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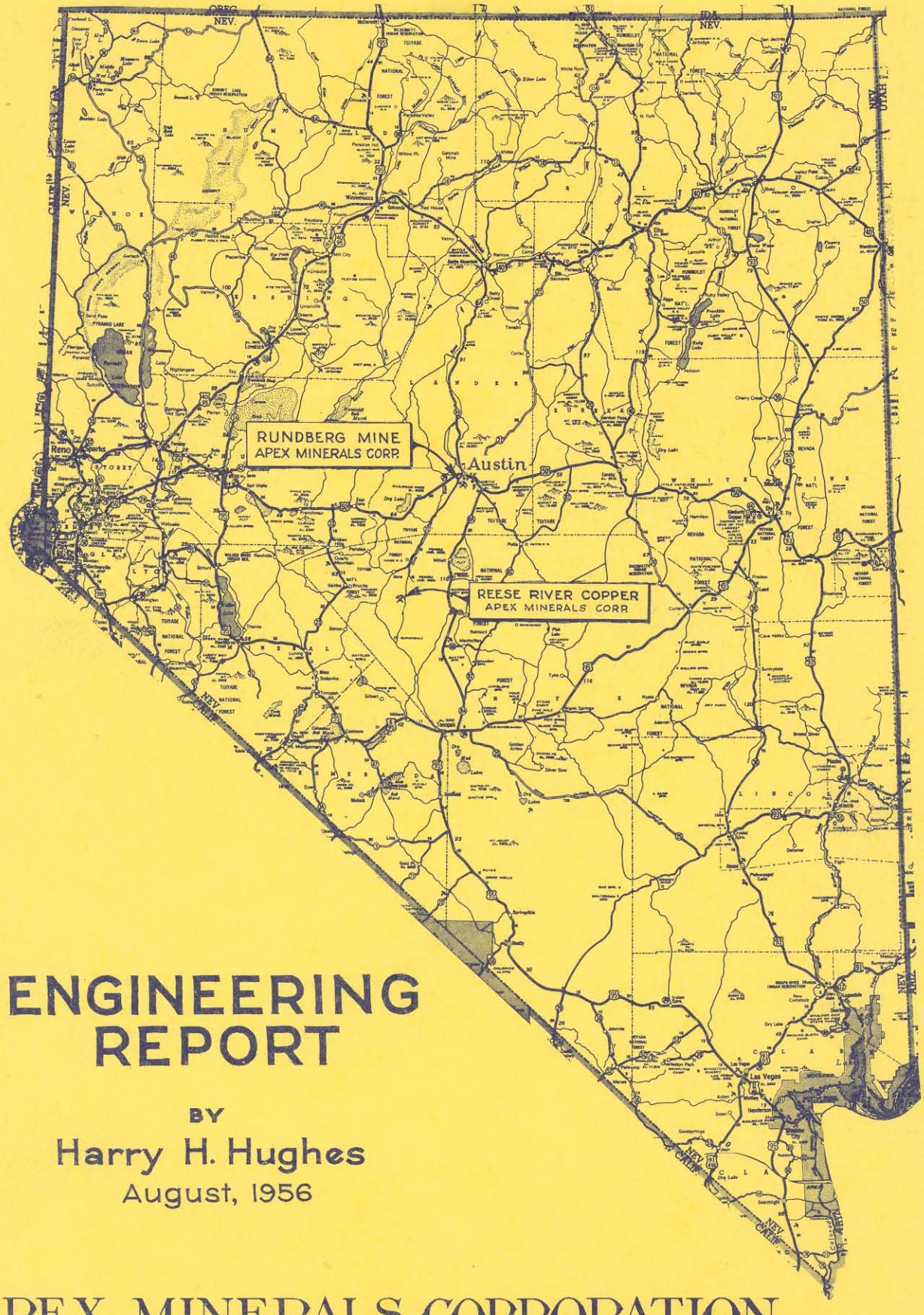

ENGINEERING REPORT

BY

Harry H. Hughes

August, 1956

APEX MINERALS CORPORATION

3890 0042

HARRY H. HUGHES
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ESMERALDA COUNTY ENGINEER
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Reno, Nevada
August 27, 1956

To the Board of Directors
Apex Minerals Corporation
317 Clay Peters Building
Reno, Nevada

Gentlemen:

Attached is my report on your mines near Austin, Lander County, Nevada.

Very truly yours,

Harry H Hughes

Harry H. Hughes

REPORT ON MINES OF APEX MINERALS CORPORATION

AUSTIN, NEVADA

SUMMARY AND CONCLUSIONS

As long as two years ago this writer gave as an opinion that the secondary ores in the Rundberg mine would make primary ores at shallow depths and that the mines of Apex Minerals Corporation would be important producers of uranium. These and other predictions and opinions were given at a time when there was considerable controversy among engineers as to the possibility of them coming true. To date every opinion expressed and every prediction made has turned out to be correct. This is not to be construed as bragging, but rather is mentioned to establish the writer's right to make the positive statements which will be made in this report.

Mr. Marty Hess, engineer-educator, who formerly conducted a mobile uranium prospecting school under the auspices of the Nevada State Vocational Education Department recently visited the Apex Minerals Corporation mine. Shortly before his visit uranophane had been recognized in surface workings on the Diamond orebody where bulldozing was in progress.

Mr. Hess was so enthused over this showing, as well as that of your primary ores that, unknown to any of the Apex officials or personnel, and entirely on his own, he wrote an article for the Nevada State Journal, a Reno newspaper. This appeared in the July 29, 1956 issue. Among a number of other enthusiastic statements, Hess said: "It's not just a uranium mine, it's THE uranium mine in continental United States" . . . "The world's richest uranium discoveries in the Belgian Congo and Great Bear Lake in Canada were also found on uranophane and gummite outcrops" . . . and, "I've seen nothing to compare with Austin's coffinite discovery, not even in Gilpin County, Colorado, the pitchblende district of America. Orebodies in this Austin (Apex) property show width, massiveness and consistency on a regular vein formation that I have not seen in any other continental U. S. uranium mine." It is certainly very gratifying to have a disinterested outside authority agree with my estimate of the mine.

To date four orebodies have been found and partially developed on the Apex Minerals Corporation claims. In developing these orebodies a total of 2,600 feet of underground drifting, crosscutting and raising have been done. In addition to the underground development a great deal of surface stripping with bulldozer has been done and is being carried on currently.

The orebodies of major importance are the Rundberg, Adit No. 1 (coffinite), and Diamond. In addition to these there is the one shown in the map as the "Surface Outcrop." This will in time develop into an orebody of size, but at this time insufficient work has been done to be able to estimate any definite tonnage for it.

In addition to the orebodies mentioned above, aerial reconnaissance of the ground (southeast of the Diamond workings) on the Western Soldier and Paiute claims has disclosed a definite anomaly. Experience has shown that, without exception, where scintillator readings are had and subsequently dug on, ore is found. It was from such scintillator readings that the tremendous Diamond orebody was opened up.

Since June 16, 1956, twenty-four cars of ore have been shipped to the Vitro Uranium Company's mill near Salt Lake City, Utah. These totaled 1,509.45 dry tons, with an average assay of .29265% U_3O_8, containing 8,834.76 pounds of U_3O_8 according to my calculations.

The following is a tabulation of ore tonnages:

	Tons Positive Ore	Tons Probable Ore	Tons Possible Ore
Adit No. 1 (Primary Ore)			
(a) hanging wall orebody	8,860	4,900	44,100
(b) foot wall orebody	6,900	4,600	41,400
Rundberg orebody	37,000	25,000	225,000
Diamond orebody	53,500	53,500	200,000*
TOTALS	106,260	88,000	510,500

*Diamond ore projected only to Veatch Canyon elevation.

The writer is assigning these positive tonnages to the various orebodies because of experience in developing. All areas have always filled in with ore where expected during the various development drives. Because, as stated previously, the shipment of 1,509.45 tons was taken from all over the property, it is considered that it constitutes the best sampling possible—much better than any number of cut samples—so that the average grade of all ore should be not less than .25% U_3O_8. Future shipments should average this or more.

Further discussion of possible ore extensions is given under the headings of the separate orebodies.

Metallurgy of the ores will be important to Apex Minerals Corporation. The Company has filed its "intent" to build a mill with the Atomic Energy Commission, and application was made to the State Engineer of Nevada to appropriate water for milling. A consulting metallurgist, Albert Silver, one of the outstanding metallurgists of this area, has been employed to work out the proper flow sheet. Average samples of the mixed coffinite and autunite ores (as they will be mined) are now at the Colorado School of Mines at Golden, Colorado, where the most economical flow sheet for extracting the uranium oxide is being worked out under the direction of Mr. Silver.

In view of the very great advantage to Apex Minerals Corporation in the price which would be received for uranium oxide over the price paid for crude ore shipped to a custom mill, the writer strongly recommends that Apex Minerals Corporation erect a mill to treat its own ores.

On a recent trip to Grand Junction, Colorado, where the AEC office was visited, the writer was informed that the price for uranium oxide will be determined by negotiation. This price is determined by the size and type of the orebodies in relation to the size of the mill and may be as high as $11.00 per pound of uranium oxide. This holds until 1962. Between 1962 and December 31, 1966 the price has been set at a minimum of $8.00 per pound, but may be higher under certain conditions.

In conclusion the writer would like to say that he is retained by the Apex Minerals Corporation as consulting geologist. He has been in constant association with the entire operations since July, 1954 and is now devoting a minimum of half his time to the development campaign.

In my thirty-five years experience in mining from Canada to Brazil I have never seen a property develop from a prospect to a mine of such magnitude in so short a time. For this reason, it has been a pleasure to write the foregoing and following positive, enthusiastic statements.

LOCATION AND ACCESSIBILITY

The Apex Minerals Corporation mines are located near Austin, the County seat of Lander County, Nevada. The mines are three miles in an air line southerly, or 7½ miles by road from Austin. Of the road distance, 5 miles are over U. S. Highway 50; the remaining 2½ miles are over a graded and maintained gravel road. From the mines to Battle Mountain, a distance of 97 miles (and the closest rail head) there are 2½ miles of gravelled road just mentioned plus 94½ miles of oiled State Highway 8-A. Ore is trucked from the mines to Battle Mountain (a town on The Western Pacific Railroad) and goes from there by rail to the mill of the Vitro Uranium Company near Salt Lake City, Utah, being sampled en route by the Utah Ore Sampling Company.

HISTORY

Uranium was discovered in September, 1953 by Joe and Rudy Rundberg on the ground now held by Apex Minerals Corporation. They drove 118 feet of tunnel which cut a corner of the Rundberg orebody. On November 1, 1955, Apex Minerals Corporation acquired a 20-year lease and an option to purchase the Rundberg group from Uranium Mines, Inc. Since that time an intensive development campaign of bulldozing on the sur-

face, driving tunnels, raising and drilling have opened three large orebodies of uranium ore, with another possible orebody as yet undeveloped.

PROPERTY

Claims held by Apex Minerals Corporation are 57 in number. Of these, 7 are in the Rundberg group and are held under a 20-year lease and an option to purchase from the Rundbergs. These are the Emma, Early Day, Diamond, Ajax, Protector, Climax, and Bonnie Blue. The claims are shown on Map No. 4 at the end of this report.

The company acquired outright the Jumbo, Paiute, Paiute Nos. 1 through 8, Western Soldier, and Western Soldier Nos. 1, 2 and 3.

The Carnotite, Carnotite Nos. 1 through 11, Noonday, Noonday Nos. 1 and 2, Ace, Autun, Autun Nos. 1 through 5, Sundown, Sundown Nos. 1 through 9, Sundown No. 11, Rundberg Extension and Rundberg Extension Nos. 1 and 2 are held by Apex Minerals Corporation under a lease and option to purchase agreement.

GEOLOGY

The claims of Apex Minerals Corporation are near the southwest border of the quartz monzonite pluton which is the core of the Reese River mining district in which is located the famous old silver mining camp of Austin.

In the area of these claims the quartz monzonite has intruded a series of (presumably) paleozoic shales and quartzites, indurating and altering the shales almost to slates and schists. Locally, in the area of the Apex claims, the metasediments consist almost entirely of the quartzites, many of them being carbonaceous. In several places in the vicinity of the orebodies, the writer has found streaks of pure graphite, one of which is 4 inches thick. The carbonaccous material is quite significant since all authorities on uranium agree that presence of carbon is required to precipitate the uranium minerals from their solutions.

The quartz monzonite-quartzite contact strikes northwest-southeast generally and can be followed for a distance of about 9,000 feet on the Apex claims. Along the contact the quartzites have been greatly folded, crumpled and kaolinized, resulting in crushed zones which have afforded excellent channels for the uranium solutions to circulate and precipitate.

In spite of the generally consistent NW-SE strike of the contact there are many local irregularities along it with small noses and embayments of the monzonite intruding the quartzites.

Also, throughout the area of the Apex Minerals Corporation claims there are numerous aplite dikes of varying thickness which cut across the monzonite-quartzite contact. They cut the contact varying from almost right angles to almost parallel. The dikes are later than the monzonite intrusion into the quartzites, and the intrusive action of the dikes further shattered the quartzites making even better channels for the circulation of the ascending uranium solutions. To put it in plainer terms, it is clear that a solution will pass through a bed of gravel easier than through a mass of rock only slightly cracked.

Therefore, I am certain today that the aplite dikes are the structural control for the uranium mineralization.

For the sake of brevity no further discussion of the general geology is given here, but additional details are given below for the separate orebodies.

ORE DEPOSITS

Apex No. 1 Adit

On the hanging wall side of the aplite dike where the primary ore was first found, the coffinite has been opened for a length of 180 feet horizontally, and raises have been made in two places; one to a height of 80 feet and the other to 40 feet. The slope distance up the dike from the No. 1 adit to the surface is 160 feet (see Maps No. 1 and No. 2). The width of ore is variable but will average at least four feet. Using this width, and the

length and slope distances given above, a positive tonnage of 8,860 tons is indicated. Projecting the ore 100 feet down the dip below the No. 1 adit, using the same width and length as above, indicates 4,900 tons of probable ore. For each additional 100 feet of depth there should be added 4,900 tons.

Judging from the strength of the mineralization in the vein and dike the writer is willing to state that the ore will make downward for at least one thousand feet.

At the time when the primary ore was first found in Adit No. 1 the writer gave as an opinion that it was sooty pitchblende. Later the AEC stated that it is coffinite (a silicate of uranium). When Mr. Hess, who is mentioned previously, visited the mine in July he took with him a sample of the primary ore. In a letter from Mr. Hess dated July 21, 1956, to Mr. Hugh Cameron, superintendent of the Rundberg mine, he stated:

"One of the ore samples we have, which we obtained when we examined the mine last Saturday, July 14, is very definitely streaked with pitchblende.

"This is not just my own opinion, also the opinion of a couple of geologists good in their field. In other words, this is good news for your mine."

A crosscut was driven through the aplite dike and at the footwall contact a fine body of the primary ore was cut. This has been developed along the strike for the length shown on Map No. 1 and will continue for undertermined but considerable added lengths, as well as up and down the dip. This ore has maintained a width of six feet. As stated above, the downward extension will be as great in this orebody as that in the hanging wall ore. There is a good location in the footwall orebody to sink a winze to open the ore in depth. This ore will also extend upward to the surface. A diamond drill hole being drilled as this is written (to further outline the Rundberg orebody) has passed through ten feet of very good ore (in the quartzite) in the footwall of the dike. This proves positively the upward extension of this footwall orebody. In addition to the ten feet of ore mentioned above, there are 16 feet of ore disseminated through the dike. This drill hole is shown on Map No. 2. As in the case of the hanging wall ore the tonnage will increase by 4,600 tons for each 100 feet of depth and in all probability considerably more.

Rundberg Orebody

This was the original discovery of uranium at the Rundberg mine. The orebody has been opened as shown on Maps No. 1 and No. 2, and the extensions outlined by long-hole drilling as indicated. This outlining of ore by drilling is standard practice. In fact, a very large tonnage of the uranium ore reserves on the Colorado Plateau are "blocked" in this manner, and accepted by the AEC.

The Rundberg orebody itself is in the quartzite but both walls are of the monzonite.

Both drifting and drilling are being carried on at this time from the No. 2 Adit to open the orebody further.

Diamond Orebody

The Diamond orebody is on top of the mountain almost two thousand feet southeast of the Adit No. 1 primary orebodies (see Maps No. 2 and 3).

On the surface (where first discovered) the width of ore was twelve feet. Excavating and bulldozing a cut from this surface outcrop has exposed the face of an orebody fifty-eight feet wide and fifty feet high. A churn drill hole put down 130 feet back from the face shows autunite, in most of the sludge samples, to a depth of 130 feet. In addition to this exposure bulldozing has cut a continuation of the same ore, along the strike 200 feet to the southeast.

The 53,500 tons of positive ore shown for this orebody is quite conservative and the writer is certain that this figure will be vastly increased when the orebody is fully developed. This development is being pushed as rapidly as possible. The same is true

for the ore in depth, and the probable ore will increase in the same proportion. This is by far the largest orebody found so far in the area and as yet its magnitude is not known.

Possibly one of the reasons for the Diamond orebody being of such great size is the fact that it lies between two of the dikes, as shown on Map No. 3. The ore itself is, of course, in the quartzite. Development by drilling (now in progress) will determine the plunge of this orebody. Surface evidence now available indicates the plunge as shown on the map. This orebody lies parallel to a very steep hillside, with an excellent tunnel site at the bottom of Veatch canyon, which would give 450 feet of backs when driven into the orebody.

The probable ore mentioned previously will develop rapidly in the near future. The recommendations listed below are based on making positive ore out of this probable ore.

RECOMMENDATIONS

1. Adit No. 1 - Footwall ore
   (a) Raise on ore, and continue drifting along ore zone at both ends.
   (b) Sink winze in ore.
2. Adit No. 1 - Hanging wall ore
   (a) Continue raise in ore to surface.
3. Rundberg Orebody
   (a) Continue crosscut in Adit No. 2 to contact, and drift on contact to dike.
4. Diamond Orebody
   (a) Continue surface open cut as is presently being done.
   (b) Put down additional churn drill holes to outline extent of orebody.
   (c) Drive tunnels at 100-foot (vertical) intervals down hillside for extraction of ore.

GENERAL

2.5 miles of gravelled road have been built to connect the mine roads with U. S. Highway No. 50 and all mine roads have been gravelled permitting year-around all weather hauling and operations.

Apex Minerals Corporation has ample equipment and tools to carry on its operations as presently conducted at the Apex properties.

These consist of:

2 - 315 cubic feet per minute air compressors
1 - 500 cubic feet per minute air compressor
1 - 33½ KVA Diesel-electric generator
10 - "Swede" air drills, with accessories and air legs
2 - "Swede" air drills with stoper legs
1 - "Swede" Cobra long hole drill outfit with 50 feet of drill rods
1 - Caterpillar shovel loader
2 - Jeeps
1 - 4-wheel drive truck, 1½ tons
1 - Eimco air locomotive
4 - Granby type side dump mine cars 1½ tons
5 - End dump mine cars
1 - "Tugger" air hoist
2 - Eimco mechanical muckers
1 - Chrysler 300 amp. arc welder
1 - Screw cutting lathe
1 - Power drill press
1 - Shaking screen
Miscellaneous small tools

REESE RIVER COPPER PROPERTY

Apex Minerals Corporation entered into an agreement to purchase a copper property which is located in Section 31, T. 12 N., R. 40 E., M. D. M. (unsurveyed). The property consists of seven claims held by possessory title known as: Sue, Sue No. 1, Sue No. 2, Sue No. 3, Blue Rock, Blue Rock No. 1, and Blue Rock No. 2.

Copper is found on the surface over an area 3,000 feet long by hundreds of feet wide. The copper occurs as oxides and carbonates. It is found as stringers in an oxidized iron gossan. The gangue rock is limestone most of which has been replaced by the iron and copper, with subsequent leaching of the copper.

This is a typical example of a leached copper outcrop and most of the large copper mines of the world had these surface characteristics; many with no commercial values at the surface.

The sequence of events, geologically, is: solutions carrying copper and iron ascend and circulate through the country rock, replacing it and precipitating as iron and copper sulphides. Leaching and weathering oxidize both the iron and copper, with formation of sulphuric acid. The copper, being more soluble, is carried down in solution to be re-precipitated as secondary sulphides at or near the water table leaving the iron oxides behind. Where the copper re-precipitates is called the "zone of secondary enrichment," and is always richer than either the surface residual or the primary ores.

At your Reese River property a surface cut has been bulldozed at both ends of the exposure mentioned above to depths of 35 feet. These are still in the gossan iron, with streaks of high grade copper which have been assayed from 3% to 21.4%. Arrangements have been made to put down churn drill holes at each end to prospect for the secondary enrichment. The depth at which this will be found is, of course, indeterminable at this time, but should occur at about 100 feet. However, it is recommended that the holes be drilled 200 feet, if necessary, or until the permanent water table is reached. When this water table is reached it is confidently expected that there will be an important concentration of the copper in the zone of secondary enrichment.

Harry H. Hughes

Harry H. Hughes

MAP 1

RUNDBERG ADIT
EL 6440

Outline of Orebody defined by drilling

Rundberg Orebody

Secondary Uranium Ore

EMMA ADIT
EL 6410

Primary Uranium Ore (Coffenite)

80' Raise

Raise

Primary Uranium Ore (Coffenite)

APEX ADIT Nº 1
EL 6270

APEX ADIT Nº 2
EL 6335

10,200 E

10,000 E

9800 E

9600 E

10,400 N

10,200 N

10,000 N

9800 N

9600 N

MAG.
17½°
TRUE

LEGEND

Jap — Aplite Dike
Jqm — Quartz Monzonite
Jurassic
Cqf — Carbonaceous Quartzite
Cambrian(?)

Uranium Ore

30° Strike and Dip of Fault or Contact

Top of Raise

Bottom of Raise

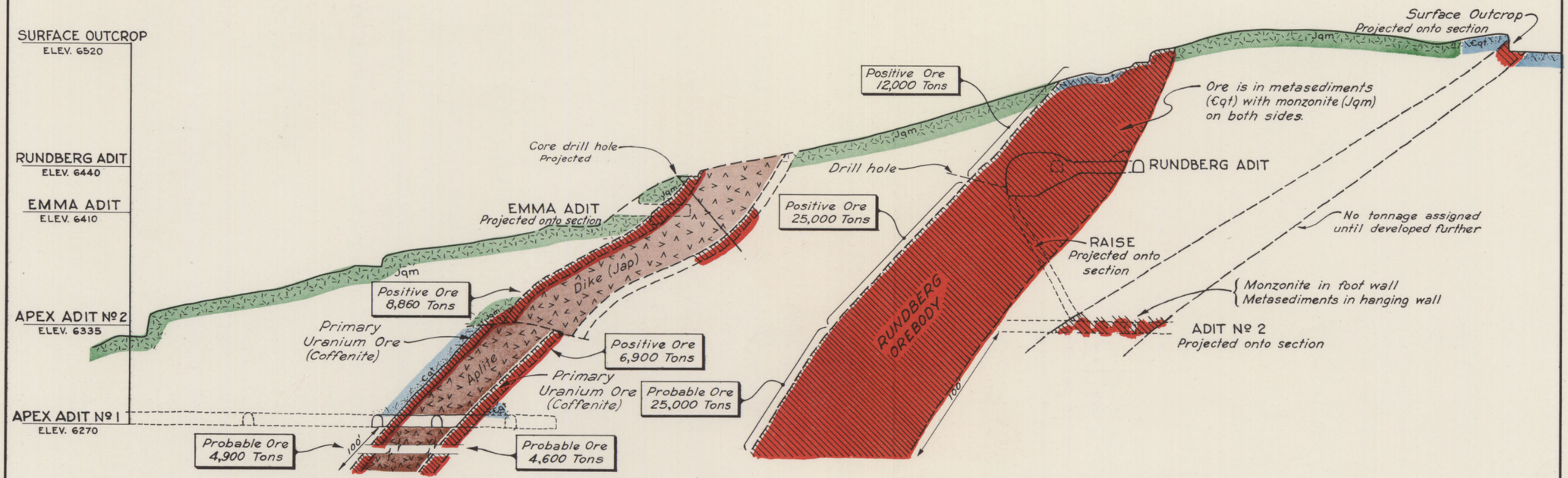
PLAN OF UNDERGROUND WORKINGS
SHOWING ORE OCCURENCES
TO ACCOMPANY
REPORT BY HARRY H. HUGHES
ON
RUNDBERG MINE
OF
APEX MINERALS CORPORATION
JULY, 1956

SCALE IN FEET
50 0 50 100 150

Traced by Sherd W. Baker

3890 0042

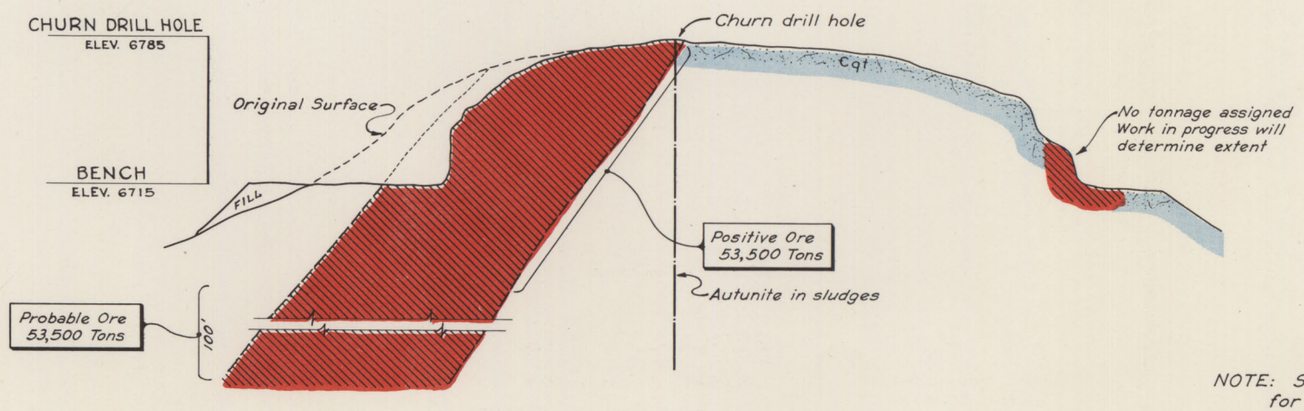
MAP 2



NW~SE IDEALIZED LONGITUDINAL SECTION ~ LOOKING NORTHEAST

AT OR NEAR PRINCIPAL CONTACT ZONE

SHOWING OREBODIES IN ADITS Nº 1, Nº 2, EMMA, RUNDBERG AND SURFACE OUTCROPS



NW~SE LONGITUDINAL SECTION
LOOKING NE THROUGH DIAMOND OREBODY

NOTE: See plan for legend

SCALE IN FEET
50 0 50 100 150

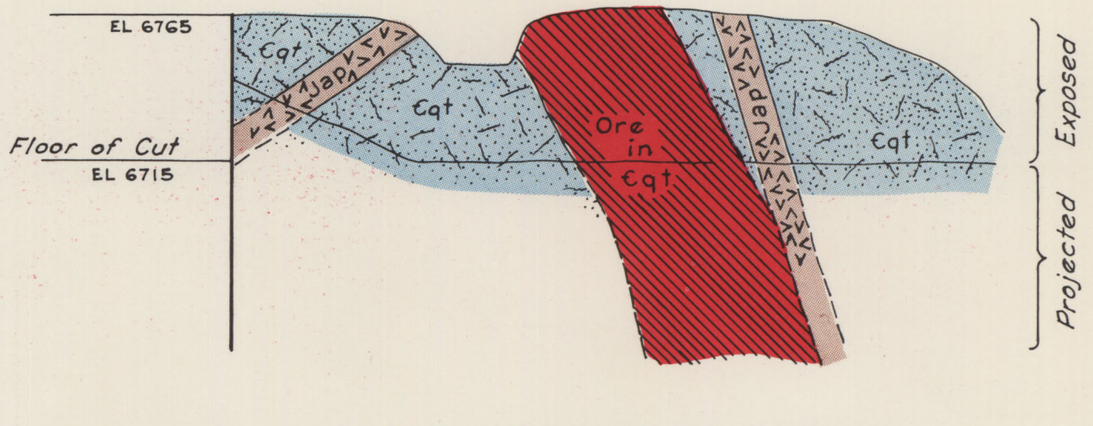
GEOLOGIC SECTIONS

TO ACCOMPANY
REPORT BY HARRY H. HUGHES
ON
RUNDBERG MINE
OF
APEX MINERALS CORPORATION
JULY, 1956

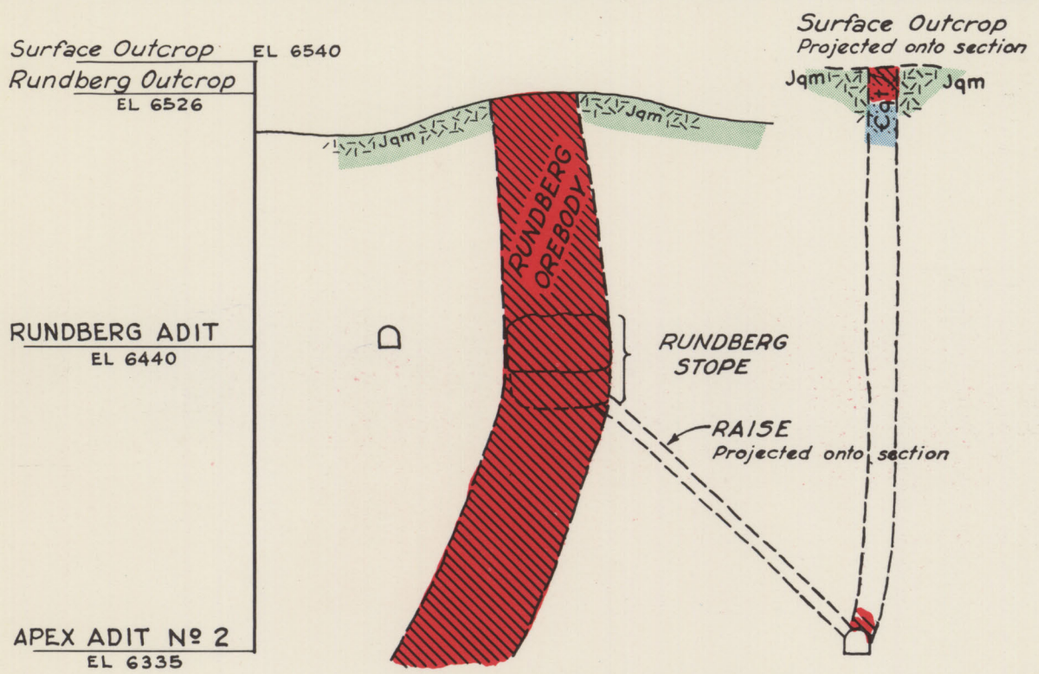
Drawn by Harry H. Hughes
Traced by Sherd W. Baker

3890 0042

MAP 3



TRANSVERSE SECTION
THROUGH DIAMOND OREBODY



TRANSVERSE SECTION
LOOKING SE THROUGH RUNDBERG OREBODY

NOTE: See plan for legend

GEOLOGIC SECTIONS

TO ACCOMPANY
REPORT BY HARRY H. HUGHES
ON
RUNDBERG MINE
OF
APEX MINERALS CORPORATION
JULY, 1956

SCALE IN FEET
50 0 50 100 150

MAP 4

MAP SHOWING PROPERTIES OF
APEX MINERALS CORPORATION
NEAR AUSTIN, NEVADA

Prepared by S. W. Baker
OCTOBER ~ 1955

SCALE IN FEET
0 1000 2000 3000

N

26 25 30 35 36 31 1 6 2 11 12

Twp. 19 N.
Twp. 18 N.

R. 43 E.
R. 44 E.

CARNOTITE Nº 7
AUTUN Nº 5
SUNDOWN Nº 11
CARNOTITE Nº 6
AUTUN Nº 4
SUNDOWN Nº 9
SUNDOWN Nº 8
RUNDBERG EXTENSION Nº 2
CARNOTITE Nº 5
AUTUN Nº 3
SUNDOWN Nº 7
SUNDOWN Nº 6
RUNDBERG EXTENSION Nº 1
CARNOTITE Nº 4
AUTUN Nº 2
SUNDOWN Nº 5
SUNDOWN Nº 4
RUNDBERG EXTENSION
CARNOTITE Nº 3
AUTUN Nº 1
SUNDOWN Nº 2
SUNDOWN
CARNOTITE Nº 2
AUTUN
SUNDOWN Nº 3
SUNDOWN Nº 1
CARNOTITE Nº 1
NOONDAY Nº 2
NOONDAY Nº 1
NOONDAY
CARNOTITE
CARNOTITE Nº 11
CARNOTITE Nº 10
CARNOTITE Nº 9
CARNOTITE Nº 8
ACE
EMMA
PROTECTER
AJAX
EARLY DAY
DIAMOND
CLIMAX
JUMBO
BONNIE BLUE
W.S. Nº 3 (fract.)
WESTERN SOLDIER
WESTERN SOLDIER Nº 1
WESTERN SOLDIER Nº 2
PAIUTE Nº 6
PAIUTE Nº 7
PAIUTE Nº 8
PAIUTE Nº 3
PAIUTE Nº 4
PAIUTE Nº 5
PAIUTE
PAIUTE Nº 1
PAIUTE Nº 2
COMET 4634

3890 0042