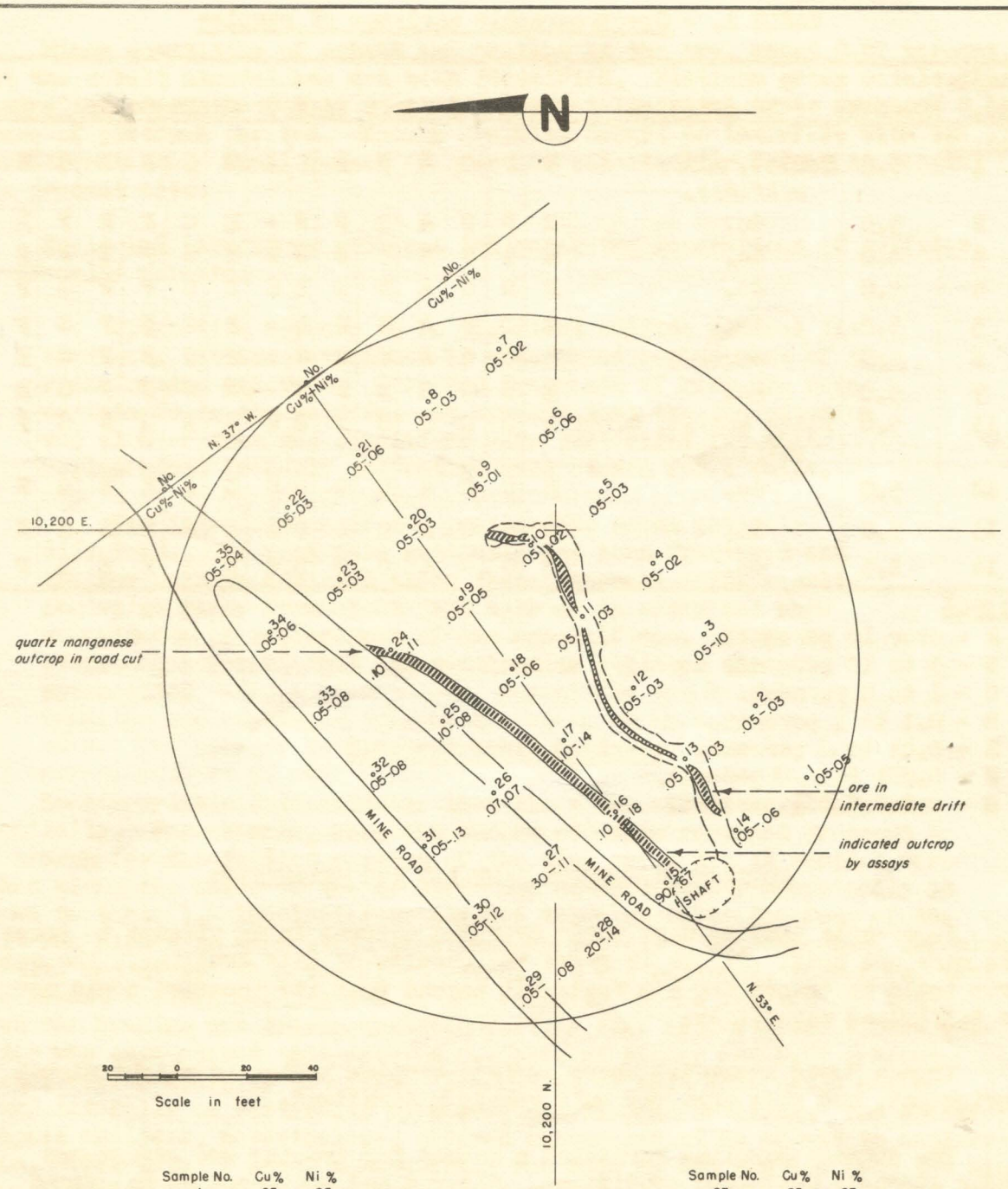
AUGER-HOLE SURFACE SAMPLING AND WEATHERING

Auger-hole samples were taken over the outcrop in an attempt to trace the mine ore body. Figure 12 shows the results of this sampling. The outcrop could be traced for 130 feet; but beyond that its location could not be determined accurately.

Trench 5 was excavated where surface samples indicated slight nickel enrichment, but this area was only weakly mineralized.

The surface sampling furnished a method for tracing ore structures under strongly weathered conditions. Altered and weathered rocks extend to a depth of 10 to 20 feet near the ore bodies, and deep trenches were necessary to expose the bedrock structures.

Weathering does not extend to uniform depths. In crosscut 2, the schist is weathered and clayey 100 feet from the portal, and then abruptly it becomes fresh and hard. The same relationship is exposed 25 feet from the portal of crosscut 1; at this point the contact between weathered and unweathered schist is a thrust fault, indicating that some of the apparent weathering may be due to hydrothermal alteration localized by fault zones (fig. 4).



Sample No.	Cu%	Ni %
1	.05	.05
2	.05	.03
3	.05	.10
4	.05	.02
5	.05	.03
6	.05	.06
7	.05	.02
8	.05	.03
9	.05	.01
10	.05	.02
11	.05	.03
12	.05	.03
13	.05	.03
14	.05	.06
15	.90	.67
16	.10	.18
17	.10	.14
18	.05	.06
19	.05	.05
20	.05	.03
21	.05	.06
22	.05	.03
23	.05	.03
24	.10	.11
25	.10	.08
26	.07	.07
27	.30	.11
28	.20	.14
29	.05	.08
30	.05	.12
31	.05	.13
32	.05	.08
33	.05	.08
34	.05	.06
35	.05	.04

Assay map showing vein outcrop as determined by soilsamples.

July 1950

Figure 12. - Shamrock nickel mine, Jackson County, Oreg.

METALLURGICAL TESTS

Approximately 200 pounds of representative ore was used for testing to obtain separate nickel and copper concentrates by mineral dressing. The following report[16] summarizes the results of that testing.

The ore submitted for testing assayed 1.1 percent copper and 1.3 percent nickel. A recall assay on the head sample showed it to contain 0.03 ounce platinum per ton.

No significant concentration was noted in any screen-sized product of the ore.

Fine-flake graphite interfered with subsequent flotation treatment. About 80 percent of the graphite was recovered by flotation using frother alone.

The results shown in the following table are typical of those obtained by selective flotation methods. Ore was ground to minus-65-mesh and the bulk of the graphite and micaceous material was removed and cleaned once by flotation. Chalcopyrite was floated from an alkaline circuit and cleaned once; a nickel-iron concentrate was made by treating the remaining pulp by flotation in an acid circuit. The cleaner tailing was returned to the circuit before each step. The nickel-iron product was treated in a low-intensity wet magnetic separator in the attempt to produce a high-nickel concentrate and a low-nickel pyrrhotite reject.

Selective flotation and magnetic separation

Metallurgical data

Product	Weight, percent	Assay			Distribution, percent		
		Percent		Oz. per ton			
		Cu	Ni	Pt	Cu	Ni	Pt
Graphite-mica.....	1.3	1.7	1.2	0.22	1.8	1.7	9.0
Copper conc.....	4.6	14.1	1.9	.09	57.5	9.1	12.7
Magnetic Fe-Ni.....	18.1	.5	2.6	.06	8.0	49.3	33.9
Nonmagnetic Fe-Ni....	9.2	1.1	2.7	.01	8.8	25.9	2.8
Tailing.....	66.8	.4	.2	.02	23.9	14.0	41.6
Calc. head.....	100.0	1.1	1.0	.03	100.0	100.0	100.0
Comb. Fe-Ni conc.....	27.3	.69	2.6	.04	16.8	75.2	36.7

16/ R. R. Wells, Mineral Dressing Section, Bureau of Mines, Region II.

Operation data

Grind: 100 percent minus-65-mesh

Circuit	pH	Reagents, pounds per ton						
		CaO	NaCN	Minerec 27	B-23 frother	H_2SO_4	$CuSO_4$	Xanthate Z-6
Mica-graphite rougher	9.0	6.0	0.3	-	0.06	-	-	-
Mica-graphite cleaner	9.0	-	-	-	.03	-	-	-
Cu rougher.....	9.0	-	-	0.02	.03	-	-	-
Cu cleaner.....	8.7	.5	-	-	.03	-	-	-
Fe-Ni rougher.....	6.6	-	-	-	-	5.0	0.4	0.2
Total.....		6.5	.3	.02	.15	5.0	.4	.2

By selective flotation, 57.5 percent of the total copper was recovered in a concentrate assaying 14.1 percent Cu. Nine percent of the nickel and 12.7 percent of the platinum reported in this product. The iron-nickel concentrate contained 16.8 percent of the copper, 75.2 percent of the nickel, and 36.7 percent of the platinum and assayed 0.69 percent copper, 2.6 percent nickel, and 0.04 ounce Pt per ton. Low-intensity magnetic separation of this product yielded no low nickel reject. The test showed a slight tendency for platinum to concentrate with the graphite and mica.

Other tests on ore ground as fine as 200-mesh showed similar results. In general, the graphite-mica concentrate contained 1 to 5 percent of the copper and nickel and 10 to 30 percent of the platinum. Flotation of chalcopyrite recovered 55 to 65 percent of the total copper at 10 to 15 percent copper grade; up to 10 percent of the nickel reported in the copper concentrate. The nickel-iron concentrate contained 50 to 75 percent of the nickel at 2.6 to 2.7 percent Ni grade. In no test was a high-iron product, low in nickel content, produced by magnetic separation of the iron-nickel flotation concentrate. This would indicate either extremely intimate physical association of pentlandite and pyrrhotite or the occurrence of nickel in the pyrrhotite crystal lattice.

Bulk sulfide flotation showed some promise as a primary concentration method for use before leaching or other subsequent treatment. The following table shows typical results of this method of treatment.

Bulk sulfide flotation
Metallurgical data

Product	Weight Percent	Assay			Distribution, percent		
		Percent		Oz. per ton			
		Cu	Ni	Pt	Cu	Ni	Pt
Concentrate.....	34.4	2.4	3.2	0.04	89.4	92.3	51.3
Tailing.....	65.6	.15	.14	.02	10.6	7.7	48.7
Calc. head.....	100.0	.9	1.2	.03	100.0	100.0	100.0

Operation data

Grind: 90 percent minus-65-mesh

Circuit	pH	Reagents, pounds per ton		
		$CuSO_4$	Xanthate Z-6	Cresylic acid
Condition.....	7.1	1.0	-	-
Flotation.....	7.1	-	0.4	0.1
Total.....		1.0	.4	.1

By flotation of ore ground to 90 percent minus-65-mesh, 89.4 percent of the copper, 92.3 percent of the nickel, and 51.3 percent of the platinum were recovered in a bulk sulfide concentrate, which assayed 2.4 percent Cu, 3.2 percent Ni, and 0.04 ounce Pt per ton.

Tests were run on ore ground as fine as minus-270-mesh, with various degrees of acidity and with various reagent combinations. The results obtained were similar, except for slightly higher copper recovery with finer grinding. In general, the bulk sulfide concentrate assayed 2.0 to 2.5 percent copper and 3.0 to 3.4 percent nickel. The product contained 89 to 92 percent of the copper and 90 to 94 percent of the nickel in the ore. Approximately 60 percent of the weight of the original ore was rejected as tailing in all tests.

A program has been initiated to study possible leaching treatment of bulk sulfide concentrate. Not enough data have been accumulated to draw any conclusions at this time. Some promise has been shown, however, by a method involving sulfating, roasting, and water leaching. The laboratory technique includes an oxidizing roast at 800° C. for nearly complete removal of sulfur, followed by treatment with sulfuric acid and reroasting at 400° C. In a plant, under proper operating conditions, these steps probably could be combined. In one test, approximately 50 percent of the nickel was extracted in the water-leach solution.

Summary of Metallurgical Testing

Owing to the intimacy of association of the sulfide minerals, the sample of Shamrock ore was not amenable to concentration by any of the ore-dressing methods tried for the production of separate high-grade copper and nickel concentrates.

Approximately 90 percent each of the copper and nickel can be recovered in a low-grade bulk sulfide concentrate with a rejection of about 60 percent of the original weight of the ore. Testing continues to determine the feasibility of a subsequent leaching treatment of the bulk sulfide product.

I copy of this

AG-771

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
ASSAY LABORATORIES
Baker SAMPLE INFORMATION REQUESTED. Grants Pass

The law passed by the Legislature, governing the free assaying and analyzing of samples sent to the State Assay Laboratories, provides that certain information be furnished the Laboratory regarding samples sent for assay, etc. A copy of this law will be found on the back of this blank. Please read the law carefully. Will you please fill in the information called for on the following blank, as far as possible and return the same to the nearest State Assay Laboratory along with your sample? If you have made out a blank, this copy is for your future use. Keep a copy of the information on each sample for your own reference.

Your name in full . Ford McCormick . . . . . .

Postoffice address . . Medford, Oregon . . . . . .

Are you a citizen of Oregon? . Yes . Date on which sample is sent . June 2, 1940 .

Name (or names) of owners of the property . . . . . .

Name of particular claim and date of location . . . . . .

Location of property or source of sample (describe as accurately as possible below):

(1) County . . Jackson . . . . . .(2) Mining district . Gold Hill . . .

(3) Township . 35S. (4) Range . 3W. (5) Section . 4 . (6) Quarter Section . . . .

How far from passable road? . . Less than 1 mile . . . . . .

Do you wish the sample examined for commercial minerals? . . Yes . . . . . .

For what metals do you wish the sample assayed? . . Platinum and Nickel . . . . .

Type of sampling: Channel (length) . . . . Grab . . . . Pipe . . . . . .

IMPORTANT: A sample, to be of value, should be taken in an even channel across the vein from wall to wall. Its position in the workings should be marked and the width measured. Assays of unlocated samples, without widths, are of little value; they create little interest in the minds of experienced investors and engineers.

(signed) . F. D. McCormick by. Ray C. Treasher

DO NOT WRITE BELOW THIS LINE -- FOR OFFICE USE ONLY -- USE OTHER SIDE IF DESIRED

Description Highly altered material containing a considerable amount of iron oxide and a small amount of nickel silicate. 6 lbs. 2 inches and smaller.

7/1/50 - Check with McCormick indicates sample came from Shannon Mine instead of location given

Sample Number	GOLD oz./T	GOLD Value	SILVER oz./T	SILVER Value	Platinum Percent	Nickel Percent		
	0.03		Trace		Trace	1.6		

AG-771

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
ASSAY LABORATORIES
Baker SAMPLE INFORMATION REQUESTED. Grants Pass

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Your name in full . Ford McCormick . . . . . .

Postoffice address . . Medford, Oregon . . . . . .

Are you a citizen of Oregon? . Yes . Date on which sample is sent . June 2, 1940 .

Name (or names) of owners of the property . . . . . .

Name of particular claim and date of location . . . . . .

Location of property or source of sample (describe as accurately as possible below):

(1) County . . Jackson . . . . . .(2) Mining district . Gold Hill . . .

(3) Township . 35S . (4) Range . 3W . (5) Section . 4 . (6) Quarter Section . . . .

How far from passable road? . . Less than 1 mile . . . . . .

Do you wish the sample examined for commercial minerals? . . Yes . . . . . .

For what metals do you wish the sample assayed? . . Platinum and Nickel . . . . . .

Type of sampling: Channel (length) . . . . Grab . . . . Pipe . . . . . .

IMPORTANT: A sample, to be of value, should be taken in an even channel across the vein from wall to wall. Its position in the workings should be marked and the width measured. Assays of unlocated samples, without widths, are of little value; they create little interest in the minds of experienced investors and engineers.

(signed) . F. D. McCormick. by. Ray C. Treasher

DO NOT WRITE BELOW THIS LINE -- FOR OFFICE USE ONLY -- USE OTHER SIDE IF DESIRED

Description Highly altered material containing a considerable amount of iron oxide and a small amount of nickel silicate. 6 lbs. 2 inches and smaller.

Sample Number	GOLD oz./T	GOLD Value	SILVER oz./T	SILVER Value	Platinum Percent	Nickel Percent		
	0.03		Trace		Trace	1.6		

Gold Hill District

Name: Shamrock Mine

Ownership: The last known owners of the mining claims were R. D. Semon of Medford, Oregon and Hanley Hyde of Hood River, Oregon in 1950.

Location: The Shamrock Mine is located about 25 miles northwest of Medford in the northwest part of Jackson County, Oregon. The mine workings are mainly in the SE¼ of the NE¼ of sec. 19, T. 34 S., R. 1 W. This area is covered by the Trail quadrangle, 15 minute series.

History: The area was originally prospected for quicksilver in the early 1900's and oxidized copper-nickel outcrops were discovered sometime about 1920. Several operators explored the occurrence including Dr. W. P. Chisholm, R. D. Hyde and Stanley Hyde. The Bureau of Mines carried on extensive exploration in 1949 and 1950 which is described in Report of Investigations 4895. There has been no production from the Shamrock.

Climate, Vegetation & Land Use: The surrounding area has a rugged topography; has an annual precipitation of 60 to 65 centimeters with most of it coming in the winter months. The climate is temperate with a mixed coniferous and deciduous forest. The primary land use is logging. Short term environmental impact would probably be moderate and long term, minor to negligible.

Geology: The occurrence of nickel, copper, cobalt, and platinum bearing sulfides associated with basic plutonic rocks at the Shamrock Mine is of interest in the light of new views on genesis of ore deposits.

The mineralization occurs in layered metasedimentary rocks of the Triassic Applegate Group. These rocks are locally called the May Creek Schist and consist mainly of quartz-mica schists and phyllites with a variety of associated

intrusive rocks including peridotite, serpentinite, norite, and granite type rocks. The mineralization is reported to be intimately associated with a norite sill-like mass although some of the schist has disseminated sulfides. A regional fault trends about north-south just east of the occurrence where lower Tertiary sandstone and shales are down-faulted into juxtaposition with metamorphosed Applegate Group rocks.

Tonnage and grade: The ore bodies as delineated by adits, shafts, and drill holes are roughly tabular but have been offset and contorted by post mineralization faulting and or folding.

Estimates from vein widths in underground workings and drill hole intercepts indicate a 50 percent probability of an ore body 25 to 30 meters long, 1 to 8 meters thick and 25 to 30 meters wide. No attempt was made to average all the assay information, and the analysis of the Bureau of Mines' 10 kilogram sample of representative ore was used for grade:Ni 1.3%, Cu 01.1%, Co 0.07%, Pt 0.03 oz/ton.

The tabular shape of the ore bodies dictates some kind of an underground mining operation. The relatively small known tonnage will also dictate a simple operation.

The Bureau of Mines reports on their test work showed that the ore texture, fine grain and intimate association of the metallic sulfides poses a difficult beneficiation problem and selective flotation was not satisfactory. Further testing will be needed to determine a satisfactory beneficiation process.

References:

Hundhausen, R. H., 1952, Investigation of Shamrock Copper-Nickel Mine, Jackson County, Oregon, U.S. BuMines, R. I. 4895.

References continued:

Vhay, J. S., 1969, Cobalt in Mineral & Water Resources of Oregon, Oregon Dept. Geol. and Mineral Ind. Bull. 64, in coop. with U. S. Geol. Survey p. 116-120.

Youngberg, E. A., 1945, Shamrock Mine, Oregon Dept. Geol. and Mineral Ind., Mine File Report, unpublished.

Report by: N. V. Peterson 7-7-75

XG-216+217
Au, Ag

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

2033 First Street
Baker, Oregon

1069 State Office Building
Portland 1, Oregon

239 S.E. "H" Street
Grants Pass, Oregon

REQUEST FOR SAMPLE INFORMATION

The State law governing analysis of samples by the State assay laboratory is given on the back of this blank. Please supply the information requested herein fully and submit this blank filled out along with the sample.

Your name in full Department samples

Street or P.O. Box 417 City & State Grants Pass, Ore

Are you a citizen of Oregon? _____ Date on which sample is sent 8-27-62

Name (or names) of owners of the property Ernest McTimmonds

Are you hiring labor? _____ Are you milling or shipping ore? _____

Name of claim sample obtained from M.C.

Location of property or source of sample (If legal description is not known, give location with reference to known geographical point.)

County Curry Mining District Chetco

Township 39S Range 10W Section 1 Quarter section NW of SE

How far from passable road? on Name of road Little Chetco road

	Channel (length)	Grab	Assay for	Description
Sample no. 1	20 inches		Au Ag	flat shear near serpentine contact in short tunnel
Sample no. 2	6 inches	≠	Au Ag	brown seam in lower trench

(Samples for assay should be at least 1 pound in weight)

(Signed) Len Ramp

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Sample Description #1 highly sheared altered metasedimentary rock.
#2 weathered metasedimentary rock in part soil.

Sample number	GOLD		SILVER					
	oz./T.	Value	oz./T.	Value				

Report issued _____ Card filed _____ Report mailed _____ Called for _____

SIR-5

XG - 216 & 217
Au, Ag

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REQUEST FOR SAMPLE INFORMATION

The State law governing analysis of samples by the State assay laboratory is given on the back of this blank. Please supply the information requested herein fully and submit this blank filled out along with the samples.

Your name in full Department samples - Len Ramp

Street or P.O. Box P.O. Box 417 **City & State** Grants Pass, Oregon

Are you a citizen of Oregon? _____ Date on which sample is sent 8/27/63

Name (or names) of owners of the property Ernest McTimmonds

Are you hiring labor? _____ Are you milling or shipping ore? _____

Name of claim sample obtained from M C Claim

Location of property or source of sample (If legal description is not known, give location with reference to known geographical point.)

County Curry Mining District Chetco

Township 39 S Range 10 W Section 1 Quarter section NW of SE

How far from passable road? On **Name of road** Little Chetco Road

	Channel (length)	Grab	Assay for	Description
Sample no. 1	20 inches		Au, Ag	flat shear near serpentine contact in short tunnel
Sample no. 2	6 inches		Au, Ag	brown seam in dozer trench

(Samples for assay should be at least 1 pound in weight)

(Signed) Len Ramp

DO NOT WRITE BELOW THIS LINE - FOR OFFICE USE ONLY - USE OTHER SIDE IF DESIRED

Sample Description #1 - Highly sheared altered metasedimentary rock.

#2 - Weathered metasedimentary rock - in part soil.

Sample number	GOLD		SILVER					
	oz./T.	Value	oz./T.	Value				
P-28731 XG-216	0.40	$14.00	0.20	$0.18	- - -	- - -	- - -	- - -
P-28732 XG-217	Nil	- -	Nil	- -	- - -	- - -	- - -	- - -

Report issued _____ Card filed _____ Report mailed 9/20/63 Called for _____

SIR-5

State Department of Geology and Mineral Industries

702 Woodlark Building
Portland, Oregon

Jackson County
Gold Hill Area
By: E. A. Youngberg
December 17, 1945

NAME:
SHAMROCK MINE (CHISHOLM MINE)
~~Sprignett Mt. Prospect~~ (Ni., Cu., Pt., Ag.) ~~Co.~~)

OWNERS:

~~O & C land.~~ R. D. SEMON Rt. 2 Box. 29, MEDFORD
260 MOBILE DR. ASHLAND 482-0218

LOCATION:

The prospect is located in S.E. 1/4, Sec. 19, T. 34 S., R. 2 W. approximately 2 miles above the Angle Ranch. The prospect is about 500 feet above and north of the Evans Creek road on the south slope of Sprignett Mt.

AREA:

The ground is not open to location.

HISTORY:

Previous work on the property was in the late 1920's when the prospect, according to old residents of the area, was being developed as a gold mine.

DEVELOPMENT:

The prospect is developed by a Winze 40 feet deep on the vein, which is intersected by a drift about 20 feet from the surface. Another adit, apparently a drift, is located about 40 feet below the upper drift. A crosscut 600 feet in length starts a short distance above the road having a northerly strike, but does not encounter the vein.

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GEOLGY:

The vein occurs in a area mapped as May Creek schists of Devonean age (Wilkinson, Butte Falls Quad.) The rocks locally are highly siliceous and contain large amounts of biotite mica. The rocks appear to have been originally a granite.

The vein strikes N. 30° - 55°E and has a dip of 40° to the east. The vein as exposed in the shaft consists of a 4 foot shear zone. The first 20 feet of the vein in the shaft is largely a redish-brown gosson with nickel and copper stains. Below this, some base ore appears, although not fresh enough to be certain of sulphide minerals present. The sulphide minerals appear to be pyrrhotite, pyrite, chalcopyrite, and possibly some niccolite or millerite. Assays of oxidized material showed the ore to contain 2.15% nickel, 2.42% copper, and .05 platinum per ton and only a trace of gold and silver.

GENERAL INFORMATION:

The prospect lies on a steep mountain slope about 300 feet in elevation above Sprignett Creek and the East Evans Creek road. The prospect is about twenty miles from Gold Hill via Sams Valley over good roads and easy grades.

Informant: Elton A. Youngberg

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Portland, Oregon

ECONOMICS:

The vein as exposed in the shaft shows continuity and persistence on the dip. If the ore body has any persistence on the strike, which appears quite possible, the prospect would be of economic importance.

This type of mineralization is unusual in this area. At least it apparently has not been brought to anyones attention before.

The samples were brought to the office by Mr. Reid of Grants Pass for Mrs. Angle for identification. The staining on the oxidized ore suggested nickel for which I suggested an analysis be made along with copper, gold, and silver. It seems quite possible that the ore may contain some cobalt also. I have requested a spec analysis be made. The presence of platinum is also interesting. Apparently Mr. Hoagland discovered its presence when cupelling. If a good, fresh specimen of the sulphide ore can be obtained possibly a petrographic analysis would be valuable in determining the sulphide minerals present.

Mr. Reid or Mrs. Angle I don't believe have the finances or the know how to develop the prospect. They are also handicapped because of the ownership is O & C. They possibly can get a lease on some basis. If the deposit is of economic importance, at least they should have some protection. I have hesitated in doing any geological work on the prospect

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until the matter of leasing or ownership has been settled.

Oregon. - A. E. Kellogg describes the cobalt deposits in Jackson county as follows.

"About twenty years ago cobalt was discovered in Jackson County, Ore., by Dr. W. P. Chisholm, of Gold Hill, Ore., the pioneer of the quicksilver industry in that district, while he was developing his gold-copper mine in the "Meadows", twelve miles north of Gold Hill. This property, know as the Chisholm group, is still owned and under development by the doctor. It is situated not far from Chisholm's quicksilver properties, also in the "Meadows". Early in the development of the gold-copper property, large orebodies were opened up, which, besides producing gold and copper, also carried from 4 to 4½ per cent of cobalt. This work extended over a period of several years and it is estimated that at least 30,000 tons of this ore will produce not less than 4½ per cent cobalt.

12. Kellogg, A. E., Cobalt in Jackson County, Oregon: Eng. and Min. Journal vol. 112, Oct. 22, 1921, p. 560

Tungsten ore in form Scheelite
S 2 - T. 36 S. R. 3 West - 3 Miles N.E. Gold
Hill Jackson County oregon.
It was called the Sylvanite Mine
E.T. Simons owner. Vein strikes N. 22°
East dip 65° East. In an Jillite altered to
chlorite & serpentine on hanging wall -
Limestone on foot. Scheelite associated
with vein Quartz

Philip F. Cramer
108 N. 6th G. Pass ore.

O. S. Blanchard, Attorney - has nearly a complete set of State Publications

CRIB MINERAL RESOURCES FILE 12

RECORD IDENTIFICATION
RECORD NO..... M061527
RECORD TYPE..... X1M
COUNTRY/ORGANIZATION. USGS
MAP CODE NO. OF REC..

REPORTER
NAME..... JOHNSON, MAUREEN G.
UPDATED..... 81 01
BY..... SMITH, ROSCOE M.; FERNS, MARK L.; (BROOKS, HOWARD C.) ; FERNS, MARK L.; (BROOKS, HOWARD C.)

NAME AND LOCATION
DEPOSIT NAME..... SHAMROCK MANGANESE

COUNTRY CODE..... US
COUNTRY NAME: UNITED STATES

STATE CODE..... OR
STATE NAME: OREGON

COUNTY..... JACKSON
DRAINAGE AREA..... 17 ROGUE RIVER
PHYSIOGRAPHIC PROV..... 13 KLAMATH MOUNTAINS
LAND CLASSIFICATION..... 01 49

QUAD SCALE	QUAD NO OR NAME
1: 62500	TRAIL

LATITUDE	LONGITUDE
42-35-51N	122-58-32W

UTM NORTHING	UTM EASTING	UTM ZONE NO
4715900.0	502000.0	+10

TWP..... 34S
RANGE.... 02W
SECTION.. 19
MERIDIAN. W.M.

COMMODITY INFORMATION
COMMODITIES PRESENT..... MN

PRODUCER(PAST OR PRESENT):
MAJOR PRODUCTS.. MN

ORE MATERIALS (MINERALS,ROCKS,ETC.):

EXPLORATION AND DEVELOPMENT
STATUS OF EXPLOR. OR DEV. 8

DESCRIPTION OF DEPOSIT
FORM/SHAPE OF DEPOSIT: ELONGATED PODS

SIZE/DIRECTIONAL DATA
SIZE OF DEPOSIT..... SMALL
COMMENTS(DESCRIPTION OF DEPOSIT):
SCATTERED EXPOSURES ALONG CREEK BANK

DESCRIPTION OF WORKINGS

COMMENTS(DESCRIP. OF WORKINGS):
ROAD CUTS, ADIT

PRODUCTION
YES
SMALL PRODUCTION

ANNUAL PRODUCTION (ORE,COMMOD.,CONC.,OVERBURD.)

	ITEM	ACC	AMOUNT	THOUS.UNITS	YEAR	GRADE,REMARKS
1	ORE	ACC	.101	TONS		
2	ORE	ACC	.077	TONS		
3	ORE	ACC	.012	TONS		
23	ORE,	EST	.190	TONS	PRE 1954	29-32 MN, 2-4 FE

PRODUCTION COMMENTS.... USBM REMOVED #1

GEOLOGY AND MINERALOGY

AGE OF HOST ROCKS..... PRE-LTRI
HOST ROCK TYPES..... QUARTZITE SCHIST SCHIST

PERTINENT MINERALOGY..... QUARTZ

GENERAL REFERENCES
1) APPLING, R N, 1958, MANGANESE DEPOSITS OF SOUTHWESTERN OREGON; USBM REPT INV 5472, P 45
2) PAGE, N J AND OTHERS, 1977, PRELIMINARY RECONNAISSANCE GEOLOGIC MAP OF THE WIMER QUADRANGLE, OREGON; USGS GEO
MAP MF-848

CRIB MINERAL RESOURCES FILE 12

RECORD IDENTIFICATION
- RECORD NO..... M061386
- RECORD TYPE..... XIM
- COUNTRY/ORGANIZATION. USGS
- DEPOSIT NO..... 043
- MAP CODE NO. OF REC..

REPORTER
- NAME..... JOHNSON, MAUREEN G.
- DATE..... 76 05
- UPDATED..... 79 04
- BY..... BRADLEY, ROBIN

NAME AND LOCATION
- DEPOSIT NAME..... SHAMROCK
- SYNONYM NAME..... CHISHOLM COPPER

- COUNTRY CODE..... US
- COUNTRY NAME: UNITED STATES

- STATE CODE..... OR
- STATE NAME: OREGON

- COUNTY..... JACKSON

QUAD SCALE	QUAD NO OR NAME
1: 62500	TRAIL

LATITUDE	LONGITUDE
42-36-04N	122-58-32W

UTM NORTHING	UTM EASTING	UTM ZONE NO
4716300.0	502000.0	+10

- TWP..... 34S
- RANGE.... 02W
- SECTION.. 19

- POSITION FROM NEAREST PROMINENT LOCALITY: 8 MILES WEST OF SHADY COVE

- LOCATION COMMENTS: E 1/2 SEC 19

COMMODITY INFORMATION
- COMMODITIES PRESENT..... CU NI CO PT

PRODUCER(PAST OR PRESENT):
MAJOR PRODUCTS.. CU NI

COMMODITY SPECIALIST INFORMATION:
PGM OCCUR CO

ORE MATERIALS (MINERALS,ROCKS,ETC.):
PYRRHOTITE, PENTLANDITE, CHALCOPYRITE

COMMODITY COMMENTS:
CHALCOPYRITE AND PENTLANDITE ARE INTIMATELY ASSOCIATED IN MINUTE VEINLETS THEREBY CREATING PROBLEMS IN SEPARATI
OF CU FROM NI. USBM STUDIES CONCLUDE THAT BULK SAMPLE OF FLOTATION WOULD WORK AS FIRST STEP: ORE NEVER MINED

ANALYTICAL DATA(GENERAL)
APPROXIMATE AVERAGE GRADE REPORTED FROM A 10 - KG U.S. MINES SAMPLE OF REPRESENTATIVE ORE CONTAINS 1.3 % NI, 1.
% CU, 0.07 % CO, AND 0.03 OZ/TON PT.

EXPLORATION AND DEVELOPMENT
STATUS OF EXPLOR. OR DEV. 2
PROPERTY IS INACTIVE
YEAR OF DISCOVERY..... 1900'S

WORK DONE BY OTHER ORGANIZATIONS
YEAR WORK TYPE ORGANIZATION AND RESULTS
1) 1949 DIREXPL HUNDHAUSEN, USBM

EXPLOR. AND DEVELOP. COMMENTS:
FURTHER EXPLORATION OF AREA MAY BE JUSTIFIED.

DESCRIPTION OF DEPOSIT

DEPOSIT TYPES:
LODE
FORM/SHAPE OF DEPOSIT:

SIZE/DIRECTIONAL DATA
SIZE OF DEPOSIT..... SMALL
DEPTH TO BOTTOM..... 100 FT.
MAX LENGTH..... 100 FT.
MAX WIDTH..... 25 FT.
STRIKE OF OREBODY.... N60E
DIP OF OREBODY..... 55SE
COMMENTS(DESCRIPTION OF DEPOSIT):
2 ORE BODIES; MINE ORE BODY (DATA ABOVE) & SURFACE ORE BODY - 200X200X38FT.

DESCRIPTION OF WORKINGS
SURFACE AND UNDERGROUND

COMMENTS(DESCRIP. OF WORKINGS):
UNDERGROUND WORKINGS IN FOUR ADITS TOTAL ABOUT 1,500 FT.; DIAMOND DRILLING IN 11 DRILL HOLES.

SOURCE OF INFORMATION (PRODUCTION).. REF 2

COMMENTS (POT RESOURCES).. RESERVES UNKNOWN

SOURCE OF INFORMATION (POT RESOURCES).. UNPUBLISHED COBALT REPORT.

GEOLOGY AND MINERALOGY
HOST ROCK TYPES..... QUARTZ-MICA SCHIST
IGNEOUS ROCK TYPES..... NORITE

PERTINENT MINERALOGY..... GRAPHITE, ZOISITE, QUARTZ-RHODONITE

IMPORTANT ORE CONTROL/LOCUS.. STRONGEST MINERALIZATION IN NORITE; WEAKLY DISSEMINATED IN SCHIST

LOCAL GEOLOGY
NAMES/AGE OF FORMATIONS,UNITS,OR ROCK TYPES
1) NAME: MAY CREEK SCHIST
AGE: LPAL

SIGNIFICANT ALTERATION:
SERICITE, LEACHING ON INTERMEDIATE LEVEL, SERPENTINITE

COMMENTS (GEOLOGY AND MINERALOGY):
ULTRABASIC SILLS IN SCHISTOSE ALTERED GREENSTONE CONTAINS ORE, AS DESSEMINATIONS, SMALL VEINLETS, AND SOLID MASSES. ORE ZONE BADLY CUT UP BY THRUST FAULTS.

GENERAL COMMENTS
RECORD (W000688) MERGED WITH THIS RECORD AND DELETED FROM OREGON FILE.

GENERAL REFERENCES
1) HUNDHAUSEN, R. J., 1952, INVESTIGATION OF SHAMROCK COPPER - NICKEL MINE, JACKSON COUNTY, OREGON: U. S. BUR. MINES REPT. INV. 4895, 12 P.
2) SHELTON, J. E., 1956 , USBM REPT. INV. 5261
3) RAMP, LEN, 1978 , INVESTIGATIONS OF NICKEL IN OREGON: ODOMI MISC. PAPER NO. 20 , P. 57 - 58 .

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

702 WOODLARK BUILDING
PORTLAND 5, OREGON

July 17, 1948

Sample submitted by F. W. Libbey

Sample received on June 30, 1948

Analysis requested As reported

Analysis by:

L. K. Hoagland

Assayer

Lab. No.	Sample Marked	Results of Analysis		Remarks
P-7313	Drillings Chisolm mine	Gold (Au)	Trace	- - - - - - - - - - - - -
		Silver (Ag)	0.50 oz./ton	
		Nickel (Ni)	0.90%	
		Cobalt (Co)	0.005%	
* * * *	* * * * *	* * * * * * * * * * * * * * * *		* * * * * * * * * * * * *

The Department did not participate in the taking of this sample and assumes responsibility only for the analytical results.

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

702 WOODLARK BUILDING
PORTLAND 5, OREGON

June 7, 1948

Shamrock N. Mine, Jackson Co.

Sample submitted by H. D. Wolfe

Analysis by:

Sample received on May 25, 1948

L. L. Hoagland
Assayer

Analysis requested Cobalt, Nickel, Copper assay

Lab. No.	Sample Marked	Results of Analysis		Remarks
P-7199	IG-111	Cobalt (Co)	0.07%	Grab sample from dump some fines.
		Nickel (Ni)	1.60%	
		Copper (Cu)	1.10%	
P-7200	IG-112	Cobalt (Co)	0.17%	Grab sample from dump
		Nickel (Ni)	1.88%	
		Copper (Cu)	1.70%	
P-7201	IG-113	Cobalt (Co)	0.12%	3' channel taken across ore body at base of shaft
		Nickel (Ni)	2.19%	
		Copper (Cu)	0.50%	
* * *	* * * *	* * * * * * * * * * * * *		* * * * * * * * * * * *

The Department did not participate in the taking of this sample and assumes responsibility only for the analytical results.

4 copies on Confidential (red) paper

LABORATORY CERTIFICATE

CURTIS & TOMPKINS, LTD.

ESTABLISHED 1878

ANALYTICAL - CONSULTING - ENGINEERING

CHEMISTS

AUTHORIZED, LICENSED OR BONDED BY FEDERAL & STATE INSTITUTIONS & NATIONAL TRADE ORGANIZATIONS AND ASSOCIATIONS

236 FRONT STREET
BETWEEN CALIFORNIA & SACRAMENTO STS.
SAN FRANCISCO

ANALYTICAL & RESEARCH LABORATORIES
UMPIRE & CONTROL ANALYSES
PRACTICAL INVESTIGATIONS

CABLE ADDRESS: ANALYST

DUPLICATE

Laboratory No. 169986/90 November 29, 1940

M R. C. WILMOT

We have examined the samples

of Ore *Received* 11/18/40

Marked As Below

and found the samples AS SUBMITTED to give the following results:

ANALYSIS

Lab. No.	Mark	Cobalt	Nickel	Copper
169986	(1) 4' shear 5' N of winze Cu stain	Nil	-	-
169987	(2) Character sample 3' below shear 20' N of winze	Nil	-	-
169988	(3) 3' - 15' down winze 15' above lower level. Cut on top of other sample	0.08%	-	-
169989	(4) Cobalt prospect 3' - 30' N of winze	Nil	-	-
169990	Composite	-	1.10%	1.45%

Curtis & Tompkins Ltd.
ANALYTICAL & ENGINEERING CHEMISTS

A-5

2469

1200

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

702 WOODLARK BUILDING
PORTLAND 5, OREGON

July 6, 1948

Sample submitted by H. D. Wolfe

Sample received on June 18, 1948

Analysis requested As reported

Analysis by:

L. L. Hoagland

Assayer

Lab. No.	Sample Marked	Results of Analysis		Remarks
		Shamrock Mine		
P-7274	IG-138	Gold (Au)	Nil	5' channel taken across oxidized material of ore body 15' down from collar of old shaft.
		Copper (Cu)	2.60%	
		Nickel (Ni)	1.73%	
		Cobalt (Co)	0.18%	
P-7275	IG-139	Gold (Au)	Nil	grab sample of sulphides from dump
		Copper (Cu)	0.80%	
		Nickel (Ni)	2.71%	
		Cobalt (Co)	0.34%	
P-7276	IG-140	Gold (Au)	Nil	3½' channel from quartzitic zone lying immediately below sulphide zone near base of old shaft - contains some graphite seams.
		Silver (Ag)	Nil	
* * * *	* * * * *	* * * * * * * * * * * * * * *		* * * * * * * * * * * *

The Department did not participate in the taking of this sample and assumes responsibility only for the analytical results.

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

702 WOODLARK BUILDING
PORTLAND 5, OREGON

July 17, 1948

Sample submitted by F. W. Libbey

Sample received on June 30, 1948

Analysis requested As reported

Analysis by:

L. L. Hoagland
Assayer

Lab. No.	Sample Marked	Results of Analysis		Remarks
P-7313	Drillings Chisolm mine (Shamrock)	Gold (Au)	Trace	- - - - - - - - - - - -
		Silver (Ag)	0.50 oz./ton	
		Nickel (Ni)	0.90%	
		Cobalt (Co)	0.005%	
* * * *	* * * * *	* * * * * * * * * * * * * * *		* * * * * * * * * * * * *

The Department did not participate in the taking of this sample and assumes responsibility only for the analytical results.

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

702 WOODLARK BUILDING
PORTLAND 5, OREGON

General Laboratory Number P 4329 Date received January 6 1946

Spectrographic Laboratory Number 1409 Sample received from E.A.Youngberg via L.L. Hoagland, Grants Pass Ore.

QUALITATIVE SPECTROGRAPHIC ANALYSIS
(Quantities estimated to nearest power of ten)

1. Elements present in concentrations over 10%.

   Iron

2. Elements present in concentrations 10% - 1%.

   Silicon, aluminum, magnesium, copper, nickel

3. Elements present in concentrations 1% - 0.1%.

   Calcium, manganese, titanium, chromium, cobalt

4. Elements present in concentrations 0.1% - .01%.

   Sodium, vanadium

5. Elements present in concentrations .01% - .001%.

   Molybdenum, silver

6. Elements present in concentrations below .001%.

Dr. H. G. Harrison, Spectroscopist

E. W. Wells