CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
3550 N. Central Ave, 2nd floor
Phoenix, AZ, 85012
602-771-1601
http://www.azgs.az.gov
inquiries@azgs.az.gov

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8.11

# A REVIEW OF ESTIMATED MINEABLE URANIUM RESERVES

## ANDERSON MINE PROJECT

## YAVAPAI COUNTY, ARIZONA

SEPTEMBER, 1977

FOR

MINERALS EXPLORATION COMPANY

TUCSON, ARIZONA

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EXHIBITS:


Location map - follows page 7

Photos - follow page 7

Drill-hole map showing approximate locations of open-pit mining reserves, scale: 1 inch = 400 feet, - in pocket

# I

# INTRODUCTION

At the request of Gerald C. Dohm, Jr., Development Manager, Minerals Exploration Company (Minerals), Tucson, Arizona, the firm of Chapman, Wood and Griswold, Inc., Consulting Mining Engineers and Geologists of Albuquerque, New Mexico has reviewed Minerals' estimate of mineable uranium reserves at the Anderson Mine Project, Yavapai County, Arizona.

Our review of reserves involved an audit-type check of Minerals' evaluation of the raw data, a procedural check of methods of computation, a detailed study of radiometric-probe data versus chemical assays on core, and a study of the mining parameters, viz. quantities of primary and secondary stripping versus quantities of mining materials (ore and internal waste and low grade).

Minerals' data on mineable reserves, associated mining waste and stripping quantities are from a preliminary study of the mining operation. Detailed mine-planning studies and additional core-drilling are currently being conducted. Thus, our comments by necessity refer only to the preliminary estimates.

D. F. Irving accompanied by Christopher Hill, Minerals' geologist, visited the Anderson property on August 3 and attended a meeting in Minerals' Tucson office on August 11 to discuss disequilibrium problems and an additional coring program.

Acknowledgment is made to Gerald C. Dohm, Jr., Bob Lucht, John Roberts, and Christopher Hill of Minerals' Tucson office for their assistance in this study.

## II

## SUMMARY AND CONCLUSION

1. The Anderson Mine uranium deposit is located principally in Sections 9, 10, 11, 14 and 15, T.11N., R.10W., Yavapai County, Arizona, 44 miles by road northwest of Wickenburg.

2. During the late 1950's the property produced from open cuts about 11,000 tons of ore grading 0.15% $U_3O_8$, most of which was shipped to the A.E.C. buying station at Tuba City, Arizona.

3. Minerals Exploration Company has drilled 513 holes including 34 core holes and has just started an additional coring program of about 30 holes.

4. Uranium mineralization is contained in carbonaceous siltstones and lignitic beds within a lacustrine sedimentary unit of Tertiary age. The beds dip southerly at 5 to 15 degrees and are disrupted by northwesterly striking faults which drop the sequence to the southwest. Mineralized zones average about 15 to 20 feet thick, but intercepts of 0.03% $eU_3O_8$ and greater average less than 4 feet thick.

5. Estimated reserves mineable by open-pit techniques are as follows: (cut-off = 2.0 feet at 0.03% $eU_3O_8$ - September 12, 1977 data)

| | |
|---|---|
| Tons of Indicated Reserve* | 10,267,157 tons |
| Grade (%$eU_3O_8$) | 0.075% $eU_3O_8$ |
| Pounds $eU_3O_8$ (in-place) | 15,269,859 lbs. |
| Metallurgically recoverable lbs. $eU_3O_8$ (in-place) | 13,590,175 lbs. |

*All reserves for the property are classed as Indicated.

6. A comparison was made of the uranium content in 71 mineral intercepts as measured by down-the-hole gamma probe and by chemical analysis on core. This comparison showed that the ratio of percent chemical $U_3O_8$ to percent radiometric equivalent $U_3O_8$ (%$U_3O_8$:%$eU_3O_8$) is 0.87. This ratio applies at the weighted average grade of 0.078% $eU_3O_8$ which resulted from a cutoff of 2.0 feet at 0.03% $eU_3O_8$ for the 71 intercepts studied.

7. A mining analysis of about 25% of the deposit indicated the following:

   a. About 7½% of Minerals' primary stripping quantities should be costed as if they were secondary stripping materials.

   b. Materials contained in the mining zone should be increased by about 7½%.

   c. Within the mining zone approximately 75% of the total material can be classed as mining material and 25% classed as secondary stripping.

   d. Using Minerals' unit costs we find that the overall financial impact of our materials quantities reduces by

about 6½% the "Net Unit Income" of the project as shown on Minerals' September 12, 1977 analysis.

e. The mineable reserves as stated by Minerals in their September 12, 1977 study at a cutoff of 2.0 feet at 0.03% $eU_3O_8$ within the confines of a proposed pit conform with those determined in our studies.

It is concluded that the uranium reserves represented by Minerals Exploration Company as being mineable by open-pit techniques on the Anderson Uranium Property are a realistic estimate provided that extreme selectivity and grade control are exercised. However, the grade of the deposit may be overstated by about 13% based on a comparison of core assays to the down-the-hole gamma probe. The current coring program will provide further data for verification of the chemical-radiometric ratio.

Respectfully submitted,

CHAPMAN, WOOD AND GRISWOLD, INC.

Douglas F. Irving, P. Eng.

John P. Herndon, P. Eng.

III

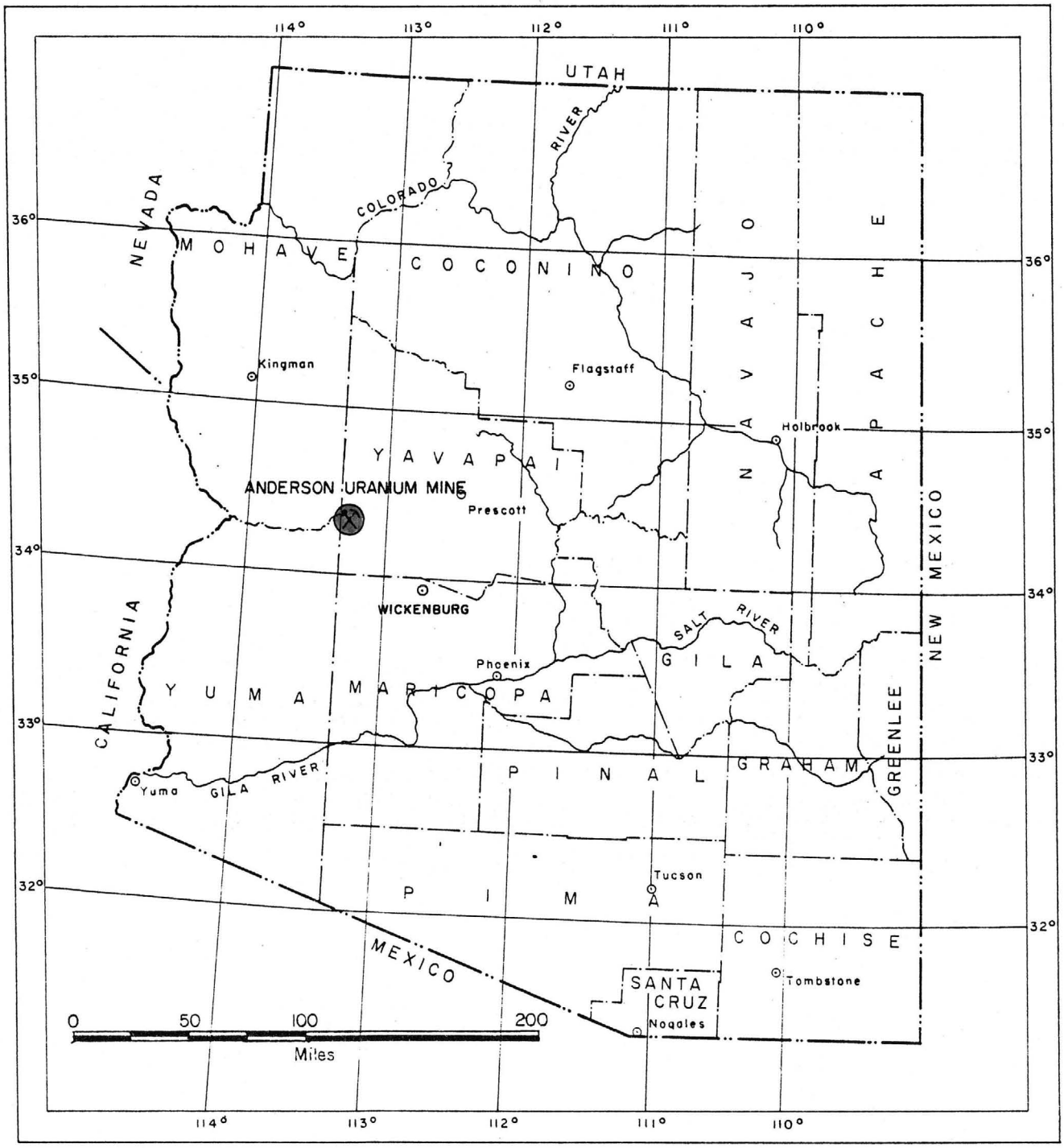
## GENERAL PROPERTY DESCRIPTION

The Anderson Mine project is situated in Sections 2-5, 8-11, 15 and 16, T.11N., R.10W. and Section 34, T.12N., R.10W., Gila and Salt River Meridian, Yavapai County, Arizona. Access from Phoenix is northwesterly on U. S. Highway 60 for 51 miles to Wickenburg; thence 21 miles northwesterly through Congress Jct. on U. S. Highway 93 to Alamo Road; thence westerly on Alamo Road (unimproved) for 19 miles; and finally northerly for 4 miles to the property on dirt road.

The Anderson property is located immediately south of the Santa Maria River and at the northern edge of a broad, rolling plateau that is incised by intermittent streams draining to the Santa Maria River. Mean elevation at the property is 1900 feet above sea level with local relief in the mine area of 200 feet. Nearby hills provide a maximum relief of about 700 feet.

The accompanying photographs show the mine area. Vegetative cover is sparse, comprising a variety of cactus, palo verde bush and desert grasses. The climate is arid with long, hot summers and pleasant winters. Mid-summer temperatures reach 115° to 120°F.

The property comprises unpatented mining claims and one 640-acre state mining lease (Section 16). The identified, potentially-mineable uranium mineralization is located on mining claims owned by Minerals Exploration Company.




*MAP OF ARIZONA SHOWING*

*LOCATION OF ANDERSON URANIUM MINE*

IV

# HISTORY

Mr. T. R. Anderson of Sacramento, California is credited with the initial discovery of uranium at the Anderson property in January 1955. Anomalous radioactivity was initially detected with airborne scintillation equipment. The property was drilled and during the period 1955 to 1959 open-pit mining resulted in the following production as recorded by the U.S. A.E.C. The bulk of the material was shipped to the A.E.C. buying station at Tuba City, Arizona.

| Year | Tons Shipped | Grade ($\%U_3O_8$) |
|---|---|---|
| 1955 | 9 | 0.56 |
| 1956 | 31 | 0.21 |
| 1957 | 3,614 | 0.19 |
| 1958 | 725 | 0.27 |
| 1959 | 6,380 | 0.12 |
| Total and wtd. avg. grade | 10,759 | 0.15 |

Getty Oil, during 1967-68, did some drilling on the property. In 1974 Minerals Exploration Company optioned the property and began a systematic drilling program. The property was purchased in 1975 and as of this date Minerals Exploration has drilled 513 holes including 32 core holes and 2 cored geotechnical holes. The property has now been drilled on approximate 200-foot centers for a total of about 213,000 feet of drilling.

An additional coring program involving some 30 holes has just started.

V

## GEOLOGY

The geology of the Anderson Mine area has been quite well documented by Minerals Exploration Company. Only a brief summary is provided here.

The oldest rocks in the area are coarse-grained to pegmatitic Precambrian granites. Immediately overlying these granites are Tertiary age volcanics and sediments occurring in ascending order as follows:

a. Felsic to Intermediate Volcanics - flows, breccias, tuffs and minor intrusives.

b. Volcaniclastic Sediments - ash flows, tuffaceous sediments and arkosic sandstone.

c. Andesitic Volcanics - porphyritic andesitic flows with a paleosurface and locally reddish brown paleosols.

d. Lacustrine Sediments - micaceous siltstones and mudstone, calcareous siltstones and silty limestone, thin beds of carbonaceous siltstone and lignitic material. The siltstones and calcareous units exhibit varying degrees of silicification with cherty or chalcedonic nodules being common. These sediments are typically 200 to 350 feet thick and contain the uranium mineralization which occurs mainly in and near the carbonaceous zones.

e. Lower Conglomerate - arkosic sandstones and conglomerate, typically 200 to 300 feet thick.

f. Basaltic flows - amygdular basalt averaging about 70 feet thick.

g. Upper Conglomerate - cobble and boulder conglomerate, somewhat indurated and locally calcite cemented. This unit forms the surface of the mesa on the southern part of the mine property. Thickness is zero to 200 feet.

All units above and including the lacustrine sediments are exposed over the Anderson Mine.

It is suggested that the lacustrine sediments were deposited in an area less than 3 miles wide by 5 to 6 miles long on the northern edge of an old Tertiary lake. Southward these sediments intertongue with siltstones and sandstones. The beds in the vicinity of the mine dip 5 to 15 degrees southward with much of this dip attributed to recurrent faulting during deposition.

Three major faults striking northwesterly cut across the property. Numerous smaller and sympathetic faults are evident, some of which indicate hinge action. Faulting has essentially dropped the beds to the southwest resulting in major displacements of 200 to 400 feet.

Uranium mineralization is primarily associated with carbonaceous siltstones and lignitic beds and it is believed that the mineralization is probably syngenetic. Remobilization in some areas has resulted in fracture fillings around and below the principal zones of mineralization. The mineralized horizons vary in thickness from a foot or two to as much as 50 feet, but average 15 to 20 feet thick. However, individual intercepts grading 0.03% $eU_3O_8$ and greater average less than 4 feet thick. Average tenor of mineralization using a minimum of 2.0 feet at 0.03% $eU_3O_8$ is 0.075% $eU_3O_8$.

VI

# URANIUM RESERVES

## A. Definitions

The terminology used in classifying mineral deposits is often a controversial subject. Many authorities, including the U.S. Geological Survey and the U.S. Bureau of Mines, have agreed upon and defined certain terminology that specifies the relative dependability of information. We have used the appropriate terms as defined below to classify the uranium mineralization on the Anderson property.

### 1. Ore and Reserves

The word 'ore' is generally taken to mean mineralized rock from which one or more substances can be extracted at a profit. A 'reserve' is defined as "that portion of an identified resource from which a usable mineral or energy commodity can be economically and legally extracted at the time of determination." Thus, when used in context with the commercial evaluation of mineral deposits, the words 'ore' and 'reserves' are synonymous.

### 2. Measured Reserves

> 'Measured reserves' are material for which tonnage is computed from dimensions revealed in outcrops, trenches, workings, and drill holes and for which the grade is computed from the results of detailed sampling. The sites of inspection, sampling, and measurements are so closely spaced and the geologic character is defined so well that the size, shape,

and mineral content are well established. The computed tonnage and grade are judged to be accurate within limits which are stated, and no such limit is judged to differ from the computed tonnage or grade by more than 20 percent.

In working on estimation and evaluation of mineral deposits for more than two decades, we have concluded that the category "Measured reserves" should not be applied to a deposit based upon data developed only from surface drill-holes. We recognize that the quantities of reserves or mineralization and the average grades for a deposit can be derived with a high degree of confidence from drill-holes provided that:

a. drill-hole spacing is appropriate in relation to the geologic character of the deposit.

b. evaluation of the mineralized material, whether from cores or radiometric probes or combinations of both, has been thorough.

Experience has shown that when mineral deposits are opened up, the quantities of mineralization as estimated from drill-holes are valid; but frequently, and particularly in the sedimentary uranium deposits found in the western U.S.A., the configuration and continuity of mineralization may differ substantially from interpretations based solely on data from surface-drilling. For this reason we have not classified any portion of the Anderson property uranium deposit as 'Measured reserves.'

3. Indicated Reserves

> 'Indicated reserves' are material for which tonnage and grade are computed partly from specific measurements, samples, or production data and partly from projection for a reasonable distance on geologic evidence. The sites available for inspection, measurement, and sampling are too widely or otherwise inappropriately spaced to outline the ore completely or to establish its grade throughout.

The Anderson property uranium deposit has been drilled on an approximate 200-foot spacing with 513 holes, 32 of which are core holes drilled adjacent to open-rotary holes. The uranium deposit is sufficiently defined in grade (%e$U_3O_8$) and location of mineralization to place the reserves in the Indicated category. Additional open-hole drilling will provide a better fix on location and grade in given areas, but will not significantly affect the presently estimated reserves. Further core drilling will provide greater confidence in establishing the relationship of chemical $U_3O_8$ to radiometric-equivalent $U_3O_8$.

4. Inferred Reserves

> 'Inferred reserves' are material for which quantitative estimates are based largely on broad knowledge of the geologic character of the deposit and for which there are few, if any, samples or measurements. The estimates are based on an assumed continuity or repetition for which there is geologic evidence; this evidence may include comparison with deposits of similar type. Bodies that are completely concealed may be included if there is specific geologic evidence of their presence. Estimates of inferred ore should include a statement of the spatial limits within which the inferred ore may lie.

We have not placed any of the reserves (i.e. material which may be economically recoverable) at the Anderson Mine in the Inferred category.

B. Reserve Estimates

An audit-type check of the reserves as represented by Minerals Exploration was made. The following topics discuss the individual aspects of our investigation.

1. Gamma-log interpretation.

Twenty randomly selected drill-hole analogs were manually interpreted and compared to the Minerals Exploration evaluation (see Table V-1). We evaluated data above a cut-off of 2.0 ft. at 0.02% $eU_3O_8$ and compared it with the computer-run 2.0-foot data supplied to us. On a grade-thickness product basis, our evaluation is 1% higher than Minerals', a very satisfactory check.

2. Probe calibration.

Two different series of radiometric probes have been used for logging the holes at the Anderson property; one is shielded and the other unshielded. Holes numbered 1-41 were drilled and logged in the period January to April 1975 with a probe having a K-factor of $2.31 \times 10^{-5}$ and dead-time correction factor of 9.6 microseconds. Holes 42-206 were drilled and logged between November 1975 and February 1976 with 3 probes having K-factors of $2.25 \times 10^{-5}$

TABLE V-1

COMPARISON OF MINERALS EXPLORATION AND C.W.&G. GAMMA-LOG EVALUATIONS

Anderson Mine Project
Sections 9, 10, 11, 14 & 15, T.11N., R.10W., Yavapai County, Arizona

| | MINERALS EXPLORATION | | | | C.W.&G. | | | |
|---|---|---|---|---|---|---|---|---|
| Hole No. | Interval (Depth in feet) | Thickness (feet) | Grade (%eU3O8) | Grade x Thick. | Interval (Depth in feet) | Thickness (feet) | Grade (%eU3O8) | Grade x Thick. |
| 10 | 240.0-244.0 | 4.0 | 0.110 | 0.438 | 241.5-243.5 | 2.0 | 0.205 | 0.409 |
| 10 | 300.0-304.0 | 4.0 | 0.056 | 0.224 | 300.5-304.5 | 4.0 | 0.067 | 0.267 |
| 22 | 430.0-432.0 | 2.0 | 0.040 | 0.080 | 430.5-432.0 | 1.5 | 0.054 | 0.082 |
| 22 | 440.0-456.0 | 16.0 | 0.031 | 0.488 | 440.5-447.0 | 6.5 | 0.045 | 0.292 |
| 22 | | | | | 449.5-451.5 | 2.0 | 0.039 | 0.079 |
| 22 | | | | | 452.0-458.5 | 6.5 | 0.023 | 0.147 |
| 22 | 460.0-464.0 | 4.0 | 0.046 | 0.182 | 460.0-463.5 | 3.5 | 0.055 | 0.193 |
| 22 | 596.0-598.0 | 2.0 | 0.026 | 0.052 | 595.5-597.5 | 2.0 | 0.034 | 0.068 |
| 22 | 662.0-666.0 | 4.0 | 0.037 | 0.146 | 662.0-666.0 | 4.0 | 0.042 | 0.168 |
| 88 | 64.0- 66.0 | 2.0 | 0.025 | 0.050 | 63.5- 65.5 | 2.0 | 0.034 | 0.068 |
| 88 | 74.0- 76.0 | 2.0 | 0.022 | 0.044 | 74.5- 76.0 | 1.5 | 0.033 | 0.050 |
| 88 | 80.0- 90.0 | 10.0 | 0.034 | 0.344 | 79.5- 89.0 | 9.5 | 0.039 | 0.367 |
| 121 | 80.0- 88.0 | 8.0 | 0.033 | 0.262 | 81.5- 87.5 | 6.0 | 0.042 | 0.251 |
| 121 | 102.0-104.0 | 2.0 | 0.024 | 0.048 | 102.0-107.0 | 5.0 | 0.023 | 0.117 |
| 121 | 106.0-108.0 | 2.0 | 0.021 | 0.042 | | | | |
| 131 | 394.0-400.0 | 6.0 | 0.045 | 0.272 | 395.5-399.5 | 4.0 | 0.059 | 0.237 |
| 131 | 420.0-424.0 | 4.0 | 0.028 | 0.112 | 421.5-425.0 | 3.5 | 0.035 | 0.124 |
| 131 | 432.0-438.0 | 6.0 | 0.063 | 0.376 | 431.0-438.5 | 7.5 | 0.057 | 0.427 |
| 131 | 454.0-458.0 | 4.0 | 0.307 | 1.226 | 455.5-457.5 | 1.5 | 0.682 | 1.023 |
| 131 | | | | | 471.5-473.0 | 1.5 | 0.038 | 0.056 |
| 131 | 494.0-496.0 | 2.0 | 0.025 | 0.050 | 494.0-496.5 | 2.5 | 0.031 | 0.076 |
| 154 | 364.0-372.0 | 8.0 | 0.049 | 0.394 | 364.0-371.0 | 7.0 | 0.060 | 0.418 |
| 154 | 402.0-412.0 | 10.0 | 0.080 | 0.798 | 402.5-416.0 | 13.5 | 0.061 | 0.820 |
| 154 | 414.0-416.0 | 2.0 | 0.023 | 0.046 | | | | |
| 154 | 442.0-444.0 | 2.0 | 0.032 | 0.064 | 442.0-443.5 | 1.5 | 0.052 | 0.078 |
| 154 | 446.0-450.0 | 4.0 | 0.049 | 0.196 | 447.0-449.5 | 2.5 | 0.069 | 0.173 |
| 154 | 550.0-554.0 | 4.0 | 0.024 | 0.094 | 551.0-553.0 | 2.0 | 0.042 | 0.083 |

TABLE V-1 (cont'd.)

| Hole No. | Interval (Depth in feet) | Thickness (feet) | Grade (%eU3O8) | Grade x Thick. | Interval (Depth in feet) | Thickness (feet) | Grade (%eU3O8) | Grade x Thick. |
|---|---|---|---|---|---|---|---|---|
| 154 | 566.0-568.0 | 2.0 | 0.040 | 0.080 | 567.0-568.5 | 1.5 | 0.063 | 0.094 |
| 158 | 182.0-184.0 | 2.0 | 0.052 | 0.104 | 182.0-183.5 | 1.5 | 0.085 | 0.127 |
| 158 | 240.0-246.0 | 6.0 | 0.026 | 0.156 | 241.0-247.0 | 6.0 | 0.035 | 0.207 |
| 158 | 264.0-266.0 | 2.0 | 0.043 | 0.086 | 263.5-269.5 | 6.0 | 0.041 | 0.246 |
| 158 | 268.0-270.0 | 2.0 | 0.044 | 0.088 | | | | |
| 171 | 534.0-542.0 | 8.0 | 0.117 | 0.934 | 533.5-542.5 | 9.0 | 0.099 | 0.887 |
| 171 | 576.0-580.0 | 4.0 | 0.027 | 0.110 | 577.5-580.0 | 2.5 | 0.043 | 0.107 |
| 171 | 590.0-592.0 | 2.0 | 0.032 | 0.064 | 591.0-593.0 | 2.0 | 0.044 | 0.088 |
| 171 | 604.0-612.0 | 8.0 | 0.079 | 0.634 | 605.5-611.5 | 6.0 | 0.107 | 0.640 |
| 171 | 616.0-618.0 | 2.0 | 0.021 | 0.042 | 616.0-617.5 | 1.5 | 0.037 | 0.055 |
| 171 | 708.0-712.0 | 4.0 | 0.041 | 0.162 | 709.0-712.0 | 3.0 | 0.053 | 0.158 |
| 171 | 720.0-722.0 | 2.0 | 0.021 | 0.042 | 720.0-722.0 | 2.0 | 0.029 | 0.058 |
| 171 | 730.0-732.0 | 2.0 | 0.052 | 0.104 | 730.0-732.0 | 2.0 | 0.058 | 0.116 |
| 216 | 2.0- 8.0 | 6.0 | 0.034 | 0.202 | 2.0- 8.0 | 6.0 | 0.038 | 0.228 |
| 216 | 84.0- 86.0 | 2.0 | 0.025 | 0.050 | 84.0- 86.0 | 2.0 | 0.029 | 0.059 |
| 247 | 106.0-112.0 | 6.0 | 0.024 | 0.146 | 107.0-112.5 | 5.5 | 0.026 | 0.143 |
| 272 | 0.0- 6.0 | 6.0 | 0.072 | 0.432 | 1.0- 5.5 | 4.5 | 0.100 | 0.449 |
| 272 | 78.0- 82.0 | 4.0 | 0.037 | 0.148 | 79.0- 81.0 | 2.0 | 0.064 | 0.128 |
| 298 | 248.0-256.0 | 8.0 | 0.032 | 0.258 | 248.5-256.5 | 8.0 | 0.035 | 0.279 |
| 298 | 272.0-278.0 | 6.0 | 0.039 | 0.236 | 272.0-278.5 | 6.5 | 0.042 | 0.270 |
| 298 | 320.0-322.0 | 2.0 | 0.023 | 0.046 | 320.0-322.0 | 2.0 | 0.027 | 0.054 |
| 298 | 340.0-346.0 | 6.0 | 0.097 | 0.582 | 341.0-345.0 | 4.0 | 0.138 | 0.550 |
| 298 | 354.0-358.0 | 4.0 | 0.052 | 0.210 | 354.5-357.0 | 2.5 | 0.082 | 0.206 |
| 298 | 370.0-372.0 | 2.0 | 0.033 | 0.066 | 370.0-372.0 | 2.0 | 0.038 | 0.077 |
| 301* | 40.0- 54.0 | 14.0 | 0.046 | 0.640 | 41.0- 54.0 | 13.0 | 0.099 | 1.287 |
| 314 | 76.0- 78.0 | 2.0 | 0.022 | 0.044 | 76.0- 78.0 | 2.0 | 0.019 | 0.039 |
| 314 | 102.0-108.0 | 6.0 | 0.197 | 1.182 | 103.0-107.5 | 4.5 | 0.234 | 1.051 |
| 314 | 120.0-124.0 | 4.0 | 0.046 | 0.184 | 120.5-123.0 | 2.5 | 0.066 | 0.164 |
| 352 | 324.0-330.0 | 6.0 | 0.049 | 0.292 | 324.0-328.5 | 4.5 | 0.059 | 0.267 |
| 352 | 370.0-380.0 | 10.0 | 0.103 | 1.032 | 371.5-379.0 | 7.5 | 0.134 | 1.006 |
| 352 | 382.0-398.0 | 16.0 | 0.074 | 1.190 | 382.5-385.5 | 3.0 | 0.077 | 0.230 |
| 352 | | | | | 387.5-391.0 | 3.5 | 0.103 | 0.361 |
| 352 | | | | | 394.0-397.5 | 3.5 | 0.153 | 0.534 |

*This interval not used in the comparison - Minerals Exploration may have used wrong log scale.

TABLE V-1 (cont'd.)

| Hole No. | Interval (Depth in feet) | Thickness (feet) | Grade (%eU3O8) | Grade x Thick. | Interval (Depth in feet) | Thickness (feet) | Grade (%eU3O8) | Grade x Thick. |
|---|---|---|---|---|---|---|---|---|
| 352 | 404.0-406.0 | 2.0 | 0.047 | 0.094 | 404.0-406.0 | 2.0 | 0.052 | 0.105 |
| 352 | 420.0-426.0 | 6.0 | 0.056 | 0.334 | 422.5-426.5 | 4.0 | 0.081 | 0.324 |
| 352 | 470.0-472.0 | 2.0 | 0.021 | 0.042 | 471.0-472.5 | 1.5 | 0.027 | 0.040 |
| 374 | 386.0-396.0 | 10.0 | 0.058 | 0.584 | 385.5-395.0 | 9.5 | 0.058 | 0.547 |
| 400 | 190.0-192.0 | 2.0 | 0.040 | 0.080 | 190.0-192.0 | 2.0 | 0.039 | 0.078 |
| 400 | 256.0-266.0 | 10.0 | 0.085 | 0.850 | 256.0-265.0 | 9.0 | 0.077 | 0.693 |
| 443 | 270.0-272.0 | 2.0 | 0.032 | 0.064 | 275.0-277.0 | 2.0 | 0.040 | 0.081 |
| 443 | 274.0-278.0 | 4.0 | 0.034 | 0.134 | 279.5-282.5 | 3.0 | 0.043 | 0.131 |
| 443 | 316.0-320.0 | 4.0 | 0.035 | 0.138 | 322.0-325.0 | 3.0 | 0.051 | 0.148 |
| 443 | 322.0-324.0 | 2.0 | 0.025 | 0.050 | 326.0-329.0 | 3.0 | 0.028 | 0.083 |
| 443 | 326.0-328.0 | 2.0 | 0.023 | 0.046 | 331.0-334.0 | 3.0 | 0.028 | 0.083 |
| 443 | 330.0-344.0 | 14.0 | 0.060 | 0.840 | 338.0-348.0 | 10.0 | 0.081 | 0.810 |
| 443 | 356.0-360.0 | 4.0 | 0.059 | 0.236 | 357.0-361.0 | 4.0 | 0.063 | 0.253 |
| 443 | 372.0-376.0 | 4.0 | 0.047 | 0.188 | 372.0-376.0 | 4.0 | 0.056 | 0.226 |
| 443 | 402.0-406.0 | 4.0 | 0.035 | 0.138 | 402.5-406.0 | 3.5 | 0.041 | 0.145 |
| 475 | 56.0- 58.0 | 2.0 | 0.038 | 0.076 | 57.0- 59.0 | 2.0 | 0.049 | 0.097 |
| 475 | 60.0- 68.0 | 8.0 | 0.032 | 0.258 | 61.0- 68.5 | 7.5 | 0.036 | 0.267 |
| 475 | 96.0- 98.0 | 2.0 | 0.074 | 0.148 | 96.0- 98.5 | 2.5 | 0.074 | 0.185 |
| 486 | 442.0-448.0 | 6.0 | 0.037 | 0.220 | 443.0-448.5 | 5.5 | 0.043 | 0.235 |
| 486 | 492.0-496.0 | 4.0 | 0.032 | 0.128 | 491.5-495.0 | 3.5 | 0.043 | 0.149 |
| 486 | 500.0-502.0 | 2.0 | 0.049 | 0.098 | 500.0-502.0 | 2.0 | 0.067 | 0.134 |
| 486 | 510.0-514.0 | 4.0 | 0.068 | 0.270 | 511.0-513.5 | 2.5 | 0.104 | 0.260 |
| 486 | 524.0-526.0 | 2.0 | 0.029 | 0.058 | 523.5-526.0 | 2.5 | 0.037 | 0.092 |
| 486 | 534.0-536.0 | 2.0 | 0.023 | 0.046 | 534.0-535.5 | 1.5 | 0.035 | 0.053 |
| 486 | 548.0-550.0 | 2.0 | 0.026 | 0.052 | 549.0-551.0 | 2.0 | 0.041 | 0.082 |
| 486 | 672.0-676.0 | 4.0 | 0.024 | 0.096 | 671.5-676.0 | 4.5 | 0.031 | 0.138 |
| 486 | 692.0-694.0 | 2.0 | 0.049 | 0.098 | 692.0-694.0 | 2.0 | 0.059 | 0.118 |
| TOTALS | | | | | | | | |
| No. of Intervals = 81 | | 368.0 | | 20.300 | No. of Intervals = 83 | 323.5 | | 20.508 |
| Wtd. Avg. Grade (%eU3O8) | | | 0.055 | | | | 0.063 | |
| Average Thickness | | 4.5 ft. | | | | 3.9 ft. | | |

(115 holes), $1.82 \times 10^{-5}$ (3 holes) and $2.25 \times 10^{-5}$ (47 holes) and dead-time correction factors of 9.6, 14.9 and 17.3 microseconds respectively. Holes 207 to 515 were drilled between November 1976 and April 1977 and logged with a shielded unit having a K-factor of $5.70 \times 10^{-5}$ and dead-time correction factor of 7.14 microseconds.

Probe calibration data from Bendix Field Engineering Corporation were studied. Probe Number 3 was field tested and calibrated on June 24, 1976 and again on June 7, 1977 and our analysis of the Bendix analog curves for this probe as run through the Grand Junction N-3 test pit for a filtered scintillation tool (4.19 ft. grading 0.240% $eU_3O_8$) provided a satisfactory check although a factor of about $5.55 \times 10^{-5}$ might be more appropriate than the $5.70 \times 10^{-5}$ factor used. The K-factor for this tool has also shown some drift between the two calibration dates ($5.70 \times 10^{-5}$ to $5.97 \times 10^{-5}$ - a 4.7% drift; and if our factor for the June 1976 calibration is right, then the drift would be 7.6%). The evaluations thus have some built-in conservatism but in analyzing the chemical data on core versus the down-the-hole probe value, it creates inequalities although probably not too serious, as the $5.70 \times 10^{-5}$ value appears to fall midway in the apparent drift based on our computations.

3. In-place reserves.

Conventional polygons were drawn around 16 contiguous drill-holes. The area of influence for each hole was planimetered. All intercepts containing a minimum of 2.0 feet or more of 0.03% $eU_3O_8$ were compiled from the 2.0-foot intercept data provided by Minerals for the 16 holes. The volume and tons of material at or above cut-off were computed for each hole using a factor of 15.6 cubic feet per ton. The weighted-average grade and pounds of $eU_3O_8$ were calculated and compared to the Minerals' computer out-put. A very close check was obtained (1% difference).

The in-place reserves within the confines of a preliminary open-pit design using a cut-off of 2.0 feet at 0.03% $eU_3O_8$ are as follows (data from Minerals Exploration Company dated September 12, 1977):

| | |
|---|---|
| Tons | 10,267,157 tons |
| Grade (%$eU_3O_8$) | 0.075% $eU_3O_8$ |
| Pounds $eU_3O_8$(in-place) | 15,269,859 lbs. |
| Metallurgically recoverable lbs. $eU_3O_8$ (in-place) | 13,590,175 lbs. |

4. Rock density.

Hazen Research, Inc. determined tonnage factors on core samples from 3 holes, 17c, 26c and 135c. Specific gravity measurements were made on a piece of core taken from the top

of each 2-foot section. These data with corresponding assays and lithologic descriptions are presented in Table V-2. These data appear to represent a cross-section of the mineralized rock units and thus the factor of 15.6 cubic feet per short dry ton in place should be a good average.

Work done by the United States Atomic Energy Commission in 1958 on Anderson Mine ore resulted in final density factors, based on bulk samples, of:

18 cubic feet per ton in place
21 cubic feet per dry ton in place
26 cubic feet per dry ton in stockpiles

These factors were derived for ore grading 0.18% $U_3O_8$ which may have comprised far more lignitic matter than the present reserves grading 0.07% $eU_3O_8$. The U.S. A.E.C. factors appear to be unrealistically high.

As additional coring is done in the deposit, further bulk dry-density tests should be made. Mineralized core representative of material to be fed to process should be selected in minimum 5- to 6-inch lengths. Prior to making the density measurement the core should be oven-dried and then shellacked. A good commercial testing laboratory in Tucson could be utilized for this work.

TABLE V-2

DATA USED IN DETERMINING BULK DRY DENSITY

| Hole No. | Interval (feet) | Sp. Gravity | Ton. Factor cu. ft./ton | $\%U_3O_8$ | $\%eU_3O_8$ (log) | Lithology |
|---|---|---|---|---|---|---|
| 17c | 130-132 | 2.05 | 15.6 | 0.024 | 0.014 | 130-150 - olive green to grey mudstone; locally mottled red to brown; slightly calcareous with local jasper nodules; minor yellow oxides of uranium. |
| | 132-134 | 2.07 | 15.5 | 0.021 | 0.029 | |
| | 134-136 | 2.33 | 13.8 | 0.007 | 0.011 | |
| | 136-138 | 1.91 | 16.8 | 0.017 | 0.029 | |
| | 138-140 | 1.78 | 18.0 | 0.013 | 0.033 | |
| | 140-142 | 2.02 | 15.9 | 0.009 | 0.018 | |
| | 142-144* | 2.00 | 16.0 | 0.003 | 0.028 | |
| | 144-146* | 2.05 | 15.6 | 0.010 | 0.019 | |
| | 146-148 | 1.97 | 16.3 | 0.017 | 0.017 | |
| | 148-150 | 2.00 | 16.0 | 0.032 | 0.034 | |
| 26c | 627-629 | 2.00 | 16.0 | 0.008 | 0.009 | 627-643 - grey to greenish-grey to greenish brown calcareous siltstone with scattered carbonaceous matter especially 631 to 636; light-grey limestones at 636.1-636.7 & 637.5-640.3 with abundant chert in the latter. |
| | 629-631 | 2.07 | 15.5 | 0.024 | 0.062 | |
| | 631-633 | 2.10 | 15.3 | 0.021 | 0.026 | |
| | 633-635 | 2.14 | 15.0 | C.055 | 0.088 | |
| | 635-637 | 2.19 | 14.6 | 0.185 | 0.210 | |
| | 637-639 | 2.24 | 14.3 | 0.014 | 0.022 | |
| | 639-641 | 2.44 | 13.1 | 0.030 | 0.030 | |
| | 641-643* | 2.00 | 16.0 | 0.004 | 0.005 | |
| 135c | 460-462 | 1.78 | 18.0 | 0.178 | 0.164 | 460.0-462.5 - silty lignite grading to carbonaceous and calcareous mudstone from 462.5-463.3; green bentonitic mudstone 463.3-466.8; 466.8-468 - buff coloured marl with siltstone and thin lignitic bands. |
| | 462-464 | 1.99 | 16.1 | 0.098 | 0.195 | |
| | 464-466 | 2.09 | 15.3 | 0.007 | 0.016 | |
| | 466-468 | 2.15 | 14.9 | 0.096 | 0.039 | |

Average value = 15.6 cubic feet per dry ton in place

*Assay values for 1.0 foot only

C. Radioactive Disequilibrium

Chemical assay data ($\%U_3O_8$) from 32 core-holes has been compared to the gamma-log evaluation of those holes on an intercept-by-intercept basis, resulting in a comparison of 71 intercepts. (See Table V-3.) The pairs of data are plotted on CW&G Drawing Nos. 1128 and 1129. Only those intercepts considered mineable by a proposed open pit and containing a minimum of 2.0 feet of 0.03% $eU_3O_8$ have been utilized in the comparison. A few assay intervals were omitted because of insufficient data for comparison or because of possible errors.

The 71 pairs of assay data utilized in the analysis provide the following information:

| | |
|---|---|
| Average intercept thickness | 4.0 feet |
| Weighted average gamma-log grade | 0.078% $eU_3O_8$ |
| Weighted average chemical grade | 0.068% $U_3O_8$ |
| Ratio of $\%chU_3O_8$:$\%eU_3O_8$ | 0.87 |

The data were analyzed by grade range, resulting in the following:

| Grade Range ($\%eU_3O_8$) | Ratio Chemical:Radiometric (Grade-Thickness weighted) |
|---|---|
| 0.100% and greater | 0.96 |
| 0.070% to 0.099% | 0.77 |
| 0.050% to 0.069% | 0.70 |
| 0.030% to 0.049% | 0.88 |

A study of 453 samples on which both chemical (fluorimetric) and closed-can gamma assays had been performed indicated a

TABLE V-3

COMPARISON OF GAMMA-LOG VALUE (%eU$_3O_8$) TO CHEMICAL ASSAY (%U$_3O_8$) ON CORE

(Cut-off = 2.0 ft. @ 0.03% U$_3O_8$)

Anderson Mine Project, Yavapai County, Arizona

| Hole No. | Depth to top of mineralization, (ft.) | Thickness, (ft.) | GAMMA LOG | | CHEMICAL ASSAY | |
|---|---|---|---|---|---|---|
| | | | Grade (%eU$_3O_8$) | Grade x Thick. | Grade (%U$_3O_8$) | Grade x Thick. |
| 1c | 95.0 | 2.0 | 0.077 | 0.155 | 0.053 | 0.106 |
| | 99.5 | 2.0 | 0.074 | 0.148 | 0.092 | 0.184 |
| | 104.0 | 2.5 | 0.054 | 0.134 | 0.046 | 0.116 |
| | 111.0 | 5.0 | 0.058 | 0.292 | 0.061 | 0.307 |
| 7c | 18.0 | 4.0 | 0.115 | 0.460 | 0.136 | 0.543 |
| | 97.0 | 3.0 | 0.037 | 0.110 | 0.012 | 0.036 |
| 13c | 126.0 | 9.7 | 0.043 | 0.420 | 0.019 | 0.184 |
| 16c | 247.5 | 3.5 | 0.189 | 0.660 | 0.239 | 0.838 |
| | 267.5 | 3.5 | 0.073 | 0.256 | 0.047 | 0.165 |
| | 294.0 | 8.0 | 0.075 | 0.598 | 0.064 | 0.512 |
| | 305.0 | 7.0 | 0.041 | 0.287 | 0.037 | 0.260 |
| 17c | 148.0 | 2.0 | 0.034 | 0.067 | 0.032 | 0.063 |
| | 203.0 | 2.0 | 0.055 | 0.110 | 0.059 | 0.118 |
| 18c | 279.0 | 6.0 | 0.048 | 0.289 | 0.082 | 0.491 |
| | 288.0 | 3.0 | 0.103 | 0.309 | 0.073 | 0.220 |
| | 295.1 | 3.0 | 0.095 | 0.284 | 0.064 | 0.192 |

TABLE V-3 (cont'd.)

| Hole No. | Depth to top of mineralization, (ft.) | Thickness, (ft.) | GAMMA LOG Grade ($\%eU_3O_8$) | GAMMA LOG Grade x Thick. | CHEMICAL ASSAY Grade ($\%U_3O_8$) | CHEMICAL ASSAY Grade x Thick. |
|---|---|---|---|---|---|---|
| 26c | 625.0 | 2.0 | 0.042 | 0.083 | 0.032 | 0.063 |
| | 629.0 | 3.0 | 0.057 | 0.171 | 0.027 | 0.082 |
| | 634.0 | 3.0 | 0.189 | 0.567 | 0.158 | 0.475 |
| 51c | 396.0 | 5.0 | 0.034 | 0.168 | 0.018 | 0.090 |
| | 404.0 | 7.0 | 0.041 | 0.290 | 0.030 | 0.213 |
| | 439.0 | 7.0 | 0.086 | 0.599 | 0.066 | 0.464 |
| | 464.0 | 4.0 | 0.302 | 1.207 | 0.358 | 1.430 |
| 79c | 45.0 | 2.0 | 0.045 | 0.090 | 0.029 | 0.057 |
| 113c | 299.0 | 4.0 | 0.057 | 0.226 | 0.035 | 0.138 |
| | 340.0 | 4.0 | 0.079 | 0.315 | 0.082 | 0.326 |
| 119c | 119.0 | 5.0 | 0.037 | 0.185 | 0.044 | 0.220 |
| | 130.0 | 3.0 | 0.119 | 0.358 | 0.143 | 0.429 |
| 135c | 385.0 | 4.0 | 0.063 | 0.251 | 0.059 | 0.236 |
| | 457.0 | 7.0 | 0.123 | 0.858 | 0.086 | 0.605 |
| | 466.0 | 10.0 | 0.193 | 1.928 | 0.127 | 1.272 |
| 149c | 382.0 | 5.0 | 0.058 | 0.291 | 0.040 | 0.199 |
| | 393.0 | 2.0 | 0.050 | 0.100 | 0.045 | 0.089 |
| | 397.0 | 2.0 | 0.036 | 0.071 | 0.024 | 0.048 |
| | 406.0 | 6.0 | 0.062 | 0.371 | 0.039 | 0.235 |
| 184c | 474.0 | 9.0 | 0.045 | 0.402 | 0.049 | 0.443 |
| | 492.0 | 3.0 | 0.100 | 0.299 | 0.103 | 0.308 |
| | 505.0 | 4.0 | 0.040 | 0.159 | 0.043 | 0.173 |

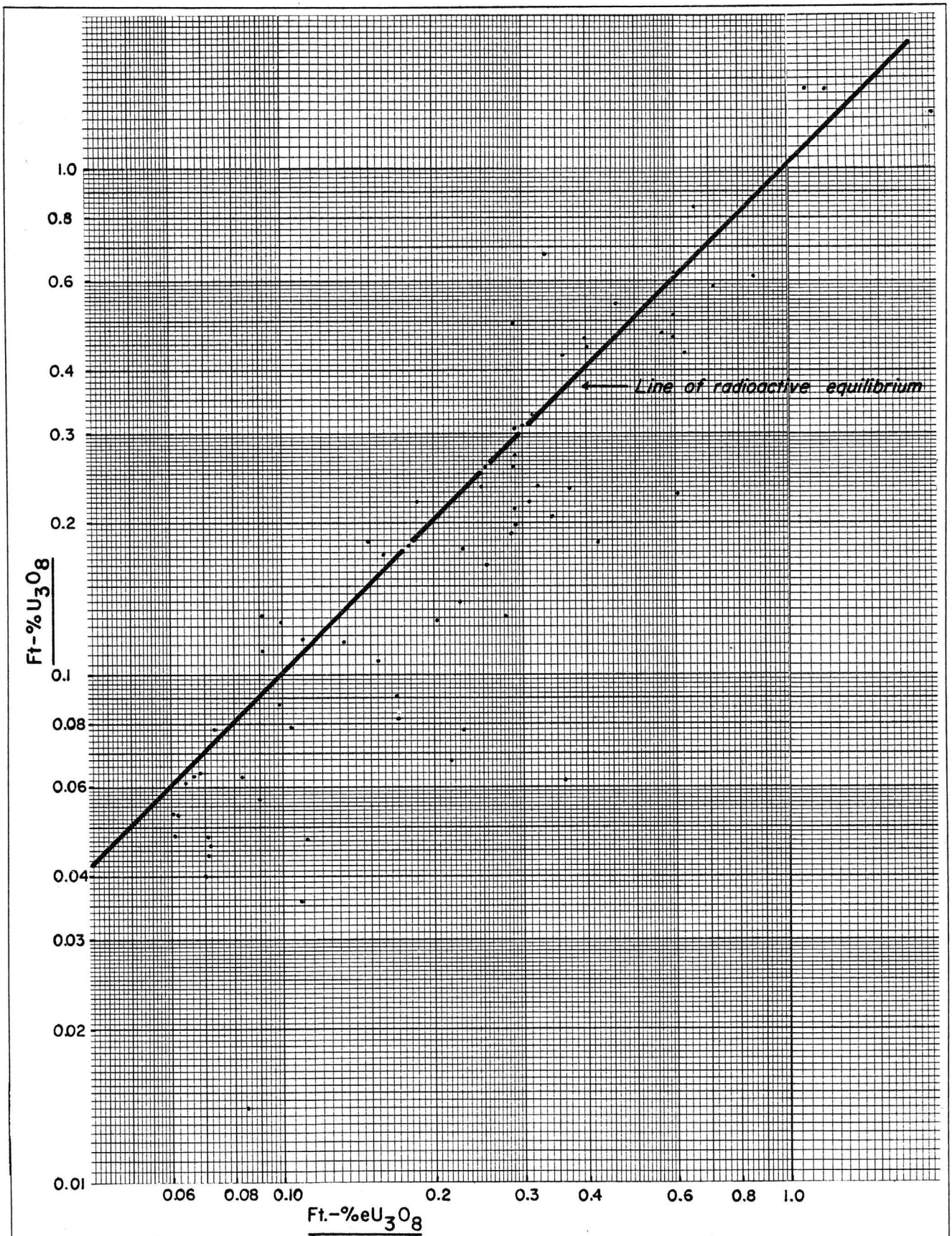
TABLE V-3 (cont'd.)

| Hole No. | Depth to top of mineralization, (ft.) | Thickness, (ft.) | GAMMA LOG Grade ($\%eU_3O_8$) | GAMMA LOG Grade x Thick. | CHEMICAL ASSAY Grade ($\%U_3O_8$) | CHEMICAL ASSAY Grade x Thick. |
|---|---|---|---|---|---|---|
| 229c | 123.0 | 2.0 | 0.049 | 0.098 | 0.064 | 0.127 |
| | 144.0 | 2.0 | 0.046 | 0.092 | 0.056 | 0.112 |
| 273c | 36.0 | 2.0 | 0.128 | 0.255 | 0.129 | 0.257 |
| | 41.0 | 2.0 | 0.036 | 0.072 | 0.023 | 0.046 |
| | 134.0 | 5.0 | 0.036 | 0.178 | 0.036 | 0.180 |
| | 179.0 | 2.0 | 0.035 | 0.070 | 0.020 | 0.040 |
| 274c | 52.0 | 5.0 | 0.072 | 0.362 | 0.012 | 0.062 |
| 275c | 47.0 | 5.0 | 0.143 | 0.714 | 0.117 | 0.585 |
| 289c | 80.0 | 3.0 | 0.092 | 0.276 | 0.044 | 0.131 |
| | 138.0 | 6.0 | 0.058 | 0.347 | 0.034 | 0.205 |
| | 154.0 | 2.0 | 0.047 | 0.094 | 0.066 | 0.132 |
| | 188.0 | 2.0 | 0.031 | 0.061 | 0.027 | 0.053 |
| 337c | 424.0 | 3.0 | 0.068 | 0.204 | 0.043 | 0.128 |
| 390c | 249.0 | 2.0 | 0.043 | 0.085 | 0.007 | 0.014 |
| 412c | 129.0 | 6.0 | 0.185 | 1.111 | 0.241 | 1.444 |
| 422c | 409.0 | 2.0 | 0.057 | 0.113 | 0.024 | 0.047 |
| | 456.0 | 15.0 | 0.040 | 0.602 | 0.042 | 0.625 |
| 427c | 549.0 | 5.0 | 0.081 | 0.403 | 0.092 | 0.460 |
| | 559.0 | 6.0 | 0.038 | 0.226 | 0.013 | 0.078 |
| | 569.0 | 7.0 | 0.091 | 0.634 | 0.062 | 0.433 |
| 431c | 561.0 | 3.0 | 0.097 | 0.290 | 0.091 | 0.273 |
| | 587.0 | 2.0 | 0.035 | 0.069 | 0.032 | 0.064 |
| | 592.0 | 2.0 | 0.036 | 0.071 | 0.022 | 0.044 |

TABLE V-3 (cont'd.)

| Hole No. | Depth to top of mineralization, (ft.) | Thickness, (ft.) | GAMMA LOG Grade ($\%eU_3O_8$) | GAMMA LOG Grade x Thick. | CHEMICAL ASSAY Grade ($\%U_3O_8$) | CHEMICAL ASSAY Grade x Thick. |
|---|---|---|---|---|---|---|
| 435c | 98.0 | 3.0 | 0.108 | 0.323 | 0.078 | 0.234 |
| | 176.0 | 4.0 | 0.054 | 0.217 | 0.017 | 0.068 |
| 436c | 220.0 | 3.0 | 0.202 | 0.605 | 0.075 | 0.226 |
| 444c | 343.0 | 3.0 | 0.111 | 0.332 | 0.227 | 0.681 |
| | 365.0 | 2.0 | 0.031 | 0.062 | 0.027 | 0.053 |
| | 388.0 | 2.0 | 0.031 | 0.061 | 0.024 | 0.048 |
| | 393.0 | 2.0 | 0.032 | 0.064 | 0.031 | 0.061 |
| | 410.0 | 3.0 | 0.035 | 0.104 | 0.026 | 0.079 |
| | 423.0 | 2.0 | 0.037 | 0.074 | 0.039 | 0.078 |
| | 564.0 | 3.0 | 0.076 | 0.228 | 0.059 | 0.178 |
| TOTALS | | | | | | |
| No. of Intervals = 71 | | 282.2 | | 22.065 | | 19.176 |
| Weighted Averages | | | 0.078 | | 0.068 | |
| Average Thickness | | 4.0 ft. | | | | |

$\%U_3O_8$ = 86.9% of $\%eU_3O_8$

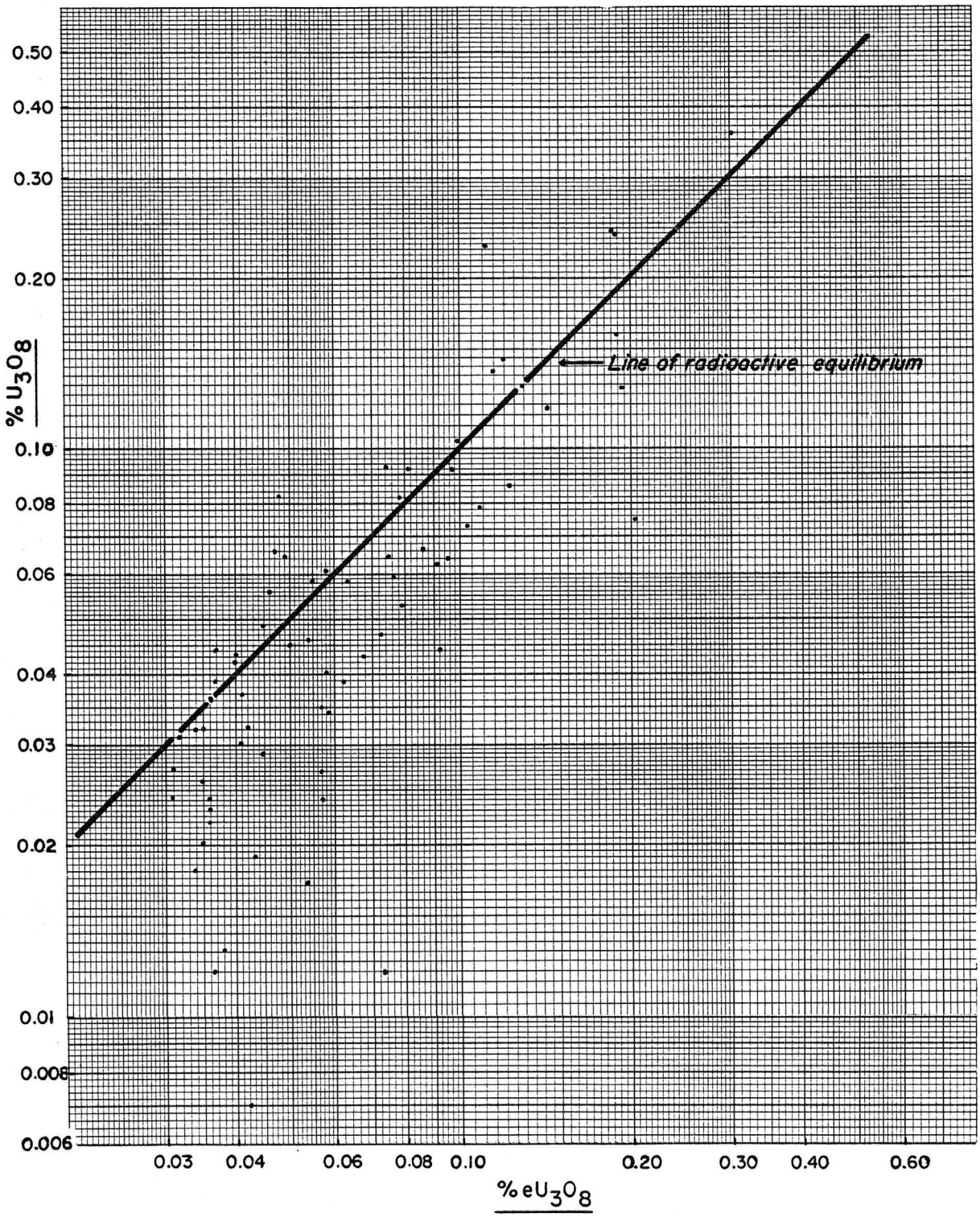



Plot of grade-thickness product of radiometric equivalent to chemical uranium from 71 drill-hole intercepts at the Anderson Uranium Mine, Yavapai County, Arizona.

CW&G Drawing No. 1128

September 1977

CHAPMAN WOOD & GRISWOLD INC — ALBUQUERQUE NEW MEXICO




Plot of radiometric-equivalent versus chemical uranium from 71 drill-hole intercepts at the Anderson Uranium Mine, Yavapai County, Arizona.

September 1977

CW&G Drawing No. 1129

problem with radiometric analysis by Hazen, Inc. laboratory versus Chemical and Geological laboratory. The bulk of these samples are 1.0-foot assay intervals and were selected on the basis that either the chemical ($\%U_3O_8$) or closed-can ($\%eU_3O_8$) assay must be 0.02% or greater.

| | | | |
|---|---|---|---|
| Chemical and Geological | - No. of Samples | = | 288 |
| | Average $\%U_3O_8$ | = | 0.059% |
| | Average $\%eU_3O_8$ | = | 0.066% |
| Hazen, Inc. | - No. of Samples | = | 165 |
| | Average $\%U_3O_8$ | = | 0.061% |
| | Average $\%eU_3O_8$ | = | 0.053% |

The averages for the 453 samples are 0.060% $U_3O_8$ and 0.061% $eU_3O_8$, a 1.7% difference, whereas the individual laboratories show the following ratios:

| | | | |
|---|---|---|---|
| Chemical and Geological | - $\%U_3O_8$:$\%eU_3O_8$ | = | 0.894 |
| Hazen, Inc. | $\%U_3O_8$:$\%eU_3O_8$ | = | 1.151 |

The problem does not appear to be from an inadequate number of samples. Chemical assays from identical pulps have shown both labs to be in fair agreement and these two groups, which contain a sufficient population to be representative, show good agreement chemically but are reversed radiometrically. The Chemical and Geological lab provides results which compare very favorably with the evaluation of the down-the-hole probe versus the chemical assays on core.

D. Mining Analysis

A study of three areas within the confines of the proposed pit was made and compared to Minerals' data of July 18, 1977. These areas averaged approximately 900,000 square feet and were located in the east, south and west portions of the main pit. Our analysis indicated that Minerals' study required further refining with respect to quantities of materials to be handled within the overall mining zone, i.e. quantities of ore, waste and internal or secondary stripping.

Minerals' Tucson staff revamped the previous study by placing appropriate levels within the pit that would represent the bottom of primary stripping. To study the overall relationship of this new data (dated September 12, 1977) a large area in the western part of the main pit was selected. This area covered approximately 2,000,000 square feet and extended from Drill Hole No. 141 southeasterly to Drill Hole No. 362 in a zone about 900 feet wide.

Our analysis indicates the following:

1. For total material lying above the zone of mineralization, our estimate of 68,700,000 tons for the block was within 1% of Minerals' estimate. (Stripping materials were actually analyzed over about 3,000,000 square feet.)

2. Of the 68,700,000 tons in (1) we find that 7.6% or 5,200,000 tons should be costed as if it were secondary stripping. This is material which will have to be moved from the present surface to establish the first stripping bench and material which lies below the final stripping bench but above the mineralization and for which a full stripping bench cannot be established. We have used a 50-foot height for stripping benches.

3. For interior waste, ore in place and secondary stripping below the top of mineralization, our analysis provides a 7.4% increase in overall tonnage (13,100,000 tons versus Minerals' 12,200,000 tons for the block studies). This increase is a result of establishing a suitable operating floor for the pit versus the column analysis used by Minerals.

4. Within the overall mining zone we find that 75% of the total materials will require mining (i.e. ripping and sorting) and 25% will constitute secondary stripping (benches of 10 feet or more with lateral continuity of at least 400 ft. by 400 ft.) These figures are a complete reversal from those of Minerals in which mining materials constitute 25% of the overall mining zone and secondary stripping 75%.

5. We accept Minerals' estimate of mineable reserves within the confines of the proposed pit (see map in pocket),

using a cutoff of 2.0 feet at 0.03% $eU_3O_8$, realizing that detailed economic studies will ultimately determine the cut-offs for blocks lying in the pit perimeter and in the pit bottom.

6. Our new analysis agreed quite closely with our original analysis of the July data. We applied our factors to the deposit as a whole to assess the financial impact of the variance in materials quantities and find that our results are 93.6% of Minerals' when comparing the "Net Unit Income" as shown on the September 12, 1977 computer sheet ($276,400,000 versus Minerals' $295,300,000). In making this financial comparison we used Minerals' unit costs, price per pound for $U_3O_8$ ($42) and metallurgical recovery (89%).

   Although there are big differences in the mining quantities by category (CW&G versus Minerals), the financial impact is small because the milling and primary stripping costs comprise 82% of the total cost.

7. Our study acknowledges the fact that Minerals' estimates of total materials within a potential pit do not include material that will be removed to accommodate a safe pit-wall slope. For comparative purposes we did not include

such materials in our analysis but recognize that they will be substantial on the south side of the pit. However, the overall financial impact will be marginal.

View of the Anderson Mine looking across old strip mining area; view is northwesterly from vicinity of Drill Hole No. 157.

Looking westerly from vicinity of Drill Hole No. 157. Cliff-forming unit on left is conglomerate.

View of lake beds in cut-bank remaining from previous mining operations; located near Drill Hole No. 99.

New cut in calcareous siltstones and lignitic material (dark) showing uranium oxides (yellow). Location is near Drill Hole No. 152.