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PREPARED FOR THE U. S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
GRAND JUNCTION OFFICE
UNDER CONTRACT NO. EY-76-C-13-1664

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PRELIMINARY EVALUATION OF THE
URANIUM FAVORABILITY IN THE AREA
NORTHEAST OF GUNNISON, COLORADO

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SUMMARY

Rock and stream-sediment samples were collected to define areas favorable for uranium deposits northeast of Gunnison, Colorado. Areas considered most favorable for further exploration are: (1) the Bronco Mountain area, approximately 10 mi south of Taylor Park Reservoir, (2) the area near the Big Red mine, and (3) the area 5 mi north-northeast of Taylor Park Reservoir. On the basis of known deposits in the Marshall Pass and Cochetopa districts, fault contacts between Precambrian granites and Paleozoic or Mesozoic sedimentary rocks are favorable structural sites.

INTRODUCTION

This report is a preliminary evaluation of the uranium favorability of igneous, metamorphic, and sedimentary rocks in the area northeast of Gunnison, Colorado. The project began September 1, 1976, and was completed December 31, 1976, by personnel of Bendix Field Engineering Corporation (BFEC) for the Grand Junction Office of the U.S. Energy Research and Development Administration (ERDA).

PURPOSE

The purpose of this project was to collect geologic and geochemical information to define areas favorable for uranium deposits in the project area, which includes approximately 800 sq mi of Gunnison County in central Colorado (Fig. 1).

PREVIOUS WORK

Published data on the uranium geology of the project area are limited. The area is included in the regional uranium and thorium evaluation of the western United States by Malan and Sterling (1970) and Malan (1972), but more specific references are not available. The Marshall Pass and Cochetopa uranium districts, south of the project area, are geologically similar to the Gunnison area. These districts are described by Malan and Ranspot (1959), Olson (1976), and Ranspot and Spengler (1957). More complete information concerning the geology and base-metal mines in the southeastern quadrant of the project area is found in Dings and Robinson (1957) and Staatz and Trites (1955).

PROCEDURES

Equivalent uranium (eU), thorium (eTh), and potassium (eK) of rock samples were determined by gamma-ray spectroscopy using a sodium-iodide detector. Precision of this method is ± 5 percent. Uranium analyses of the less-than-100-mesh fraction of stream-sediment samples were performed by several methods (see App. C). Because the Gunnison project area is also host to many base-metal deposits, Cu, Pb, Zn, and Ag in stream-sediment samples were determined (see App. C for discussion).

Figure 1. Location of the Gunnison project area, Gunnison County, Colorado

GEOLOGY

The geology of the Gunnison area is complex. Rocks are from Precambrian to Quaternary in age (Pl. 1). Tweto and others (1976) mapped three Precambrian units within the project area: metasedimentary rocks (including quartzite, gneiss, and migmatites); X granite, approximately 1.7 b.y. old (including rocks previously mapped as Silver Plume and Pikes Peak granite by Dings and Robinson, 1957); and limited exposures of YX granite, 1.4 to 1.7 b.y. old.

Thicknesses of as much as 6,300 ft of Paleozoic rocks are present within the project area (Dings and Robinson, 1957). The lower Paleozoic section includes Sawatch Quartzite (Cambrian), Harding Sandstone (Ordovician), Manitou Dolomite (Ordovician), Fremont Limestone (Ordovician), Chaffee Formation (Devonian), and Leadville Limestone (Mississippian). The upper Paleozoic includes clastic sediments of Belden Shale (Pennsylvanian) and Minturn Formation (Pennsylvanian). Mesozoic sedimentary rocks include the Morrison Formation (Jurassic) and the Dakota Sandstone and Mancos Shale (Cretaceous).

Lower Tertiary intrusive units form granodiorite and quartz monzonite stocks, sills, and dikes throughout the area. The Mount Princeton batholith in the eastern half of the project area is a quartz monzonite body approximately 20 mi in diameter. A metamorphic aureole of marble, hornfels, and quartzite up to $\frac{1}{2}$ mi wide can be observed around the Mount Princeton batholith. Other Tertiary intrusive rocks range from quartz diorite to granite. Extrusive units include tuffs, flow breccia, and volcanic breccia. Moraines, talus, and alluvium of Quaternary age cover broad areas throughout the project area.

The complex structure of the area includes faults, folds, and fractures. The dominant structures trend to the northwest, but local structural fractures are oriented in all directions. Deformation occurred during Precambrian, Late Cretaceous (Laramide), and possibly early Tertiary events (Dings and Robinson, 1957). Large- and small-scale folds and faults in the Paleozoic and Mesozoic units are common. Contacts between Precambrian rocks and Paleozoic or Mesozoic units, previously mapped as unconformities, are possibly fault contacts (May, 1970). Breccia zones as much as 350 ft thick are reported along these contacts. The numerous unconformities, thinning and thickening of beds, and poor surface exposures do not allow for a more complete structural evaluation of the area.

URANIUM FAVORABILITY

KNOWN DEPOSITS

Seven uranium occurrences, listed in Table 1 and shown on Plate 2, are known in the Gunnison area. All are reported as vein or pegmatitic uranium

TABLE 1. URANIUM DEPOSITS IN THE GUNNISON AREA.

Name	Location	Type	Host* Rock	Maximum Reported % U_3O_8	Reference
1. Saverac	sec. 13, T. 14 S., R. 85 W.	Vein	1	--	E. P. Beroni (personal commun., 1976)
2. Matchless	sec. 19, T. 13 S., R. 82 W.	Vein	1	0.36	PRR ⁺ DAO-P-3-1863
3. Virginia	sec. 26(?), T. 14 S., R. 83 W.	Disseminated	1	--	E. P. Beroni (personal commun., 1976)
4. North Star #7	secs. 29 and 32, T. 15 S., R. 84 W.	Vein	2	--	E. P. Beroni (personal commun., 1976)
5. Public Land	sec. 21, T. 15 S., R. 84 W.	Vein (?)	1	--	PRR ⁺ 1557
6. Delores-Marie	sec. 25, T. 50 N., R. 4 E.	Pegmatite and shear	1	0.59	PRR ⁺ 1871
7. Big Red No. 22	sec. 11, T. 49 N., R. 5 E.	Vein	2	0.41	E. P. Beroni (personal commun., 1976)

*1 - X granite

*2 - Granite/Paleozoic sediment contacts.

⁺PRR - U. S. Atomic Energy Comm. Preliminary Reconnaissance Report, open-filed.

occurrences in Precambrian X granite. Only three occurrences (North Star No. 7, Delores-Marie, and Big Red No. 22) could be located for field examination. North Star No. 7 and Big Red No. 22 contain uranium in fractures along fault contacts of Precambrian X granite and Paleozoic sediments. The Delores-Marie has numerous uranium-bearing pegmatites (up to 1.59% U_3O_8) and a small shear zone (?) that contains secondary uranium and copper minerals. Only Big Red No. 22 has had production; ERDA records show that 127 tons of ore, with an average grade of 0.22 percent U_3O_8 , were produced from the mine prior to 1969.

Two uranium-producing areas adjacent to the project area may be helpful in evaluating the favorability of the Gunnison area. The Los Ochos mine, 20 mi southeast of Gunnison in the Cochetopa mining district, has pitchblende localized along fault contacts between the Morrison Formation and Precambrian granite and schists (Malan and Ranspot, 1959). Most of the ore is in the fault zone, but weak mineralization continues into the sedimentary rocks at some points. Sedimentary rocks near the fault contact are brecciated and silicified; along the fault trace, abnormal radiation is present. Faults trend in all directions, and no specific orientation is considered most favorable, although northwest-trending faults showed the highest stream-sediment values in the central part of the project area. The recent work of Olson (1976) suggests that weathering and resulting supergene solutions related to Oligocene prevolcanic erosion surfaces may have controlled the formation and localization of uranium deposits in the Los Ochos area. Uranium may have concentrated in the fault zones by the process of ground waters moving through overlying volcanic rocks, down an ancient paleovalley on the pre-Oligocene unconformity, and into favorable structural sites.

At the Pitch mine, southeast of Gunnison in the Marshall Pass district, uraninite occurs in fractured limestone, sandstone, and shale of the Belden Formation, which is in fault contact with Precambrian granite (U.S. Atomic Energy Comm., 1959). A description of the mineralogy of the Marshall Pass deposits is found in Gross (1965), but more detailed geologic information is not available.

FAVORABILITY CRITERIA

Evaluation of uranium favorability in the Gunnison project area is based on (1) presence of known deposits and (2) definition of a favorable structural setting. The presence of seven known uranium deposits within the Gunnison project area, and two uranium districts adjacent to the area, indicates that the area is favorable for uranium deposits.

On the basis of known deposits, the most favorable structure for vein uranium deposits is the fault contact between Precambrian granitic rocks and Paleozoic or Mesozoic sedimentary rocks. The largest uranium mines in and near the Gunnison area, Los Ochos, Pitch, and Big Red mines, are in this geologic setting. Orientation of fault-contact structure does not seem important in this favorability evaluation.

SAMPLE RESULTS

Stream-sediment and rock samples were collected to help define areas favorable for uranium. Sample locations are shown on Plate 2,

and analytical data for the rock and stream-sediment samples are given in Appendices A and B, respectively. A graphic plot of the stream-sediment sample results (Pl. 3) shows three anomalous areas: (1) north-northeast of Taylor Park Reservoir, (2) the southeast part of the project area near Big Red No. 22 mine, and (3) the Bronco Mountain area.

High uranium values (up to 47 ppm) are found in stream sediments collected north of Taylor Park Reservoir. The area has one known uranium occurrence (Matchless, no. 2 in Table 1 and Pl. 2). Broad areas are covered by Quaternary alluvium and, therefore, an adequate geologic investigation of this area is not possible. Values of 30 ppm uranium are found in stream-sediment samples collected within 5 mi of Big Red No. 22. This set of anomalous samples reflects proximity to known uranium deposits.

The highest uranium values in the project area are found in sediments collected from streams that drain the north and south sides of Bronco Mountain. The four most anomalous samples contain 157, 151, 108, and 97 ppm uranium. In addition, samples that contain 30 to 40 ppm uranium were collected throughout the area (Pl. 3). These anomalous sediment samples suggest that the Bronco Mountain area is most favorable for uranium deposits.

Uranium content of the rock samples correlates with uranium in the stream-sediment samples. Because of time limitations, too few samples were collected to provide statistically valid results, but initial results suggest local zones of uranium enrichment. Five samples from the Precambrian X granite body of the Bronco Mountain area contain 5, 6, 7, 13, and 15 ppm eU (Pl. 2), which suggests uranium enrichment relative to the 4.4 ppm uranium values reported by Malan (1972) for granites of the Colorado Front Range. Two samples from the Mount Princeton batholith contain 7 ppm eU, which suggests that this body may also be enriched with uranium.

Results from the rock samples compare favorably with results of stream-sediment samples. Rich and others (1975) noted a strong correlation between vein uranium deposits and granites that contain greater than 5 ppm uranium. Phair and Jenkins (1975) stated that broad regions characterized by low magmatic uranium content contain few uranium deposits of any type. On the basis of high uranium concentrations in the granite, the Bronco Mountain area is considered the most favorable area for uranium.

CONCLUSIONS

The rock and stream-sediment sampling program in the Gunnison project area defined three locations where further exploration for uranium deposits is warranted. These include (1) the area north-northeast of Taylor Park Reservoir, (2) the area surrounding Big Red No. 22 mine, and (3) the Bronco Mountain area, located in Tps. 15 S. and 51 N., Rs. 82 and 83 E.

The Bronco Mountain area should be considered a highly favorable area. Uranium anomalies greater than 150 ppm in sediment samples and up to 15 ppm in samples of Precambrian X granite are most pronounced at this specific locale. On the basis of known deposits, uranium in the Bronco Mountain area is most likely to be found as vein deposits along fault contacts between Paleozoic sedimentary rocks and Precambrian X granite (Pl. 1).

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APPENDIX A
ANALYSES OF ROCK SAMPLES

APPENDIX A. ANALYSES OF ROCK SAMPLES

Site no. (Pl. 2)	Unit	eU (ppm)	eTh (ppm)	eK (%)
72	Tertiary intrusive	5.2	14.0	3.17
73	Tertiary intrusive	3.7	13.6	3.49
74	Tertiary intrusive	4.1	12.6	3.25
75	X granite	6.2	17.2	3.21
76	Tertiary intrusive	2.1	2.0	1.07
77	X granite	5.7	33.5	4.55
78	Tertiary intrusive	0.9	1.1	2.82
79	X granite	3.9	16.0	3.35
80	X granite	2.6	12.7	2.83
81	X granite	2.1	19.2	3.98
82	Tertiary intrusive	5.3	23.2	3.48
83	X granite	3.7	5.4	2.95
84	X granite	13.0	15.8	4.57
85	X granite	4.8	39.3	2.72
86	X granite	7.8	21.0	4.37
87	X granite	3.6	5.3	4.70
88	Tertiary intrusive	2.1	15.4	4.43
89	X granite	1.5	7.0	1.61
90	Tertiary intrusive	5.5	24.8	3.55
91	X granite	6.3	25.7	4.73
92	X granite	14.8	17.8	4.29
93	X granite	6.6	21.5	3.97
94	Tertiary intrusive	7.1	22.6	3.59
95	X granite	6.1	16.3	4.80
96	Tertiary intrusive	4.0	12.9	3.88
97	Tertiary intrusive	6.7	24.0	3.77
98	X granite	1.7	12.9	4.85
99	X granite	1.9	20.0	4.45

APPENDIX B
URANIUM IN STREAM SEDIMENTS

APPENDIX B. URANIUM AND OTHER ELEMENTS IN STREAM SEDIMENTS

Sample no.	TU ₃ O ₈ (ppm)	HxU ₃ O ₈ (ppm)	CxU ₃ O ₈ (ppm)	LOI (%)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ag (ppm)
601	3	3	1	4.51	28	37	159	2
603	3	3	1	3.55	36	29	118	2
606	16	13	9	4.54	21	12	106	2
609	16	12	5	7.28	19	45	120	2
611	28	13	6	9.49	103	408	966	3
613	17	15	8	5.51	14	16	106	2
615	22	18	9	5.62	32	103	255	2
617	26	19	11	6.14	29	82	204	3
619	11	9	6	3.30	207	0.18%	0.55%	12
621	11	7	5	2.98	144	769	0.21%	4
626	19	18	15	5.72	17	41	153	2
628	30	22	19	7.78	23	37	148	2
630	17	10	8	5.78	22	12	117	2
632	15	9	8	3.74	17	8	109	2
634	2	3	1	6.62	16	16	127	2
636	13	8	4	9.58	546	25	680	3
638	5	4	1	3.74	26	293	292	2
640	3	4	1	5.38	21	41	170	2
642	3	4	1	10.20	28	24	145	2
644	2	1	1	4.90	15	8	78	2
646	3	4	2	8.05	23	4	100	2
648	4	3	2	7.84	30	16	132	2
650	3	4	1	10.40	19	8	124	2
652	3	2	<1	9.22	26	41	119	2
654	3	2	1	15.40	22	16	215	2
656	13	13	12	8.90	19	29	201	2
658	3	1	<1	6.73	27	153	308	6
660	6	6	3	2.25	49	1.4%	440	12
662	94	78	29	12.00	47	33	116	2
664	151	132	68	23.20	51	37	138	2

APPENDIX B. (continued)

Sample no.	TU ₃ O ₈ (ppm)	HxU ₃ O ₈ (ppm)	CxU ₃ O ₈ (ppm)	LOI (%)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ag (ppm)
666	9	5	3	3.76	21	16	80	2
668	7	4	2	7.80	146	95	396	3
670	9	5	3	9.04	21	12	104	2
672	9	8	4	13.90	41	12	99	2
674	9	7	3	11.10	54	16	129	2
676	6	8	5	6.99	397	8.4%	0.11%	10
678	2	4	3	4.49	12	33	71	2
680	3	4	<1	5.87	30	12	124	2
682	6	7	4	21.30	46	17	127	2
684	17	19	14	4.91	31	45	188	2
686	32	34	14	4.78	16	45	126	2
688	17	16	8	4.51	18	41	308	2
690	6	7	3	13.80	38	87	888	2
692	15	12	6	6.98	49	45	462	2
694	21	11	5	6.56	25	121	265	2
696	47	30	17	4.90	14	29	81	2
698	16	7	3	8.58	16	29	71	2
700	16	10	4	11.08	24	12	73	2
702	22	13	5	8.68	21	12	98	2
704	7	4	1	6.20	21	17	73	2
706	43	31	15	6.01	24	12	95	2
708	6	2	1	3.05	13	17	60	1
710	8	2	2	5.75	23	33	107	2
712	7	5	1	3.30	21	0	60	2
714	4	2	<1	3.46	12	0	32	2
716	5	3	<1	2.85	17	0	51	2
718	4	4	<1	3.37	14	0	98	2
720	5	3	<1	6.19	20	21	122	2
722	6	3	<1	4.27	25	12	145	2
724	5	3	<1	5.34	23	4	99	2

APPENDIX B. (continued)

Sample no.	TU ₃ O ₈ (ppm)	HxU ₃ O ₈ (ppm)	CxU ₃ O ₈ (ppm)	LOI (%)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ag (ppm)
726	108	69	30	7.16	23	21	63	2
728	46	27	18	7.96	18	8	82	2
730	29	18	9	5.89	13	17	56	2
732	13	5	1	4.24	16	8	55	2
734	18	6	<1	5.10	23	29	68	2
736	27	14	6	4.10	18	17	69	2
738	15	7	3	5.47	30	0	114	3
740	9	6	<1	6.84	34	0	114	2
742	7	3	<1	2.77	19	4	82	2
746	2	*	*	*	*	*	*	*
747	17	*	*	*	*	*	*	*
748	13	*	*	*	*	*	*	*
749	21	*	*	*	*	*	*	*
750	1	*	*	*	*	*	*	*
751	7	*	*	*	*	*	*	*
752	9	*	*	*	*	*	*	*
754	32	*	*	*	*	*	*	*

Key to Abbreviations

TU₃O₈: "Total" fluorometric U₃O₈, HF-HClO₄-HNO₃ extraction.

HxU₃O₈: Hot HNO₃ extractable U₃O₈.

CxU₃O₈: Cold CH₃COOH-H₂O₂ extractable U₃O₈.

LOI: Loss on ignition at 550°C.

* Follow-up sample; these analyses were not run.

APPENDIX C
DISCUSSION OF STREAM-SEDIMENT DATA

APPENDIX C
DISCUSSION OF STREAM-SEDIMENT DATA

The fraction of the stream sediments smaller than 100 mesh was analyzed for uranium by fluorometry, using a HF-HClO₄-HNO₃ digestion (Latimer and others, 1974), a hot HNO₃ leach (Smith and Lynch, 1969), and a cold CH₃COOH-H₂O₂ leach (Rose and others, 1976). Cu, Pb, Zn, and Ag were determined by atomic absorption spectrophotometry, and loss on ignition was determined gravimetrically after heating the samples at 550°C for 16 hr. Results of the analyses are in Appendix B.

Comparison of Extraction Methods. In order to determine which extraction method was most effective in selecting anomalies when prospecting for vein uranium deposits in the Rocky Mountains and areas of similar climate and topography, the means of two groups of samples were compared. Table C-1 shows uranium values for 10 samples collected downstream from known mineralized areas (A, anomalous subset), and uranium values for 14 samples collected in areas where no uranium mineralization was known to exist (B, background subset), using the three extractions described above. A total uranium determination was also made for these 24 samples, using delayed neutron activation. This value also appears in Table C-1.

Student's t-test was used to determine whether there was a significant difference between the means of the A and B populations for each of the four analytical methods (statistical data, Table C-2). The HF-HClO₄-HNO₃ extraction, with a higher t-statistic, gives slightly better contrast between background and anomalous drainages, although the t-statistic values for all methods are significant at the 1 percent level. In addition, the mean of all 24 delayed neutron analyses was compared to the mean of the same group of "total" fluorometric analyses (the HF-HClO₄-HNO₃ method). (Unless otherwise specified, all values of U₃O₈ are "total" values.) The low t-statistic indicates that there is no significant difference between these two groups, even at the 30 percent level of significance. Since the "total" fluorometric procedure is normally not capable of dissolving resistate minerals, such as zircon, this indicates that the uranium in the anomalous drainages is not dominantly tied up in resistate minerals but is in a readily extractable form. Furthermore, the excellent contrast between the anomalous and background test areas indicates that anomalies in non-test areas are real. Resampling of the areas of highest uranium values showed that the high values were reproducible and were not a result of sample contamination.

Effect of Organic Material. In an effort to determine if stream-sediment uranium values reflected sample-to-sample differences in organic content, uranium values were correlated against loss on ignition (LOI) (Fig. C-1). (LOI can be an excellent indicator of organic content, as in Rose and others, 1976, p. 14.) The resulting least-squares fit is:

$$U_3O_8 \text{ (ppm)} = 2.5 \text{ LOI (\%)} - 0.125.$$

Although the value of the correlation coefficient (0.395) is significant at the 1 percent level (99% confidence), no correlation of the data was made for LOI. Even though the effect of LOI was judged to be genuine, the magnitude of the effect is small except at the highest values of LOI.

APPENDIX C. (continued)

Elements Other Than Uranium. Because the Gunnison project area is host to a large number of base-metal deposits, the stream-sediment samples were analyzed for Cu, Pb, Zn, and Ag to determine if there is any relationship between base-metal and uranium mineralization in the project area (Figs. C-2, C-3, C-4; Ag was not plotted because variation in Ag content was very slight). Table C-3 contains the various coefficients and the values of the correlation coefficient for each regression. None of the correlation coefficients were significant, which suggests that there is no discernable relationship between uranium and base metals in the project area. Base-metal deposits in the project area, therefore, were of no higher priority than other areas as targets for investigation, although there is no evidence to indicate that structures hosting base-metal deposits could not also host uranium deposits.

The sample location map (Pl. 2) shows that sampling was conducted at wide spacings in different parts of the project area. In the southeastern part of the area, in the vicinity of the Big Red No. 22 uranium occurrence, the anomalies were detected effectively in samples taken an average of 2 mi from uranium mineralization. Sample 708, however, taken on Roaring Judy Creek approximately 6 mi downstream from the North Star No. 7 uranium occurrence, showed no indication of the uranium mineralization upstream. Evidence accumulated during this project indicates that uranium anomalies in stream sediment tend to become indistinguishable from regional background at distances 4 to 5 mi downstream from mineralization (in areas similar in topography and climate to the Gunnison project area). Analyses of single samples, which represent drainage basins larger than approximately 30 sq mi, were of limited utility in this reconnaissance survey, in which uranium-only analyses were used.

Figure C-1. U_3O_8 versus loss on ignition in stream-sediment samples.

Figure C-2. U_3O_8 versus Cu in stream-sediment samples.

Figure C-3. U_3O_8 versus Pb in stream-sediment samples.

Figure C-4. U_3O_8 versus Zn in stream-sediment samples.

TABLE C-1. COMPARISON OF ANALYTICAL METHODS

Sample no.	Pop.	DNC U ₃ O ₈	TU ₃ O ₈	HxU ₃ O ₈	CxU ₃ O ₈
606	A	20	16	13	9
609	A	20	16	12	5
613	A	19	17	15	8
617	A	28	26	19	11
626	A	32	19	18	15
628	A	39	30	22	19
694	A	18	21	11	5
708	A	4	6	2	1
710	A	5	8	2	2
738	A	11	15	7	3
601	B	5	3	3	1
603	B	5	3	3	1
619	B	13	11	9	6
621	B	11	11	7	5
630	B	14	17	10	8
632	B	12	15	9	8
634	B	4	2	3	1
636	B	9	13	8	4
638	B	5	5	4	1
640	B	5	3	4	1
642	B	6	3	4	1
644	B	5	2	1	1
646	B	4	3	4	2
648	B	5	4	3	2

KEY TO ABBREVIATIONS

A: Anomalous subset (see text).

B: Background subset.

DNC U₃O₈: U₃O₈ by delayed neutron counting.TU₃O₈: "Total" fluorometric U₃O₈ (HF-HClO₄-HNO₃ extraction).HxU₃O₈: Hot HNO₃ extractable U₃O₈.CxU₃O₈: CH₃COOH-H₂O₂ extractable U₃O₈.

TABLE C-2. STATISTICAL PARAMETERS USED IN COMPARISON OF EXTRACTION METHODS

Method	Population	n	$\bar{X}$	s^2	Sp	t
DNC	A	10	19.6	126.0	7.704	3.825
DNC	B	14	7.4	13.2		
T	A	10	16.4	68.3	6.345	4.468
T	B	14	6.8	28.8		
Hx	A	10	12.1	46.8	5.241	3.834
Hx	B	14	5.1	8.1		
Cx	A	10	7.8	34.2	4.271	2.714
Cx	B	14	3.0	7.2		
DNC	All	24	12.5	94.8	8.955	0.503
T	All	24	11.2	65.6		

Note: n = number of elements, $\bar{X}$ = mean, s^2 = variance of each subset.
 Sp = pooled standard deviation, t = t-statistic. All other abbreviations
 are the same as Table C-1.

TABLE C-3. REGRESSIONS OF U_3O_8 AGAINST OTHER ELEMENTS

y	x	m	b	r
log ppm U_3O_8	log ppm Cu	8.43×10^{-2}	8.80×10^{-1}	6.4×10^{-2}
log ppm U_3O_8	log ppm Pb	-4.01×10^{-2}	-4.71	2.2×10^{-3}
log ppm U_3O_8	log ppm Zn	-1.55×10^{-2}	1.04	1.4×10^{-2}

All equations are of the form $y = mx + b$; r is the linear correlation coefficient.

PLATE 1. GENERALIZED GEOLOGY OF THE GUNNISON AREA
(AFTER TWETO AND OTHERS, 1976)

PLATE 3.