(286)
Item 22

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U. S. Geological Survey
Bishop, California
August 9, 1943.

NIGHTINGALE MINE, PERSHING COUNTY, NEVADA

Dwight M. Lemmon

On July 10, accompanied by M. R. Klepper of the Geological Survey, I examined the workings of the Nightingale mine, Pershing County, Nevada. We reached the mine from Nixon, Nevada by following the MGL road 8.9 miles north from Nixon, then turning east on the Coyote Canyon road for 7.1 miles past the Garfield Force claims to the Nightingale camp, a total distance of 16 miles over fair dirt roads. Most traffic to Nightingale still uses the gravel road from Hot Springs on U. S. 40.

Although my visit was confined to examination of the underground workings in ultra-violet light coupled with a brief excursion over the surface of the Nightingale and adjoining Meyer properties, Klepper subsequently, at my request, examined the Star mine to the east, prepared a general district map showing relations of Garfield Force, Nightingale, Meyer, and MGL mines, and went over the surface exposures at night with ultra-violet light. His reports and maps will be completed shortly; so this preliminary memorandum is confined to the Nightingale problem.

I have examined most of the assay data from Bureau of Mines project 701, but have not had access to the final report.

GEOLOGY

As an addendum to Ward Smith's report (Geological Survey Bull. 936-B), I enclose a vertical longitudinal projection of the Nightingale mine showing stoping and ore reserves. Klepper is now negotiating with a mining engineer, who has no connection with the Clark interests, for results of check sampling done since the Bureau of Mines work in 1940p we have some hope of obtaining this confidential information, and would place considerable reliance on its authenticity.

Examination of the orebodies in the mine with the high-powered ultra-violet lamps now available shows a definite control of tungsten mineralization by low angle joints that strike east and dip gently south, a control not recognized by Ward Smith and not taken into account in the Bureau of Mines project of 1939-1940. Much of the channel sampling loses significance in the light of this structural control, for samples taken a few feet higher or lower in the orebody might give an entirely different picture. These joints give a bedded appearance to the ore across both the limestone bedding and the contact, and result in alternate bands of ore and barren tactite. The ore requires sampling in both a vertical and a horizontal plane. The drill holes appear to have done this advantageously, for they crossed the ore zone obliquely. This structural picture also changes the general interpretation of assay results; the lack of correlation between adjoining channel samples does not necessarily mean lenticularity of ore. Bulk sampling from raises would probably be the only satisfactory way to determine the grade of orebodies.

RESERVES

General considerations

Any estimation of reserves depends upon (1) grade of ore exposed; (2) continuity of ore with depth; and (3) lateral extension of orebodies.

Grade.- Unfortunately, no reliable records are available showing the tungsten content of the ore mined from the property. The channel sampling by the Bureau of Mines is not conclusive. However, by combining available information with examination in ultraviolet light, I am of theopinion that ore can be mined with a grade of 0.4 to 0.5% of WO_3.

Vertical continuity.- The drilling by the Bureau of Mines shows that tungsten mineralization continues several hundred feet below the lowest workings without any apparent change. There is no evidence that the favorable limestone beds will be eliminated by encroachment of granite for some hundreds of feet downward.

Lateral continuity.- The evidence from the mine workings indicates that the orebodies in the Machine Shop tunnel and Ranson tunnel are separated by barren tactite. The Lidstone orebody appears to be bordered laterally by waste. Therefore, any assumption of lateral continuity between the Ranson and Lidstone bodies seems unwarranted.

Tonnage

Available information suggests that the known ore in the mine occurs in 3 shoots -- herein referred to, in order from south to north, as the Machine Shop, Ranson, and Lidstone shoots (see projection). Surface sampling is indicative of a fourth, undeveloped shoot 250 to 350 feet north of the Lidstone workings. Drilling by the Bureau of Mines has proved that all 3 oreshoots contain scheelite ore at depths 100 to 150 feet below the present workings. I estimate that these 3 shoots contain 109,000 tons of measurable, indicated, and inferred ore, distributed as follows:

	Measurable	Indicated	Inferred	total
Machine Shop	19,000	21,000	21,000	61,000
Ranson	--	17,000	7,000	24,000
Lidstone	--	24,000	--	24,000
				109,000

In making this estimate, I assume ore above the 128 foot level in the Machine Shop and Ranson orebodies to be measurable; ore in drill holes to be indicated; and ore below drill holes to be inferred. The available data suggest that the oreshoots are vertical.

If the ore averages 0.45% of WO_3, a mill that makes a 75% recovery should save 0.33 unit per ton, or a total of 35,000 units of WO_3

RECOMMENDATIONS

The reserve of measurable and indicated ore in the Nightingale mine warrants putting the property on a productive basis on a moderate scale of 100 to 200 tons daily. The mine itself is in good shape and could be developed readily to yield 100 tons a day; production might be increased after a few months aggressive development.

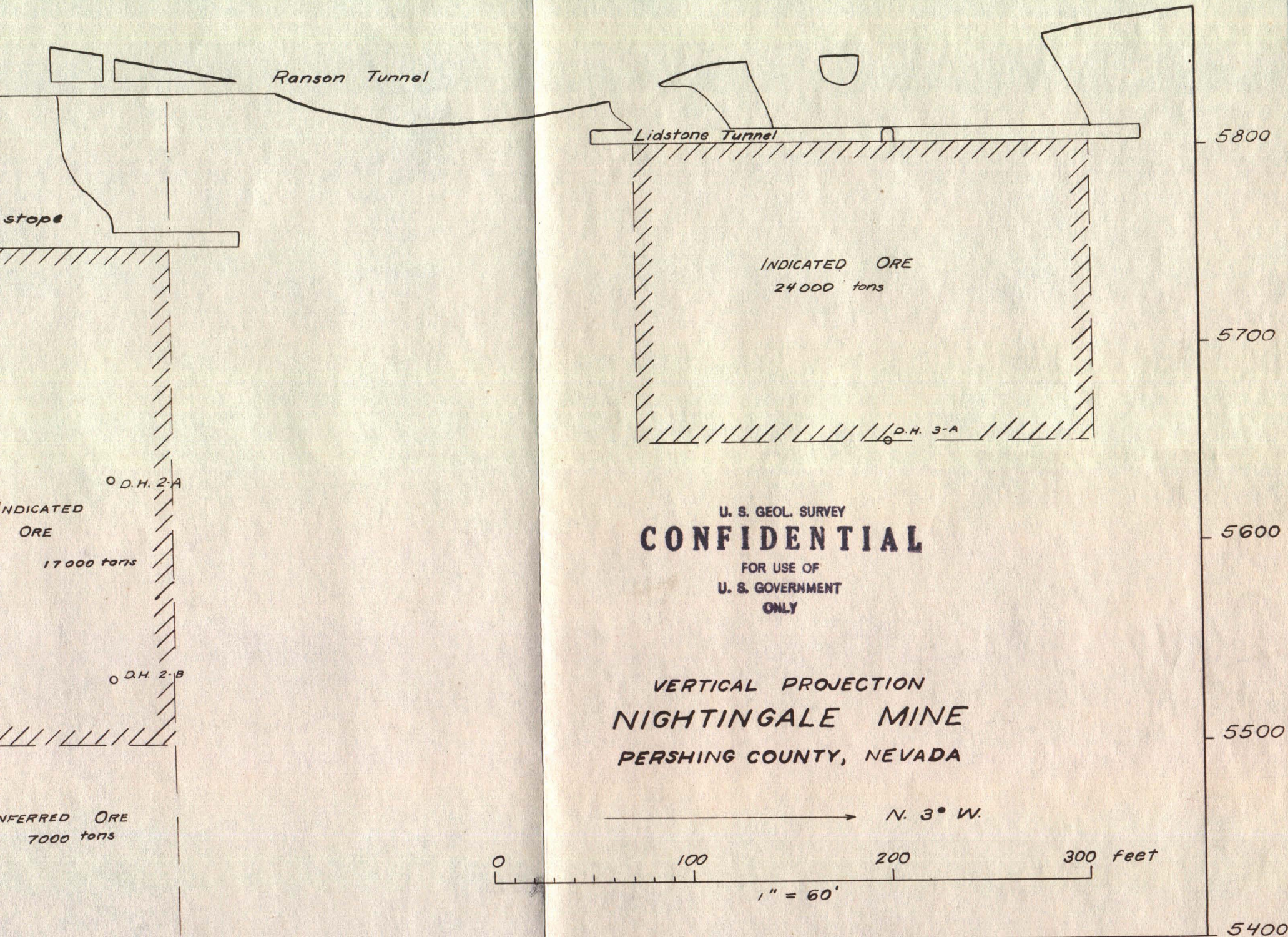
The mill on the property, now in poor condition, probably would be useless in treating ore from the mine. Also, there is no water supply adequate for milling, although it might be possible to develop water in additional wells.

The ore could be haulted for custom milling to the Toulon mill of Rare Metals Corp. or to the MGL mill. The Toulon mill, which takes custom ore and has excess capacity, is 50 miles by fair road to the east. The MGL mill, which has not yet taken custom ore, is 15 miles from Nightingale by the poor existing road. However, this distance could be shortened to 7 or 8 miles by building a one-mile link between the Meyer property and the end of the MGL road in Cowles canyon. A new road is now beingplanned from Nightingale to the Meyer property.

The MGL mill could be equipped readily to handle an extra 75 to 100 tons daily in addition to present production. Also, it appears likely that the MGL orebodies will be exhausted soon, and the mill will then be idle. Therefore the MGL mill seems the logical place to treat Nightingale ore if some agreement could be made with Mr. Letts of MGL to handle it now or in the future if it is stockpiled for the present (similar to Getchell-Metals Reserve-Riley arrangement). The main difficulty in making such a plan is with Mr. Letts, who is highly independent, and with Mr. Clark, who is convinced that Nightingale needs a big mill of its own.

The involved financial status of the Nightingale properties makes any proposal unattractive to outside capital. Perhaps the way would be paved for a well-managed, third organization if the Clark interests were eliminated from the picture through foreclosure by the Molybdenum Corp. of America.

The Meyer, Nightingale, and Star properties plus the MGL have possibilities of contributing to a district operation similar to that of Getchell Mine in the Osgood Range. The Meyer property has recently been optioned to John Heizer, who plans trucking the ore to Toulon. The Star and Nightingale, both owned by Clark interests, are the only known remaining properties that could be tributary to the MGL mill.



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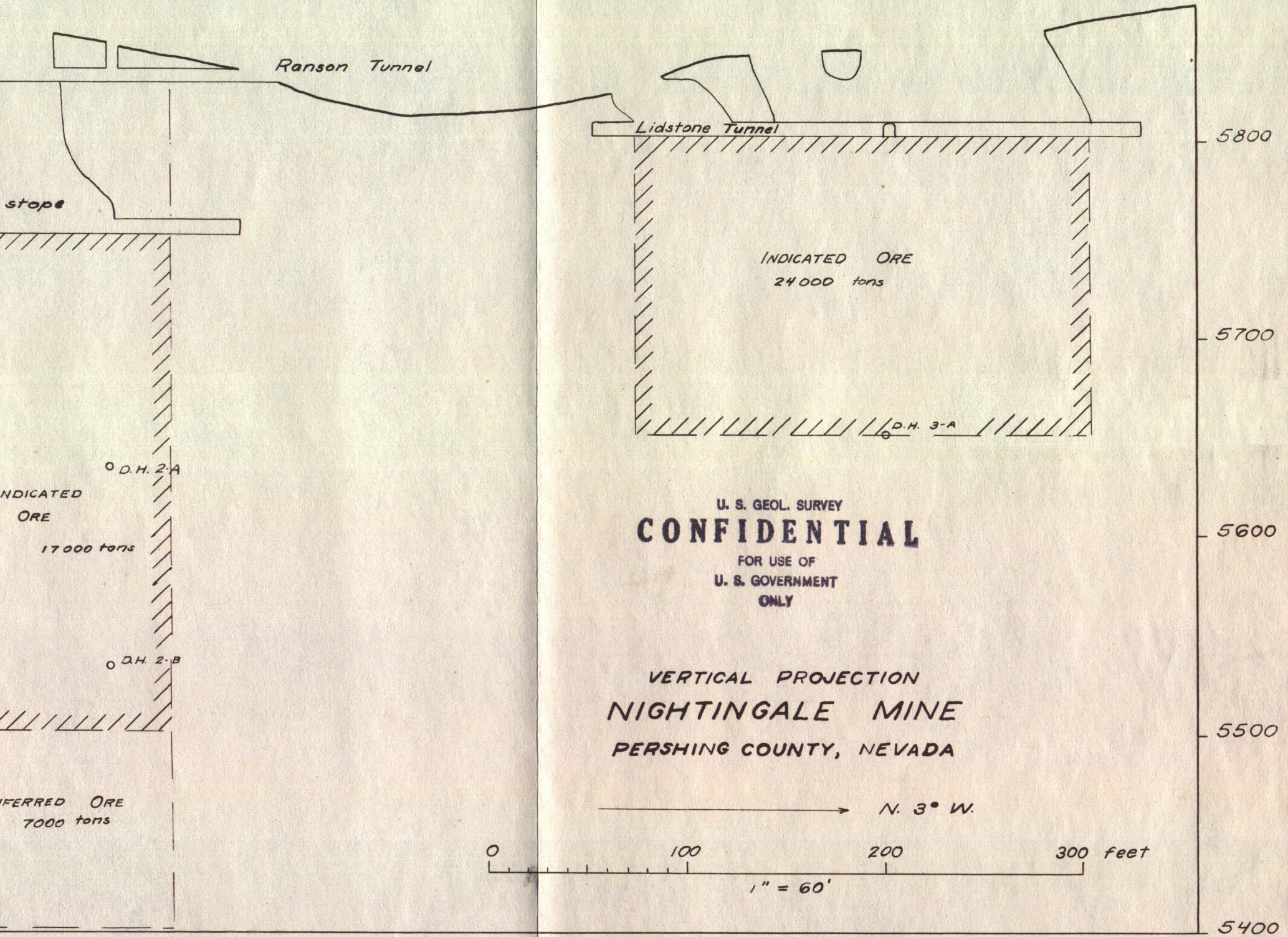
VERTICAL PROJECTION
NIGHTINGALE MINE
PERSHING COUNTY, NEVADA



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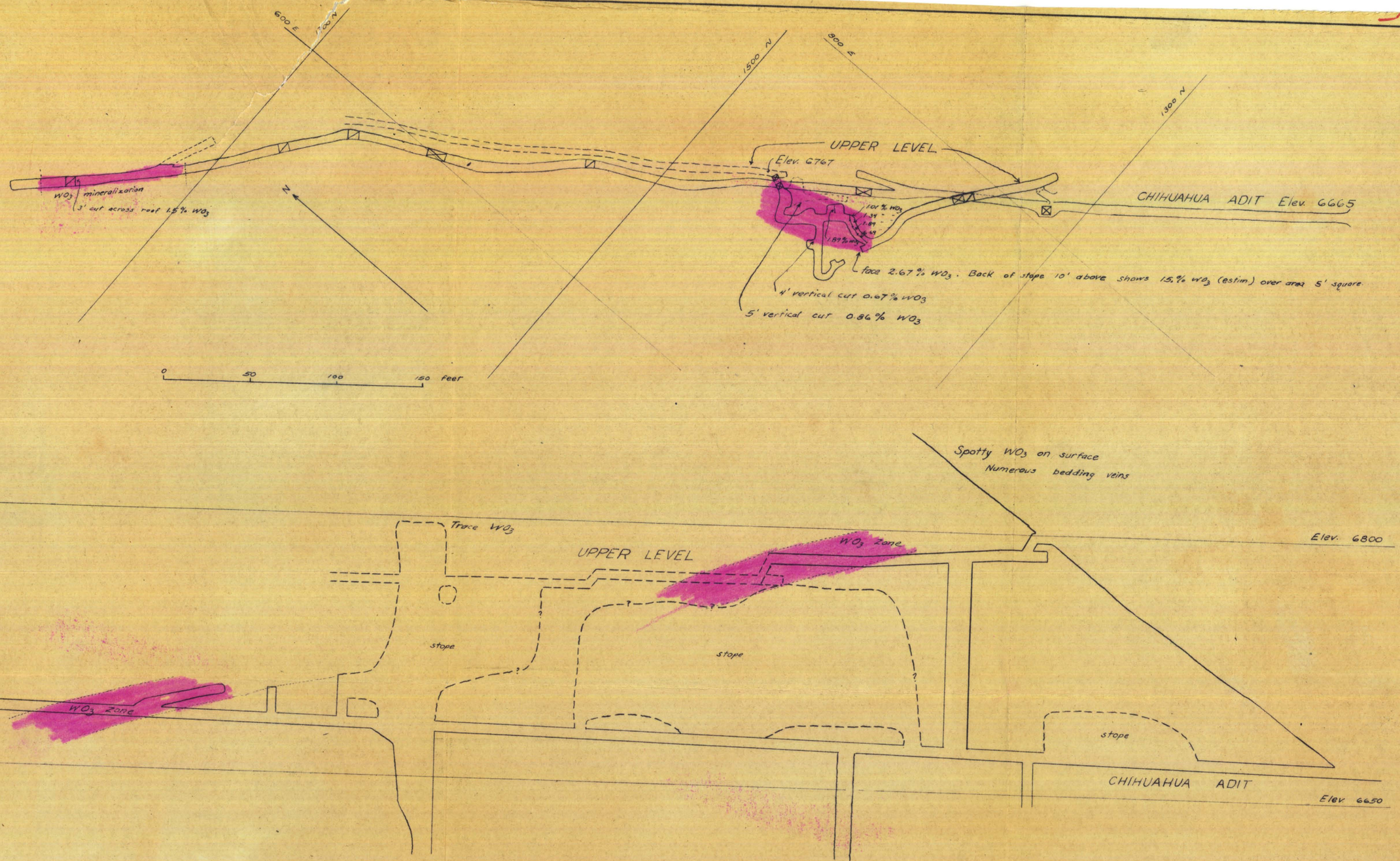
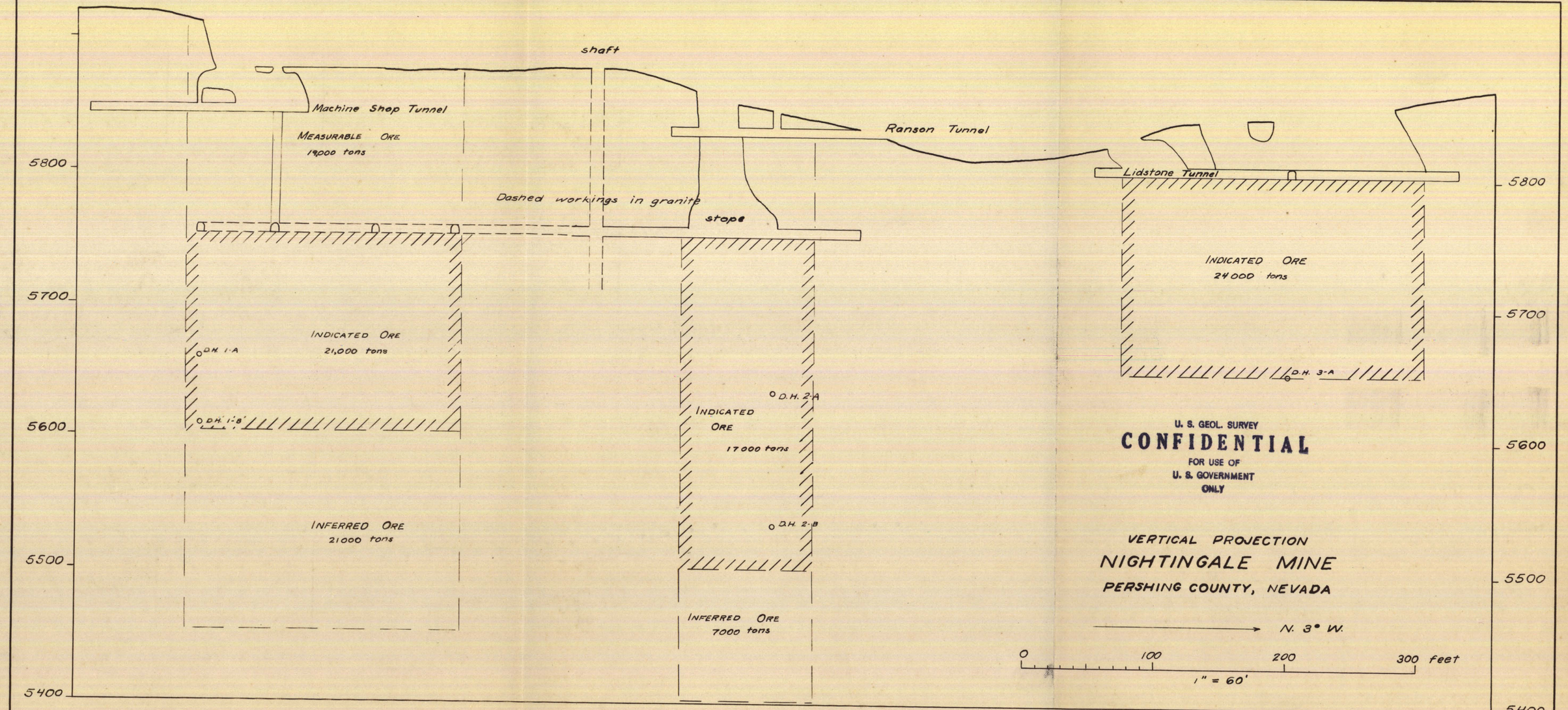


SKETCH MAP AND PROJECTION OF PART OF THE BAY STATE MINE, NEWARK DISTRICT, NEVADA

D. M. Lemmon and H. R. Bramel September 16-17, 1942

3380-0034


shaft
Machine Shop Tunnel
MEASURABLE ORE
19000 tons
Ranson Tunnel
Lidstone Tunnel
Dashed workings in granite
stope
5800
5700
5600
5500
5400
INDICATED ORE
21,000 tons
D.H. 1-A
D.H. 1-B
INFERRED ORE
21000 tons
INDICATED
ORE
17000 tons
D.H. 2-A
D.H. 2-B
INFERRED ORE
7000 tons
INDICATED ORE
24000 tons
D.H. 3-A
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VERTICAL PROJECTION
NIGHTINGALE MINE
PERSHING COUNTY, NEVADA
N. 3° W.
0
100
200
300 feet
1" = 60'
D. M. L. 7-11-43