Carnotite Resources of Club Mesa, Montrose County, Colorado

By

Leonid Bryner

Trace Elements Investigations Report 147

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Geology - Mineralogy

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UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

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Leonid Bryner

November 1952

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*This report concerns work done on behalf of the Division of Raw Materials of the U. S. Atomic Energy Commission

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Division of Raw Materials, Salt Lake City	19
Division of Raw Materials, Richfield	20
Division of Raw Materials, Butte	21
Division of Raw Materials, Washington	22-24
Dow Chemical Company, Pittsburg	25
Technical Information Service, Oak Ridge	26-31
Tennessee Valley Authority, Wilson Dam	32
U. S. Geological Survey:	
Mineral Deposits Branch, Washington	33-34
Geochemistry and Petrology Branch, Washington	35
Geophysics Branch, Washington	36
Alaskan Geology Branch, Washington	37
Fuels Branch, Washington	38
L. R. Page, Denver	39
R. P. Fischer, Grand Junction	40-41
A. E. Weissenborn, Spokane	42
J. B. Cathcart, Plant City	43
J. F. Smith, Jr., Denver	44
N. M. Denson, Denver	45
R. W. Swanson, Spokane	46
A. H. Koschmann, Denver	47
E. H. Bailey, San Francisco	48
C. E. Dutton, Madison	49
R. A. Laurence, Knoxville	50
R. J. Roberts, Salt Lake City	51
TEPCO, Washington (Including master)	52-55

CONTENTS

CONTENTS--Continued

ILLUSTRATIONS

TABLES

CARNOTITE RESOURCES OF CLUB MESA, MONTROSE COUNTY, COLORADO

By Leonid Bryner

ABSTRACT AND SUMMARY

Club Mesa is 1 mile west of Uravan, Montrose County, Colo. About 200,000 short tons of carnotite ore containing an estimated 0.45 percent U_3O_8 and 2.1 percent V_2O_5 has been mined from the mesa. This production represents about one-fifth of the carnotite ore mined from the Colorado Plateau.

All the principal deposits on the mesa are in the main ore-bearing sandstone, which is in the top part of the Salt Wash sandstone member of the Jurassic Morrison formation. The deposits are in tabular masses of uneven thickness, lying more or less parallel to the enclosing strata. The ore consists mainly of sandstone impregnated with carnotite and vanadiferous clay minerals. The sandstone near the deposits is generally over 30 feet in thickness, contains noticeable quantities of carbon, and vivid patches of limonite (?) stain. Also near ore deposits, the mudstone in contact with the sandstone is altered from red to gray or green through a thickness of 3 or 4 feet. Certain linear features of the ore bodies and of favorable parts of the main ore-bearing sandstone offer clues by their orientation to extensions of known ore bodies and of favorable ground. These features on Club Mesa trend mostly east to northeast.

Between March 6, 1948, and January 22, 1952, the U. S. Geological Survey drilled 651 holes for a total of 167,495 feet. As a result of this drilling, 18 deposits were discovered and partly outlined. These range in size from 200 to 55,000 short tons of indicated ore reserves and are in layers 1 foot or more thick containing 0.10 percent or more U_3O_8 or 1.0 percent or more V_2O_5.

About 85 percent of this ore is in public land; the remainder is in claims owned by the United States Vanadium Co.

Reserves in deposits known from drill holes or exposures are classed as indicated or inferred, and those in deposits that are predicted solely on geologic evidence are classed as potential. The tons of indicated and inferred reserves and the pounds of contained U_3O_8 and V_2O_5 are summarized in table 1. These reserves are subdivided also by thickness and grade cutoffs. At the higher grade cutoff, reserve figures express approximately the tonnage and grade of material that might actually be mined from these deposits under 1951 conditions. Indicated and inferred reserves of this type total 198,000 short tons, averaging 0.35 percent U_3O_8 and 1.8 percent V_2O_5, and contain 1,372,000 pounds of U_3O_8 and 7,260,000 pounds of V_2O_5. These reserves are based on Geological Survey drilling. Potential reserves are predicted to total about 40,000 short tons, averaging about 0.35 percent U_3O_8 and 1.9 percent V_2O_5.

No additional exploration on Club Mesa is planned by the Geological Survey, but exploration by private companies is recommended.

INTRODUCTION

This report contains a final estimate of the reserves discovered on Club Mesa by U. S. Geological Survey drilling in the 1948-1952 period and a description of the geology and the ore deposits.

The mesa is 1 mile west of Uravan, Montrose County, Colo. Uravan

Table 1.--Summary of reserves, Club Mesa, Montrose County, Colorado

Thickness cutoff	Reserves	Grade cutoff	Reserves (short tons)	Percent		Pounds 1/	
				U_3O_8	V_2O_5	U_3O_8	V_2O_5
1 foot or more thick	Indicated	0.10% U_3O_8 or 1.0% V_2O_5	132,000	0.36	1.9	950,000	5,016,000
		0.05% U_3O_8 or 0.5% V_2O_5	216,000	0.24	1.5	1,037,000	6,480,000
	Inferred	0.10% U_3O_8 or 1.0% V_2O_5	66,000	0.32	1.7	422,000	2,244,000
		0.05% U_3O_8 or 0.5% V_2O_5	89,000	0.24	1.4	427,000	2,492,000

1/ Rounded to nearest 1,000 pounds

is 93 miles south of Grand Junction, Colo., by U. S. Highway 50 and Colorado Highway 141 (fig. 1). A network of truck trails connects the drill sites and mines with Uravan, where the United States Vanadium Co. operates a sampling plant and mill. The main trunks of these truck trails are shown in figure 2.

Club Mesa is in secs. 31 and 32, and parts of secs. 28, 29, 30, and 33, T. 48 N., R. 17 W., and sec. 5 and parts of secs. 4, 6, 7, 8, and 9, T. 47 N., R. 17 W., New Mexico principal meridian (fig. 2).

Altitudes on the mesa range from 5,500 to 6,500 feet. The nearest dependable water supply is the San Miguel River. At Uravan the river's altitude is 5,000 feet.

The mesa is public land except for 57 mining claims belonging to the United States Vanadium Co. (fig. 2).

Total production of carnotite ore from Club Mesa from 1911 through 1951 amounted to about 200,000 tons averaging 0.45 percent U_3O_8 and 2.1 percent V_2O_5. (Tons in this report are short tons.) This tonnage represents about one-fifth of the carnotite ore mined from the Colorado Plateau. Production from Club Mesa is summarized in table 2. The first operations were in 1911 when the Standard Chemical Co. began mining and milling for radium. These operations continued until 1923 when a drop in the market price of radium forced a general shutdown on the Colorado Plateau. In 1934 and 1935, the United States Vanadium Corp., now known as the United States Vanadium Co., acquired the Standard Chemical Co. assets, and in 1936 started mining and milling. This renewed activity was for the production of vanadium. By 1944 mining tapered off with the

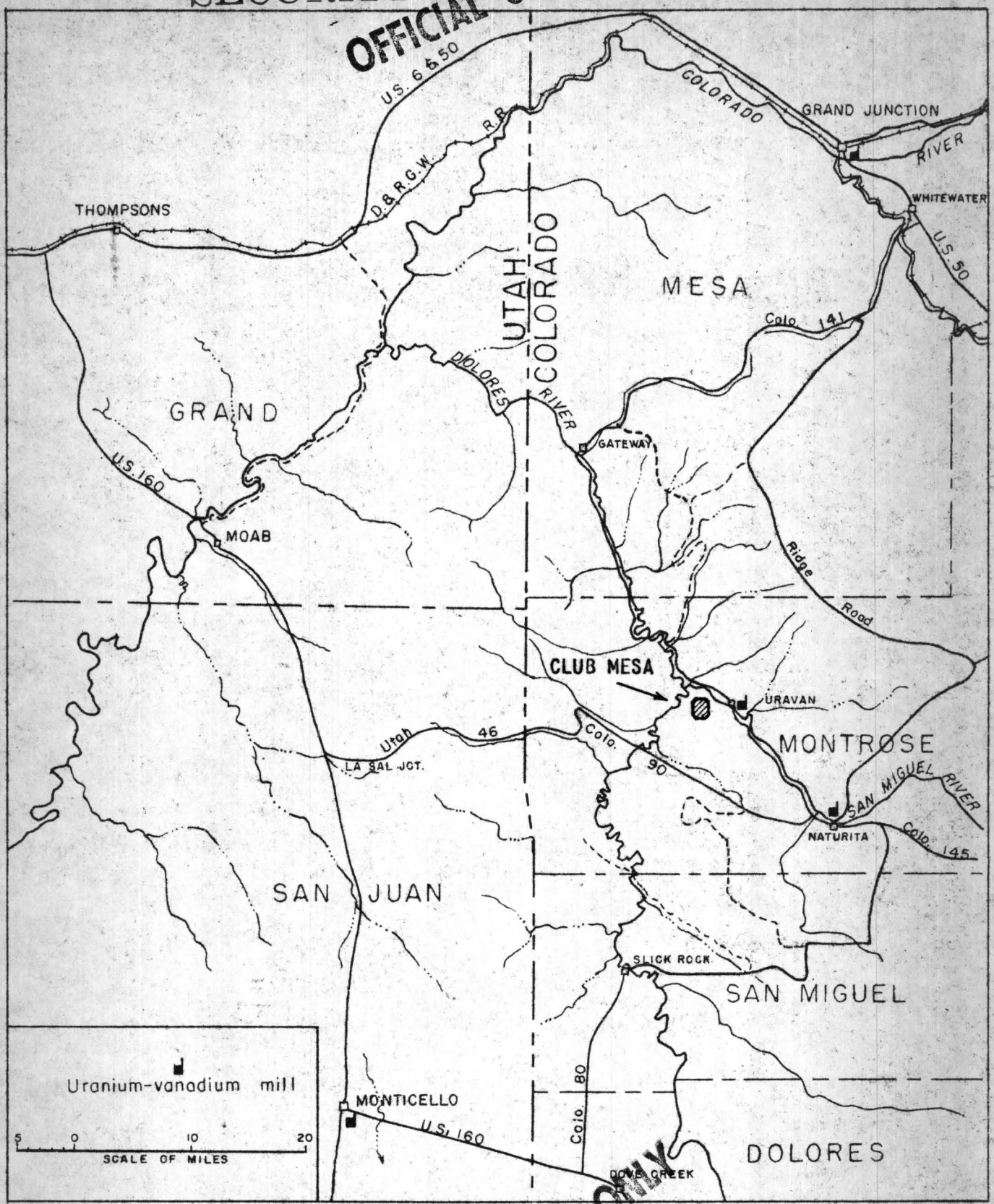

Figure 1.--INDEX MAP OF PART OF THE COLORADO PLATEAU SHOWING THE LOCATION OF CLUB MESA, MONTROSE COUNTY, COLORADO

Table 2.--Production of carnotite ore from Club Mesa, Montrose County, Colorado, 1911-51
(from U. S. Vanadium Co. records except as noted)

Mine, group of mines, or block	Period	Ore a/ (short tons)	Percent a/		Pounds a/	
			U_3O_8	V_2O_5	U_3O_8	V_2O_5
Club group	1911-23	19,151 b/	1.46 b/	4.32 b/	559,209	1,654,646
		14,439 c/	0.26 c/	1.4	75,083	404,292
	1938-43	106,547	0.3	1.78 d/	639,282	3,814,383
	1948-51	9,626	0.50 e/	2.84 e/	96,260	539,056
Subtotals and averages		149,763	0.46	2.14	1,369,834	6,412,377
Tramp mine	1911-23	2,000	1.0	3.0	40,000	120,000
	1938-43	23,348	0.4	2.18 d/	186,784	1,017,973
	1948-51	10,059	0.23	1.11	46,271	223,310
Subtotals and averages		35,407	0.39	1.92	273,055	1,361,283
Shamrock group	1911-23	1,500	1.0	3.0	30,000	90,000
	1938-43	692	0.4	2.18 d/	5,536	30,171
	1948-51	452	0.4	2.2	3,616	19,888
Subtotals and averages		2,644	0.74	2.65	39,152	140,059
Mill No. 2 (mainly Block 3B)	1950, 1951	2,950	0.46	1.82	27,140	107,380
Block 3A	1951	739	0.52	2.36	7,686	34,881
Block 1A	1951	2,482	0.31	1.58	15,388	78,431
Block 5 East	1951	4,429	0.32	1.81	28,346	160,330
Totals and averages (rounded)	1911-51	200,000 f/	0.45	2.1	1,761,000	8,295,000

a/ Tonnages shown only to nearest 100 tons have been estimated. Grades shown only to nearest 0.1 percent have been estimated by ratio from recorded U_3O_8 or V_2O_5 data. Pounds of U_3O_8 and V_2O_5 have been calculated from the percentages shown in this table.

b/ Hess, F. L., 1933, Ore deposits of the Western States (Lindgren volume): Am. Inst. Min. Met. Eng., fig. 7, p. 468.

c/ Standard Chemical Co. mill figure for the Club mine dump, from data submitted by Blair Burwell, 1944.

d/ From data for 1942 and 1943 only.

e/ Average grade of Mill No. 1 ore (1948-51) which amounted to 58% of the Club group production for this period.

f/ Total has been raised about 2,000 tons to include estimated lessee production from 1938-43, which includes most of the Raven mine production.

decreasing demand for ferro-vanadium alloys. During the winter of 1949-50, the Uravan mill was renovated by the United States Vanadium Co. Since that time the mill has been in operation for the recovery of both vanadium and uranium.

Of the 15,800 tons of carnotite ore mined during 1951 from Club Mesa, 10,100 tons came from deposits discovered by Geological Survey drilling; the proportion of tonnage mined from Geological Survey discoveries will probably increase in 1952.

Exploration by drilling is the chief method by which the companies have guided mining. This method also was used by the U. S. Bureau of Mines on Club Mesa in August and September 1943 when, in cooperation with the Geological Survey, the Bureau drilled 51 holes on the Shamrock group to develop vanadium ore for wartime needs (Fischer, Duncan, Stokes, and Rominger, 1944, p. 74; Huleatt, Hazen, and Traver, 1946, pp. 27 and 28). As shown in figure 2, company drilling and Bureau of Mines drilling was confined mostly to the vicinity of the mines, thereby leaving large areas of the mesa untested. Diamond-drill exploration by the Geological Survey from 1948 to 1952 was planned to discover most of the deposits of average and better than average size and grade in these large untested areas. Preliminary appraisals of this work are contained in previous reports (Bryner, 1950; Bryner and Withington, 1951; Bryner and Douglas, 1952).

GEOLOGY

General features

The rocks exposed on Club Mesa are part of a series of conformable Mesozoic sedimentary beds. The highest portion of the mesa is capped by the Lower Cretaceous Burro Canyon formation, which is underlain by the Upper Jurassic Morrison formation (fig. 2). The Morrison formation is divided into an upper member, called the Brushy Basin shale, and a lower member, called the Salt Wash sandstone (Craig et al., 1951). The Salt Wash sandstone member is underlain by the Jurassic Summerville formation, and the Summerville is underlain by the Jurassic Entrada sandstone.

In general these strata strike N. 50° W., and dip $2\frac{1}{2}°$-3° NE. The steeper dips are in the western part of the mesa. Small but possibly significant deviations from this general attitude of the strata are indicated at the top of the Entrada sandstone by geologic mapping. The most notable example of this is a broad, shallow syncline in the outcrop below the Tramp mine. Such deviations may be related to the localization of carnotite deposits, but more study is needed to determine whether this is true.

Burro Canyon formation

The outcrop of the Burro Canyon formation is shown in figure 2. The Burro Canyon consists of sandstone locally containing lenses of conglomerate. The edge of the outcrop generally forms a cliff up to

70 feet high. Persistent joints in back of this cliff permit large blocks from the outcrop to ride down on segments of the underlying Brushy Basin shale. The surface of Club Mesa between the Burro Canyon outcrop and the outer rim of the mesa is characterized by these landslide masses. Close to their place of origin they form distinct terraces edged by tilted blocks. Toward the outer rim, however, the landslides become less distinctive, but are recognizable as mounds composed of steeply tilted beds generally culminating in one or more blocks of Burro Canyon sandstone. The difficulties of drilling through these landslides are described on page 24.

Morrison formation, Brushy Basin shale member

The Brushy Basin shale member crops out widely over Club Mesa. It consists of varicolored mudstones containing thin beds of quartzitic sandstone and siliceous limestone, and lenses of light-colored, partly coarse-to-pebbly sandstone. The coarse-to-pebbly sandstone in many places is friable. Total thickness of the member ranges from 400 to 450 feet. The contact with the underlying Salt Wash sandstone member is gradational, but corresponds approximately with the top of the uppermost sandstone stratum of the Salt Wash (fig. 2). On Club Mesa the ratio for thickness of gray mudstone to brown mudstone in the basal 150 feet of the Brushy Basin appears, on the basis of limited evidence, to be greatest where the Brushy Basin overlies ground favorable for ore in the Salt Wash. Mineralized showings in the Brushy Basin member also

appear to be most common in those areas where the member overlies deposits in the Salt Wash member. Although the Brushy Basin member on Club Mesa contains a few small carnotite deposits, the deposits generally do not exceed a few hundred tons each, and are confined mainly to the basal sandstone of the member. Drilling characteristics of the Brushy Basin are presented on page 24.

Morrison formation, Salt Wash sandstone member

The Salt Wash sandstone member consists of a varying number of comparatively thick sandstone strata that were deposited in a stream environment. The sandstone strata are separated by interbedded reddish-brown mudstones and thin-bedded sandstones that were deposited in a floodplain environment.

The strata of stream origin in the Salt Wash member average about 25 feet in thickness. They are composite units consisting of lenses generally several hundred to several thousand feet long in outcrop. The lenses merge with each other or pinch out, but where they are distinct from each other, they are separated by mudstone lens or seam. In some places, the contact of the sandstone lenses with underlying mudstones or with other sandstones is sharp and steep, suggesting truncation of the lower lens by stream erosion prior to deposition of the upper lens. The strata composed of these sandstone lenses, like the lenses themselves, merge with each other or pinch out. The composite nature of the top sandstone stratum of the Salt Wash is shown in the

geologic sections in figure 2. The sandstone strata at the top and bottom of the Salt Wash generally are the thickest and most continuous. The top stratum crops out in a wide bench over most of the mesa. The Salt Wash sandstone strata are white to light brown, fine- to medium-grained, and cross-laminated, and they contain irregularly distributed clay-pebble conglomerates and fragments of fossil plants.

The localization of carnotite deposits on Club Mesa appears to be related to variations over broad areas in the thickness and overall sedimentary character of the Salt Wash sediments. Most of the deposits are in sandstone lenses that accumulated in stream channels, and the deposits are most abundant in areas where the stream-laid material constitutes a relatively large part of the Salt Wash. In addition, the thickness of the Salt Wash member, as observed at the mesa rim, ranges from about 180 to 300 feet. Over broad areas near mineralized ground, maximum thicknesses commonly prevail, and at barren parts of the outcrop about midway between the Club and Shamrock mines on the east rim and between the Tramp and Raven mines on the west rim, minimum thicknesses are found. The apparent relationship of thickness to ore deposits has one notable exception in the 3,000-foot interval of barren outcrop where the Salt Wash member is about 300 feet thick between the Club mine and the workings on the Jack Rabbit claim (fig. 2).

Main ore-bearing sandstone

The term "main ore-bearing sandstone" is applied to the part of the topmost stratum of the Salt Wash member that forms a mappable unit

over most of Club Mesa. This sandstone stratum contains all of the known carnotite deposits on the mesa that individually contain more than several hundred tons. The outcrop of the base and top of the main ore-bearing sandstone is shown in figure 2. As indicated in sections A-A' and C-C' of figure 2 this sandstone pinches out or is interrupted by mudstones in the southern part of the mesa. This pinchout or interruption marks what is considered in this report as the southern limit of the main ore-bearing sandstone. This limit is identified on opposite sides of the mesa in figure 2 by the termination of the symbol for the base of the main ore-bearing sandstone. The underground position of this limit is not shown because drill-hole data are not complete enough to define it, but the southern boundary of the semifavorable belt south of the Club and Tramp mines (fig. 2) more or less corresponds to the southern edge of the main ore-bearing sandstone. North of this line the main ore-bearing sandstone includes all of the "Club sandstone" and part of the "Tramp sandstone" of the Union Mines Development Corp. report on Club Mesa (Smith, 1946). The distinction between these two units is preserved, however, by terming the "Tramp". sandstone" the "Tramp lens of the main ore-bearing sandstone." But the Tramp lens, on the evidence of its outcrop as well as from drill-hole information, is applied only to the northern part of the original "Tramp. Originally the "Tramp" was thought to be a separate stratum from the Club, but it is more likely a branch from the upper part of the Club or main ore-bearing sandstone. The relationship between the Tramp lens and the main ore-bearing sandstone is shown in sections C-C' and D-D' in figure 2.

A few very small deposits have been found on Club Mesa in the sandstone strata immediately above or below the main ore-bearing sandstone as well as in the top sandstone stratum of the Salt Wash member outside of the area underlain by the main ore-bearing sandstone. On the eastern side of the mesa as well as in the vicinity of the Tramp mine the basal sandstone stratum of the Salt Wash member also contains a few small deposits. The sandstones that contain these minor deposits are defined simply as "ore-bearing sandstone" as distinguished from the "main ore-bearing sandstone" which contains the main ore deposits.

In the main ore-bearing sandstone certain sedimentary structures show an alinement similar to that of the deposits in the sandstone; other sedimentary structures, in addition to this similarity of alinement, are associated with these deposits. The average direction of dip of the cross-laminations in the main ore-bearing sandstone approximately parallels the elongation of the deposits in the vicinity of these features. Furthermore, pronounced irregularity in profile of the contact between the main ore-bearing sandstone and the underlying mudstone accompanies the deposits in many places, as shown in section C-C' (fig. 2) between holes 9 and U-709, as well as in other sections. Individual irregularities observed at the outcrop extend underground in the form of troughs or ridges; a similarity of alinement exists between these features and the deposits associated with them. Most of the deposits in the main ore-bearing sandstone are contained within parts of the sandstone that are 30 feet or more thick. In many cases ore deposits are found approximately parallel to and near the edge of a mudstone lens within the main ore-bearing sandstone. Examples of some of these

sedimentary features and their association with carnotite deposits are shown in the geologic sections in figure 2.

From the above relationships the deposits appear to have an alinement and position similar to that of the dominant streams that deposited the main ore-bearing sandstone.

In addition to the above-mentioned original sedimentary structures certain secondary features are associated with the ore deposits. The most striking of these is the color alteration in the reddish-brown mudstone within or next to the main ore-bearing sandstone. Near ore deposits the mudstone in contact with the main ore-bearing sandstone commonly is altered from red to gray or green through a thickness of 3 to 4 feet. Fossil plant remains in the form of carbon also are associated with ore. Limonite (?) stain is also common in the main ore-bearing sandstone near mineralized rock. Such stains do not accompany mineralized ground as consistently as do carbon and altered mudstone, but they are generally a fairly reliable indication of proximity to mineralized ground.

A method of applying the features associated with ore to classifying ground as favorable, semifavorable, or unfavorable for ore is outlined in the section on guides to ore.

GUIDES TO ORE

On Club Mesa the term "favorable" applies to ground considered favorable to ore deposits of the large size common southwest of the Club mine. "Semifavorable" is used for ground of doubtful classification and for ground where the deposits are likely to be comparatively small or widely scattered. The "unfavorable" classification does not preclude the presence of ore, but the chances of discovering deposits of commercial size and grade

in unfavorable ground are considered to be poor. The classification of ground as favorable or otherwise, prior to the discovery of the deposits in the ground, has an important use, that of concentrating drilling in areas where most of the reserves are likely to be.

In order to evaluate the favorableness of ground from drill-hole information, a point system was devised. This system was worked out by trial and error from drill-hole data in areas where drilling had been relatively intensive, where the location and size of deposits was fairly certain, and where the relationship between guides to ore and the deposits could be studied. In general, ground classification made early in the exploration program by this system, proved to be substantially correct on the basis of the deposits found after the drilling program had been completed. Holes were rated on the following features:

	Points
(a) Ore-bearing sandstone, 30 feet or more thick	1
(b) Carbon in ore-bearing sandstone	
Abundant	2
Noticeable but scarce	1
(c) Limonite (?) stain in ore-bearing sandstone	
Solid, vivid, yellow-brown	2
Noticeable and solid, but not vivid	1
(d) Altered mudstone beds or seams in contact with ore-bearing sandstone, 2 feet or more in total thickness	5
1 to 1.9 feet in total thickness	4
0.1 to 0.9 feet in total thickness	3
Abundant fragments but no measurable thickness	1

The hole is scored by totaling the points for the above four features, and classified as follows:

5 points or more . . . . . favorable

3 or 4 points . . . . . semifavorable

2 points or less . . . . . unfavorable

ORE DEPOSITS

General features

Club Mesa lies within the Uravan mineral belt described by Fischer and Hilpert (1952). The ore consists mainly of sandstone impregnated with uranium- and vanadium-bearing minerals. Some of the fragments of fossil plants and many of the fossil logs in the sandstone are richly replaced with ore minerals, and some mudstone pebbles within the ore are richly mineralized with vanadium-bearing minerals.

Carnotite is the principal uranium mineral identified in the deposits. The vanadium occurs principally in micaceous clay minerals. Their minute flakes coat the sand grains and partly or completely fill the pore space of the sandstone. These flakes color the rock gray, and the color darkens as the vanadium content increases. Some of the other vanadium minerals identified on Club Mesa are: corvusite (massive, purplish, and blue-black); vanoxite (black, minutely crystalline); and pascoite (a bright-orange coating on fracture surfaces in the ore).

The deposits are in tabular masses more or less parallel to the enclosing beds. In their lateral limits and thickness the deposits are irregular, reaching a maximum lateral extent of about 2,000 feet and a

maximum thickness of about 15 feet. Figure 2 shows the size range of the deposits; it also shows that in horizontal outline many of the deposits are roughly elongate and exhibit a similarity of trend.

The term "roll" is commonly applied to the elongate, thicker masses of ore having sharp boundaries at an angle to the dip of the containing stratum. The larger deposits on the mesa consist mainly of closely grouped, parallel rolls interconnected by one or more thin layers of ore. The orientation of the rolls commonly parallels the elongation of the deposit. In general, the larger the deposit the thicker it is, the more extreme its local divergence from a single stratigraphic horizon, and the larger and thicker its rolls.

The grade and uranium and vanadium ratio of most of the deposits on Club Mesa does not differ markedly from one locality to another. The ratio of U_3O_8 to V_2O_5 in the ore ranges from about 1:4 to about 1:6, but in unusually high grade ore this ratio is about 1:3. Reserve estimates based on Geological Survey drilling give an average of 0.36 percent U_3O_8 and 1.9 percent V_2O_5. The total ore produced from Club Mesa averaged 0.45 percent U_3O_8 and 2.1 percent V_2O_5. Early production substantially raises the overall average grade because early mining was highly selective. The grade of ore and the tonnage produced from various parts of the mesa during the main periods of mining activity are shown in table 2.

Origin

The primary ore minerals probably were deposited in the ore-bearing sandstone by ground water. The ore deposits appear to have formed near the edges of belts where the streams of Salt Wash time laid down the

thickest deposits. A possible explanation of the apparent spatial relationship between Salt Wash streams and the ore deposits is that the belts of sandstone deposited by the major streams offered the best channels for the mineralizing solutions. Precipitation of the ore minerals may then have been effected by the plant debris or its carbonized remains that accumulated mostly near the edges of the streams. The source of the metal-bearing solutions and the time of their introduction into the ore-bearing sandstones have not been determined.

A description of the geology and character of the carnotite deposits of the southwestern Colorado and adjoining states is given by Fischer (1942).

GEOLOGICAL SURVEY EXPLORATION

Diamond-drill exploration on Club Mesa by the Geological Survey was planned to find most of the carnotite deposits of commercial size and grade, to outline these deposits sufficiently to provide private enterprise with incentive to develop and mine them, and to determine the total carnotite reserves of the mesa.

A total of 167,495 feet in 651 holes, was drilled between March 6, 1948, and January 22, 1952. Except for 7 holes that were drilled for experimental purposes, this drilling was done on three successive contracts. Most of the footage was expended in holes 200 to 600 feet deep; average depth was 257 feet. About 95 percent of the total footage was expended in unexplored public land, and the remainder in privately owned claims.

Drilling was planned to test the main ore-bearing sandstone and, in some localities, other ore-bearing sandstones near the top of the Salt Wash member.

Drill-hole spacing generally was in three orders of magnitude; (1) widely spaced holes, 500 to 1000 feet apart to find the large target offered by ground favorable to ore; (2) moderately spaced holes, 200 to 500 feet apart to discover deposits within the favorable ground; and (3) closely spaced holes, 50 to 200 feet apart to outline discoveries.

Under the first exploration contract, which totaled 16,123 feet, drilling began along three north-trending lines about 3,000 feet apart in which the holes were spaced at about 1,000-foot intervals. The direction of these lines was chosen to intersect extensions of the west-trending geologic features associated with the known deposits. As a result of this drilling a large area between the Club and Tramp mines, an area south of the Shamrock mines, an area between the Raven mine and the Buck Shot claim, and an area between the Tramp mine and the Jack Rabbit claim were considered to merit further exploration. This drilling also fairly definitely eliminated as unfavorable a large area in the northern part of the mesa. Under the second contract, which totaled 49,976 feet, widely spaced drilling supplemented with some moderately spaced drilling in the areas chosen by previous exploration, established a ground classification (Bryner and Withington, 1951) that remained fundamentally unchanged during later exploration. At the same time, in the especially favorable area southwest of the Club mine, a large part of the total reserves of Club Mesa were discovered and partly outlined with moderately to closely spaced holes. Under the last contract, which totaled 91,610 feet, most of the footage was used in moderately to closely spaced drilling to complete the outlining of deposits discovered earlier and to search for other deposits in sparsely drilled parts of the favorable areas. A smaller part of the

footage on the last contract was expended in widely to closely spaced holes 400 to 600 feet deep to better define favorable ground, and to discover and outline major deposits under the Burro Canyon outcrop (fig. 2).

In general, holes that cut ore in private property were not offset with other holes, as the discovery was considered to offer the incentive for the claim owner to block out the ore. For example, the United States Vanadium Co. drilled about 3,500 feet near hole 21A on the Mill No. 2 claim, extending and outlining the deposit discovered by that hole.

The uneven character of the Brushy Basin shale member, in addition to the wide distribution of landslide masses that include large tilted blocks of conglomeratic sandstone from the Burro Canyon formation, made drilling difficult. Friable, pebbly sands in the Brushy Basin member tended to pack around and jam the drill rods. Caving and high water loss generally was common, especially in the upper part of holes starting in the Brushy Basin member or in landslide masses.

When Geological Survey drilling was concluded in January 1952, about 30 percent of the total footage had been used to appraise the ground, about 25 percent to find the deposits on favorable ground, and about 45 percent to outline the deposits. Of the 651 holes drilled, 67 (10 percent) were in ore, 117 (18 percent) were in mineralized rock too thin or too low grade to be classed as ore, and 467 (72 percent) were classed as barren.

The indicated and inferred reserves of ore, 1 foot or more thick and containing 0.10 percent or more U_3O_8 and 1.0 percent or more V_2O_5 attributable to Geological Survey drilling, amount to about 1.2 tons per foot drilled.

RESERVES

The terms "indicated" and "inferred" reserves are applied to the uranium- or vanadium-bearing material in the deposits that are known from exposures in natural outcrops, mine workings, or drill holes. These reserves are subdivided by thickness and grade cutoffs, and the method used in calculating them is explained below. A summary of the reserves and their contained metals is shown in table 1, page 7.

Reserves that are extensions of workings existent prior to the Geological Survey drilling program probably amount to several thousand tons, but because they are relatively small and are being mined at the time this report is written, they are not calculated. The ore found by United States Vanadium Co. drilling around Geological Survey discovery hole 21A, however, is calculated and included in the reserve estimates because it represents a relatively large body that is still in great part unmined. Since January 1952, the date of the most recent drilling and mining information included in this report, the United States Vanadium Co. has reportedly done some drilling on the Half Shot, Mill No. 3, and Mill No. 4 claims near Geological Survey discoveries and cut ore in several holes. The incorporation of these new data in the present report would not materially alter the overall reserve picture, and likely it would only change some tonnage from the inferred to indicated classification.

In addition to the known deposits, probably other deposits exist which have not yet been found. These deposits are predicted solely on the basis of interpretation of geologic evidence, for there is no physical proof of

their existence. The term "potential" reserves is applied to the material in these deposits. Potential reserves are described on page 36.

Reserves are not classed in this report according to their availability for mining, although consideration was given to the 1951 mining and milling practices in selecting the thickness and higher grade cutoffs. This was done to obtain figures for one category of reserves that would express as nearly as possible the tonnage and grade of the material that might actually be mined from these deposits under 1951 conditions.

Indicated and inferred reserves

Definitions

Known reserves are classed as indicated and inferred. Owing to the erratic variations in thickness and grade of carnotite ore within short distances, and the general lack of abundant sample data for individual reserve blocks, the amount of reserves that can be calculated with a small limit of error, and thus can be classed as "measured" is so small as to be nearly negligible; therefore, reserves that might be classed as measured are included with indicated reserves.

Indicated reserves _/ are those for which the grade is computed

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_/ The definitions used here for indicated and inferred reserves are abstracted from the definitions adapted by the U. S. Bureau of Mines and the U. S. Geological Survey in April 1943.

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from drill-hole samples, exposures in mine workings and natural outcrops, and production data, and for which the tonnage is computed by projection

for a reasonable distance on geologic evidence from points of exposure (drill holes, mine workings, and natural outcrops).

Inferred reserves are those for which quantitative estimates are based largely on knowledge of the geologic character of the deposits and for which there are few, if any, samples or measurements.

Because of the variations in thickness and grade of ore and the lack of abundant sample data, the actual reserves in any single indicated reserve block might amount to as much as twice the calculated tonnage or as little as one-half the calculated tonnage. The percent of error is likely to be large in the small blocks and small in the large blocks. The limit of error of the total tonnage for several blocks, however, is likely to be 25 percent or less of the calculated tonnage. The limit of error in the tonnage figures is apt to be higher for inferred reserves than for indicated reserves. The limit of error in the grade figures for both indicated and inferred reserves is probably smaller than the limit of error in the tonnage figures.

Thickness cutoff

Although mining practices vary from place to place in the region as well as with individual operators, with the 1951 price schedules (Atomic Energy Commission, 1951) most ore bodies of average grade are being mined to where they pinch to a layer about 1 foot thick. Reserves, therefore, are classed by thickness as those that are 1 foot or more thick and those that are less than 1 foot thick. Layers of ore less than 1 foot thick are mined in places if the grade of the ore is high.

Grade cutoffs

The deposits are valued for two metals, uranium and vanadium. These metals occur on Club Mesa in an average ratio of about 1 part U_3O_8 to about 5 parts V_2O_5. Within the deposits, however, these metals are so erratically distributed that a single sample, such as obtained from a drill hole, is not necessarily representative of the grade or metal ratio of ore near the point sampled. Knowing this, the miner will drive to a drill hole that shows a good vanadium value, even though the uranium content of the sample might be negligible. Thus the material in the vicinity of this sample must be classed as ore reserves for both metals, even though the sample shows a value for only one metal. Furthermore, with the 1951 price schedule for ore (Atomic Energy Commission, 1951) the vanadium content of ore containing the normal metal ratio for Club Mesa constitutes about one-third of the market value of the ore. Thus, both metals must be considered in reserve appraisals and in selecting grade cutoffs.

Reserves 1 foot or more thick are classified by two grade cutoffs. The higher cutoff used--0.10 percent U_3O_8 or 1.0 percent V_2O_5--corresponds to the Atomic Energy Commission purchase cutoff for uranium and the Monticello, Utah, mill cutoff for vanadium. Reserves also are calculated at a lower cutoff--0.05 percent U_3O_8 or 0.5 percent V_2O_5--because conditions in the future might demand or permit the acceptance of lower grade ore.

Reserves less than 1 foot thick, calculated at a cutoff equivalent to a 1-foot layer containing 0.10 percent U_3O_8 or 1.0 percent V_2O_5, were found to total only several hundred tons on Club Mesa and therefore are not reported in the reserve table.

Calculation of tonnage

The method of calculating the volume, and hence the tonnage, of a deposit is based on the premise that the ore deposits are tabular. The average thickness of the ore cut by the drill holes in a deposit is assumed to be the average thickness of the deposit. Where core recovery is low, gamma-ray data (table 4) may help in estimating the actual thickness of ore in the hole. By definition the tonnage of indicated reserves "is computed by projection for a reasonable distance on geologic evidence." In general the distance that indicated reserves can reasonably be projected is a function of the characteristic size of the deposits in the area under consideration. In the northern half of the mesa indicated reserves are projected between drill holes that are not more than 100 feet apart. In the favorable belt that crosses the mesa from east to west (fig 2.), however, indicated reserves are commonly projected between drill holes as much as 150 feet apart, and in a few cases between holes as much as 250 feet apart. Where the edge of the deposit has not been located, indicated reserves are not projected more than 50 feet. Reserves are classed as inferred rather than indicated if the projection exceeds these distances. Inferred reserves are projected to the assumed limits of the deposit, as determined by geologic evidence and interpretation.

Although a single drill hole in ore obviously permits the designation of some tonnage of indicated reserves, there is no reasonable basis for projecting an indicated reserve block more than a few feet from a single hole. Rather than calculate such an indicated block separately,

or assign a small but arbitrarily selected amount of indicated reserve to a single hole, the reserve block is projected to its assumed limits and the ore calculated and classed as inferred.

A constant of 14 cubic feet per ton is used to calculate tonnage.

Calculation of grade

Grades have been calculated mainly from chemical assay data, supplemented in part by the gamma-ray data given in table 4. If the deposit has been partly mined, or is thought to be comparable to mined deposits, the grade of the ore mined is also considered in establishing the grade of the deposit.

The average grade of the indicated reserves is calculated by weighting the assay values of all samples that qualify as reserves within the grade and thickness limits. Strict grade cutoffs are used in calculating reserves 1 foot or more thick. Except as noted in the following paragraph, no material belonging to a class with a lower cutoff is included with material of a higher cutoff class, even though the weighted average grade of the whole is above the grade cutoff of the higher class.

A layer of material that is below the grade cutoff and not more than 1 foot thick between two layers of ore, the three layers totaling 1 foot or more in thickness, is included with the ore in calculating reserves. The combination of three layers is classed according to the weighted average of the three grades. If the middle layer of waste or low grade is more than 1 foot thick, it probably would be blasted separately from the ore layers, and so ore layers more than 1 foot apart are calculated as separate bodies.

The grade assigned to the inferred reserves is based mainly on the grade of indicated reserves in the same block or in adjacent blocks.

As strict grade cutoffs are used, the average grade assigned to the reserve blocks is likely to be higher than the average grade of ore mined from these blocks, owing to unavoidable dilution with low grade and waste rock during mining. On the other hand, the tonnage assigned to these blocks is likely to be lower than the tonnage mined from them, owing to the increment of low grade or waste material.

Reserve blocks

Masses of mineralized rock that constitute indicated or inferred reserves, as defined by the thickness and grade cutoff, are called reserve blocks. The geometric limits of reserve blocks are determined by the rules used in calculating reserves, (See above.) The carnotite-bearing ground that contains the blocks is designated by block numbers, as shown in figures 2, 3, 4, 5, and 6, but the exact position of the blocks in this ground is not shown. Figures expressing the calculated tonnage and grade of the indicated and inferred reserves for each reserve block are given in table 3. Two or more contiguous or overlapping masses of reserves are assigned a single block number. The numbering of blocks used in preliminary reserve statements (Bryner and Cramer, 1951 and 1952; Trace, 1950) has been retained. However, in this report, the subdivision of blocks into "A" and "B" corresponds to their subdivision into public and private land, respectively.

Table 3.--Indicated and inferred reserves of Club Mesa,
Montrose County, Colorado
(based on U. S. Geological Survey exploration 1948-52, except as noted)

Block No.	Location	INDICATED						INFERRED					
		1 foot or more thick						1 foot or more thick					
		Grade cutoff 0.10% U_3O_8 or 1.0% V_2O_5			Grade cutoff 0.05% U_3O_8 or 0.5% V_2O_5			Grade cutoff 0.10% U_3O_8 or 1.0% V_2O_5			Grade cutoff 0.05% U_3O_8 or 0.5% V_2O_5		
		Short tons	Percent U_3O_8	Percent V_2O_5	Short tons	Percent U_3O_8	Percent V_2O_5	Short tons	Percent U_3O_8	Percent V_2O_5	Short tons	Percent U_3O_8	Percent V_2O_5
1 A	Public land	12,000	0.30	1.7	19,000	0.24	1.5	5,000	0.30	1.7	5,000	0.30	1.7
1 B	Buck Shot claim	700	0.30	1.7	1,600	0.16	1.1	2,000	0.30	1.7	4,000	0.17	1.2
2	Public land	900	0.55	2.9	1,000	0.50	2.7	100	0.55	2.9	2,000	0.20	1.0
3 A	Public land	13,000	0.45	2.3	15,000	0.37	2.0	2,500	0.45	2.3	2,500	0.45	2.3
3 B 1/	Mill No. 2 claim	18,000	0.40	1.8	26,000	0.29	1.4	4,500	0.40	1.8	4,500	0.40	1.8
4	Public land	4,000	0.20	1.3	6,000	0.15	1.1	3,000	0.20	1.3	4,500	0.15	1.0
5 East	Public land	35,000	0.30	2.0	54,000	0.21	1.6	8,000	0.30	2.0	10,000	0.24	1.7
5 West	Public land	20,000	0.50	2.5	35,000	0.31	1.7	4,000	0.50	2.5	15,000	0.17	1.1
6	Public land	11,000	0.40	2.5	13,000	0.35	2.2	2,000	0.40	2.5	2,000	0.40	2.5
7	Public land	4,000	0.20	1.7	8,000	0.13	1.1	5,000	0.20	1.7	6,500	0.16	1.3
8	Public land	13,000	0.30	1.5	36,000	0.14	0.9	25,000	0.30	1.5	25,000	0.30	1.5
9	Mill No. 4 claim	200	0.30	1.8	200	0.30	1.8	2,000	0.30	1.8	2,000	0.30	1.8
10	Public land	0	——	——	500	0.08	0.4	1,000	0.35	2.0	3,500	0.16	0.9
11	Public land	0	——	——	0	——	——	900	0.30	1.7	900	1.30	1.7
12	Public land	0	——	——	0	——	——	0	——	——	200	0.50	2.5
13	Joe Junior claim	0	——	——	0	——	——	250	0.20	1.5	600	0.11	0.8
14	Public land	0	——	——	0	——	——	250	0.34	1.2	250	0.34	1.2
15	Public land	0	——	——	100	0.05	0.5	0	——	——	0	——	——
16	Public land	200	0.15	1.0	200	0.15	1.0	500	0.15	1.0	500	0.15	1.0
17	Public land	0	——	——	0	——	——	0	——	——	500	0.15	1.0
18	Lost Horse claim	0	——	——	0	——	——	0	——	——	150	0.06	0.4
	Totals and averages (rounded)	132,000	0.36	1.9	216,000	0.24	1.5	66,000	0.32	1.7	89,000	0.24	1.4

1/ Ore blocked out by U. S. Vanadium Co. drilling around a U. S. Geological Survey discovery hole

Club Mesa reserves

Indicated and inferred reserves

Geological Survey drilling discovered and outlined three major deposits--Blocks 3A-3B and 5 East-5 West (fig 3), and Block 8 (fig. 4); four deposits of intermediate size--Block 1A-1B (fig. 5), Blocks 4 and 6 (fig. 3), and Block 7 (fig. 6.); and eleven small deposits Blocks--2, 16, and 17 (fig. 6), Blocks 9, 10, 11, and 12 (fig. 3), and Blocks 13, 14, 15, and 18 (fig. 2).

The largest deposits on the mesa are in the main ore-bearing sandstone in the belt of favorable ground that crosses the mesa between the Club and Tramp mines (fig. 2). The main deposits discovered by Geological Survey drilling southwest of the Club mine are similar in size and habit to the bodies developed in the Club mine. In these newly discovered deposits most of the tonnage is probably in rolls as much as 15 feet thick. In overall thickness the deposits probably average 3 to 5 feet. The rolls in the Club mine trend about N. 70° E. Southwest of the Club mine, however, the roll-trend more nearly approaches due east or slightly south of east. This is true at least of the Tramp mine and Blocks 3A-3B and 5 East, where rolls can be examined in the workings (fig. 3). These workings also show that rolls in Blocks 3A-3B and 5 East range from 10 by 50 feet to 50 by 200 feet in lateral dimensions, and reach 12 feet in thickness. The largest roll was found in Block 5 East. Block 8, in this favorable belt, probably is intermediate in size between the Tramp mine deposit and Block 5 East-5 West, and resembles these deposits. The thickest mineralized interval known in Block 8 is 12 feet. In its thickest part the deposit probably averages about 4 feet of

ore-grade material. Along the northern edge of the favorable belt, which includes the ore blocks and mines described above, the deposits tend to be smaller than the deposits along the central and southern edge of this belt. Figures 3 and 4 show detailed maps and geologic sections of the deposits in this main favorable belt.

Block 1A-1B in the main ore-bearing sandstone in the Buck Shot claim locality (fig. 5) probably consists mainly of rolls averaging 4 or 5 feet thick connected by layers of mineralized rock about 1 foot thick. Most of the rolls so far opened in the deposit have a northeasterly orientation. At hole 243, however, the roll orientation is only a few degrees east of north. The largest roll revealed by the present workings is 30 by 120 feet in its lateral dimensions, and 7 feet in its thickest part. Most of the tonnage so far extracted from Block 1A-1B was in this large roll. The ore from this roll consisted of rusty-looking sandstone containing very little visible carnotite and practically no visible gray vanadium minerals. According to the miners this rock averaged about 0.1 percent U_3O_8 but by mining it together with the layers of dark, higher grade ore commonly adjacent to it, an average shipping grade of 0.31 percent U_3O_8 and 1.58 percent V_2O_5 was maintained. A detailed map and geologic sections of Block 1A-1B are shown in figure 5.

In the Shamrock mines in the northeastern part of the mesa (fig. 2) the ore is in rolls 3 to 4 feet thick connected by tabular layers less than 1 foot thick. These rolls rarely exceed 30 feet in their widest dimension, 5 to 10 feet being the common width. Roll orientation and the belt occupied

by the deposits both have a southeasterly trend. Block 2 (fig. 2 and 6), discovered in the main ore-bearing sandstone by Geological Survey drilling on public land, is similar in size and habit to the Shamrock mine deposits. The deposit appears, however, from its north-south elongation, more likely to contain south-trending rolls than southeast-trending ones such as are common in the Shamrock mine area.

The wide vertical distribution of mineralized rock in hole 155 of Block 7 (fig. 6) and the habit of other deposits on Club Mesa suggest that this deposit also contains rolls. The orientation of the deposit and its crescentic outline suggest roll orientations from northwesterly in the western to northeasterly in the eastern parts of the deposit. In areal extent and habit, Block 7 resembles Block 1A-1B more than it resembles the Shamrock mine deposits. Assays of diamond-drill core from Block 7 show that this deposit is lower grade and has a lower U_3O_8:V_2O_5 ratio than the other deposits on the mesa. Like the other large deposits on the mesa, Block 7 is in the main ore-bearing sandstone.

The only deposit definitely not in the main ore-bearing sandstone discovered by Geological Survey drilling is the small one in Block 15 (fig. 2). This deposit is in a sandstone bed a short interval below the stratigraphic position of the main ore-bearing sandstone.

The deposits discovered by Geological Survey drilling range in depth from 55 to 565 feet. Depths from the surface to the ore in the drill holes are given in table 4.

Ore blocks discovered by Geological Survey drilling on Club Mesa are described individually in preliminary reserve statements (Bryner and Cramer, 1951 and 1952; Trace, 1950).

Potential reserves

Potential reserves are in the undiscovered deposits which are predicted solely on geologic evidence. Estimates of this type of reserve are for mineralized rock 1 foot or more thick, containing 0.10 percent or more U_3O_8 or 1.0 percent or more V_2O_5. The potential reserves of Club Mesa are estimated at 40,000 tons averaging about 0.35 percent U_3O_8 and 1.9 percent V_2O_5. About 30,000 tons of these reserves is predicted to be in the main favorable belt in the relatively unexplored areas between Block 8 and the surrounding deposits (fig. 2). About 5,000 tons is predicted for the Mill No. 3 and Mill No. 4 claims and unexplored parts of the two leased areas west of the Mill No. 4 claim, and about 3,000 tons for the large semifavorable area that includes the Shamrock mines. Also included under the heading of potential reserves is 2,000 tons in the Half Shot claim. This latter is not strictly a potential reserve estimate, as the report of a discovery by company drilling on the Half Shot claim adds factual support to the existence of undescribed reserves in this area (p. 25).

PLAN AND RECOMMENDATIONS

No further drilling is planned on Club Mesa by the Geological Survey, but some exploration by private companies, either by drilling or by extension of underground workings, is recommended. The most promising area for such exploration is the main belt of favorable ground that crosses the mesa between the Club and Tramp mines. In this belt there are five favorable though weakly mineralized holes (147, 570, 574, 609, and 615) that have not been offset by other holes and that quite possibly are in unproven deposits

of minable size and grade. Also in this belt there is a fair chance that Block 8 has undiscovered extensions to the west and to the north, and that undiscovered satellitic bodies lie to the west and south of this block. An area of less promise but some possibility is the large semifavorable area bordering the favorable belt on the north. This area is large enough to contain small deposits that have not been found by Geological Survey drilling. Another area that may contain minable deposits is the Half Shot claim and some of the ground east of it. The ore-bearing sandstone is fairly close to the surface here and could be explored in part by wagon-drill holes.

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Table 4.--Assay data, Club Mesa, Montrose County, Colorado

Geological Survey exploration, 1948-52. Assays by the Geological Survey 1948-52. Samples in sandstone unless otherwise noted.

U. S. Vanadium Co. exploration, 1948-49. Assays by the U. S. Vanadium Co., 1948-49. Hole numbers have the prefix V or S.

Rock units containing less than 0.020% U_3O_8, less than 0.020% equivalent U_3O_8, and less than 0.10% V_2O_5, as determined by assay of drill core, are considered to be barren. Barren holes and rock units are omitted from this table.

Gamma-ray data obtained by probing drill holes with a radiometric logging unit. Radioactivity expressed as percent equivalent U_3O_8. Values less than 0.020% eU_3O_8 are omitted from this table.

Assay data listed under "block" (i.e. Block 1A) are within the blocks of calculated reserves.

Assay data listed under "other holes" are within areas from which no reserves were calculated because the samples recovered are too thin or too weakly mineralized to qualify for the selected grade and thickness cutoffs.

Most collar elevations obtained by transit and stadia survey methods; others by less accurate methods shown with asterisk.

e Equivalent

< Less than

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 1A, Public land										
91 (5,938)	61.1	63.4	2.3[a]	0.020	0.26	3.27	Not probed			
	63.4	64.3	0.9	0.15 [b]	2.0 [b]	Undet.				
	64.3	64.4	0.1	0.401	3.70	0.57				
142 (5,943)	78.2	79.2	1.0	0.140	1.52	1.52	Not probed			
	79.2	79.5	0.3	0.020	<0.1	3.1				
161 (5,937)	69.0	71.2	2.2	0.65	4.38	1.08	Not probed			
198 (5,929)	67.8	68.0	0.2	< 0.020	1.25	0.13	Not probed			
	74.6	74.9	0.3	< 0.020	0.17	1.55				
	79.7	80.5	0.8[a]	< 0.020	0.19	9.4				
	84.7	85.0	0.3[a]	0.024	0.17	6.3				
214 (5,926)	66.6	67.0	0.4	< 0.020	0.19	3.2	Not probed			
	68.1	70.6	2.5	0.022	0.31	3.0				
	70.6	71.9	1.3	0.18	0.61	5.7				

a/ Sample in mudstone

b/ Estimated value. Sample taken by Atomic Energy Commission for thermo-conductivity tests, but not saved for assay

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 1A, Public land--Continued										
226	67.6	70.0	2.4	0.036	0.25	3.7	Contaminated	64.0	70.5	6.5
(5,935)	70.0	70.7	0.7	0.50	2.59	1.17	0.47	70.5	73.0	2.5
	70.7	71.3	0.6	0.23	2.25	1.29	0.40	73.0	73.7	0.7
	71.3	72.4	1.1	0.50	1.26	2.04	0.94	73.7	74.5	0.8
	72.4	72.6	0.2	0.53	2.06	1.33				
	72.6	73.6	1.0	0.30	1.17	2.42				
	73.6	74.1	0.5	0.66	2.16	1.65				
	74.1	74.4	0.3	< 0.020	0.73	1.78				
229	61.4	62.6	1.2	0.056	0.23	3.0	0.038	58.0	58.8	0.8
(5,932)	62.6	63.3	0.7	0.20	2.85	0.22				
	63.3	65.3	2.0	0.033	0.21	0.42	0.080	60.2	61.6	1.4
							1.1	61.6	62.4	0.8
	66.0	67.0	1.0	< 0.020	0.11	2.02	0.056	62.4	64.2	1.8
230	58.2	58.5	0.3	< 0.020	1.55	0.27	Not probed			
(5,929)	58.5	59.2	0.7	0.39	3.37	0.12				
	59.2	59.4	0.2	0.14	3.32	0.05				
	59.4	59.9	0.5	0.054	2.73	0.09				
	59.9	60.4	0.5	0.18	2.72	0.09				
	60.4	60.6	0.2	0.87	2.01	0.16				

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	V_2O_5	$CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 1A, Public land--Continued										
236 (5,934)	56.7	57.3	0.6	< 0.020	0.34	3.5	Not probed			
	57.3	57.5	0.2	0.50	3.02	0.36				
	57.5	58.2	0.7	0.81	2.42	2.6				
	58.2	58.4	0.2	0.44	0.91	4.0				
	58.4	59.0	0.6	0.20	0.87	3.7				
	59.0	60.7	1.7[a/]	< 0.020	0.29	1.05				
237 (5,948)	69.2	70.4	1.2	0.024	0.35	2.8	Not probed			
238 (5,949)	68.9	71.2	2.3	0.082	0.31	5.3	Not probed			
	71.2	72.1	0.9	0.36	1.51	5.4				
	72.1	73.2	1.1	0.028	0.37	6.3				
	73.2	74.1	0.9	< 0.020	0.13	2.5				

a/ Sample in mudstone

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 1A, Public land--Continued										
243 (5,932)	69.0	69.8	0.8	<0.020	0.28	4.8	Not probed			
	70.0	71.9	1.9	0.16	4.24	0.61				
	71.9	72.4	0.5	0.35	3.27	1.04				
	72.4	72.8	0.4	0.24	3.86	0.75				
	72.8	73.6	0.8	0.10	0.70	2.8				
	73.6	74.1	0.5	0.24	0.62	2.7				
	74.1	74.3	0.2	0.15	1.28	2.9				
	74.3	74.5	0.2	0.18	3.67	1.18				
	74.5	75.0	0.5	0.28	2.90	2.06				
	75.0	76.4	1.4	0.060	0.60	4.0				
	76.4	76.8	0.4	0.36	3.84	0.37				
	76.8	77.3	0.5	0.040	0.67	4.3				
	81.0	81.6	0.6	<0.020	0.23	12.1				
246 (5,941)	75.9	77.7	1.8	0.15	0.39	4.9	Not probed			
	77.7	78.3	0.6	0.027	0.15	4.8				
251 (5,939)	76.4	79.2	2.8	0.041	0.18	5.9	0.090	75.2	76.0	0.8
							0.065	76.0	76.5	0.5
	81.4	82.7	4.3	0.048	0.43	4.0	0.83	79.4	80.3	0.9

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	V_2O_5	$CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 1A, Public land--Continued										
253 (5,938)	76.0	77.1	1.1	0.050	0.48	2.49	Not probed			
	77.1	77.4	0.3	0.28	1.23	1.08				
	77.4	79.1	1.7	0.094	0.65	2.42				
	79.1	80.8	1.7	0.17	1.34	1.37				
	80.8	81.4	0.6	0.24	2.43	0.43				
	81.4	83.2	1.8	0.059	0.68	2.24				
	83.2	83.7	0.5	0.18	2.48	0.48				
	83.7	84.2	0.5	0.50	2.32	1.90				
	84.2	84.4	0.2	0.32	2.04	1.70				
	84.4	84.9	0.5	0.35	1.69	1.62				
	84.9	87.5	2.6	0.20	1.10	1.46				
	87.5	88.6	1.1	0.043	1.62	1.61				
	88.9	89.4	0.5	<0.020	0.13	7.2				
	94.1	94.4	0.3	<0.020	0.58	4.8				
	94.4	94.8	0.4	0.11	4.26	3.9				
	94.8	95.0	0.2[a/]	<0.020	0.21	4.0				
259 (5,942)	94.8	95.3	0.5	0.021	0.11	9.6	0.94	90.0	90.7	0.7
	95.8	97.9	2.1	0.026	0.28	6.4				

a/ Sample in mudstone

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 1A, Public land--Continued										
262 (5,938)							0.067	72.4	73.1	0.7
263 (5,919)	50.9	52.6	1.7	0.032	0.37	1.10	Not probed			
	52.8	53.4	0.6	0.61	3.82	0.22				
268 (5,945)							0.075	99.1	100.0	0.9
274 (5,940)	86.4	86.8	0.4[a]	<0.020	0.11	2.00				
Block 1B, Buckshot claim										
89 (5,965)	77.3	77.6	0.3	0.048	<0.10	1.11	0.078	76.1	77.1	1.0
	84.5	86.4	1.9	0.023	0.27	9.37	0.038	84.0	85.2	1.2
248 (5,918)	53.4	54.1	0.7	<0.020	0.21	2.5	Not probed			
	54.4	55.7	1.3	0.041	0.66	1.61				
	55.7	56.2	0.5	0.080	0.61	1.08				
	56.2	57.0	0.8	0.032	0.16	2.6				

a/ Sample in mudstone

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	V_2O_5	$CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 1B, Buckshot claim--Continued										
249 (5,944)	71.2	72.2	1.0	0.033	0.65	2.25	0.032	0.4	1.2	0.8
							0.12	70.9	71.5	0.6
S-85 (5,942)	40.7	41.2	0.5	<0.020	0.18	Undet.	Not probed			
	41.2	42.8	1.6	<0.020	0.35	Undet.				
S-86 (5,941)	40.0	40.5	0.5	0.02	Trace	Undet.	Not probed			
Block 2, Public land										
231 (5,670)	128.6	129.1	0.5	<0.020	0.14	1.58	Not probed			
	129.1	129.5	0.4	0.075	0.29	0.41				
	129.5	130.2	0.7	0.021	0.26	5.2				
	130.2	130.5	0.3	0.97	2.56	0.38				
	130.5	133.4	2.9	<0.020	0.29	5.4				
	133.4	134.7	1.3	0.022	0.11	5.8				
	134.7	135.0	0.3	0.13	0.32	6.5				
	135.0	136.4	1.4	0.74	1.67	4.6				
	136.4	136.6	0.2	0.30	0.39	7.2				
	136.6	138.2	1.6	0.033	0.11	8.9				
	140.4	141.6	1.2	0.053	0.24	16.3				

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 2, Public land--Continued										
252 (5,666)	124.2	124.8	0.6	< 0.020	0.18	1.90	0.99	124.0	125.2	1.2
	124.8	125.	0.2	< 0.020	0.57	0.95				
	125.0	125.3	0.3	0.40	4.50	0.21				
	125.3	125.7	0.4	1.77	7.41	0.45				
	125.7	126.1	0.4	1.60	7.01	0.43				
	126.1	126.6	0.5	0.65	8.86	0.21				
	126.6	127.1	0.5	0.28	4.18	0.24				
	127.1	127.7	0.6	0.44	2.17	0.48				
258 (5,690)	147.1	148.5	1.4	0.18	0.31	4.9	Not probed			
294 (5,654)	124.2	125.9	1.7	< 0.020	0.13	11.8	Not probed			
295 (5,690)	152.9	155.2	2.3	0.045	0.11	3.2	Not probed			
	155.2	157.6	2.4	< 0.020	0.11	4.1				

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	V_2O_5	$CaCO_3$	Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 3A, Public land										
171A (5,944)	204.3	204.6	0.3	< 0.020	0.21	5.5	Not probed			
	210.6	210.8	0.2	< 0.020	0.29	0.29				
	212.8	213.4	0.6	< 0.020	0.53	0.59				
	213.4	213.8	0.4	1.23	15.00	0.19				
	213.8	214.5	0.7	0.077	5.76	0.26				
	214.5	218.1	3.6	< 0.020	1.08	0.17				
	218.1	219.9	1.8	2.54	7.25	0.48				
	219.9	220.6	0.7	0.13	7.26	0.28				
	220.6	221.4	0.8	0.42	6.16	0.33				
	221.4	221.7	0.3	0.84	2.52	0.23				
	221.7	222.0	0.3	1.40	2.25	0.24				
	222.0	222.4	0.4	0.77	2.16	0.27				
	222.4	225.2	2.8	0.034	0.27	0.48				
	225.9	226.6	0.7	< 0.020	0.19	2.6				
	226.9	227.9	1.0	< 0.020	0.20	3.2				
	228.2	228.4	0.2	< 0.020	0.17	3.4				
	230.4	232.4	2.0 c/	< 0.020	0.25	1.21				

c/ Sludge sample

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	V_2O_5	$CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 3A, Public land--Continued										
176 (5,943)	211.0	211.8	0.8	< 0.020	0.20	3.0	Not probed			
	212.6	213.9	1.3	< 0.020	3.98	0.19				
	215.4	216.4	1.0	< 0.020	0.44	7.5				
217 (5,951)	206.4	207.0	0.6	< 0.020	0.21	9.1	Not probed			
	208.1	208.4	0.3	< 0.020	0.12	0.35				
	224.9	225.1	0.2	< 0.020	0.23	8.7				
299 (5,949)	214.1	215.2	1.1	0.036	0.14	0.72	Not probed			
	219.8	220.1	0.3	0.024	0.24	0.24				

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	V_2O_5	$CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 3A, Public land--Continued										
305 (5,944)	206.4	207.0	0.6[a]	< 0.020	0.34	1.18	Not probed			
	216.3	216.4	0.1	< 0.020	0.13	2.26				
	216.4	218.5	2.1	0.039	1.05	0.66				
	218.5	218.8	0.3	0.027	0.57	0.08				
	218.8	219.2	0.4	0.20	0.79	0.10				
	219.2	219.7	0.5	0.10	1.18	0.07				
	219.7	220.0	0.3	0.19	3.27	0.13				
	220.0	221.0	1.0	0.16	1.36	0.15				
	221.0	221.5	0.5	0.073	1.10	0.11				
	221.5	223.4	1.9	< 0.020	0.84	1.91				
	223.4	224.2	0.8	< 0.020	0.31	7.7				
	224.7	225.2	0.5	< 0.020	0.18	9.8				
307 (5,960)	201.0	201.3	0.3	< 0.020	0.10	0.19	Not probed			
	221.0	221.6	0.6	0.024	0.88	0.85				
	221.6	223.6	2.0	< 0.020	0.18	1.50				
	224.9	229.0	4.1	< 0.020	0.48	4.65				

a/ Sample in mudstone

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 3B, Mill No. 2 claim										
14 (5,940)	209.2	210.6	1.4	0.020	< 0.10	1.07	Not probed			
21A (5,936)	178.5	179.8	1.3	0.020	< 0.10	7.2	Not probed			
	179.8	180.1	0.3	0.17	0.30	2.8				
	180.1	181.3	1.2[a/]	< 0.020	0.10	13.9				
	211.4	212.6	1.2	0.040	0.31	1.58				
	212.8	213.9	1.1	0.960	6.92	0.45				
	213.9	214.7	0.8	0.84	1.17	0.93				
	214.7	217.6	2.9	0.030	0.11	2.91				
	217.6	217.8	0.2	0.51	0.66	2.29				
	217.8	218.0	0.2	1.46	1.65	1.82				
	218.0	218.4	0.4	0.53	1.54	0.22				
	218.4	219.9	1.5	0.14	0.71	0.18				
	219.9	220.8	0.9	0.05	0.37	0.67				
	221.8	222.3	0.5	< 0.020	1.92	0.11				
	222.3	223.2	0.9	0.05	0.10	1.00				
	223.2	223.5	0.3	0.19	< 0.10	2.28				
	223.5	225.4	1.9	0.03	< 0.10	6.47				
	231.1	231.5	0.4	< 0.020	0.11	17.4				

a/ Sample in mudstone

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 3B, Mill No. 2 claim--Continued										
25 (5,937)	203.4	205.4	2.0	0.046	0.32	0.54	Not probed			
	210.5	212.9	2.4	0.020	<0.10	3.70				
V-241 (5,938)	211.2	211.7	0.5	0.02	0.53	Undet.	Not probed			
	211.7	214.0	2.3	0.50	1.49	Undet.				
	214.0	218.0	4.0	0.31	1.85	Undet.				
	218.0	222.0	4.0	0.05	0.54	Undet.				
V-242 (5,938)	217.0	218.0	1.0	0.69	2.67	Undet.	Not probed			
	218.0	225.0	7.0	Undet.	Undet.	Undet.				
	225.0	229.0	4.0	0.03	0.16	Undet.				
V-243 (5,932)	205.0	209.0	4.0	0.04	0.25	Undet.	Not probed			
	209.0	212.5	3.5	0.13	1.06	Undet.				
	212.5	215.2	2.7	0.03	0.51	Undet.				
	215.2	219.8	4.6	0.06	0.20	Undet.				
V-244 (5,937)	216.0	216.7	0.7	0.05	1.69	Undet.	Not probed			
	216.7	224.1	7.4	0.04	0.21	Undet.				
	224.1	225.1	1.0	1.16	3.62	Undet.				
	225.1	232.0	6.9	0.10	0.26	Undet.				
V-245 (5,937)	219.3	219.9	0.6	0.11	0.26	Undet.	Not probed			
	219.9	222.3	2.4	0.09	0.86	Undet.				

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 3B, Mill No. 2 claim--Continued										
V-246 (5,938)	214.9	216.7	1.8	0.51	2.63	Undet.	Not probed			
	216.7	217.8	1.1	0.48	2.14	Undet.				
	217.8	219.2	1.4	0.18	0.80	Undet.				
	219.2	219.7	0.5	0.10	1.02	Undet.				
V-247 (5,936)	209.7	213.0	3.3	0.09	2.20	Undet.	Not probed			
	213.0	220.0	7.0	0.03	0.29	Undet.				
	220.0	223.0	3.0	<0.020	0.64	Undet.				
	223.0	223.9	0.9	0.12	1.44	Undet.				
	223.9	225.7	1.8	0.29	0.68	Undet.				
V-248 (5,937)	217.0	219.7	2.7	1.30	3.26	Undet.	Not probed			
	219.7	220.4	0.7	0.36	0.55	Undet.				
	220.4	222.1	1.7	0.16	1.40	Undet.				
V-249 (5,940)	213.0	218.0	5.0	0.02	0.12	Undet.	Not probed			
	223.0	228.0	5.0	0.02	0.28	Undet.				
	228.0	228.5	0.5	0.54	5.40	Undet.				
V-274 (5,939)	203.6	204.1	0.5	0.03	0.21	Undet.	Not probed			
	217.7	219.6	1.9	0.11	0.44	Undet.				

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 3B, Mill No. 2 claim--Continued										
V-275 (5,929)	210.9	211.5	0.6	<0.020	0.36	Undet.	Not probed			
	218.0	219.3	1.3	0.38	2.00	Undet.				
V-277 (5,923)	193.0	193.6	0.6	0.07	0.57	Undet.	Not probed			
	193.9	194.3	0.4	0.16	1.35	Undet.				
	200.9	201.2	0.3	0.05	0.20	Undet.				
V-278 (5,926)	217.0	219.0	2.0	0.02	0.21	Undet.	Not probed			
V-280 (5,922)	189.6	191.0	1.4	0.14	0.99	Undet.	Not probed			
	192.3	196.7	4.4	0.18	0.61	Undet.				
	196.7	199.1	2.4	0.38	1.22	Undet.				
	199.1	201.6	2.5	<0.020	0.16	Undet.				
Block 4, Public land										
132 (5,967)	215.3	215.5	0.2	<0.020	0.48	0.67	Not probed			
	215.5	216.0	0.5	0.048	5.15	0.35				
	216.0	216.1	0.1	0.027	0.66	0.47				

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	V_2O_5	$CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 4, Public land										
186 (5,973)	223.9	228.6	4.7	<0.020	1.37	0.60	Not probed			
	237.6	238.6	1.0	<0.020	0.23	5.9				
	239.8	241.5	1.7	0.033	0.21	6.7				
187 (5,963)	212.3	213.7	1.4	0.026	0.30	1.33	Not probed			
	213.7	214.2	0.5	0.039	1.04	0.64				
	214.2	214.9	0.7	<0.020	0.23	2.40				
191 (5,969)	204.5	205.3	0.8	<0.020	0.24	5.7	Not probed			
	210.3	211.9	1.6	<0.020	0.26	3.3				
	211.9	212.4	0.5	0.24	2.75	0.49				
	212.4	212.7	0.3	<0.020	0.92	0.78				
	212.7	213.2	0.5	0.13	0.89	0.29				
	213.2	213.8	0.6	0.074	0.44	7.4				
	213.8	214.1	0.3	0.13	0.42	8.8				
	214.1	216.1	2.0	0.041	0.57	13.7				
	217.3	218.8	1.5	0.026	0.22	6.1				
	227.5	227.7	0.2	<0.020	0.28	17.6				

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 4, Public land--Continued										
224 (5,981)	227.5	227.7	0.2	<0.020	0.23	1.95	Not probed			
	228.0	228.3	0.3	<0.020	0.23	2.02				
	228.9	229.0	0.1	<0.020	0.17	3.1				
306 (5,954)	207.5	208.0	0.5	<0.020	0.12	0.52	Not probed			
323 (5,943)	201.6	203.4	1.8	0.048	0.53	8.5	Not probed			
	203.4	204.4	1.0	<0.020	0.12	19.6				
Block 5 East, Public land										
119 (6,019)	221.4	221.7	0.3	0.027	3.05	0.43	Not probed			
	221.7	223.6	1.9	0.020	0.12	2.6				

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	V_2O_5	$CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 5 East, Public land--Continued										
308 (6,013)	216.6	218.2	1.6	< 0.020	0.31	4.5	Not probed			
	218.4	219.4	1.0	0.24	5.94	0.12				
	219.4	220.0	0.6	0.20	0.94	0.18				
	220.0	221.4	1.4	0.043	0.42	0.48				
	221.4	222.0	0.6	0.14	2.18	0.25				
	222.0	222.5	0.5	0.020	0.65	2.03				
	223.5	224.8	1.3	0.031	0.24	2.99				
	224.8	227.8	3.0[a]	0.046	0.40	3.8				

a/ Sample in mudstone

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 5 East, Public land--Continued										
315 (6,022)	212.4	214.5	2.1	0.020	0.16	0.35	Not probed			
	217.2	218.0	0.8	< 0.020	0.11	2.29				
	219.3	219.8	0.5	0.080	1.04	0.14				
	219.8	220.8	1.0	0.18	1.16	0.09				
	222.2	222.7	0.5	0.096	0.84	0.41				
	222.7	223.2	0.5	0.41	2.07	0.18				
	223.2	223.8	0.6	0.12	0.88	0.60				
	223.8	224.0	0.2	2.25	1.90	0.36				
	224.0	224.3	0.3	0.55	2.69	0.17				
	224.3	224.5	0.2	0.15	2.29	0.13				
	224.5	225.8	1.3	0.068	1.33	0.17				
	225.8	226.3	0.5	< 0.020	1.32	0.46				
	226.3	226.6	0.3	0.044	0.36	1.71				

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 5 East, Public land--Continued										
316 (6,013)	216.0	216.5	0.5	< 0.020	0.39	1.54	Not probed			
	216.5	216.8	0.3	0.060	0.14	1.16				
	218.3	218.6	0.3	0.10	0.24	0.67				
	218.6	218.8	0.2	0.025	0.44	1.26				
	218.8	219.3	0.5	0.036	2.48	0.27				
	219.3	221.3	2.0	0.095	1.84	0.14				
	221.3	222.1	0.8	0.031	2.38	0.17				
	222.1	222.4	0.3	0.066	0.89	0.06				
	222.4	223.8	1.4	0.12	1.60	0.11				
	223.8	224.4	0.6	0.29	1.86	0.12				
	224.4	225.0	0.6	0.75	4.00	0.41				
	225.0	226.0	1.0	0.092	1.21	0.12				
	226.0	227.5	1.5	0.045	1.14	0.60				

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	V_2O_5	$CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 5 East, Public land--Continued										
319 (6,027)	210.5	211.4	0.9	0.11	2.31	0.38	0.035	209.7	210.6	0.9
	211.4	213.1	1.7	0.23	1.54	0.29	0.14	210.6	212.0	1.4
	213.1	214.0	0.9	0.11	1.02	0.08	0.22	212.0	213.1	1.1
	214.0	216.2	2.2	< 0.020	0.29	2.8	0.20	213.1	213.9	0.8
							0.53	213.9	214.5	0.6
	216.7	217.0	0.3	< 0.020	0.12	5.5	0.027	214.5	218.8	4.3
	217.0	217.6	0.6	0.16	1.35	1.15	0.39	218.8	220.6	1.8
	217.6	220.0	2.4	0.048	0.47	1.02	0.11	220.6	223.1	2.5
							0.44	223.1	224.2	1.1
	222.0	223.3	1.3[a/]	< 0.020	0.27	0.19				
	223.5	224.3	0.8	0.16	1.22	2.09				
	224.3	224.5	0.2	0.022	3.91	0.18				
320 (6,019)	215.2	216.6	1.4	0.025	0.45	0.60	Not probed			
	216.6	219.3	2.7	0.032	0.23	1.27				
	219.3	220.3	1.0	0.042	0.71	0.93				
	220.3	220.8	0.5	0.031	0.20	1.89				
	222.9	223.7	0.8	< 0.020	0.12	1.57				

a/ Sample in mudstone

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 5 East, Public land--Continued										
328 (6,006)	213.0	215.3	2.3	0.020	0.13	3.3	Not probed			
329 (6,019)	217.0	219.5	2.5	0.060	0.89	0.63	Not probed			
	219.5	221.3	1.8	0.090	1.09	0.72				
	221.3	222.0	0.7	1.05	5.05	0.40				
	222.0	222.7	0.7	0.21	3.01	0.10				
	222.7	223.1	0.4	0.13	1.10	0.17				
	223.1	223.5	0.4	0.64	1.14	0.17				
	223.5	225.0	1.5	1.83	4.52	0.20				
	225.0	225.5	0.5	0.35	3.78	0.13				
	225.5	226.0	0.5	0.070	0.58	0.08				
	226.0	227.0	1.0	0.022	0.73	0.10				
	227.0	227.5	0.5	0.37	1.35	0.18				
	227.5	228.0	0.5	0.75	2.30	0.13				
	228.0	230.0	2.0	0.20	1.31	0.50				
	230.0	230.9	0.9	0.047	0.56	22.7				

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 5 East, Public land--Continued										
330 (6,002)	206.6	207.4	0.8	0.048	0.35	1.06	Not probed			
	208.1	208.8	0.7	0.020	0.16	1.26				
	208.8	209.8	1.0	0.098	0.17	1.34				
	209.8	211.2	1.4	0.027	0.25	0.94				
	211.2	212.2	1.0	0.092	1.71	0.26				
	212.2	213.2	1.0	0.060	0.67	0.07				
	213.2	214.2	1.0	0.021	0.20	0.14				
	214.2	215.2	1.0	<0.020	0.67	1.33				
331 (6,001)	192.2	192.8	0.6	<0.020	0.50	0.46	0.062	196.8	198.6	1.8
							0.020	198.6	199.8	1.2
	193.1	193.9	0.8	<0.020	0.23	0.22				
							0.026	200.3	200.8	0.5
	196.7	198.5	1.8	<0.020	0.31	1.33				
	198.5	199.1	0.6	0.052	0.16	2.09				
	199.1	200.4	1.3	0.028	1.01	0.89				
	200.4	201.8	1.4	<0.020	0.22	3.4				
	208.1	209.4	1.3	<0.020	1.00	0.37				
	210.7	211.0	0.3[a]	<0.020	0.20	0.56				

a/ Sample in mudstone

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 5 East, Public land--Continued										
334 (6,025)	201.8	202.1	0.3	0.66	6.14	0.95	Not probed			
	202.1	202.7	0.6	0.24	4.69	0.33				
	202.7	203.2	0.5	0.14	1.80	0.15				
	203.2	204.5	1.3	0.085	2.96	0.20				
	204.5	205.3	0.8	0.059	1.73	0.19				
	205.3	206.8	1.5	0.088	2.47	0.20				
	206.8	207.8	1.0	< 0.020	0.34	1.30				
339A (6,004)	215.2	216.9	1.7	0.022	0.11	0.89	Not probed			
	216.9	218.5	1.6	< 0.020	0.12	1.93				
	218.5	219.5	1.0	0.20	0.60	2.14				
	219.5	220.9	1.4	0.24	1.33	2.39				
	220.9	221.3	0.4	0.51	1.36	5.0				
	221.3	222.7	1.4	0.067	0.20	20.0				
	222.7	223.6	0.9	< 0.020	0.10	24.6				
341 (5,976)	188.0	188.4	0.4	0.53	5.19	0.32	Not probed			
	188.4	188.9	0.5	0.14	1.42	2.6				
	188.9	189.9	1.0	0.049	0.85	4.0				
	191.5	192.3	0.8	0.048	1.25	0.67				
	192.3	194.4	2.1	< 0.020	0.50	11.7				
	194.4	195.8	1.4[a]/	0.023	0.28	27.2				
	196.2	196.5	0.3[a]/	< 0.020	0.13	18.0				

a/ Sample in mudstone

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 5 East, Public land--Continued										
342 (5,982)	195.4	196.3	0.9	0.048	1.36	0.21	Not probed			
	196.3	196.6	0.3	0.021	0.31	0.17				
343 (5,979)	185.5	186.9	1.4	0.026	< 0.10	2.6	Not probed			
	186.9	188.7	1.8	0.061	0.11	0.70				
	188.7	191.0	2.3[a]	0.025	0.36	3.9				
Block 5 West, Public land										
105A (6,027)	223.1	223.5	0.4	0.036	0.13	2.9	Not probed			
	224.3	224.6	0.3	< 0.020	0.12	2.21				
	225.6	227.3	1.7[a]	< 0.020	0.10	0.74				
	229.6	230.3	0.7	0.034	0.35	1.08				
	234.2	238.9	4.7	0.053	0.10	5.3				
116 (6,044)	234.1	236.2	2.1	0.025	0.13	1.60	Not probed			
	237.3	238.7	1.4	0.03	0.06	3.28				
	242.5	244.2	1.7	0.243	1.55	0.41				

a/ Sample in mudstone

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 5 West, Public land--Continued										
116--Continued (6,044)	244.2	244.4	0.2	0.100	2.73	0.25				
	244.4	245.0	0.6	1.681	2.85	0.20				
	245.0	246.5	1.5	0.707	1.74	0.22				
	246.5	246.8	0.3	2.540	2.61	0.28				
	246.8	247.9	1.1	1.207	2.10	0.25				
	247.9	248.9	1.0	0.140	1.47	0.37				
	248.9	249.6	0.7	0.088	0.50	16.8				
122B (6,040)	199.5	200.2	0.7	0.029	0.27	17.4	Not probed			
	200.4	201.4	1.0	0.38	3.62	5.2				
	201.4	201.9	0.5	0.031	0.32	17.0				
	208.8	209.0	0.2	< 0.020	0.11	0.79				
124 (6,030)	230.2	230.9	0.7	0.038	1.88	0.35	Not probed			
	243.5	246.8	3.3[a/]	0.026	0.19	8.9				
127 (6,056)	259.3	260.2	0.9	< 0.020	1.66	11.0	Not probed			
137 (6,045)	256.9	257.2	0.3	< 0.020	0.24	8.2	Not probed			
	257.2	257.4	0.2	0.19	0.37	17.6				

a/ Sample in mudstone

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 5 West, Public land--Continued										
183 (6,023)	249.3	249.6	0.3	<0.020	0.22	7.6	Not probed			
	249.8	250.1	0.3	<0.020	0.15	11.5				
196 (6,050)	222.0	225.9	3.9	<0.020	0.27	2.12	Not probed			
	226.2	227.3	1.1	<0.020	0.44	0.57				
	228.0	228.6	0.6	0.52	4.74	0.38				
	228.6	229.4	0.8	0.15	0.90	0.18				
	229.4	230.3	0.9	0.88	5.84	0.44				
	230.3	233.0	2.7	0.076	0.65	1.90				
	233.0	233.8	0.8[a/]	0.36	0.98	1.65				
	233.8	234.8	1.0	0.073	1.11	3.0				
	234.8	237.5	2.7	0.037	0.30	3.0				
257 (6,058)	212.5	213.2	0.7	0.18	0.76	0.53	Not probed			
	213.2	214.2	1.0	0.67	4.35	0.18				
	214.2	214.5	0.3	0.36	3.58	0.26				
	214.5	216.3	1.8	0.027	0.32	1.87				
265 (6,057)	215.7	218.8	3.1	<0.020	0.18	2.44	Not probed			
	218.8	220.5	1.7	0.040	0.19	1.88				
	220.5	220.9	0.4	0.35	3.58	0.48				
	220.9	221.9	1.0	0.71	2.78	0.20				
	221.9	222.3	0.4	0.10	6.54	0.25				

a/ Sample in mudstone

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 5 West, Public land--Continued										
265--Continued (6,057)	222.3	222.8	0.5	< 0.020	0.39	0.42				
	223.2	224.9	1.7	< 0.020	0.30	0.24				
	224.9	225.2	0.3	1.32	14.76	0.59				
	225.2	225.4	0.2	0.37	11.61	0.50				
	225.4	225.5	0.1	0.42	3.48	0.29				
	225.5	226.9	1.4	0.024	0.39	0.44				
269 (6,018)	220.5	220.7	0.2	< 0.020	0.21	0.62	Not probed			
302B (6,061)	216.0	219.8	3.8	0.033	0.25	5.0	Not probed			
	219.8	221.0	1.2	0.26	2.43	0.46				
	221.0	222.2	1.2	0.094	4.79	0.13				
	222.2	222.7	0.5	0.41	1.33	0.33				
	222.7	223.2	0.5	0.080	0.55	1.04				
	223.2	224.4	1.2	< 0.020	0.70	1.04				
	224.4	224.9	0.5	0.082	2.58	0.83				
	224.9	225.5	0.6	1.91	9.09	0.75				
	225.5	228.5	3.0	0.020	0.26	1.03				
303 (6,059)	227.8	230.0	2.2	< 0.02	0.13	1.63	Not probed			

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 5 West, Public land--Continued										
304 (6,039)	225.0	225.7	0.7	0.27	5.78	0.59	Not probed			
	227.5	228.0	0.5	0.072	1.61	0.59				
	228.0	228.5	0.5	0.029	0.27	1.86				
309 (6,046)	219.8	224.0	4.2	< 0.020	0.12	1.79	Not probed			
	226.0	226.4	0.4	0.13	0.57	0.75				
	226.4	228.4	2.0	< 0.020	1.91	0.30				
	228.4	229.5	1.1	0.17	1.80	0.23				
	229.5	230.0	0.5	8.11	5.83	0.55				
	230.0	231.7	1.7	< 0.020	0.26	2.42				
313 (6,059)	221.4	222.4	1.0	0.036	0.18	1.04	Not probed			
	222.4	223.1	0.7	0.25	1.93	0.12				
	223.1	223.5	0.4	0.55	2.35	0.15				
	223.5	224.3	0.8	1.13	2.67	0.17				
	224.3	224.7	0.4	1.48	4.22	0.26				
	224.7	225.6	0.9	0.34	2.89	0.05				
	225.6	227.0	1.4	0.16	3.08	0.07				
	227.0	227.4	0.4	0.32	3.41	0.18				
	227.4	228.4	1.0	1.25	9.41	0.46				
	228.4	228.9	0.5	1.83	5.83	0.25				

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	V_2O_5	$CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 5 West, Public land--Continued										
314 (6,068)	216.7	219.2	2.5[a]	0.041	0.83	3.4	Not probed			
318A (6,070)	216.7	217.7	1.0	<0.020	0.24	0.84	Not probed			
	222.1	224.8	2.7	<0.020	0.12	3.7				
	224.8	225.1	0.3	0.25	3.49	0.40				
	225.1	227.3	2.2	0.052	0.33	0.47				
	227.3	228.0	0.7	0.24	4.11	0.12				
326 (6,029)	239.6	241.1	1.5	0.084	0.62	1.14	Not probed			
	241.1	242.7	1.6	<0.020	0.62	1.64				
	242.7	243.0	0.3	0.055	0.56	1.99				
	243.0	243.8	0.8	1.44	2.26	2.7				
	243.8	244.1	0.3	0.22	0.60	4.1				
	244.1	244.4	0.3	<0.020	0.52	3.2				
333 (6,060)	267.2	269.7	2.5[c]	<0.020	0.63	2.40	Not probed			
335 (6,037)	245.1	245.6	0.5	<0.020	0.42	1.85	Not probed			
	245.6	246.9	1.3	<0.020	0.60	2.50				
	246.9	248.1	1.2	<0.020	1.37	2.6				

[a] Sample in mudstone
[c] Sludge sample

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	V_2O_5	$CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness
Block 6, Public land										
129 (6,075)	282.5	282.9	0.4	< 0.020	0.36	1.81	Not probed			
	290.0	290.7	0.7	0.028	1.35	0.77				
	290.7	291.4	0.7	0.158	0.42	2.19				
	291.4	292.3	0.9	< 0.020	0.12	3.50				
365 (6,012)	247.9	248.6	0.7	0.061	0.43	6.5	Not probed			
	248.6	250.1	1.5	0.26	2.05	9.3				
371 (5,993)							0.025	75.8	76.5	0.7
							0.044	76.5	77.6	1.1
378 (6,030)							0.030	143.6	144.8	1.2
							0.034	257.5	258.6	1.1
							0.020	259.7	260.7	1.0
							0.022	267.1	267.8	0.7
396 (6,039)	262.7	263.9	1.2	0.48	6.58	3.9	0.039	136.0	137.0	1.0
	263.9	264.4	0.5	0.061	0.22	3.2				
							0.62	262.7	264.0	1.3
	268.7	270.2	1.5	0.51	1.81	11.3				
							0.64	268.4	269.8	1.4

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	V_2O_5	$CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 6, Public land--Continued										
397 (6,037)	260.1	261.8	1.7	0.25	6.09	0.1	Not probed			
	261.8	262.8	1.0	0.053	3.13	0.2				
421 (6,059)	284.2	284.4	0.2	0.040	0.14	Undet.	0.026	285.3	286.1	0.8
							0.020	288.9	290.1	1.1
423 (6,073)	294.4	295.4	1.0[a/]	0.11	0.64	5.2	0.20	294.6	295.8	1.2
	295.4	296.4	1.0	0.044	0.39	Undet.				
439 (6,034)	257.0	257.5	0.5	0.027e	0.12	Undet.	0.038	143.8	145.0	1.2
	259.9	260.1	0.2	< 0.020e	0.18	Undet.	0.041	256.2	257.4	1.2
	260.1	260.7	0.6	0.18	0.20	0.9				
	260.7	262.0	1.3	2.06	9.76	0.3	1.8	260.5	261.6	1.1
	262.0	263.0	1.0	0.13	0.16	1.7				
							0.036	264.6	265.3	0.7
446 (6,018)	239.0	241.5	2.5	< 0.020e	0.16	Undet.				
447 (6,047)	273.2	273.7	0.5	0.33	1.57	2.7	0.55	272.8	273.6	0.8
448 (6,013)							0.033	121.8	122.8	1.0

a/ Sample in mudstone

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 6, Public land--Continued										
451	254.5	254.7	0.2	0.031	0.34	3.2	0.22	258.6	259.4	0.8
(6,028)	254.7	255.5	0.8	0.11	0.16	8.5				
	255.5	256.0	0.5	0.043	0.11	Undet.				
	263.3	263.8	0.5	< 0.020e	1.89	1.3				
479	245.0	245.7	0.7	< 0.020e	0.22	2.6	0.080	245.9	248.4	2.5
(6,012)	245.7	246.7	1.0	0.040	3.12	0.3	1.2	248.4	249.9	1.5
	246.7	246.9	0.2	0.31	4.13	0.2	0.025	249.9	252.3	2.4
	246.9	247.9	1.0	0.059	2.37	0.2				
	247.9	248.2	0.3	0.29	1.31	0.1				
	248.2	248.7	0.5	0.31	2.41	0.3				
	248.7	249.9	1.2	0.70	2.80	3.8				
	249.9	250.1	0.2	0.31	0.53	3.9				
	250.1	250.3	0.2	0.11	0.25	5.6				
	250.3	251.3	1.0	0.033	0.12	7.0				
498	246.7	247.2	0.5	0.028	< 0.10	11.8	0.025	248.0	249.4	1.4
(6,019)	247.2	248.9	1.7	0.280	1.33	4.8	0.78	249.4	250.3	0.9
	255.7	256.5	0.8	0.041	0.17	2.7	0.83	256.3	257.2	0.9
	256.5	258.2	1.7	0.460	2.58	6.9	0.50	257.2	257.7	0.5
	258.2	259.2	1.0	0.056	0.13	12.1	0.83	257.7	258.6	0.9
	259.2	261.1	1.9	0.280	1.04	11.0	0.35	258.6	259.4	0.8
	261.1	261.7	0.6	0.032e	0.23	7.9	0.38	259.4	261.4	1.0

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	V_2O_5	$CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 6, Public land--Continued										
514 (6,001)							0.092	82.0	83.0	1.0
529 (6,012)	233.4	233.9	0.5	<0.020e	0.66	0.10	2.2	233.7	234.6	0.9
	233.9	234.2	0.3	0.026e	1.39	0.10				
	234.2	234.7	0.5	0.99	7.50	0.20				
	234.7	235.1	0.4	<0.020e	1.15	0.10				
Block 7, Public land										
35 (5,874)	99.4	100.1	0.7	0.033	0.101	2.87	Not probed			
	244.6	245.8	1.2	0.020	0.21	0.51				
	245.8	246.0	0.2	0.140	0.24	1.76				
	246.0	246.9	0.9	0.062	0.101	2.57				
	246.9	247.7	0.8	0.150	<0.10	3.15				
	247.7	248.0	0.3	0.079	0.29	9.90				
	248.0	248.3	0.3	< 0.020	0.19	1.29				
155 (5,882)	265.5	266.5	1.0	< 0.020	0.28	3.6	Not probed			
	266.7	267.0	0.3	< 0.020	0.20	1.9				
	271.9	273.6	1.7	< 0.020	0.25	3.1				
	279.5	281.6	2.1	< 0.020	0.28	7.2				

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 7, Public land--Continued										
158A	247.7	248.0	0.3	0.88	0.96	2.36	Not probed			
(5,861)	248.0	250.0	2.0	< 0.020	0.32	1.66				
247	218.8	219.3	0.5	0.021	0.12	3.6	Not probed			
(5,884)										
	265.8	266.1	0.3	< 0.020	0.18	0.25				
	266.1	266.3	0.2	0.73	6.00	0.36				
	266.3	266.5	0.2	0.055	0.65	1.62				
	266.5	267.1	0.6	0.32	4.68	0.33				
291	234.6	236.9	2.3	0.050	<0.10	8.4	Not probed			
(5,842)	236.9	238.9	2.0	0.021	<0.10	11.4				
495	256.5	257.3	0.8	0.12	0.12	7.0	0.27	255.9	256.7	0.8
(5,889)										
	268.6	271.6	3.0	0.10	1.30	1.2	0.027	263.4	266.6	3.2
	271.6	274.0	2.4	0.057	0.31	3.1	0.31	266.6	268.0	1.4
							0.14	268.0	269.0	1.0
							0.28	269.0	270.0	1.0
515							0.022	266.1	267.3	1.2
(5,889)										

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 7, Public land--Continued										
521	263.9	265.1	1.2	< 0.020e	0.15	Undet.	0.20	264.6	265.5	0.9
(5,886)	265.1	265.6	0.5	0.098	1.25	0.60	0.080	265.5	266.2	0.7
	256.5	266.4	0.8[a/]	0.029e	0.33	Undet.				
531	261.5	261.7	0.2	< 0.020e	0.26	Undet.	0.59	262.7	263.7	1.0
(5,887)	261.7	262.6	0.9	0.034	0.87	2.1				
	262.6	263.6	1.0	0.38	3.31	2.2	0.094	267.1	268.0	0.9
	267.7	267.9	0.2	0.031	1.82	3.8				
	267.9	268.6	0.7	0.082	0.59	5.5				
	268.6	268.9	0.3	0.023e	0.57	5.3				
594	268.0	268.5	0.5	0.032	2.21	1.7	0.044	267.6	268.7	1.1
(5,886)	268.5	268.7	0.2	< 0.020e	1.73	2.3				
							0.022	271.1	272.2	1.1
595A	237.9	238.4	0.5	0.25	4.68	0.2	0.047	156.1	156.9	0.8
(5,879)										
							0.44	236.0	236.7	0.7
605	263.2	264.7	1.5	0.055	0.19	4.8	0.38	263.1	264.1	1.0
(5,885)							0.18	264.1	264.9	0.8

a/ Sample in mudstone

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	V_2O_5	$CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 8, Public land										
347 (6,367)	480.0	480.5	0.5	0.052	0.22	3.7	0.029	475.3	476.2	0.9
	480.5	481.2	0.7	< 0.020	0.13	4.3				
588 (6,490)*	551.5	551.6	0.1	< 0.020e	0.80	0.6				
	553.3	554.1	0.8	< 0.020e	1.04	0.6				
606 (6,379)							8.6	471.7	472.7	1.0
							0.027	472.7	474.7	2.0
							0.26	474.7	475.4	0.7
							0.029	475.4	476.3	0.9
							0.022	477.8	478.6	0.8
621 (6,364)	465.4	465.6	0.2	0.052	< 0.1	0.7	0.032	463.6	464.5	0.9
	467.0	467.5	0.5	0.042	2.30	0.1	0.055	465.3	466.3	1.0
	467.5	467.6	0.1	< 0.020e	0.32	Undet.	0.032	466.3	467.3	1.0
							0.045	467.3	468.6	1.3
	467.8	468.1	0.3	< 0.020e	0.25	Undet.	0.63	468.6	469.9	1.3
							0.21	469.9	472.0	1.1
	468.6	468.9	0.3	0.032e	0.39	Undet.				
	468.9	470.0	1.1	< 0.020e	0.81	0.2				
	470.0	470.7	0.7	0.33	2.38	0.5				
	470.7	471.5	0.8	0.52	1.23	1.2				

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 8, Public land--Continued										
621--Continued	471.5	472.0	0.5	0.32	0.67	1.4				
(6,364)	472.0	472.2	0.2	0.33	1.47	2.1				
	472.2	472.5	0.3	0.13	1.60	2.0				
	472.5	472.7	0.2	0.13	0.68	7.0				
	472.7	473.2	0.5	0.24	1.38	7.6				
	473.2	473.4	0.2	0.091	0.34	32.0				
628	494.8	495.2	0.4	< 0.020e	0.67	0.9	0.026	483.7	484.6	0.9
(6,404)										
	497.8	498.0	0.2	0.19	0.33	2.3	0.051	492.1	493.1	1.0
	498.0	498.3	0.3	0.035	0.32	2.8				
	498.3	499.0	0.7	0.088	0.47	6.2	0.094	495.2	496.5	1.3
	499.0	499.2	0.2	0.042	0.31	3.1				
630	495.5	496.0	0.5	0.032	1.31	0.5	0.14	494.8	496.1	1.3
(6,395)	496.0	496.5	0.5	0.062	0.21	0.4				
	496.5	497.1	0.6	0.14	1.14	1.6				
	497.1	497.8	0.7	0.075	0.28	1.8				
	497.8	499.1	1.3	< 0.020e	0.14	Undet.				
631	493.7	494.9	1.2	< 0.020e	0.59	1.0	0.031	495.2	496.5	1.3
(6,414)	494.9	495.0	0.1	0.056	0.14	1.8				
							0.13	499.6	500.3	0.7
	495.2	495.5	0.3	0.023e	<0.10	Undet.				

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	V_2O_5	$CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 8, Public land--Continued										
631--Continued	495.5	496.5	1.0	0.030e	<0.10	Undet.	0.15	501.8	503.0	1.2
(6,414)	496.5	497.2	0.7	0.023e	<0.10	Undet.				
	500.0	500.4	0.4	0.041	0.47	1.2				
	502.7	503.8	1.1	0.021	0.11	1.7				
632	482.7	483.4	0.7	0.074	2.18	0.6	0.48	482.2	482.8	0.6
(6,387)	483.4	484.2	0.8	0.023e	0.95	0.6	0.59	482.8	484.7	1.9
	484.2	484.4	0.2	0.059	0.36	2.5	0.025	484.7	486.2	1.5
	484.4	484.6	0.2	0.046	0.39	1.4				
	484.6	484.8	0.2	<0.020e	0.17	Undet.				
	485.1	485.6	0.5	0.058	0.13	5.2				
633	546.7	547.1	0.4	0.045	0.21	11.8	0.029	379.4	380.9	1.5
(6,484)										
634							0.021	466.6	467.2	0.6
(6,485)							0.022	490.4	491.8	1.4
637	514.0	514.2	0.2	<0.020e	0.36	Undet.	1.1	516.0	517.5	1.5
(6,445)	514.2	514.7	0.5	0.028e	0.45	Undet.	0.78	517.5	518.3	0.8
	514.7	515.0	0.3	0.057	0.46	0.2	2.8	518.3	519.4	1.1

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 8, Public land--Continued										
637--Continued	515.0	516.7	1.7	0.048	2.54	0.2	0.17	519.4	521.1	1.7
(6,445)	516.7	520.6	3.9	0.34	1.31	0.7	0.032	521.1	523.2	2.1
	520.6	521.6	1.0	0.12	0.36	2.5	0.098	523.2	524.6	1.4
	521.6	522.1	0.5	0.024e	0.28	Undet.				
	522.1	523.1	1.0	0.048	0.35	4.4				
	523.1	523.6	0.5	0.21e	0.31	Undet.				
	523.6	524.1	0.5	0.043	0.29	4.0				
	524.1	524.6	0.5	0.023e	0.31	Undet.				
	524.6	525.0	0.4	0.096	0.32	1.8				
	525.0	525.2	0.2	0.025	0.56	2.0				
	525.2	525.5	0.3	< 0.020e	0.42	Undet.				
	526.2	526.5	0.3	0.030	0.31	4.4				
638 (6,407)							0.032	499.9	500.9	1.0
639	507.8	508.5	0.7[a/]	0.34	2.68	0.9	1.1	507.1	507.8	0.7
(6,408)	508.5	508.7	0.2	< 0.020e	0.13	Undet.				
							0.056	509.2	509.9	0.7
	509.8	511.2	1.4	0.028	6.93	0.2				

a/ Sample in mudstone

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	V_2O_5	$CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 9, Mill No. 4 claim										
568	175.8	176.3	0.5	0.023e	0.16	Undet.	0.59	175.9	176.8	0.9
(5,966)	176.3	177.1	0.8	0.31	0.90	13.6	0.39	176.8	177.3	0.5
624	176.6	177.6	1.0	0.037	<0.10	2.7	0.033	175.8	178.0	2.2
(5,944)										
625	174.4	174.9	0.5	0.043	0.20	2.1	0.21	177.4	178.1	0.7
(5,944)	174.9	175.3	0.4	0.064	0.19	1.6				
	175.3	176.3	1.0	1.00	2.96	0.4				
Block 10, Public land										
192	254.6	256.1	1.5	<0.020	0.13	6.3	Not probed			
(6,066)	256.4	257.1	0.7	<0.020	0.13	9.9				
	258.1	259.4	1.3	<0.020	0.13	5.9				
	265.6	265.9	0.3[a/]	<0.020	0.16	1.66				
276	261.3	261.8	0.5	<0.020	0.50	1.07	Not probed			
(6,063)	262.6	265.6	3.0	0.022	<0.10	7.0				
	268.0	269.3	1.3	0.027	<0.10	10.2				

a/ Sample in mudstone

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 10, Public land--Continued										
312A (6,075)	271.7	273.0	1.3	0.034	0.41	5.7	Not probed			
	273.2	272.7	0.5	<0.020	0.13	11.1				
	278.9	280.1	1.2	<0.020	0.16	4.3				
	280.1	281.2	1.1	0.054	0.60	0.90				
	281.2	282.1	0.9	0.10	0.60	1.36				
	282.1	283.6	1.5	0.025	0.23	6.0				
	283.6	284.8	1.2	0.020	0.17	7.9				
	284.8	286.4	1.6	0.092	0.12	17.0				
359 (6,058)	246.0	246.3	0.3	0.052	<0.10	8.4	0.071	255.4	256.2	0.8
	250.3	251.1	0.8	0.043	<0.10	3.9	0.033	261.6	262.3	0.7
403 (6,103)							0.065	185.4	185.9	0.5
							0.041	285.6	286.2	0.6
462 (6,050)							0.021	189.1	190.1	1.0
466 (6,064)	274.6	274.8	0.2	0.096	<0.10	4.4	0.034	272.7	274.5	1.8

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 10, Public land--Continued										
473 (6,082)	287.0	287.6	0.6	0.045	0.10	1.1	0.023	277.1	278.0	0.9
							0.063	286.4	287.3	0.9
508 (6,060)							0.047	262.3	263.0	0.7
Block 11, Public land										
567 (5,942)	227.9	228.6	0.7	<0.020e	1.86	<0.1	0.027	227.7	229.3	1.6
	228.6	229.1	0.5	0.034e	1.97	<0.1				
	229.1	229.6	0.5	<0.020e	1.66	<0.1				
	229.6	230.1	0.5	0.029e	1.77	<0.1				
	230.1	231.8	1.7	<0.020e	1.27	0.2				
Block 12, Public land										
546 (5,953)	174.1	174.3	0.2	0.14	0.20	0.80	1.8	174.2	174.9	0.7
	174.3	174.8	0.5	1.04	4.67	0.10				
	174.8	175.1	0.3	0.049	0.71	0.40				
Block 13, Joe Junior claim										
3 (5,636)*	25.4	25.7	0.3	0.066	0.57	1.20	0.025	22.8	23.9	1.1
	26.2	26.5	0.3	<0.020	0.11	11.75	0.032	35.3	37.1	1.8

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 13, Joe Junior claim--Continued										
3--Continued (5,636)*	26.8	27.0	0.2	< 0.020	0.28	6.12				
	27.7	28.5	0.8	< 0.020	0.22	7.27				
	28.7	28.9	0.2	< 0.020	0.23	10.67				
	36.0	36.5	0.5	< 0.020	0.14	23.00				
	36.5	36.8	0.3	< 0.020	0.31	6.62				
	36.8	37.3	0.5	0.025	1.15	11.20				
	37.3	37.8	0.5	0.080	1.98	13.7				
	37.8	38.2	0.4	0.020	1.34	14.32				
Block 14, Public land										
368 (6,516)	565.0	566.5	1.5[a/]	0.34	1.18	1.9	Not probed			
	566.5	566.7	0.2	< 0.020	0.48	4.7				
Block 15, Public land										
63 (5,987)*	90.9	91.8	0.9	< 0.020	0.20	13.42	0.022	88.1	88.7	0.6
	91.8	92.0	0.2	< 0.020	0.10	7.40				
	92.0	92.2	0.2	< 0.020	0.42	2.70	0.035	89.5	90.5	1.0
	92.2	92.4	0.2	0.061	2.18	8.40	0.092	90.5	91.5	1.0

a/ Sample in mudstone

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Block 15, Public land--Continued										
159 (5,997)*	102.9	104.2	1.3	0.021	0.24	5.40	0.030	102.6	103.5	0.9
Block 16, Public land										
478	176.5	179.0	2.5	0.12	0.26	2.5	2.4	177.4	178.1	0.7
(5,766)	179.0	181.5	2.5	0.18	0.17	5.0				
							0.033	179.7	180.8	1.1
Block 17, Public land										
179	154.5	154.6	0.1	< 0.020	0.67	0.17	Not probed			
(5,692)	154.6	155.2	0.6	0.19	0.51	0.22				
	155.2	155.4	0.2	< 0.020	0.67	0.97				
Block 18, Lost Horse claim										
97 (5,596)*	85.0	87.5	2.5	0.060	0.45	0.59	0.21	85.0	86.0	1.0
Other holes, Kaiser claim										
10 (5,629)*							0.020	71.6	72.4	0.8
							0.085	73.3	74.1	0.8

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Other holes, Kaiser claim--Continued										
17 (5,619)*	25.5	27.6	2.1	0.030	<0.10	18.0	0.050	26.7	27.3	0.6
Other holes, J. M. claim										
19 (5,644)*	66.4	66.7	0.3	0.02	<0.10	3.8	Not probed			
Other holes, Big Shot claim										
72 (6,100)*	64.0	64.9	0.9[a]	0.020	<0.10	2.58				
Other holes, Irene claim										
98 (5,606)*							0.022	67.8	69.3	1.5
99 (5,605)*	145.0	146.5	1.5	<0.020	0.38	2.91	0.022	144.5	146.2	1.7

a/ Sample in mudstone

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Other holes, Public land										
39 (5,703)	135.2	136.0	0.8[a]	0.083	0.60	0.42				
	136.3	137.9	1.6[a]	<0.020	0.25	1.56				
42A (5,960)*	142.2	142.5	0.3	0.034	<0.10	0.52	Not probed			
59A (6,050)*							0.033	158.0	158.6	0.6
109A (5,925)	224.9	225.4	0.5	0.023	0.12	15.9	Not probed			
114A (6,205)*	233.4	233.8	0.4	0.030	<0.10	1.90	Not probed			
130 (6,056)	216.0	216.5	0.5	<0.020	0.21	4.9	Not probed			
139 (6,226)*	269.5	270.0	0.5	0.034	<0.10	10.6	Not probed			
147 (6,074)	268.3	268.6	0.3	<0.020	0.13	1.82	Not probed			

a/ Sample in mudstone

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Other holes, Public land--Continued										
149 (6,040)	329.1	329.8	0.7[a]	0.023	<0.10	19.8	Not probed			
185 (5,866)*	250.4	251.4	1.0	0.045	0.25	14.8	Not probed			
194 (6,044)	262.7	262.9	0.2	0.020	0.18	10.7	Not probed			
216 (5,677)	99.8	100.0	0.2	<0.020	0.23	22.3	Not probed			
244 (6,125)	362.0	362.2	0.2	<0.020	0.13	1.31	Not probed			
282 (5,964)	67.5	68.5	1.0	0.027	0.24	1.77	0.030	64.9	66.4	1.5
402 (6,124)							0.020	185.9	186.6	0.7
405 (6,148)	306.1	306.5	0.4	0.021	0.12	0.2	0.021	305.8	306.7	0.9

a/ Sample in mudstone

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Other holes, Public land--Continued										
410 (6,168)							0.020	212.6	213.7	1.1
414 (6,022)	260.3	260.6	0.3	0.029e	<0.10	Undet.	0.026	101.5	102.3	0.8
	260.6	261.0	0.4	0.35	<0.10	18.1				
							0.330	257.8	258.5	0.7
477 (6,009)	250.1	250.8	0.7	0.063	0.23	11.3	0.14	250.2	251.0	0.8
493 (5,662)							0.029	19.4	20.7	1.3
504 (5,979)	283.8	284.8	1.0	<0.020e	0.25	Undet.	0.43	284.6	285.5	0.9
	284.8	285.0	0.2	0.41	5.68	2.3	0.038	285.5	286.9	1.4
	285.0	285.3	0.3	0.69	3.36	2.8				
	285.3	285.8	0.5	0.030e	0.20	Undet.				
	285.8	286.5	0.7	0.040	<0.10	5.8				
524 (5,958)*	268.1	268.6	0.5	0.36	3.47	10.7	0.85	267.2	267.9	0.7
	268.6	269.0	0.4	0.027e	<0.10	Undet.				
530 (5,989)							0.021	88.4	89.4	1.0

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Other holes, Public land--Continued										
541 (5,943)	257.7	258.0	0.3	0.034	2.06	3.5	0.083	257.4	258.4	1.0
							0.045	258.4	259.3	0.9
	258.7	259.0	0.3	0.044	0.14	10.3				
560 (6,005)							0.022	90.5	91.1	1.1
564 (5,996)	263.6	263.8	0.2	0.034e	0.12	Undet.	0.049	263.2	264.3	1.1
570 (6,913)	155.0	155.2	0.2	0.033e	0.10	Undet.				
574 (5,966)*	203.1	203.5	0.4	0.21	7.60	0.3	0.47	202.2	203.0	0.8
591 (6,024)	310.4	311.2	0.8	0.075	0.75	0.5	0.19	309.4	310.2	0.8
593	241.8	243.0	1.2	<0.020e	0.10	Undet.	0.022	241.5	242.7	1.2
(6,207)*	243.0	243.5	0.5	0.024e	<0.10	Undet.				
	243.5	244.8	1.3	<0.020e	0.15	Undet.	0.023	243.3	245.5	2.2
601 (6,201)*	235.2	235.3	0.1	<0.020e	0.23	Undet.	0.042	235.4	236.1	0.7

Table 4.--Assay data, Club Mesa, Montrose County, Colorado--Continued

Hole No. and collar elev. (feet)	Assay data: Depth in feet From	To	Thickness (feet)	Percent U_3O_8	Percent V_2O_5	Percent $CaCO_3$	Gamma-ray data: Percent eU_3O_8	Depth in feet From	To	Thickness (feet)
Other holes, Public land--Continued										
609 (6,318)							0.020	490.8	491.4	0.6
612 (6,036)	325.0	326.2	1.2	<0.020e	0.19	Undet.				
	326.2	326.5	1.3	0.038	0.23	1.5				
614 (5,996)							0.022	200.8	201.9	1.1
615 (6,320)							0.020	461.3	461.9	0.6