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

The following file is part of the Anderson Mine Collection

ACCESS STATEMENT

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

CONSTRAINTS STATEMENT

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

QUALITY STATEMENT

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

ANDERSON MINE

CHEMICAL DATA

Table 4. Summary of Emission Spectrographic Analyses, Anderson Mine, September, 1976.

e #	AM-135c	AM-135c	AM-135c	AM-119c	AM-119c	AM-113c	AM-7c	AM-17c
e Depth	460-461	469-470	472-473	119-120	132-133	300-301	18-19	131-132
hology	lignite & sltstn	marl	marl & lignite	marl	lignite	lignite & sltstn	mdstn	mdstn
Fe	1.5%	.2%	1.5%	.5%	2%	2%	2%	3%
Ca	.5%	15%	10%	20%	.7%	.2%	.3%	.2%
Mg	.5%	.2%	.2%	1%	1%	.3%	1.5%	2%
Ag	<1	<1	<1	<1	<1	<1	<1	<1
As	<500	<500	500	<500	<500	<500	<500	<500
B	20	10	15	15	20	20	20	30
Ba	200	10	7	150	300	200	200	100
Bi	<2	<2	<2	<2	<2	<2	<2	2
Cd	<10	<10	<10	<10	<10	<10	<10	<10
Co	<5	<5	<5	<5	10	5	7	10
Cr	20	10	70	10	30	50	70	50
Cu	10	2	15	2	20	20	20	30
Ga	<10	<10	<10	<10	<10	<10	<10	<10
Ge	<20	<20	<20	<20	<20	<20	<20	<20
La	20	20	20	20	50	30	50	70
Mn	50	150	150	200	100	150	150	200
Mo	5	70 ⊙	300 ⊙	2	50 ⊙	30 ⊙	<2	<2
Nb	<20	<20	<20	<20	<20	<20	<20	20
Ni	15	<5	30	5	20	30	20	20
Pb	10	<10	10	10	20	15	20	10
Sb	<100	<100	<100	<100	<100	<100	<100	<100
Sc	<10	<10	<10	<10	10	<10	10	15
Sn	<10	<10	<10	<10	<10	<10	<10	<10
Sr	150	700	300	2,000	200	100	150	150
Ti	500	200	200	500	1,000	700	1,500	1,500
V	5,000 ⊙	200	500 ⊙	150	500 ⊙	700 ⊙	1,000 ⊙	200
W	<50	<50	<50	<50	<50	<50	<50	<50
Y	10	<10	<10	<10	15	10	20	20
	<200	<200	<200	<200	<200	<200	<200	<200
	50	30	<20	30	50	50	50	50

⊙ Anomalous value

Table 4. Summary of Emission Spectrographic Analyses, Anderson Mine, September, 1976.

Hole #	AM-149c	AM-51c	AM-51c	AM-51c	AM-51c
Core Depth	408-409	445-446	446-447	464-465	446-467
Lithology	mdstn	lignite & mdstn	lignite & mdstn	lignite & sltstn	sltstn
Fe	1%	1%	1%	2%	1.5%
Ca	.3%	.5%	.2%	.2%	.2%
Mg	.3%	.5%	.5%	.2%	.5%
Ag	<1	<1	<1	<1	<1
As	<500	<500	<500	<500	700 ⊙
B	20	10	15	15	15
Ba	150	100	150	200	100
Be	<2	<2	<2	<2	<2
Bi	<10	<10	<10	<10	<10
Cd	<50	<50	<50	<50	<50
Co	<5	<5	<5	<5	5
Cr	70	30	50	50	30
Cu	20	10	7	20	15
Ga	<10	<10	<10	<10	<10
Ge	<20	<20	<20	<20	<20
La	30	30	20	20	20
Mn	70	50	50	50	100
Mo	15 ⊙	<2	<2	10 ⊙	<2
Nb	<20	20	<20	<20	<20
Ni	15	5	5	10	5
Pb	10	<10	<10	<10	10
Sb	<100	<100	<100	<100	<100
Sc	<10	<10	<10	<10	<10
Sn	<10	<10	<10	<10	<10
Sr	150	100	150	200	150
Ti	500	500	500	300	300
V	700 ⊙	500 ⊙	700 ⊙	1,000 ⊙	1,500 ⊙
W	<50	<50	<50	<50	<50
Y	15	10	<10	10	10
Zn	<200	<200	<200	<200	<200
Zr	30	70	20	20	20

⊙ Anomalous value

Table 4.—Summary of Emission Spectrographic Analyses, Anderson Mine, September, 1976.

ple #	AM-18c	AM-26c	AM-26c	AM-26c	AM-26c	AM-49c	AM-49c	AM-140
ore Depth	297-298	636-637	720-721	721-721.25	723-724	612-613	615-616	393-39
ithology	lignite	ls & slstn	ss	ss	ss	chert	cherty ls	lignite
Fe	1.5%	.5%	3%	2%	5%	2%	.2%	1%
Ca	10%	15%	1%	1%	1.5%	.5%	10%	.2%
Mg	.5%	.2%	1.5%	1%	1.5%	.5%	.3%	.2%
Ag	<1	<1	<1	<1	<1	<1	<1	<1
As	<500	<500	500	<500	<500	<500	<500	<500
B	15	<10	20	30	15	15	<10	50
Ba	100	20	700	700	700	100	10	50
Be	<2	<2	2	2	2	<2	<2	<2
Bi	<10	<10	<10	<10	<10	<10	<10	<10
Cd	<50	<50	<50	<50	<50	<50	<50	<50
Co	<5	<5	15	5	15	<5	<5	<5
Cr	50	15	100 ⊙	50	100 ⊙	70	<10	150
Cu	20	5	50	30	30	20	2	10
Ga	<10	<10	10	<10	10	<10	<10	<10
Ge	<20	<20	<20	<20	<20	<20	<20	<20
)	20	20	50	50	50	30	20	30
.n	500	300	200 ⊙	200 ⊙	200 ⊙	70	500	20
Mo	15 ⊙	<2	<2	<2	2	<2	<2	20
Nb	<20	<20	20	<20	20	<20	<20	<20
Ni	15	5	50	20	70	15	5	10
Pb	10	<10	30	20	20	10	<10	<10
Sb	<100	<100	<100	<100	<100	<100	<100	<100
Sc	<10	<10	15 ⊙	10 ⊙	20 ⊙	<10	<10	<10
Sn	<10	<10	<10	<10	<10	<10	<10	<10
Sr	1,000	200	1,000	1,000	1,000	70	500	100
Ti	500	100	2,000	1,000	3,000	500	100	500
V	50	30	200 ⊙	300 ⊙	300 ⊙	1,000 ⊙	100	700 ⊙
W	<50	<50	<50	<50	<50	<50	<50	<50
Y	<10	<10	30	10	20	20	<10	10
Zn	<200	<200	<200	<200	<200	<200	<200	<200
Zr	20	20	50	30	50	30	20	50

⊙ Anomalous value

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 20986
Page 1 of 17 Pages
Date 2 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 184C 475-476'
A342-1

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	230	Iron	42000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	230	Praseodymium	
Zinc	310	Cesium		Neodymium	
Cadmium		Rubidium	430	Samarium	
Mercury		Barium	780	Europium	
Gallium		Strontium	640	Gadolinium	
Indium		Titanium	850	Terbium	
Thallium		Zirconium	320	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	300	Vanadium	760	Thulium	
Arsenic	250	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium		Yttrium	170
Selenium		Molybdenum	81		
Tellurium		Tungsten			
Bromine		Uranium	750		
Iodine		Manganese	250		

By Merlyn L. Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 20986
Page 2 of 17 Pages
Date 2 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 184C 507-508' A342-2

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	100	Iron	7100	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	35	Praseodymium	
Zinc	110	Cesium		Neodymium	
Cadmium		Rubidium	72	Samarium	
Mercury		Barium	350	Europium	
Gallium		Strontium	2400	Gadolinium	
Indium		Titanium	490	Terbium	
Thallium		Zirconium	410	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	100	Vanadium	240	Thulium	
Arsenic	79	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium		Yttrium	45
Selenium		Molybdenum	24		
Tellurium		Tungsten			
Bromine		Uranium	600		
Iodine		Manganese	790		

By Merlyn L. Salmon

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 20986
Page 3 of 17 Pages
Date 2 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 184C 532-533'
A342-3

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	180	Iron	15000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	84	Praseodymium	
Zinc	130	Cesium		Neodymium	
Cadmium		Rubidium	160	Samarium	
Mercury		Barium	600	Europium	
Gallium		Strontium	530	Gadolinium	
Indium		Titanium	1100	Terbium	
Thallium		Zirconium	200	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	87	Vanadium	1000	Thulium	
Arsenic	270	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	190	Yttrium	
Selenium		Molybdenum	140		
Tellurium		Tungsten			
Bromine		Uranium	720		
Iodine		Manganese	220		

By Merlyn L. Salmon

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 20986
Page 4 of 17 Pages
Date 2 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 184C 672-673'
A342-4

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	160	Iron	25000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	150	Praseodymium	
Zinc	360	Cesium		Neodymium	
Cadmium		Rubidium	340	Samarium	
Mercury		Barium	620	Europium	
Gallium		Strontium	390	Gadolinium	
Indium		Titanium	830	Terbium	
Thallium		Zirconium	180	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead		Vanadium	2200	Thulium	
Arsenic	320	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	230	Yttrium	76
Selenium		Molybdenum	360		
Tellurium		Tungsten			
Bromine		Uranium	1500		
Iodine		Manganese	350		

By Merlyn Salmon

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 20986
Page 12 of 17 Pages
Date 2 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 222C 110-111'
A342-12

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	100	Iron	5300	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	84	Praseodymium	
Zinc	150	Cesium		Neodymium	
Cadmium		Rubidium	150	Samarium	
Mercury		Barium	120	Europium	
Gallium		Strontium	1700	Gadolinium	
Indium		Titanium	500	Terbium	
Thallium		Zirconium	360	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	49	Vanadium	79	Thulium	
Arsenic	33	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	10	Yttrium	47
Selenium		Molybdenum	82		
Tellurium		Tungsten			
Bromine		Uranium	1200		
Iodine		Manganese	410		

By Merlyn L. Salmon

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 20996
Page 1 of 4 Pages
Date 4 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM-222C 116-117'
B151-3

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	120	Iron	12000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	65	Praseodymium	
Zinc	110	Cesium		Neodymium	
Cadmium		Rubidium	100	Samarium	
Mercury		Barium	830	Europium	
Gallium		Strontium	620	Gadolinium	
Indium		Titanium	1600	Terbium	
Thallium		Zirconium	260	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead		Vanadium		Thulium	
Arsenic		Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	140	Yttrium	42
Selenium		Molybdenum	38		
Tellurium		Tungsten			
Bromine		Uranium	210		
Iodine		Manganese	130		

By Merlyn L. Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 20986
Page 13 of 17 Pages
Date 2 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 229C 124-125'
A342-13

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	54	Iron	16000	Lanthanum	
Silver		Cobalt	34	Cerium	
Gold		Nickel	150	Praseodymium	
Zinc	220	Cesium		Neodymium	
Cadmium		Rubidium	230	Samarium	
Mercury		Barium	1100	Europium	
Gallium		Strontium	1000	Gadolinium	
Indium		Titanium	1000	Terbium	
Thallium		Zirconium	310	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium	59	Erbium	
Lead	49	Vanadium	240	Thulium	
Arsenic	44	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium		Yttrium	62
Selenium		Molybdenum	23		
Tellurium		Tungsten			
Bromine		Uranium	800		
Iodine		Manganese	180		

By Merlyn Salmon

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 20986
Page 14 of 17 Pages
Date 2 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM-244C 78-79
A342-14

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	240	Iron	22000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	130	Praseodymium	
Zinc	150	Cesium		Neodymium	
Cadmium		Rubidium	130	Samarium	
Mercury		Barium	420	Europium	
Gallium		Strontium	530	Gadolinium	
Indium		Titanium	1200	Terbium	
Thallium		Zirconium	180	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	46	Vanadium	320	Thulium	
Arsenic	65	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium		Yttrium	56
Selenium		Molybdenum	44		
Tellurium		Tungsten			
Bromine		Uranium	380		
Iodine		Manganese	260		

By Merlyn L. Salmon

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 20996
Page 2 of 4 Pages
Date 4 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 254C 124-125'
B151-7

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	96	Iron	13000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	70	Praseodymium	
Zinc	150	Cesium		Neodymium	
Cadmium		Rubidium	170	Samarium	
Mercury		Barium	1100	Europium	
Gallium		Strontium	250	Gadolinium	
Indium		Titanium	1100	Terbium	
Thallium		Zirconium	140	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	100	Vanadium		Thulium	
Arsenic		Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium		Yttrium	54
Selenium		Molybdenum			
Tellurium		Tungsten			
Bromine		Uranium	180		
Iodine		Manganese	130		

By Merlyn L. Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 20996
Page 3 of 4 Pages
Date 4 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 2730 41-42' B151-9

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	170	Iron	20000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	51	Praseodymium	
Zinc	200	Cesium		Neodymium	
Cadmium		Rubidium	270	Samarium	
Mercury		Barium	680	Europium	
Gallium		Strontium	350	Gadolinium	
Indium		Titanium	650	Terbium	
Thallium		Zirconium	190	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	28	Vanadium		Thulium	
Arsenic	35	Columbium	33	Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	24	Yttrium	92
Selenium		Molybdenum	17		
Tellurium		Tungsten			
Bromine		Uranium	240		
Iodine		Manganese	1100		

By Merlyn Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 20996
Page 4 of 4 Pages
Date 4 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 273C 42-43'
B151-10

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	170	Iron	32000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	95	Praseodymium	
Zinc	220	Cesium		Neodymium	
Cadmium		Rubidium	260	Samarium	
Mercury		Barium	550	Europium	
Gallium		Strontium	410	Gadolinium	
Indium		Titanium	1700	Terbium	
Thallium		Zirconium	200	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	93	Vanadium		Thulium	
Arsenic		Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium		Yttrium	72
Selenium		Molybdenum			
Tellurium		Tungsten			
Bromine		Uranium	180		
Iodine		Manganese	390		

By Merlyn L. Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 20986
Page 15 of 17 Pages
Date 2 Mar 1977

TO:
Hazen Research, Inc

SAMPLE: AM 2730 139-140'
A342-15

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	170	Iron	15000	Lanthanum	
Silver		Cobalt	34	Cerium	
Gold		Nickel	150	Praseodymium	
Zinc	69	Cesium		Neodymium	
Cadmium		Rubidium	36	Samarium	
Mercury		Barium	630	Europium	
Gallium		Strontium	1800	Gadolinium	
Indium		Titanium	1300	Terbium	
Thallium		Zirconium	390	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead		Vanadium	480	Thulium	
Arsenic	30	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium		Yttrium	25
Selenium		Molybdenum	92		
Tellurium		Tungsten			
Bromine		Uranium	180		
Iodine		Manganese	150		

By Merlyn Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 20986
Page 16 of 17 Pages
Date 2 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 273C 158-159' A342-16

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	140	Iron	16000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	65	Praseodymium	
Zinc	150	Cesium		Neodymium	
Cadmium		Rubidium	190	Samarium	
Mercury		Barium	570	Europium	
Gallium		Strontium	440	Gadolinium	
Indium		Titanium	1200	Terbium	
Thallium		Zirconium	250	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	170	Vanadium		Thulium	
Arsenic	300	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	74	Yttrium	78
Selenium		Molybdenum	180		
Tellurium		Tungsten			
Bromine		Uranium	480		
Iodine		Manganese	260		

By Merlyn L. Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
QUANTITATIVE

ANALYTICAL REPORT

Job Number 20986
Page 17 of 17 Pages
Date 2 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 273C 176-177'
A342-17

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	110	Iron	35000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	150	Praseodymium	
Zinc	260	Cesium		Neodymium	
Cadmium		Rubidium	320	Samarium	
Mercury		Barium	1000	Europium	
Gallium		Strontium	500	Gadolinium	
Indium		Titanium	2300	Terbium	
Thallium		Zirconium	370	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	110	Vanadium	960	Thulium	
Arsenic	39	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	140	Yttrium	130
Selenium		Molybdenum	100		
Tellurium		Tungsten			
Bromine		Uranium	380		
Iodine		Manganese	350		

By Merlyn L. Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 20986
Page 10 of 17 Pages
Date 2 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 275C 47-48'
A342-10

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	110	Iron	8600	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	66	Praseodymium	
Zinc	270	Cesium		Neodymium	
Cadmium		Rubidium	310	Samarium	
Mercury		Barium	680	Europium	
Gallium		Strontium	2400	Gadolinium	
Indium		Titanium	1000	Terbium	
Thallium		Zirconium	560	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	71	Vanadium	2400	Thulium	
Arsenic	120	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	120	Yttrium	
Selenium		Molybdenum	87		
Tellurium		Tungsten			
Bromine		Uranium	3900		
Iodine		Manganese	290		

By Merlyn L. Salmon

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 20986
Page 5 of 17 Pages
Date 2 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 289C 81-82' A342-5

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	180	Iron	13000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	100	Praseodymium	
Zinc	250	Cesium		Neodymium	
Cadmium		Rubidium	140	Samarium	
Mercury		Barium	630	Europium	
Gallium		Strontium	1500	Gadolinium	
Indium		Titanium	1000	Terbium	
Thallium		Zirconium	350	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead		Vanadium		Thulium	
Arsenic		Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium		Yttrium	85
Selenium		Molybdenum	39		
Tellurium		Tungsten			
Bromine		Uranium	1100		
Iodine		Manganese	380		

By Merlyn Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 20986
Page 6 of 17 Pages
Date 2 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 289C 143-144' A342-6

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	210	Iron	11000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	21	Praseodymium	
Zinc	130	Cesium		Neodymium	
Cadmium		Rubidium	120	Samarium	
Mercury		Barium	510	Europium	
Gallium		Strontium	2400	Gadolinium	
Indium		Titanium	980	Terbium	
Thallium		Zirconium	500	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	120	Vanadium		Thulium	
Arsenic	90	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	180	Yttrium	
Selenium		Molybdenum	49		
Tellurium		Tungsten			
Bromine		Uranium	250		
Iodine		Manganese	540		

By Merlyn L. Salmon

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 20986
Page 7 of 17 Pages
Date 2 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 337C 425-426'
A342-7

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	72	Iron	17000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	150	Praseodymium	
Zinc	120	Cesium		Neodymium	
Cadmium		Rubidium	96	Samarium	
Mercury		Barium	1400	Europium	
Gallium		Strontium	2500	Gadolinium	
Indium		Titanium	660	Terbium	
Thallium		Zirconium	560	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	200	Vanadium		Thulium	
Arsenic	77	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	250	Yttrium	96
Selenium		Molybdenum	45		
Tellurium		Tungsten			
Bromine		Uranium	750		
Iodine		Manganese	230		

By Merlyn L Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 20986
Page 11 of 17 Pages
Date 2 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 390C 279-280'
A342-11

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	140	Iron	19000	Lanthanum	
Silver		Cobalt	14	Cerium	
Gold		Nickel	74	Praseodymium	
Zinc	280	Cesium		Neodymium	
Cadmium		Rubidium	210	Samarium	
Mercury		Barium	580	Europium	
Gallium		Strontium	720	Gadolinium	
Indium		Titanium	810	Terbium	
Thallium		Zirconium	420	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	81	Vanadium	1100	Thulium	
Arsenic	70	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	140	Yttrium	35
Selenium		Molybdenum	170		
Tellurium		Tungsten			
Bromine		Uranium	1300		
Iodine		Manganese	370		

By Merlyn L. Salmon

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 20986
Page 8 of 17 Pages
Date 2 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 412C 130-131'
A342-8

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	190	Iron	24000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	83	Praseodymium	
Zinc	290	Cesium		Neodymium	
Cadmium		Rubidium	390	Samarium	
Mercury		Barium	1000	Europium	
Gallium		Strontium	550	Gadolinium	
Indium		Titanium	1200	Terbium	
Thallium		Zirconium	370	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	55	Vanadium	1000	Thulium	
Arsenic	170	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	70	Yttrium	72
Selenium		Molybdenum	170		
Tellurium		Tungsten			
Bromine		Uranium	4000		
Iodine		Manganese	160		

By Merlyn L. Salmon

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 20986
Page 9 of 17 Pages
Date 2 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 412C 141-142'
A342-9

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	220	Iron	47000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	200	Praseodymium	
Zinc	340	Cesium		Neodymium	
Cadmium		Rubidium	240	Samarium	
Mercury		Barium	1400	Europium	
Gallium		Strontium	1600	Gadolinium	
Indium		Titanium	1900	Terbium	
Thallium		Zirconium	560	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	46	Vanadium	1700	Thulium	
Arsenic	170	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium		Yttrium	32
Selenium		Molybdenum	100		
Tellurium		Tungsten			
Bromine		Uranium	1500		
Iodine		Manganese	480		

By Merlyn L. Salmon

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 9 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 424C 425-426'
B141-21

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	94	Iron	21000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	40	Praseodymium	
Zinc	360	Cesium		Neodymium	
Cadmium		Rubidium	160	Samarium	
Mercury		Barium	540	Europium	
Gallium		Strontium	350	Gadolinium	
Indium		Titanium	500	Terbium	
Thallium		Zirconium	200	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	530	Vanadium	310	Thulium	
Arsenic		Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	150	Yttrium	69
Selenium		Molybdenum	220		
Tellurium		Tungsten			
Bromine		Uranium	310		
Iodine		Manganese	240		

By Melvyn L. Salmon

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 22 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 4310 562-563' B141-53

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	110	Iron	7700	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	38	Praseodymium	
Zinc	160	Cesium		Neodymium	
Cadmium		Rubidium	220	Samarium	
Mercury		Barium	450	Europium	
Gallium		Strontium	2400	Gadolinium	
Indium		Titanium	1100	Terbium	
Thallium		Zirconium	620	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead		Vanadium		Thulium	
Arsenic	71	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium		Yttrium	62
Selenium		Molybdenum	300		
Tellurium		Tungsten			
Bromine		Uranium	690		
Iodine		Manganese	300		

By Merlyn L. Salmon

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 23 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 4310 563-564' B141-54

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	110	Iron	10000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	62	Praseodymium	
Zinc	110	Cesium		Neodymium	
Cadmium		Rubidium	40	Samarium	
Mercury		Barium	230	Europium	
Gallium		Strontium	1700	Gadolinium	
Indium		Titanium	970	Terbium	
Thallium		Zirconium	360	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead		Vanadium		Thulium	
Arsenic	92	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	160	Yttrium	
Selenium		Molybdenum	110		
Tellurium		Tungsten			
Bromine		Uranium	260		
Iodine		Manganese	320		

By Merlyn L. Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 24 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 4310 575-576'
B141-58

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	90	Iron	18000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	74	Praseodymium	
Zinc	120	Cesium		Neodymium	
Cadmium		Rubidium	210	Samarium	
Mercury		Barium	540	Europium	
Gallium		Strontium	590	Gadolinium	
Indium		Titanium	1300	Terbium	
Thallium		Zirconium	220	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	150	Vanadium		Thulium	
Arsenic	290	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	10	Yttrium	40
Selenium		Molybdenum	450		
Tellurium		Tungsten			
Bromine		Uranium	340		
Iodine		Manganese	250		

By Merlyn L. Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 25 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 4310 576-577'
B141-59

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	74	Iron	11000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	40	Praseodymium	
Zinc	170	Cesium		Neodymium	
Cadmium		Rubidium	72	Samarium	
Mercury		Barium	540	Europium	
Gallium		Strontium	1500	Gadolinium	
Indium		Titanium		Terbium	
Thallium		Zirconium	360	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	86	Vanadium		Thulium	
Arsenic	190	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium		Yttrium	13
Selenium		Molybdenum	220		
Tellurium		Tungsten			
Bromine		Uranium	180		
Iodine		Manganese	290		

By Merlyn Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 26 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 4310 578-579' B141-61

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	110	Iron	6800	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	38	Praseodymium	
Zinc	48	Cesium		Neodymium	
Cadmium		Rubidium	130	Samarium	
Mercury		Barium	680	Europium	
Gallium		Strontium	1300	Gadolinium	
Indium		Titanium	990	Terbium	
Thallium		Zirconium	280	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	43	Vanadium		Thulium	
Arsenic	140	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	11	Yttrium	14
Selenium		Molybdenum	190		
Tellurium		Tungsten			
Bromine		Uranium	300		
Iodine		Manganese	310		

By Merlyn L. Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 19 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 434C 529-530!
B141-48

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	160	Iron	16000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	130	Praseodymium	
Zinc	130	Cesium		Neodymium	
Cadmium		Rubidium	130	Samarium	
Mercury		Barium	510	Europium	
Gallium		Strontium	340	Gadolinium	
Indium		Titanium	500	Terbium	
Thallium		Zirconium	170	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	74	Vanadium	240	Thulium	
Arsenic		Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium		Yttrium	27
Selenium		Molybdenum	20		
Tellurium		Tungsten			
Bromine		Uranium	440		
Iodine		Manganese	230		

By Merlyn L. Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 20 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 4340 536-537'
B141-50

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	120	Iron	18000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	29	Praseodymium	
Zinc	140	Cesium		Neodymium	
Cadmium		Rubidium	180	Samarium	
Mercury		Barium	990	Europium	
Gallium		Strontium	600	Gadolinium	
Indium		Titanium	970	Terbium	
Thallium		Zirconium	350	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	93	Vanadium		Thulium	
Arsenic		Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium		Yttrium	57
Selenium		Molybdenum	73		
Tellurium		Tungsten			
Bromine		Uranium	180		
Iodine		Manganese	220		

By Merlyn L. Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 21 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 4340 537-538'
B141-51

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	150	Iron	24000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	73	Praseodymium	
Zinc	160	Cesium		Neodymium	
Cadmium		Rubidium	240	Samarium	
Mercury		Barium	750	Europium	
Gallium		Strontium	600	Gadolinium	
Indium		Titanium	1700	Terbium	
Thallium		Zirconium	480	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	120	Vanadium	310	Thulium	
Arsenic	31	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	10	Yttrium	110
Selenium		Molybdenum	23		
Tellurium		Tungsten			
Bromine		Uranium	220		
Iodine		Manganese	230		

By Merlyn L. Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 10 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 4350 98-99' B141-25

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	130	Iron	30000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	42	Praseodymium	
Zinc	260	Cesium		Neodymium	
Cadmium		Rubidium	240	Samarium	
Mercury		Barium	690	Europium	
Gallium		Strontium	360	Gadolinium	
Indium		Titanium	1600	Terbium	
Thallium		Zirconium	260	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	110	Vanadium	230	Thulium	
Arsenic		Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	130	Yttrium	120
Selenium		Molybdenum	10		
Tellurium		Tungsten			
Bromine		Uranium	490		
Iodine		Manganese	370		

By Merlyn Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 11 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 4350 100-101'
B141-27

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	81	Iron	22000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	130	Praseodymium	
Zinc	170	Cesium		Neodymium	
Cadmium		Rubidium	320	Samarium	
Mercury		Barium	1200	Europium	
Gallium		Strontium	640	Gadolinium	
Indium		Titanium	1800	Terbium	
Thallium		Zirconium	480	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	62	Vanadium	530	Thulium	
Arsenic	19	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	62	Yttrium	120
Selenium		Molybdenum	35		
Tellurium		Tungsten			
Bromine		Uranium	280		
Iodine		Manganese	370		

By Merlyn L Salmon

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 12 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 4350 132-133'
B141-35

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	170	Iron	20000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	84	Praseodymium	
Zinc	180	Cesium		Neodymium	
Cadmium		Rubidium	180	Samarium	
Mercury		Barium	400	Europium	
Gallium		Strontium	370	Gadolinium	
Indium		Titanium	1900	Terbium	
Thallium		Zirconium	280	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead		Vanadium		Thulium	
Arsenic	28	Columbium	35	Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium		Yttrium	120
Selenium		Molybdenum			
Tellurium		Tungsten			
Bromine		Uranium	62		
Iodine		Manganese	220		

By Merlyn Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 13 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 4350 133-134'
B141-36

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	110	Iron	22000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	130	Praseodymium	
Zinc	210	Cesium		Neodymium	
Cadmium		Rubidium	260	Samarium	
Mercury		Barium	900	Europium	
Gallium		Strontium	560	Gadolinium	
Indium		Titanium	2000	Terbium	
Thallium		Zirconium	460	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead		Vanadium		Thulium	
Arsenic		Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	230	Yttrium	85
Selenium		Molybdenum			
Tellurium		Tungsten			
Bromine		Uranium	96		
Iodine		Manganese	340		

By Merlyn Salmon

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 14 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 4350 135-136'
B141-38

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	78	Iron	12000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	120	Praseodymium	
Zinc	170	Cesium		Neodymium	
Cadmium		Rubidium	84	Samarium	
Mercury		Barium	420	Europium	
Gallium		Strontium	240	Gadolinium	
Indium		Titanium	810	Terbium	
Thallium		Zirconium	270	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	120	Vanadium		Thulium	
Arsenic		Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium		Yttrium	64
Selenium		Molybdenum	17		
Tellurium		Tungsten			
Bromine		Uranium	120		
Iodine		Manganese	130		

By Merlyn Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 15 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 4350 173-174'
B141-41

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	140	Iron	32000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	150	Praseodymium	
Zinc	230	Cesium		Neodymium	
Cadmium		Rubidium	410	Samarium	
Mercury		Barium	890	Europium	
Gallium		Strontium	390	Gadolinium	
Indium		Titanium	2300	Terbium	
Thallium		Zirconium	250	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	130	Vanadium		Thulium	
Arsenic		Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium		Yttrium	100
Selenium		Molybdenum			
Tellurium	87	Tungsten			
Bromine		Uranium	180		
Iodine		Manganese	420		

By Merlyn Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 16 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 435C 180-181'
B141-43

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	98	Iron	19000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	62	Praseodymium	
Zinc	88	Cesium		Neodymium	
Cadmium		Rubidium	100	Samarium	
Mercury		Barium	680	Europium	
Gallium		Strontium	430	Gadolinium	
Indium		Titanium	330	Terbium	
Thallium		Zirconium	200	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	200	Vanadium	390	Thulium	
Arsenic	19	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	70	Yttrium	56
Selenium		Molybdenum			
Tellurium		Tungsten			
Bromine		Uranium	150		
Iodine		Manganese	210		

By Merlyn Salmon

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 17 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 4360 221-222'
B141-45

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	200	Iron	16000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	30	Praseodymium	
Zinc	210	Cesium		Neodymium	
Cadmium		Rubidium	220	Samarium	
Mercury		Barium	420	Europium	
Gallium		Strontium	640	Gadolinium	
Indium		Titanium	970	Terbium	
Thallium		Zirconium	310	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium	42	Erbium	
Lead	64	Vanadium	530	Thulium	
Arsenic	28	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium		Yttrium	33
Selenium		Molybdenum	54		
Tellurium		Tungsten			
Bromine		Uranium	1200		
Iodine		Manganese	200		

By Merlyn L. Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 18 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 4360 222-223'
B141-46

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	180	Iron	21000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	110	Praseodymium	
Zinc	150	Cesium		Neodymium	
Cadmium		Rubidium	210	Samarium	
Mercury		Barium	1100	Europium	
Gallium		Strontium	520	Gadolinium	
Indium		Titanium	1600	Terbium	
Thallium		Zirconium	320	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	110	Vanadium		Thulium	
Arsenic	70	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	180	Yttrium	77
Selenium		Molybdenum	26		
Tellurium		Tungsten			
Bromine		Uranium	290		
Iodine		Manganese	370		

By Merlyn L. Salmon

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 1 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 444C 344-345'
B141-3

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	91	Iron	11000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	20	Praseodymium	
Zinc	170	Cesium		Neodymium	
Cadmium		Rubidium	330	Samarium	
Mercury		Barium	580	Europium	
Gallium		Strontium	410	Gadolinium	
Indium		Titanium	970	Terbium	
Thallium		Zirconium	170	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	28	Vanadium		Thulium	
Arsenic	140	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium		Yttrium	32
Selenium		Molybdenum	80		
Tellurium		Tungsten			
Bromine		Uranium	2600		
Iodine		Manganese	130		

By Melyn Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 2 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 444C 365-366' B141-7

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	70	Iron	18000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	50	Praseodymium	
Zinc	190	Cesium		Neodymium	
Cadmium		Rubidium	200	Samarium	
Mercury		Barium	1100	Europium	
Gallium		Strontium	320	Gadolinium	
Indium		Titanium	1100	Terbium	
Thallium		Zirconium	270	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	110	Vanadium	610	Thulium	
Arsenic	180	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	230	Yttrium	48
Selenium		Molybdenum	65		
Tellurium		Tungsten			
Bromine		Uranium	340		
Iodine		Manganese	530		

By Melvyn Salmon

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 3 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 444C 388-389' B141-10

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	84	Iron	13000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	50	Praseodymium	
Zinc	130	Cesium		Neodymium	
Cadmium		Rubidium	200	Samarium	
Mercury		Barium	840	Europium	
Gallium		Strontium	540	Gadolinium	
Indium		Titanium	1100	Terbium	
Thallium		Zirconium	290	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	81	Vanadium		Thulium	
Arsenic	100	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	100	Yttrium	44
Selenium		Molybdenum	51		
Tellurium		Tungsten			
Bromine		Uranium	330		
Iodine		Manganese	260		

By Merlyn L. Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 4 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 4440 389-390' B141-11

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	170	Iron	14000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	86	Praseodymium	
Zinc	190	Cesium		Neodymium	
Cadmium		Rubidium	240	Samarium	
Mercury		Barium	620	Europium	
Gallium		Strontium	410	Gadolinium	
Indium		Titanium	1300	Terbium	
Thallium		Zirconium	210	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	34	Vanadium	620	Thulium	
Arsenic	170	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium		Yttrium	81
Selenium		Molybdenum	88		
Tellurium		Tungsten			
Bromine		Uranium	450		
Iodine		Manganese	260		

By Merlyn Salmon

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 5 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 444C 390-391'
B141-12

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	200	Iron	25000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	110	Praseodymium	
Zinc	220	Cesium		Neodymium	
Cadmium		Rubidium	360	Samarium	
Mercury		Barium	870	Europium	
Gallium		Strontium	480	Gadolinium	
Indium		Titanium	1600	Terbium	
Thallium		Zirconium	340	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead		Vanadium		Thulium	
Arsenic	92	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium		Yttrium	130
Selenium		Molybdenum	65		
Tellurium		Tungsten			
Bromine		Uranium	290		
Iodine		Manganese	450		

By Melvyn Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 6 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 444C 392-393'
B141-13

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	180	Iron	24000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	110	Praseodymium	
Zinc	180	Cesium		Neodymium	
Cadmium		Rubidium	330	Samarium	
Mercury		Barium	1200	Europium	
Gallium		Strontium	560	Gadolinium	
Indium		Titanium	1900	Terbium	
Thallium		Zirconium	280	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	84	Vanadium		Thulium	
Arsenic		Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	24	Yttrium	43
Selenium		Molybdenum	42		
Tellurium		Tungsten			
Bromine		Uranium	300		
Iodine		Manganese	420		

By Merlyn L. Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSEE ABOVE.

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 7 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 444C 422-423'
B141-18

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	110	Iron	16000	Lanthanum	
Silver		Cobalt	32	Cerium	
Gold		Nickel	110	Praseodymium	
Zinc	120	Cesium		Neodymium	
Cadmium		Rubidium	200	Samarium	
Mercury		Barium	580	Europium	
Gallium		Strontium	1200	Gadolinium	
Indium		Titanium	970	Terbium	
Thallium		Zirconium	270	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead	87	Vanadium	300	Thulium	
Arsenic	72	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium		Yttrium	74
Selenium		Molybdenum	220		
Tellurium		Tungsten			
Bromine		Uranium	260		
Iodine		Manganese	250		

By Merlyn Salmon

FLUO RESCENT
X RAY
SPEC TROGRAPHIC
Analytical Laboratory

718 Sherman Street (rear)
Denver, Colorado 80203
Phone (303) 837-1396
Merlyn L. Salmon, Manager

XXXX QUALITATIVE
XXXX SEMI-QUANTITATIVE
_____ QUANTITATIVE

ANALYTICAL REPORT

Job Number 21018
Page 8 of 26 Pages
Date 11 Mar 1977

TO: Hazen Research, Inc

SAMPLE: AM 444C 423-424'
B141-19

NOTE: The values below are estimated concentrations in ppm for the metal equivalent of the indicated elements. No check was made for elements with atomic numbers less than 22 (below titanium).

Copper	160	Iron	31000	Lanthanum	
Silver		Cobalt		Cerium	
Gold		Nickel	130	Praseodymium	
Zinc	230	Cesium		Neodymium	
Cadmium		Rubidium	460	Samarium	
Mercury		Barium	560	Europium	
Gallium		Strontium	520	Gadolinium	
Indium		Titanium	1800	Terbium	
Thallium		Zirconium	200	Dysprosium	
Germanium		Hafnium		Holmium	
Tin		Thorium		Erbium	
Lead		Vanadium		Thulium	
Arsenic	250	Columbium		Ytterbium	
Antimony		Tantalum		Lutetium	
Bismuth		Chromium	260	Yttrium	84
Selenium		Molybdenum	170		
Tellurium		Tungsten			
Bromine		Uranium	600		
Iodine		Manganese	280		

By Merlyn L. Salmon

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLE WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82601

ANALYTICAL REPORT

Company Minerals Exploration Company Type of sample Mineral Crude
Address Casper, Wyoming Date April 16, 1975 Lab. No. 15895
Other Pertinent Data
Hole No. AM-1C

Analytical method Analytical classification Quantitative

PERCENT BY WEIGHT

Sample	Depth		U_3O_8	eU_3O_8*	V_2O_5		
1	60.5-61		0.056	0.071	0.076		
2	64.5-65		0.021	0.015	0.036		
3	65-65.5		0.029	0.037	0.044		
4	65.5-66		0.017	0.013	0.043		
5	66-66.5		0.019	0.024	0.025		
6	66.5-67		0.102	0.109	0.061		
7	67-67.5		0.021	0.018	0.020		
8	67.5-68		0.051	0.043	0.030		
9	68-68.5		0.012	0.021	0.009		
10	68.5-69		0.020	0.025	0.014		
11	94.5-95		0.004	0.002	0.029		
12	95-95.5		0.084	0.084	0.025		
13	95.5-96		0.031	0.118	0.037		
14	96-96.5		0.054	0.077	0.068		
15	96.5-97		0.043	0.022	0.008		
16	97-97.5		0.005	0.011	0.005		
17	97.5-98		0.015	0.056	0.021		
18	98-98.5		0.004	0.011	0.005		
19	98.5-99		0.007	0.014	0.020		
20	99-99.5		0.013	0.054	0.021		
21	99.5-100		0.021	0.075	0.036		
22	100-100.5		0.214	0.170	0.133		
23	100.5-101		0.121	0.121	0.110		
24	101-101.5		0.012	0.038	0.050		
25	101.5-102		0.009	0.015	0.049		
26	103.5-104		0.016	0.030	0.125		
27	104-104.5		0.098	0.096	0.168		
28	104.5-105		0.040	0.028	0.023		
29	105-105.5		0.028	0.041	0.062		
30	105.5-106		0.051	0.049	0.169		
Threshold							

ND - Not detected

Remarks * Closed can gamma only assay for eU308.

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82601

ANALYTICAL REPORT

Company Minerals Exploration Company Type of sample Mineral Crude
Address Casper, Wyoming Date April 16, 1975 Lab. No. 15895
Other Pertinent Data
Hole No. AM-1C

Analytical method Analytical classification Quantitative

PERCENT BY WEIGHT

	Sample	Depth		U_3O_8	eU_3O_8*	V_2O_5		
1	31	106-106.5		0.015	0.020	0.026		
2	32	106.5-107		0.013	0.021	0.020		
3	33	109.5-110		0.037	0.021	0.026		
4	34	110-110.5		0.023	0.033	0.025		
5	35	110.5-111		0.028	0.026	0.026		
6	36	111-111.5		0.048	0.044	0.071		
7	37	111.5-112		0.029	0.036	0.039		
8	38	112-112.5		0.106	0.113	0.035		
9	39	112.5-113		0.048	0.110	0.041		
10	40	113-113.5		0.016	0.021	0.034		
	41	113.5-114		0.017	0.021	0.088		
	42	114-114.5		0.008	0.067	0.053		
13	43	114.5-115		0.152	0.100	0.110		
14	44	115-115.5		0.129	0.117	0.028		
15	45	115.5-116		0.060	0.078	0.020		
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
Threshold								

ND - Not detected

Remarks * Closed can gamma only assay for eU_3O_8.

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82602

ANALYTICAL REPORT

Company Minerals Exploration Company Type of sample Mineral-Crude
Address Casper, Wyoming Date April 15, 1976 Lab. No. 19491
Other Pertinent Data
Hole No.: AM-7C

Analytical method Analytical classification Quantitative

Sample	Depth	B-8	eU_3O_8* % by wt.	U_3O_8 % by wt.	V_2O_5 % by wt.	CO_2 % by wt.	Total ** Sulfur (% by wt.
2	17-18	.015	0.018	0.009	0.128	0.32	0.25
3	18-19	.312	0.198	0.179	0.198	0.06	0.26
4	19-20	.407	0.321	0.316	0.162	0	0.33
5	20-21	.062	0.049	0.045	0.111	0	0.30
6	21-22	.016	0.010	0.003	0.052	0.01	0.29
7	95-96	.012	0.023	0.017	0.012	0	0.29
8	97-98	.019	0.020	0.009	0.018	0	0.31
9	98-99	.010	0.034	0.016	0.015	0	0.30
10	99-100	.023	0.029	0.011	0.012	0	0.26
11	100-101	.011	0.026	0.007	0.011	0	0.19
12	104-105	.007	0.019	0.005	0.027	0	0.03
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
Threshold							

ND - Not detected

Remarks * Closed can gamma only assay for eU_3O_8.
** Total sulfur value includes sulfide, sulfate and elemental sulfur.

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82602

ANALYTICAL REPORT

Company Minerals Exploration Company Type of sample Mineral-Crude
Address Casper, Wyoming Date April 27, 1976 Lab. No. 19609
Other Pertinent Data
Hole No.: AM-13C

Analytical method Analytical classification Quantitative

	Sample	Depth		U_3O_8 % by wt.	eU_3O_8* % by wt.	V_2O_5 % by wt.	Total ** Sulfur % by wt.	CO_2 % by wt.
1	1	115-116		0.013	0.021	0.012	0.01	24.67
2	2	119-120		0.003	0.024	0.017	0.01	1.62
3	3	120-121		0.004	0.008	0.018	0.01	6.87
4	4	121-122		0.007	0.014	0.019	0.01	6.20
5	5	122-123		0.012	0.018	0.020	0.01	10.49
6	6	123-124		0.008	0.023	0.021	0.01	8.20
7	7	124-125		0.012	0.019	0.023	0.02	15.95
8	8	125-126		0.008	0.019	0.026	0.01	14.84
9	9	126-127		0.047	0.053	0.083	0.01	9.23
10	10	127-128		0.018	0.025	0.029	0.01	11.45
	11	128-129		0.022	0.027	0.056	0.01	9.08
	12	129-130		0.001	0.007	0.004	0.01	16.62
13	13	130-131		0.007	0.012	0.006	0.01	26.22
14	14	131-132		0.030	0.038	0.071	0.02	7.16
15	15	132.8-132.8		0.022	0.033	0.062	0.01	3.18
16	16	132.8-133.8		0.005	0.010	0.038	0.01	13.44
17	17	133.8-134.7		0.017	0.030	0.077	0.01	14.11
18	18	134.7-135.7		0.024	0.031	0.059	0.01	14.77
19	19	135.7-136.7		0.011	0.016	0.042	0.15	2.14
20	20	136.7-137.7		0.024	0.028	0.062	0.01	9.67
21	21	137.7-138.7		0.023	0.031	0.107	0.02	0.30
22	22	138.7-139.7		0.005	0.006	0.014	0.01	26.44
23	23	140-141		0.013	0.015	0.014	0.01	18.31
24								
25								
26								
27								
28								
29								
30								
Threshold								

ND - Not detected

Remarks * Closed can gamma only assay for eU_3O_8.
** Includes sulfide, sulfate and elemental sulfur.

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82601

ANALYTICAL REPORT

Company Minerals Exploration Company — Type of sample Mineral Crude
Address Casper, Wyoming — Date April 18, 1975 — Lab. No. 15935
Other Pertinent Data
Hole No. AM-16C

Analytical method — Analytical classification Quantitative

Percent by weight

Sample	Depth	U_3O_8	GT	eU_3O_8*	V_2O_5	eU_3O_8/chem
1 1.	292.5-293	0.007		0.015	0.164	—
2 2.	293-293.5	0.009		0.015	0.112	—
3 3.	293.5-294	0.004		0.014	0.082	—
4 4.	294-294.5	0.060	.030	0.045	0.102	.75
5 5.	294.5-295	0.074	.037	0.066	0.151	.89
6 6.	295-295.5	0.079	.040	0.081 ✓	0.045	1.03
7 7.	295.5-296	0.027	.014	0.075	0.023	2.78
8 8.	296-296.5	0.060	.030	0.090	0.179	1.50
9 9.	296.5-297	0.067	.034	0.095 ✓	0.049	1.42
10 10.	297-297.5	0.045	.023	0.077	0.265	1.71
11 ..	297.5-298	0.021	.011	0.028	0.045	1.33
12 12.	298-298.5	0.027	.014	0.035	0.023	1.30
13 13.	298.5-299	0.045	.023	0.050	0.034	1.11
14 14.	299-299.5	0.059	.030	0.050	0.052	.85
15 15.	299.5-300	0.042	.021	0.051 ✓	0.102	1.21
16 ✓16.	300-300.5	0.034	.017	0.037	0.062	1.09
17 17.	300.5-301	0.025	.013	0.025	0.031	1.—
18 18.	301-301.5	0.233	.126	0.218 ✓	0.218	.94
19 19.	301.5-302	0.125	.062	0.141	0.134	1.29
20 ✓20.	302-302.5	0.022		0.025	0.023	1.14
21 21.	302.5-303	0.012		0.013	0.018	—
22 22.	303-303.5	0.013		0.014	0.015	—
23 23.	303.5-304	0.018		0.022	0.012	—
24 24.	304-304.5	0.019		0.029	0.018	1.53
25 ✓25.	304.5-305	0.019		0.040	0.071	2.10
26 26.	305-305.5	0.071		0.054	0.054	.76
27 ✓27.	305.5-306	0.027		0.035	0.015	1.29
28 28.	306-306.5	0.038		0.038	0.018	1.—
29 29.	306.6-307	0.043		0.044	0.018	1.02
30 30.	307-307.5	0.044		0.051	0.024	1.60
Threshold		.040				

ND - Not detected

Remarks * Closed can gamma only assay for eU_3O_8.

CORE INTERVALS SENT TO HAZEN SEPT 1975
FROM ORIGINAL CORE WEIGHTED AVERAGE GRADE = .120 % U_3O_8

Pulps from Geochem assays from these intervals sent to. [illegible] May 1975 Pulps so missing

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82601

ANALYTICAL REPORT

Company Minerals Exploration Company Type of sample Mineral Crude
Address Casper, Wyoming Date April 18, 1975 Lab. No. 15935
Other Pertinent Data
Hole No. AM-16C

Analytical method Analytical classification Quantitative

Sample	Depth	Percent by weight U_3O_8	eU_3O_8*	V_2O_5	eU_3O_8/Chem
1 31.	307.5-308	0.035	0.050	0.036	1.42
2 ✓ 32.	308-308.5	0.052	0.065	0.095	1.25
3 33.	308.5-309	0.013	0.011	0.018	.85
4 34.	309-309.5	0.015	0.021	0.035	1.40
5 35.	309.5-310	0.016	0.014	0.033	.88
6 ✓ 36.	310-310.5	0.050	0.036	0.045	.72
7 37.	310.5-311	0.039	0.045	0.033	1.15
8 38.	311-311.5	0.039	0.037	0.030	.95
9 39.	311.5-312	0.038	0.031	0.042	.82
10 40.	312-312.5	0.012	0.011	0.052	.92
41.	Ford-2	0.007	0.041	0.047	
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
Threshold					

ND - Not detected

Remarks * Closed can gamma only assay for eU_3O_8.

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82601

ANALYTICAL REPORT

Company Mineral Exploration Company Type of sample Mineral Crude
Address Casper, Wyoming Date April 18, 1975 Lab. No. 15935
Other Pertinent Data
Hole No. AM-16C

Analytical method Analytical classification Quantitative

Sample	Depth	Percent by weight U_3O_8	6T	eU_3O_8*	V_2O_5	eU_3O_8/chem
1 42.	246.5-247	0.003		0.014	0.067	—
2 43.	247-247.5	0.007		0.078	0.168	—
3 44.	247.5-248	0.014		0.058	0.048	—
4 45.	248-248.5	0.055	.028	0.051	0.107	.93
5 46.	248.5-249	0.078	.039	0.103	0.099	1.32
6 47.	249-249.5	0.425	.213	0.444	0.257	1.04
7 48.	249.5-250	0.476	.238	0.285	0.169	.60
8 49.	250-250.5	0.447	.224	0.416	0.159	.93
9 50.	250.5-251	0.181	.090	0.122	0.278	.67
51.	251-251.5	0.015		0.028	0.098	—
52.	251.5-252	0.003		0.008	0.115	~~~
12 53.	267.5-268	0.001		0.012	0.062	—
13 54.	268-268.5	0.004		0.014	0.030	—
14 55.	268.5-269	0.141	.070	0.150	0.109	1.06
15 56.	269-269.5	0.125	.063	0.102	0.071	.82
16 57.	269.5-270	0.046	.023	0.061	0.070	1.32
17 58.	270-270.5	0.009		0.022	0.064	—
18 59.	270.5-271	0.005		0.021	0.089	~~~
19 60.	287.5-288	0.017		0.022	0.033	1.29
20 61.	288-288.5	0.062		0.048	0.015	.77
21 62.	288.5-289	0.033		0.053	0.031	1.61
22 63.	289-289.5	0.005		0.020	0.050	—
23						
24						
25						
26						
27						
28						
29						
30						
Threshold						

ND - Not detected

Remarks * Closed can gamma only assay for eU_3O_8.

Am 16c-2 .051 % U_3O_8 Pulps 4-13
Am 16C-1 .099 % " Pulps 44-47, 51, 55-57, 61, 62

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82602

ANALYTICAL REPORT

Company Minerals Exploration Company — Type of sample Mineral-Crude
Address Casper, Wyoming — Date April 15, 1976 — Lab. No. 19491
Other Pertinent Data
Hole No.: AM-17C

Analytical method — Analytical classification Quantitative

Sample	Depth	B-D	eU_3O_8* % by wt.	U_3O_8 % by wt.	V_2O_5 % by wt.	CO_2 % by wt.	Total ** Sulfur (S % by wt.
1 13	104-105	.009	0.017	0.009	0.021	11.58	0.07
2 14	105-106	.013	0.014	0.004	0.070	0.40	0.02
3 15	106-107	.007	0.010	0.006	0.034	0.35	0.02
4 16	107-108	.030	0.017	0.010	0.040	0.01	0.01
5 17	131-132	.028	0.037	0.040	0.046	0	0.02
6 18	132-133	.021	0.007	0.012	0.034	0.07	0.02
19	133-134	.035	0.026	0.030	0.035	11.49	0.02
8 20	136-137	.032	0.037	0.028	0.018	0.07	0.01
9 21	138-139	.016	0.025	0.017	0.015	0	0.01
10 22	139-140	.023	0.020	0.010	0.021	0	0.02
23	140-141	.005	0.013	0.009	0.061	0	0.02
24	141-142	.021	0.012	0.009	0.124	0	0.03
13 25	143-144	.023	0.010	0.003	0.098	0	0.02
14 26	144-145	.008	0.021	0.010	0.077	0	0.02
15 27	146-147	.017	0.024	0.011	0.249	0	0.01
16 28	147-148	.025	0.022	0.023	0.159	0	0.02
17 29	148-149	.055	0.028	0.024	0.068	0	0.01
18 30	149-150	.025	0.039	0.039	0.092	0	0.01
19 31	150-151	.016	0.013	0.004	0.080	0	0.02
20 32	154-155	.018	0.013	0.009	0.102	0	0.01
21 33	163-164	.041	0.036	0.022	0.065	0	0.01
22 34	165-166	.023	0.023	0.024	0.146	0	0.01
23 35	193-194	.038	0.020	0.017	0.130	0	0.04
24 36	199-200	.101	0.090	0.076	0.133	0	0.21
25 37	200-201	.019	0.021	0.012	0.156	0	0.03
26 38	202-203	.009	0.008	0.003	0.049	0	0.01
27 39	203-204	.057	0.064	0.059	0.159	0.15	0.04
28 40	204-205	.057	0.068	0.059	0.127	0	0.01
29 41	205-206	.018	0.011	<0.001	0.076	0	0.02
30							
Threshold							

ND - Not detected

Remarks * Closed can gamma only assay for eU_3O_8.
** Total sulfur value includes sulfide, sulfate and elemental sulfur.

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82602

ANALYTICAL REPORT

Company Minerals Exploration Company Type of sample Mineral-Crude
Address Casper, Wyoming Date April 27, 1976 Lab. No. 19609
Other Pertinent Data
Hole No.: AM-18C

Analytical method Analytical classification Quantitative

	Sample	Depth		U_3O_8 % by wt.	eU_3O_8* % by wt.	V_2O_5 % by wt.	Total** Sulfur % by wt.	CO_2 % by wt.
1	24	279-280		0.055	0.063	0.181	0.56	23.12
2	25	281-282	.090	0.095	0.115	0.205	0.73	22.82
3	26	282-283	.243	0.250	0.161	0.051	1.00	16.62
4	27	283-284	.040	0.042	0.035	0.015	0.88	22.23
5	28	284-285		0.042	0.032	0.015	0.84	22.08
6	29	285-286		0.019	0.025	0.009	0.77	21.56
7	30	286-287		0.019	0.030	0.241	0.75	8.64
8	31	288-289		0.062	0.077	0.135	0.50	0.74
9	32	289-290		0.120	0.148	0.303	0.62	3.77
10	33	290-291		0.038	0.040	0.083	0.75	6.94
	34	293.7-294.7		0.059	0.058	0.036	0.89	13.07
	35	295.10-296.10		0.031	0.030	0.062	0.86	11.67
13	36	296.10-297.10		~~0.096~~ .103	0.147	0.161	0.52	3.03
14	37	297.10-298.10		0.058	0.059	0.003	0.44	12.48
15	38	298.10-299.10		0.023	0.022	0.003	0.87	15.43
16	39	311.9-312.9		0.014	0.022	0.042	0.70	0.22
17	40	312.9-313.9		0.029	0.017	0.074	0.63	0.15
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
Threshold								

ND - Not detected

Remarks * Closed can gamma only assay for eU_3O_8.
** Includes sulfide, sulfate and elemental sulfur.

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82602

ANALYTICAL REPORT

Company Minerals Exploration Company — Type of sample Mineral-Crude
Address Casper, Wyoming — Date Received June 7, 1976 — Lab. No. 20023
Other Pertinent Data — Date Reported July 2, 1976

Analytical method — Analytical classification Quantitative

	Sample	Hole Number	Depth		U_3O_8 % by wt.	eU_3O_8 % by wt.	V_2O_5 % by wt.	
1	1	AMC-26C	619-620		0.002	0.003	0.007	
2	2	AMC-26C	620-621		0.011	0.021	0.013	
3	3	AMC-26C	628-629		0.006	0.010	0.010	
4	4	AMC-26C	633-634		0.004	0.014	0.008	
5	5	AMC-26C	640-641		0.008	0.015	0.010	
6	6	AMC-26C	718-719		0.004	0.005	0.012	
7	7	AMC-26C	719-720		0.008	0.010	0.015	
8	8	AMC-26C	722.5-723		0.007	0.009	0.011	
9	9	AMC-26C	725-726		0.006	0.012	0.013	
10	10	AMC-26C	726-727		0.003	0.002	0.010	
11	11	AMC-26C	733-734		0.003	0.003	0.010	
12	12	AMC-26C	734-735		0.007	0.016	0.018	
13	13	AMC-26C	735-736		0.008	0.008	0.016	
14	14	AMC-26C	736-737		0.007	0.011	0.016	
15	15	AMC-26C	738-739		0.004	0.009	0.015	
16	16	AMC-26C	740-741		0.003	0.002	0.008	
17	17	AMC-26C	741-742		<0.001	0.003	0.008	
18	18	AMC-26C	743-744		0.003	0.007	0.029	
19	19	AMC-26C	641-642		0.004	0.018	0.010	
20	20	AMC-490	624-625		0.019	0.025	0.014	
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

ND - Not detected at level given in parentheses

Remarks * Closed can gamma only assay for eU_3O_8.

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82602

ANALYTICAL REPORT

Company Minerals Exploration Co. Type of sample Mineral-Crude
Address Casper, Wyoming Date May 3, 1976 Lab. No. 19661
Other Pertinent Data
Hole No.: AMC-26C

Analytical method Analytical classification Quantitative

Sample	Depth	B-8	U_3O_8 % by wt.	eU_3O_8* % by wt.	V_2O_5 % by wt.	Total Sulfur** % by wt.	CO_2 % by wt.
1	602-603	.015	0.024	0.029	0.302	0.67	8.24
2	603-604	.024	0.032	0.027	0.072	0.62	3.72
3	604-605	.027	0.024	0.025	0.226	0.57	0.03
4	605-606	.029	0.020	0.016	0.058	0.55	0.01
5	606-607	.040	0.047	0.061	0.311	0.45	0.01
6	607-608	.009	0.011	0.014	0.021	0.58	8.68
7	621-622	.024	0.019	0.019	0.051	0.25	0.06
8	622-623	.022	0.012	0.018	0.076	0.41	0.72
9	623-624	.005	0.009	0.010	0.045	1.57	4.95
10	624-625	.008	0.007	0.019	0.009	1.07	9.90
11	625-626	.053	0.043	0.048	0.003	0.27	15.88
12	626-627	.012	0.020	0.033	0.007	0.32	15.36
13	629-630	.017	0.014	0.026	0.016	0.70	9.16
14	630-631	.020	0.034	0.040	0.017	0.53	6.79
15	631-632	.057	0.034	0.070	0.009	0.18	22.01
16	634-635	.098	0.106	0.108	0.008	0.25	36.93
17	635-636	.118	0.121	0.170	0.003	0.12	27.99
18	636-637	.216	0.248	0.175	0.015	0.62	26.00
19	637-638	—	0.017	0.057	0.001	0.27	29.91
20	638-639	.018	0.012	0.018	0.010	0.09	27.32
21	639-640	.046	0.052	0.048	0.010	0.50	18.09
22	720-721	.175	0.345	0.292	0.026	0.67	0.07
23	721-721.25	.027	0.067	0.081	0.071	0.71	0.06
24	723-724	.021	0.022	0.038	0.054	0.68	0
25	737-738	.037	0.034	0.037	0.086	1.74	0.09
26	739-740	.021	0.045	0.029	0.089	0.19	30.06
27	742-743	.021	0.030	0.022	0.201	0.90	8.35
28							
29							
30							
Threshold							

ND - Not detected

Remarks * Closed can gamma only assay for eU_3O_8.
** Includes sulfide, sulfate and elemental sulfur.

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82602

ANALYTICAL REPORT

Company Minerals Exploration Co. Type of sample Mineral-Crude
Address Casper, Wyoming Date May 3, 1976 Lab. No. 19661
Other Pertinent Data
Hole No.: AM-49C

Analytical method Analytical classification Quantitative

	Sample	Depth	B-V	U_3O_8 % by wt.	eU_3O_8* % by wt.	V_2O_5 % by wt.	Total Sulfur** % by wt.	CO_2 % by wt.
	28	612-613	-.034	0.034	0.034	0.120	0.32	0.01
	29	613-614	.009	0.008	0.027	0.155	0.36	1.99
	30	614-615	-.065	0.033	0.054	0.005	0.05	30.72
	31	615-616	-.073	0.058	0.051	0.039	<0.01	26.51
	32	616-617	.028	0.061	0.058	0.026	0.04	25.33
	33	617-618	.070	0.077	0.091	0.026	<0.01	25.63
	34	618-619	-.039	0.040	0.051	0.048	0.55	6.65
	35	619-620	-.032	0.037	0.030	0.042	0.48	5.98
	36	620-621	-.025	0.032	0.036	0.196	0.63	0.22
	37	621-622	.014	0.022	0.026	0.014	0.35	11.89
	38	622-623	.011	0.020	0.020	0.007	0.23	33.60
	39	623-624		0.024	0.024	0.015	0.98	2.73
	40	630-631	.018	0.019	0.027	0.053	0.63	0.06
	41	631-632	.120	0.114	0.089	0.336	0.73	0.09
	42	632-633	—	0.016	0.054	0.039	1.38	0.22
	43	633-634	.011	0.020	0.027	0.049	0.94	0.65
	44	634-635	.013	0.013	0.019	0.046	1.19	0.99
	45	635-636	.012	0.011	0.024	0.146	1.51	9.01
	46	636-637	.062	0.078	0.046	0.089	2.07	2.29
	47	637-638	—	0.012	0.024	0.064	1.40	2.51
		624-625		0.019	0.025	0.014	—	—
		629-630		0.004	0.008	0.021		
		609-610		0.007	0.013	0.063		
		610-611		0.020	0.019	0.076		
		611-612		0.010	0.017	0.079		
Threshold								

ND - Not detected

Remarks * Closed can gamma only assay for eU_3O_8.
** Includes sulfide, sulfate and elemental sulfur.

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82602

ANALYTICAL REPORT

Company Minerals Exploration Company Type of sample Mineral-Crude
Address Casper, Wyoming Date May 12, 1976 Lab. No. 19776
Other Pertinent Data
Hole No.: AM-51C

Analytical method Analytical classification Quantitative

Sample	Depth	β-γ	U_3O_8 % by wt.	eU_3O_8* % by wt.	V_2O_5 % by wt.	CO_2 % by wt.	Total Sulfur % by wt.
35	394-395	.015	0.001	0.017 70	0.035	0	0.063
36	395-396	.002	0.004	0.016 67	0.038	0	0.037
37	396-397	.033	0.040	0.036 114	0.064	0	0.429
38	397-398	.016	0.013	0.020 81	0.016	0	0.386
39	398-399	.033	0.021	0.024 91	0.013	0.02	0.063
40	399-400	.014	0.008	0.023 105	0.013	0.01	0.316
41	400-401	.006	0.008	0.036 104	0.012	0.02	0.409
42	401-402	.018	0.009	0.034 93	0.014	0.04	0.326
43	402-403	.010	0.005	0.025 89	0.012	0.02	0.374
44	403-404	.023	0.012	0.025 89	0.025	0.04	0.506
45	404-405	.030	0.023	0.027 90	0.020	0	1.012
	405-406	.012	0.011	0.031 118	0.010	0	0.848
47	406-407	.024 ?	0.011	0.030 110	0.017	0	1.386
48	407-408	.162 ↪	~~0.057~~ .152	0.062 181	0.254	0.01	2.046
49	408-409	.011	0.001	0.036 131	0.035	0	0.905
50	409-410	.010	0.005	0.017 85	0.020	0.1	0.848
51	410-411	.006	0.010	0.032 122	0.045	0	1.402
52	411-412	.003	0.007	0.026 78	0.067	0	0.094
53	412-413	.002	<0.001	0.007 44	0.057	0	0.334
54	438-439	.008	<0.001	0.011 52	0.121	3.63	0.027
55	439-440	.053 ?	~~0.032~~ .044	0.044 142	0.064	14.24	0.362
56	440-441	.249 ↪	~~0.193~~ .227	0.190 577	0.025	30.84	0.444
57	441-442	.061	0.063	0.116 365	0.018	23.25	0.516
58	442-443	.012	0.020	0.028 144	0.029	14.02	0.227
59	443-444	.007	0.011	0.023 95	0.089	7.81	0.721
60	444-445	.016	0.024	0.044 170	0.105	0.68	0.053
61	445-446	.147 ↪	~~0.030~~ .075	0.096 333	0.199	0.17	0.053
62	446-447	.041 ↪	~~0.002~~ .111	0.019 86	0.140	0.19	0.017
63	447-448	.009	0.001	0.005 48	0.200	0.11	0.651
64	461-462	.011	0.008	0.013 66	0.488	0.01	0.067

eshold
- Not detected

marks * Closed can gamma only assay for eU_3O_8.

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82602

ANALYTICAL REPORT

Company Minerals Exploration Company Type of sample Mineral-Crude
Address Casper, Wyoming Date May 12, 1976 Lab. No. 19776
Other Pertinent Data
Hole No.: AM-51C

Analytical method Analytical classification Quantitative

Sample	Depth	B-δ	U_3O_8 % by wt.	eU_3O_8* % by wt.	V_2O_5 % by wt.	CO_2 % by wt.	Total Sulfur % by wt.
1 65	462-463	.017	0.007	0.017	0.282	0.02	0.035
2 66	463-464	.029	0.009 .011	0.018	0.303	0.01	0.060
3 67	464-465	.230	0.100 .259	0.280	0.213 0.312	0.01	0.569
4 68	465-466	.225	0.242 .263	0.222	0.385	0.13	0.585
5 69	466-467	.921	0.845	0.567	0.382	0.02	0.711
6 70	467-468	.027	0.061 .063	0.088	0.215	0.01	0.551
7 71	468-469	.007	0.010	0.023	0.156	0.02	0.080
8 72	469-470	.015	0.008	0.023	0.159	0.07	0.032
9 73	470-471	.002	0.002	0.004	0.134	0.02	0.025
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
Threshold							

ND - Not detected

Remarks * Closed can gamma only assay for eU_3O_8.

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82602

ANALYTICAL REPORT

Company Minerals Exploration Co. Type of sample Mineral-Crude
Address Casper, Wyoming Date March 30, 1976 Lab. No. 19302
Other Pertinent Data
Hole No.: AM-79C

Analytical method Analytical classification Quantitative

Sample	Depth		eU_3O_8* % by wt.	β-γ	U_3O_8 % by wt.	U_3O_8 / eU_3O_8	V_2O_5 % by wt.	CO_2 % by wt.	Total Sulfur % by wt
1 27	41-42	gn mdst	0.011	.007	0.024	2.2	0.010	6.40	0.31
2 28	42-43	"	0.008	.015	0.005	.6	0.038	9.17	0.33
3 29	43-44	"	0.013	.010	0.009	.7	0.030	12.10	0.32
4 30	45-46	"	0.026	.017	0.022	.9	0.044	12.36	0.11
5 31	46-47	"	0.037	.017	0.035	1.0	0.012	32.35	0.32
6 32	47-48	"	0.024	.004	0.021	.9	0.008	31.68	0.08
7 33	58-59	Slt-gry, s/carb	0.010	.014	0.011	1.0	0.018	30.28	0.13
8 34	60-61	"	0.021	.010	0.020	1.0	0.060	23.48	0.07
9 35	62-63	"	0.018	.013	0.011	.6	0.145	1.02	0.13
10 36	63-64	"	0.030	.018	0.021	.7	0.074	3.84	0.15
11									
12	40-41		0.007		0.001		0.003		
13	44-45		0.021		0.001		0.034		
14	48-49		0.021		0.001		0.005		
15	49-50		0.006		0.001		0.003		
16	50-51		0.002		0.001		0.003		
17	59-60		0.013		0.001		0.034		
18	61-62		0.009		0.004		0.018		
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
Threshold									

ND - Not detected

Remarks * Closed can gamma only assay for eU_3O_8.

Total sulfur value includes sulfide, sulfate and elemental sulfur.

≥1.0% Total

U_3O_8
eU_3O_8

0-.020
.021-.050
.051-100
.101+

2/5
4/5

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82602

ANALYTICAL REPORT

Company Minerals Exploration Company — Type of sample Mineral-Crude
Address Casper, Wyoming — Date March 30, 1976 — Lab. No. 19302
Other Pertinent Data
Hole No.: AM-113-C

Analytical method — Analytical classification Quantitative

	Sample	Depth	Core descript. Lithology	eU_3O_8* % by wt.	RT	U_3O_8 % by wt.	U-fluor	V_2O_5 % by wt.	CO_2 % by wt.	Total Sulfur (S % by wt.
1	49	272-273	Lignite	0.012	.008	0.013	1.0	0.036	7.75	1.75
2	50	273-274	"	0.022	.012	0.028	1.3	0.030	0.44	2.17
3	51	278-279	Lig/md/Ls	0.024	.007	0.020	.8	0.030	11.15	1.44
4	52	279-280	Carb md/Ls	0.016	.011	0.016	1.0	0.014	14.84	1.92
5	53	280-281	"	0.025	.007	0.016	.6	0.014	7.39	2.13
6	54	285-286	Lignite	0.022	.015	0.015	.7	0.077	0	0.90
7	55	295-296	carb slt	0.018	.010	0.014	.8	0.065	0	0.63
8	56	296-297	"	0.012	.008	0.004	.3	0.132	0	0.47
9	57	297-298	"	0.009	.012	0.005	.6	0.138	0	0.49
10	58	298-299	"	0.016	.008	0.008	.5	0.150	0	0.69
11	59	299-300	"	0.045	.008	0.022	.5	0.223	0	0.71
	60	300-301	"	0.062	.007	0.054	.9	0.148	0	1.05
13	61	301-302	"	0.055	.008	0.030	.6	0.195	0	1.15
14	62	302-303	slt-blu gry	0.040	.007	0.032	.8	0.095	0	0.85
15	63	317-318	slt-sl. carb	0.036	.007	0.070	1.9	0.036	0	1.69
16	64	318-319	"	0.019	.007	0.020	1.0	0.016	0	1.45
17	65	319-320	"	0.017	.007	0.012	.7	0.021	0	1.36
18	66	339-340	carb slt	0.035	.008	0.007	.2	0.022	0	2.78
19	67	340-341	"	0.117	.008	~~0.057~~ 0.156	.5	0.036	0	0.47
20	68	341-342	ss	0.016	.008	0.006	.4	0.017	0	0.11
21	69	342-343	ss	0.022	.007	0.008	.4	0.021	0	0.13
22		343-344		0.076		~~0.156~~ .051		0.028	0	
23										
24		274-275		0.015		0.005		0.026		
25		275-276		0.010		0.007		0.029		
26		276-277		0.013		these 10:1 ratios		0.026		
27		277-278		0.016		all below level		0.030		
28		303-304		0.016		at 0.004		0.024		
29		314-317		0.011		0.004		0.029		
30		344-345		0.004		0.001		0.032		
Threshold										

ND - Not detected

Remarks * Closed can gamma only assay for eU_3O_8.

Total sulfur value includes sulfide, sulfate and elemental sulfur.

U_3O_8 / eU_3O_8 ≥ 1.0 / Total

0 - .020 — 3/9
.020 - .050 — 3/9
.051 - .100 — 4/5
.101 - 1.0 — 0/1

.007
.156
.006
.008
.051

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82602

ANALYTICAL REPORT

Company Minerals Exploration Company Type of sample Mineral-Crude
Address Casper, Wyoming Date April 15, 1976 Lab. No. 19491
Other Pertinent Data
Hole No.: AM-113C

Analytical method Analytical classification Quantitative

	Sample	Depth	B-8	eU_3O_8* % by wt.	U_3O_8 % by wt.	V_2O_5 % by wt.	CO_2 % by wt.	Total** Sulfur % by wt
d-core	1	343-344	.115	0.076	0.156	0.028	0	1.42
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							
	29							
	30							
	Threshold							

ND - Not detected

Remarks * Closed can gamma only assay for eU_3O_8.
** Total sulfur value includes sulfide, sulfate and elemental sulfur.

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82602

ANALYTICAL REPORT

Company Minerals Exploration Co. Type of sample Mineral-Crude
Address Casper, Wyoming Date March 30, 1976 Lab. No. 19302
Other Pertinent Data
Hole No.: AM-119-C

Analytical method Analytical classification Quantitative

	Sample	Depth	13-1	eU_3O_8* % by wt.	U_3O_8 % by wt.	V_2O_5 % by wt.	CO_2 % by wt.	Total Sulfur (% by wt
1	37	31-32	.056	0.074	0.076	0.102	0	0.17
2	38	34-35	.000	0.022	0.007	0.036	0.15	0.18
3	39	113.5-114	.028	0.135	0.044	0.101	10.63	0.52
4	40	114-115	.014	0.029	0.017	0.011	20.86	0.99
5	41	116-117	.023	0.015	0.014	0.006	35.45	0.58
6	42	118-119	.020	0.017	0.016	0.012	26.81	0.45
7	43	119-120	.058	0.083	0.090	0.030	27.03	0.93
8	44	120-121	.028	0.040	0.045	0.065	31.24	0.63
9	45	123-124	.052	0.058	0.071	0.083	12.26	1.53
10	46	131-132	.256	0.251	0.288	0.170	24.52	1.75
11	47	132-133	.134	0.118	0.194	0.077	0.37	1.85
1	48	133-132	.006	0.020	0.011	0.027	0	2.13
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
Threshold								

ND - Not detected

Remarks * Closed can gamma only assay for eU_3O_8.

Total sulfur value includes sulfide, sulfate and elemental sulfur.

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82602

ANALYTICAL REPORT

Company Minerals Exploration Co. Type of sample Mineral-Crude
Address Casper, Wyoming Date March 30, 1976 Lab. No. 19302
Other Pertinent Data
Hole No.: AM-135-C

Analytical method Analytical classification Quantitative

Sample	Depth	R-X	eU_3O_8* % by wt.	U_3O_8 % by wt.	V_2O_5 % by wt.	CO_2 % by wt.	Total Sulfur (S) % by wt.
1 1	378-379	.030	0.027	0.027	0.095	0	0.47
2 2	382-383	.028	0.020	0.017	0.077	0	0.96
3 3	383-384	.028	0.025	0.024	0.030	0.34	1.00
4 4	384-385	.029	0.038	0.028	0.027	0	1.10
5 5	385-386	.024 ✓	0.065	0.043	0.092	0	0.21
6 6	386-387	.140	0.085	0.135	0.123	0	2.22
7 7	387-388	.030	0.061	0.025	0.030	0.01	0.56
8 8	388-389	.040	0.038	0.033	0.062	0	0.67
9 9	457-458	.010	0.033	0.011	0.344	0	0.21
10 10	458-459	.010	0.054	0.010	0.264	0.01	0.16
11	459-460	.020	0.051	0.033	0.456	0.01	0.33
12	460-461	.230 ✓	0.159	0.171	0.906	0.10	1.57
13 13	462-463	.130	0.106	0.106	0.272	1.43	0.75
14 14	463-464	.070	0.122	0.090	0.064	4.61	2.42
15 15	464-465	.000 ✓	0.027	0.008	0.024	0.16	2.24
16 16	466-467	.060 ✓	0.048	0 ~~.138~~ .053	0.047	8.85	2.09
17 17	467-468	.150 ✓	0.125	(0.053) .138	0.117	6.99	2.24
18 18	468-469	.030 ✓	0.144	0.084	0.086	0.37	2.24
19 19	469-470	.040	0.052	0.045	0.056	28.06	0.21
20 20	470-471	.040	0.054	0.058	0.014	22.01	0.33
21 21	471-472	.030 ✓	0.128	0.052	0.014	16.84	0.33
22 22	472-473	.240 ✓	0.370	0.361	0.067	15.58	0.21
23 23	473-474	.190 ✓	0.626	0.273	0.051	4.71	0.83
24 24	474-475	.120	0.145	0.149	0.314	0.22	1.10
25 25	475-476	.040	0.051	0.059	0.071	0.01	2.09
26 26	476-477	.000	0.018	0.011	0.071	0.06	1.70
27							
28							
29							
30							
Threshold							

ND - Not detected

Remarks * Closed can gamma only assay for eU_3O_8.

Total sulfur value includes sulfide, sulfate and elemental sulfur.

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82602

ANALYTICAL REPORT

Company Minerals Exploration Company Type of sample Mineral-Crude
Address Casper, Wyoming Date May 12, 1976 Lab. No. 19776
Other Pertinent Data
Hole No.: AM-135C
Analytical method Analytical classification Quantitative

Sample	Depth		U_3O_8 % by wt.	eU_3O_8* % by wt.	V_2O_5 % by wt.	CO_2 % by wt.	Total Sulfur % by wt.
1 74	461-462		0.176	0.183	0.373	1.09	0.508
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
Threshold							

ND - Not detected

Remarks * Closed can gamma only assay for eU_3O_8.

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82602

ANALYTICAL REPORT

Company Minerals Exploration Company — Type of sample Mineral-Crude
Address Casper, Wyoming — Date May 12, 1976 — Lab. No. 19776
Other Pertinent Data
Hole No.: AM-149C

Analytical method — Analytical classification Quantitative

Sample		Depth		B - γ	U_3O_8 % by wt.	eU_3O_8* % by wt.	V_2O_5 % by wt.	CO_2 % by wt.	Total Sulfur % by wt.
1	1	350-351		.017	0.008	0.015	0.015	3.07	0.017
2	2	351-352		.022	0.005	0.013	0.022	3.38	0.133
3	3	352-353		.006	0.001	0.004	0.076	0.17	0.007
4	4	380-381		.014	0.008	0.008	0.064	0.07	0.498
5	5	381-382		.016	0.014	0.022	0.016	0.20	0.534
6	6	382-383		.067	0.061	0.076	0.012	0.14	0.658
7	7	383-384		.067	0.072	0.081	0.014	0.13	0.215
8	8	384-385		.044	0.032	0.048	0.011	0.38	0.075
9	9	385-386		.022	0.022	0.028	0.013	0.26	0.316
10	10	386-387		.014	0.012	0.027	0.015	0.06	0.848
	11	387-388	×	.031	0.003	0.015	0.017	0.04	1.216
	12	388-389		.021	0.011	0.013	0.021	0.04	1.009
13	13	389-390		.029	0.012	0.012	0.024	0.01	0.852
14	14	390-391		.009	0.009	0.011	0.041	0.01	0.892
15	15	391-392		.016	0.003	0.013	0.070	0	1.169
16	16	392-393		.017	0.016	0.045	0.099	0	1.921
(17)	17	393-394	×	.062	~~0.030~~ 0.050	0.050	0.209	0.01	0.159
(18)	18	394-395	×	.053	~~0.030~~ 0.037	0.028	0.143	0.02	0.077
19	19	395-396		.002	<0.001	0.008	0.153	3.45	0.317
20	20	396-397		.008	<0.001	0.016	0.163	0.10	0.094
21	21	397-398		.095	~~0.031~~ 0.039	0.033	0.571	0	0.939
22	22	398-399		.013	0.009	0.018	0.153	0	0.885
23	23	399-400		.022	0.011	0.016	0.115	0.01	1.216
24	24	400-401		.013	0.005	0.021	0.131	0	0.721
25	25	401-402		.028	0.014	0.017	0.184	0	0.631
26	26	402-403		.020	0.012	0.017	0.099	0	0.374
27	27	403-404		.010	0.005	0.007	0.077	0	0.090
28	28	404-405		.011	0.003	0.009	0.105	0	0.050
29	29	405-406		.004	0.004	0.008	0.191	0.01	0.280
30	30	406-407		.005	0.005	0.012	0.203	0.01	0.109
Threshold									

ND - Not detected

Remarks * Closed can gamma only assay for eU_3O_8.

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82602

ANALYTICAL REPORT

Company Mineral Exploration Company Type of sample Mineral-Crude
Address Casper, Wyoming Date May 12, 1976 Lab. No. 19776
Other Pertinent Data
Hole No.: AM-149C

Analytical method Analytical classification Quantitative

Sample	Core Depth	B-γ	U_3O_8 % by wt.	eU_3O_8* % by wt.	V_2O_5 % by wt.	CO_2 % by wt.	Total Sulfur % by wt.
1 31	407-408	.018	0.012	0.024	0.169	0	0.159
2 32	408-409	× .061 —	~~0.034~~ .039	0.034	0.166	0	0.093
3 33	409-410	.140	0.139	0.150	0.278	0	1.216
4 34	410-411	.047	~~0.033~~ .032	0.036	0.080	0	1.979
5 20068	411-412		0.008	0.013	0.020	—	—
6							
7							
8							
9							
10							
11							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
Threshold							

ND - Not detected

Remarks * Closed can gamma only assay for eU_3O_8.

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82602

ANALYTICAL REPORT

Company Minerals Exploration Company — Type of sample Mineral-Crude
Address Casper, Wyoming — Date Received June 10, 1976 — Lab. No. 20068
Other Pertinent Data — Date Reported July 13, 1976

Analytical method — Analytical classification Quantitative

Sample	Hole Number	Depth	U_3O_8 % by wt.	eU_3O_8 * % by wt.	V_2O_5 % by wt.
1	AM-1C	63.0-64.0	0.003	0.010	0.034
2	AM-1C	64.0-64.5	0.008	0.023	0.021
3	AM-1C	109.0-109.5	0.008	0.025	0.009
4	AM-1C	116.0-117.0	0.002	0.020	0.020
5	AM-7C	96.0-97.0	<0.001	0.024	0.018
6	AM-7C	102.0-103.0	<0.001	0.017	0.030
7	AM-7C	103.0-104.0	<0.001	0.015	0.024
8	AM-7C	104.0-105.0	0.005	0.024	0.018
9	AM-7C	105.0-106.0	0.010	0.017	0.055
10	AM-7C	106.0-107.0	0.005	0.019	0.037
11	AM-13C	116.0-117.0	0.006	0.008	0.008
12	AM-13C	117.0-118.0	0.005	0.006	0.005
13	AM-13C	118.0-119.0	0.004	0.007	0.010
14	AM-17C	130.0-131.0	0.008	0.011	0.039
15	AM-17C	134.0-135.0	0.008	0.013	0.016
16	AM-17C	135.0-136.0	0.007	0.010	0.008
17	AM-17C	137.0-138.0	0.006	0.008	0.008
18	AM-17C	162.0-163.0	0.004	0.002	0.205
19	AM-17C	164.0-165.0	0.004	0.011	0.031
20	AM-17C	166.0-167.0	0.005	0.005	0.026
21	AM-17C	192.0-193.0	0.012	0.011	0.039
22	AM-18C	280.0-281.0	0.007	0.005	0.003
23	AM-18C	291.0-291.7	0.005	0.005	0.024
24	AM-18C	292.7-293.7	0.007	0.001	0.018
25	AM-18C	294.7-294.10	0.013	0.010	0.026
26	AM-18C	300.10-300.5	0.012	0.008	0.025
27	AM-18C	313.9-314.9	0.007	0.006	0.049
28	AM-19C	198.0-199.0	0.006	0.007	0.060
29	AM-26C	601.0-602.0	0.008	0.011	0.005
30	AM-26C	627.0-628.0	0.010	0.010	0.008

ND - Not detected at level given in parentheses

Remarks * Closed can gamma only assay for eU_3O_8.

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82602

ANALYTICAL REPORT

Company Minerals Exploration Company — Type of sample Mineral-Crude
Address Casper, Wyoming — Date Received June 10, 1976 — Lab. No. 20068
Other Pertinent Data — Date Reported July 13, 1976

Analytical method — Analytical classification Quantitative

	Sample	Hole Number		Depth		U_3O_8 % by wt.	eU_3O_8 * % by wt.	V_2O_5 % by wt.
1	31	AM-26C		632.0-633.0		0.008	0.006	0.026
2	32	AM-26C		721.0-721.3		0.055	0.092	0.058
3	33	AM-49C		609.0-610.0		0.007	0.013	0.063
4	34	AM-49C		610.0-611.0		0.020	0.019	0.076
5	35	AM-49C		611.0-612.0		0.010	0.017	0.079
6	36	AM-49C		629.0-630.0		0.004	0.008	0.021
7	37	AM-79C		40.0-41.0		<0.001	0.007	0.008
8	38	AM-79C		44.0-45.0		<0.001	0.021	0.034
9	39	AM-79C		48.0-49.0		0.001	0.021	0.005
10	40	AM-79C		49.0-50.0		<0.001	0.006	0.003
11	41	AM-79C		50.0-51.0		<0.001	0.002	0.003
	42	AM-79C		59.0-60.0		<0.001	0.013	0.034
13	43	AM-79C		61.0-62.0		0.004	0.009	0.018
14	44	AM-113C		274.0-275.0		0.005	0.015	0.026
15	45	AM-113C		275.0-276.0		0.007	0.010	0.029
16	46	AM-113C		276.0-277.0		0.013	0.013	0.026
17	47	AM-113C		277.0-278.0		0.007	0.011	0.030
18	48	AM-113C		303.0-304.0		0.004	0.016	0.023
19	49	AM-113C		316.0-317.0		0.004	0.011	0.029
20	50	AM-113C		344.0-345.0		0.001	0.004	0.032
21	51	AM-119C		30.0-31.0		<0.001	0.005	0.055
22	52	AM-119C		121.0-122.0		0.007	0.008	0.021
23	53	AM-119C		122.0-123.0		0.007	0.008	0.024
24	54	AM-119C		130.0-131.0		0.007	0.012	0.029
25	55	AM-135C		377.0-378.0		0.008	0.008	0.065
26	56	AM-135C		389.0-390.0		0.006	0.012	0.047
27	57	AM-135C		461.0-462.0		0.184	0.204	0.324
28	58	AM-135C		465.0-466.0		0.006	0.010	0.018
29	59	AM-149C		411.0-412.0		0.008	0.013	0.020
30								

ND - Not detected at level given in parentheses

Remarks * Closed can gamma only assay for eU_3O_8.

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming 82602

ANALYTICAL REPORT

Company Minerals Exploration Company — Type of sample Mineral-Pulp
Address Casper, Wyoming — Date Received July 14, 1976 Lab. No. 20463
Other Pertinent Data — Date Reported July 16, 1976
Previous work order No. 19776

Analytical method — Analytical classification Quantitative

Sample	Previous Lab Number	B-8	(1) U_3O_8 % by wt.	7/16/76 U_3O_8 % by wt.		6/23/76 Previously reported (2) U_3O_8 % by wt.	U_3O_8 % by w
1 1	19776-17	.062	0.055	0.050		0.021	0.022
2 2	19776-18	.053		0.039		0.030	
3 3	19776-21	.045	0.034	0.039		0.021	
4 4	19776-32	.061		0.039		0.034	
5 5	19776-34	.047		0.032		0.033	
6 6	19776-55	.053		0.044		0.032	
7 7	19776-56	.249		0.227		0.193	
8 8	19776-61	.147	0.067	0.075		0.030	
9 9	19776-62	.040	0.108	0.111		0.002	
10 10	19776-66	.029		0.011		0.009	
11 11	19776-67	.230		0.259		0.190	0.201
12	19776-68	.225		0.263		0.242	0.246
13 13	19776-70	.027		0.063		0.061	
14							
15							
16				B-8 for #9			
17		Incorrect should be	.117				
18			.141				
19			.126				
20			.124				
21			.150				
22							
23							
24							
25							
26							
27							
28							
29							
30							

ND - Not detected at level given in parentheses

Remarks (1) Check analysis made at time of 7/16/76 samples.
(2) Check analysis made at time of 6/23/76 samples.
Data for U_3O_8 for sample #62 (6/23/76) was apparently in error.

Uranium Analyses of Core Number: 184-C

HRI No: 10866

HRI No.	Interval feet	Fluorimetric		% U_3O_8 Beta-Gamma	% U_3O_8 Beta Equivalent	% U_3O_8 Gamma Equivalent	% U_3O_8 Sealed Gamma Equivalent	% Radon Loss		% V_2O_5	% CO_2	%	
1	469 - 470	.009											
2	470 - 471	.012											
3	471 - 472	.011											
4	472 - 473	.016		0.02	0.014	0.010	0.012	17			.09		
5	473 - 474	.022		0.02	0.016	0.013	0.013	0			.54		
6	474 - 475	.060		.08	.042	.032	.032	0		.16			
7	475 - 476	.066		.10	.068	.060	.060	0		.17	.11		
8	476 - 477	.055		.06	.048	.046	.046	0		.17			
9	477 - 478	.032		.02	.028	.029	.029	0		.21			
10	478 - 479	.020		.02	.023	.023	.023	0			15.9		
11	479 - 480	.024		.02	.026	.017	.019	10			11.4		
12	480 - 481	.012											
13	481 - 482	.126		.17	.104	.088	.103	15		.20			
14	482 - 483	.048		.04	.040	.039	.039	0		.06			
15	483 - 484	.017		.01	.016	.018	.018	0			7.1		
16	484 - 486	.008											
17	485 - 486	.032		.03	.033	.034	.034	0		.10			
18	486 - 487	.019											
19	487 - 488	.012											
20	488 - 489	.009											
21	489 - 490	.010											
22	490 - 491	.015		.02	.019	.017	.019	10			.1		
23	491 - 492	.008											
24	492 - 493	.015		.02	.015	.013	.017	23			.2		
25	493 - 494	.020									.02		

ANIUM ANALYSES OF CORE NUM 2: 184-C

HRI No: 10866

HRI Sub No	INTERVAL feet			% U_3O_8						% V_2O_5	% CO_2	%
		Fluori-metric		Beta-Gamma	Beta Equivalent	Gamma Equivalent	Sealed Gamma Equivalent	% Radon Loss				
26	494 - 495	.273		.38	.211	.167	.184	9		.18		
27	495 - 496	.013										
28	496 - 497	.012										
29	497 - 498	.015		.01	.015	.015	.015	0			11.9	
30	498 - 499	.011										
31	499 - 500	.007										
32	500 - 501	.004										
33	501 - 502	.007										
34	502 - 503	.007										
35	503 - 504	.007										
36	504 - 505	.006										
37	505 - 506	.045		.04	.041	.043	.043	0		.04		
38	506 - 507	.032		.03	.032	.034	.034	0		.02		
39	507 - 508	.063		.04	.049	.051	.051	0		.05	28.9	
40	508 - 509	.033		.02	.038	.042	.042	0		.11		
41	509 - 510	.011										
42	510 - 511	.025		.02	.016	.014	.014	0			13.5	
43	511 - 512	.016		.01	.016	.017	.017	0			13.4	
44	512 - 513	.006										
45	513 - 514	.005										
46	514 - 515	.004										
47	515 - 516	.004										
48	516 - 517	.007										
49	517 - 518	.010										
50	518 - 519	.008										

URANIUM ANALYSES OF CORE NUMBER 184-C

HRI No: 10866

HRI Sub No	INTERVAL feet	% U_3O_8 Fluorimetric		% U_3O_8 Beta-Gamma	% U_3O_8 Beta Equivalent	% U_3O_8 Gamma Equivalent	% U_3O_8 Sealed Gamma Equivalent	% Radon Loss		% V_2O_5	% CO_2	%
51	519-520	.007										
52	520-521	.004										
53	521-522	.003										
54	522-523	.003										
55	523-524	.003										
56	524-525	.002										
57	525-526	.003										
58	526-527	.005										
59	527-528	.025		.02	.017	.014	.016	12			1.8	
60	528-529	.011										
61	529-530	.012										
62	530-531	.006										
63	531-532	.015										
64	532-533	.070		.10	.048	.035	.035	0		.21	0.49	
65	533-534	.010										
66	534-535	.003										
67	535-536	<.001										
68	536-537	<.001										
69	537-538	.001										
70	538-539	<.001										
71	539-540	.003										
72	540-541	.002										
73	541-542	.002										
74	542-543	.001										
75	543-544	<.001										

URANIUM ANALYSES OF CORE NUMB : 184-C

HRI No: 10866

HRI Sub Nb	Interval feet	% U_3O_8 Fluorimetric		% U_3O_8 Beta-Gamma	% U_3O_8 Beta Equivalent	% U_3O_8 Gamma Equivalent	% U_3O_8 Sealed Gamma Equivalent	% Radon Loss		% V_2O_5	% CO_2	%
76	544-545	<.001										
77	545-546	.023		.02	.014	.012	.012	0			.7	
78	546-547	.015		.01	.012	.015	.015	0			.2	
79	547-548	.011										
80	550-551	.006										
81	551-552	.010										
82	552-553	.005										
83	640-641	.003										
84	641-642	.003										
85	642-643	.002										
86	643-644	.001										
87	650-651	.003										
88	651-652	.011										
89	652-653	.014										
90	653-654	.030		.03	.027	.022	.026	15			.07	
91	654-655	.009										
92	655-656	.002										
93	656-657	<.001										
94	657-658	<.001										
95	658-659	<.001										
96	659-660	<.001										
97	660-661	.139		.14	.121	.117	.117	0		.02		
98	661-662	.012										
99	662-663	.003										
100	663-664	.005										

URANIUM ANALYSES OF CORE NUMBER 184-C

HRI No: 10866

HRI Lab No	Interval feet	Fluorimetric		% U_3O_8 Beta-Gamma	% U_3O_8 Beta Equivalent	% U_3O_8 Gamma Equivalent	% U_3O_8 Scaled Gamma Equivalent	% Radon Loss		% V_2O_5	% CO_2	%
101	664-665	.004										
102	665-666	.004										
103	666-667	.005										
104	667-668	.005										
105	668-669	.005										
106	669-670	.007										
107	670-671	.010										
108	671-672	.013										
109	672-673	.133		.19	.083	.054	.057	5		.48	.25	
110	673-674	.013										
111	674-675	.003										
112	675-676	.002										
113	676-677	.002										
114	677-678	.003										
115	678-679	.003										
116	679-680	.004										
117	680-681	.006										
118	681-682	.029		.02	.023	.022	.022	0			.1	
119	682-683	.009										
120	683-684	.003										
121	684-685	.003										
122	685-686	.005										
123	686-687	.013										
124	687-688	.011										
125	688-689	.017		.02	.015	.015	.015	0			11.2	

ANIUM ANALYSES OF CORE NUM 2: 184-C

HRI No: 10866

HRI Sub No	INTERVAL feet			% U_3O_8				%		% V_2O_5	% CO_2	%
		Fluori-metric		Beta-Gamma	Beta Equivalent	Gamma Equivalent	Scaled Gamma Equivalent	Radon Loss				
126	689-690	.019		.01	.013	.014	.016	12			14.9	
127	690-691	.004										
128	691-692	.002										
129	692-693	.001										
130	693-694	<.001										
131	694-695	<.001										
132	695-696	<.001										
133	696-697	<.001										
134	697-698	<.001										

URANIUM ANALYSES OF CORE AM 222C

HRI No	INTERVAL Feet	% U_3O_8 Fluorimetric	% U_3O_8 Beta-Gamma	% U_3O_8 Beta Equivalent	% U_3O_8 Gamma Equivalent	% U_3O_8 Sealed Gamma Equivalent	% Radon Loss		% V_2O_5	% CO_2		
10723-1	105-106	.003										
2	106-107	.003										
3	107-108	.002										
4	108-109	.001										
5	109-110	.029							0.012			
6	110-111	.129	0.12	0.136	0.142	0.145	2		0.046	32.6		
7	111-112	.026							0.011			
8	112-113	.028	0.03	0.036	0.029	0.032	9		0.026			
9	113-114	.013										
10	114-115	.012										
11	115-116	.011										
12	116-117	.032										
13	117-118	.006										
14	118-119	.007										
15	119-120	.001										
16	120-121	.001										
17	121-122	.012										
18	122-123	.002										
19	185-186	.003										
20	186-187	.005										
21	187-188	.016										
22	188-189	.004										
23	189-190	.004										
24	190-191	.003										
25	191-192	.003										
26	192-193	.003										

hri 20-24

URANIUM ANALYSES OF CORE AM 229C

HRI	No.	INTERVAL Feet	% U_3O_8				% Radon Loss		% V_2O_5	% CO_2		
			Fluorimetric	Beta-Gamma	Beta-Equivalent	Gamma-Equivalent	Sealed Gamma Equivalent						
10723	27	60-61	.003									
	28	61-62	.005									
	29	62-63	.004									
	30	63-64	.005									
	31	64-65	.004									
	32	65-66	.004									
	33	66-67	.007									
	34	67-68	.006									
	35	68-69	.019									
	36	69-70	.008									
	37	70-71	.008									
	38	71-72	.006									
	39	72-73	.005									
	40	73-74	.004									
	41	74-75	.003									
	42	115-116	.003									
	43	116-117	.004									
	44	117-118	.002									
	45	118-119	.002									
	46	119-120	.005									
	47	120-121	.003									
	48	121-122	.010									
	49	122-123	.012						0.030			
	50	123-124	.033	0.05	0.037	0.031	0.032	3	0.024			
	51	124-125	.094	0.11	0.104	0.103	0.103	0	0.059	16.5		

URANIUM ANALYSES OF CORE AM 229C

HRI No	INTERVAL Feet	% U_3O_8					% Radon Loss		% V_2O_5	% CO_2		
		Fluori-metric	Beta-Gamma	Beta Equivalent	Gamma Equivalent	Sealed Gamma Equivalent						
10723-52	125-126	.006							0.026			
53	126-127	.004										
54	127-128	.002										
55	128-129	.002										
56	129-130	.003										
57	130-131	.004										
58	131-132	.003										
59	132-133	.002										
60	133-134	.004										
61	134-135	.003										
62	135-136	.004										
63	136-137	.005										
64	137-138	.004										
65	138-139	.006										
66	139-140	.005										
67	140-141	.011										
68	141-142	.011										
69	142-143	.022	0.02	0.019	0.018	0.020	10		0.027			
70	143-144	.007							0.015			
71	144-145	.080	0.09	0.083	0.076	0.079	4		0.066			
72	145-146	.032	0.03	0.025	0.024	0.024	0		0.017			
73	146-147	.005							0.011			
74	147-148	.031	0.02	0.032	0.038	0.038	0		0.041			
75	148-149	.003							0.029			
76	149-150	.028	0.03	0.028	0.028 ~~0.034~~	0.034	18		0.061			

URANIUM ANALYSES OF CORE AM 229C

HRI	No	INTERVAL Feet	% U_3O_8					% Radon Loss		% V_2O_5			
			Fluorimetric	Beta-Gamma	Beta Equivalent	Gamma Equivalent	Sealed Gamma Equivalent						
10723	77	150 - 151	.006										
	78	151 - 152	.003										
	79	152 - 153	.007										
	80	153 - 154	.003										
	81	154 - 155	.003										
	82	155 - 156	.002										
	83	156 - 157	.003										
	84	157 - 158	.004										
	85	158 - 159	.003										

URANIUM ANALYSES OF CORE AM 244C

HRI	No	INTERVAL Feet	% U_3O_8					% Radon Loss		% V_2O_5	% CO_2		
			Fluorimetric	Beta-Gamma	Beta Equivalent	Gamma Equivalent	sealed Gamma Equivalent						
10723-	86	63-64	.002										
	87	64-65	.004										
	88	65-66	.002										
	89	66-67	.007										
	90	67-68	.006										
	91	68-69	.014										
	92	69-70	.006										
	93	70-71	.003										
	94	71-72	.002										
	95	72-73	.002										
	96	73-74	.002										
	97	74-75	.004										
	98	75-76	.006										
	99	76-77	.005										
	100	77-78	.006							0.025			
	101	78-79	.034	0.04	0.035	0.032	0.032	0		0.063	0.16		
	102	79-80	.004							0.053			

URANIUM ANALYSES OF CORE 254 C

HRI No.	INTERVAL Feet			% U_3O_8			%		%	%		
		Fluori-metric	Beta-Gamma	Beta Equivalent	Gamma Equivalent	Sealed Gamma Equivalent	Radon Loss		V_2O_5	CO_2		
10723-103	115 - 116	.002										
104	116 - 117	.002										
105	117 - 118	.002										
106	118 - 119	.003										
107	119 - 120	.004										
108	120 - 121	.002										
109	121 - 122	.002										
110	122 - 123	.002										
111	123 - 124	.014										
112	124 - 125	.015	0.02	0.019	0.016	0.021	24					
113	125 - 126	.005										
114	126 - 127	.005										
115	127 - 128	.003										
116	128 - 129	.004										
117	129 - 130	.009										
118	130 - 131	.009										
119	131 - 132	.002										
120	132 - 133	.002										
121	133 - 134	.004										
122	134 - 135	.005										

URANIUM ANALYSES OF CORE AM 273C

HRI No.	INTERVAL Feet	% U_3O_8					% Radon Loss		% V_2O_5	% CO_2		
		Fluorimetric	Beta-Gamma	Beta Equivalent	Gamma Equivalent	Sealed Gamma Equivalent						
10723-123	32-33	.004										
124	33-34	.004										
125	34-35	.004										
126	35-36	.004										
127	36-37	.016	0.02	0.015	0.015	0.015	0		0.078			
128	37-38	.241	0.32	0.227	0.190	0.193	2		0.147			
129	38-39	.009							0.036			
130	39-40	.006										
131	40-41	.005										
132	41-42	.027	0.03	0.023	0.022	0.022	0					
133	42-43	.019	0.02	0.018	0.013	0.015	13					
134	43-44	.006										
135	44-45	.003										
136	45-46	.005										
137	46-47	.003										
138	130-131	.004										
139	131-132	.004										
140	132-133	.004										
141	133-134	.010							0.011			
142	134-135	.030	✓	Insufficient Pulp for					0.045			
143	135-136	.030	✓		"		Radiometric		0.152			
144	136-137	.071	✓		"				0.048			
145	137-138	.027	✓		"				0.053			
146	138-139	.022	✓		"				0.148			
147	139-140	.023	0.03	0.021	0.019	0.019	0		0.049	10.1		

URANIUM ANALYSES OF CORE AM 273C

HRI No.	INTERVAL Feet	% U_3O_8								% V_2O_5	% CO_2		
		Fluorimetric	Beta-Gamma	Beta Equivalent	Gamma Equivalent	Sealed Gamma Equivalent	% Radon Loss						
10723-148	140-141	.029	✓	Insufficient		Pulp for	Radiometric			0.072			
149	141-142	.004			(					0.016			
150	142-143	.002											
151	143-144	.002											
152	144-145	.002											
153	145-146	.003											
154	146-147	.002											
155	147-148	.002											
156	148-149	.001											
157	149-150	.002											
158	150-151	.004											
159	151-152	.003											
160	152-153	.004											
161	153-154	.004											
162	154-155	.012											
163	155-156	.012											
164	156-157	.008											
165	157-158	.017	0.02	0.017	0.015	0.020	25			0.092			
166	158-159	.026	0.04	0.020	0.013	0.022	41			0.084	0.11		
167	159-160	.015	0.01	0.009	0.008	0.010	20			0.035			
168	160-161	.014	<.01	0.008	0.011	0.011	0			0.30			
169	161-162	.021	0.02	0.018	0.017	0.019	10			0.37			
170	162-163	.013								0.25			
171	163-164	.002											
172	164-165	.001											

URANIUM ANALYSES OF CORE AM 273 C

HRI No.	INTERVAL Feet	% U_3O_8							% V_2O_5	% CO_2		
		Fluorimetric	Beta-Gamma	Beta Equivalent	Gamma Equivalent	Sealed Gamma Equivalent	% Radon Loss					
10723-173	165-166	.002										
174	166-167	<.001										
175	167-168	<.001										
176	168-169	.001										
177	169-170	.025	0.03	0.026	0.024	0.025	4		0.032			
178	170-171	.002							0.021			
179	171-172	.032	0.03	0.035	0.036	0.042	14		0.049			
180	172-173	.013							0.045			
181	173-174	.013							0.036			
182	174-175	.014							0.052			
183	175-176	.040	0.04	0.041	0.040	0.041	2		0.196			
184	176-177	.046	0.05	0.042	0.040	0.044	9		0.203	32.6		
185	177-178	.006							0.129			
186	178-179	.021	0.01	0.016	0.017	0.022	23		0.23			
187	179-180	.015	0.01	0.013	0.012	0.014	14		0.33			
188	180-181	.025	0.02	0.023	0.024	0.029	17		0.035			
189	181-182	.023	0.02	0.020	0.020	0.023	13		0.027			
190	182-183	.022	0.02	0.021	0.020	0.032	37		0.029			
191	183-184	.010							0.029			
192	184-185	.006										

URANIUM ANALYSES OF CORE AM 27 C

274C

HRI No	INTERVAL Feet	% U_3O_8					% Radon Loss		% V_2O_5			
		Fluorimetric	Beta-Gamma	Beta Equivalent	Gamma Equivalent	Scaled Gamma Equivalent						
10723-193	40-41	.003										
194	41-42	.001										
195	42-43	<.001										
196	43-44	<.001										
197	44-45	.001										
198	45-46	<.001										
199	46-47	.001										
200	47-48	<.001										
201	48-49	<.001										
202	49-50	<.001										
203	50-51	<.001										
204	51-52	<.001										
205	52-53	<.001										
206	53-54	<.001										
207	54-55	<.001							0.24			
208	55-56	.048	0.05	0.047	0.045	0.051	12		0.106			
209	56-57	.011							0.063			
210	57-58	.002										
211	58-59	.001										
212	59-60	.001										
213	60-61	.001										
214	61-62	.001										
215	62-63	.002										
216	63-64	.001										
217	64-65	.002										

URANIUM ANALYSES OF CORE NUMBER 275-C

HRI No: 10866

HRI Sub No	Interval feet	Fluorimetric % U_3O_8		Beta-Gamma % U_3O_8	Beta Equivalent % U_3O_8	Gamma Equivalent % U_3O_8	Sealed Gamma Equivalent % U_3O_8	% Radon Loss		% V_2O_5	% CO_2	%
268	40-41	<.001										
269	41-42	<.001										
270	42-43	.003										
271	43-44	.001										
272	44-46	.002										
273	45-46	.002										
274	46-47	.004										
275	47-48	.068		.12	.096	.090	.090	0		.09	14.2	
276	48-49	.419		.62	.380	.319	.325	2		1.02		
277	49-50	.022		.01	.019	.024	.024	0			9.8	
278	50-51	.014		.03	.023	.021	.023	9			.7	
279	51-52	.062		.06	.057	.054	.060	16			32.2	
280	52-53	.023		.02	.018	.014	.024	42			16.8	
281	53-54	.004										
282	54-55	.003										
283	55-56	.002										
284	56-57	.005										
285	57-58	.008										
286	58-59	.002										
287	59-60	.002										
288	60-61	<.001										
289	61-62	.001										
290	62-63	.006										
291	63-64	.005										
292	64-65	<.001										

URANIUM ANALYSES OF CORE NUMBER 275-C

HRI No: 10866

HRI Sub No	INTERVAL feet	% U_3O_8						%		%	%	%	
		Fluorimetric		Beta-Gamma	Beta Equivalent	Gamma Equivalent	Scaled Gamma Equivalent	Radon Loss		V_2O_5			
293	65-66	<.001											
294	66-67	<.001											
295	67-68	<.001											
296	68-69	<.001											
297	69-70	<.001											
298	70-71	<.001											
299	71-72	<.001											
300	72-73	<.001											
301	73-74	<.001											
302	74-75	<.001											
303	75-76	<.001											
304	76-77	<.001											

URANIUM ANALYSES OF CORE NUM. R: 289-C

HRI No: 10866

HRI Sub No	Interval feet	Fluorimetric		% U_3O_8 Beta-Gamma	% U_3O_8 Beta Equivalent	% U_3O_8 Gamma Equivalent	% U_3O_8 Sealed Gamma Equivalent	% Radon Loss		% V_2O_5	% CO_2	%
135	75-76	.005										
136	76-77	.004										
137	77-78	.005										
138	78-79	.003										
139	79-80	.004										
140	80-81	.046		.09	.060	.053	.056	5		0.12		
141	81-82	.079		.07	.085	.090	.090	0		.07	15.4	
142	82-83	.006										
143	83-84	.002										
144	84-85	.003										
145	85-86	.003										
146	86-87	.003										
147	87-88	.003										
148	88-89	.002										
149	130-131	<.001										
150	131-132	.001										
151	132-133	<.001										
152	133-134	.002										
153	134-135	.003										
154	135-136	.010										
155	136-137	.011										
156	137-138	.002										
157	138-139	.039		.04	.055	.059	.059	0		.04		
158	139-140	.020		.04	.040	.046	.044	9			.25	
159	140-141	.043		.08	.064	.060	.060	0		.03		

URANIUM ANALYSES OF CORE NUM. R: 289-C

HRI No: 10866

HRI Sub No	INTERVAL feet	% U_3O_8							% V_2O_5	% CO_2	%
		Fluorimetric		Beta-Gamma	Beta Equivalent	Gamma Equivalent	Sealed Gamma Equivalent	% Radon Loss				
160	141-142	.033		.03	.034	.035	.035	0	.06		
161	142-143	.022		.06	.043	.033	.037	11	.03	6.8	
162	143-144	.048		.02	.023	.024	.024	0	.02	12.2	
163	144-145	.024		.02	.022	.020	.020	0	.02	10.0	
164	145-146	.032		.03	.027	.025	.025	0	.02	11.8	
165	146-147	.012									
166	147-148	.011									
167	148-149	.006									
168	149-150	.007									
169	150-151	.003									
170	151-152	.009									
171	152-153	.011									
172	153-154	.014									
173	154-155	.108		.18	.083	.057	.057	0	.06		
174	155-156	.024		.03	.025	.024	.024	0		7.8	
175	156-157	.012									
176	157-158	.023		.02	.020	.021	.021	0		5.8	
177	158-159	.004									
178	159-160	.008									
179	160-161	.003									
180	161-162	.004									
181	162-163	.004									
182	163-164	.002									
183	164-165	.011									
184	170-171	.011									

URANIUM ANALYSES OF CORE NUMBER 289-C

HRI No: 10866

HRI Sub No	Interval feet	Fluorimetric %		U_3O_8 % Beta-Gamma	U_3O_8 % Beta Equivalent	U_3O_8 % Gamma Equivalent	U_3O_8 % Scaled Gamma Equivalent	% Radon Loss		% V_2O_5	% CO_2	%
185	171 - 172	.023		.02	.019	.019	.021	9			35.0	
186	172 - 173	.006										
187	173 - 174	.024		.02	.023	.027	.027	0			33.3	
188	174 - 175	.020		.02	.021	.025	.025	0			27.4	
189	175 - 176	.025		.03	.026	.025	.025	0			19.9	
190	176 - 177	.004										
191	177 - 178	.002										
192	178 - 179	.016		.02	.017	.017	.017	0			29.8	
193	179 - 180	.018		.01	.019	.022	.022	0			37.4	
194	180 - 181	.008										
195	181 - 182	.016		.01	.015	.015	.015	0			20.6	
196	182 - 183	.024		.02	.021	.022	.022	0			27.0	
197	183 - 184	.003										
198	184 - 185	< .001										
199	185 - 186	.001										
200	186 - 187	.003										
201	187 - 188	.010										
202	188 - 189	.012										
203	189 - 190	.041		.06	.037	.030	.031	3		.11		
204	190 - 191	.010										
205	191 - 192	.004										
206	192 - 193	.003										
207	193 - 194	.004										
208	194 - 195	.003										
209	255 - 256	.001										

URANIUM ANALYSES OF CORE NUMBER: 289-C

HRI No: 10866

HRI Sub No	INTERVAL feet			% U_3O_8						% V_2O_5	% CO_2	%
		Fluorimetric		Beta-Gamma	Beta Equivalent	Gamma Equivalent	Sealed Gamma Equivalent	% Radon Loss				
210	256-257	.001										
211	257-258	.029		.03	.032	.031	.031	0			.1	
212	258-259	.004										
213	259-260	.002										
214	260-261	.002										
215	261-262	.106		.16	.096	.079	.079	0		.05		
216	270-271	.005										
217	271-272	.001										
218	272-273	.002										
219	273-274	<.001										
220	274-275	.001										
221	275-276	.001										
222	276-277	.002										
223	277-288	.007										
224	278-279	.030		.03	.028	.030	.030	0			.1	
225	279-280	.008										
226	280-281	.005										
227	281-282	.002										
228	282-283	.004										
229	291-292	.003										
230	292-293	.012										
231	293-294	.003										
232	294-295	<.001										
233	295-296	.002										
234	296-297	.002										
235	297-298	.006										

URANIUM ANALYSES OF CORE NUMB : AM 337-C

HRI No: 10866

HRI Sub No	INTERVAL feet	% U_3O_8 Fluorimetric		% U_3O_8 Beta-Gamma	% U_3O_8 Beta Equivalent	% U_3O_8 Gamma Equivalent	% U_3O_8 Scaled Gamma Equivalent	% Radon Loss		% V_2O_5	% CO_2	%
236	420-421	.001										
237	421-422	.001										
238	422-423	<.001										
239	423-424	.002										
240	424-425	.045		.05	.032	.028	.028	0		.11		
241	425-426	.057		.06	.058	.057	.057	0		.02	21.2	
242	426-427	.026		.04	.037	.034	.036	5		.12	.4	
243	427-428	<.001										
244	428-429	.001										
245	429-430	<.001										
246	430-431	.003										
247	431-432	<.001										
248	438-439	<.001										
249	439-440	<.001										
250	440-441	<.001										
251	441-442	<.061										
252	442-443	<.001										
253	443-444	<.001										

ANIUM ANALYSES OF CORE NUMBER 390-C

HRI No: 10866

HRI Sub No	INTERVAL feet	Fluorimetric		% U_3O_8 Beta-Gamma	% U_3O_8 Beta Equivalent	% U_3O_8 Gamma Equivalent	% U_3O_8 Sealed Gamma Equivalent	% Radon Loss		% V_2O_5	%	%
305	244-245	<.001										
306	245-246	<.001										
307	246-247	<.001										
308	247-248	<.001										
309	248-249	<.001										
310	249-250	.010										
311	250-251	.004										
312	251-252	.003										
313	252-253	.003										
314	253-254	<.001										
315	254-255	.001										
316	255-256	.001										
317	256-257	.001										
318	257-258	<.001										
319	258-259	<.001										
320	259-260	<.001										
321	260-261	<.001										
322	261-262	<.001										
323	262-263	<.001										
324	263-264	<.001										
325	264-265	<.001										
326	265.5-266	<.001										
327	266-267	<.001										
328	267-268	<.001										
329	268-269	.001										

URANIUM ANALYSES OF CORE NUMB. : 390-C

HRI No: 10866

HRI Sub No	INTERVAL feet	Fluorimetric		% U_3O_8 Beta-Gamma	% U_3O_8 Beta Equivalent	% U_3O_8 Gamma Equivalent	% U_3O_8 Sealed Gamma Equivalent	% Radon Loss		% V_2O_5	% CO_2	%
330	269-270	.002										
331	270-271	.019		.02	.019	.017	.017	0			.1	
332	279-280	.113		.16	.094	.077	.077	0		.28	.23	
333	280-281	.003										
334	281-282	<.001										
335	282-283	<.001										
336	283-284	<.001										
337	284-285	<.001										
338	285-286	<.001										
339	286-287	<.001										
340	287-288	<.001										
341	288-289	<.001										
342	289-290	<.001										
343	290-291	<.001										
344	291-292	<.001										
345	292-293	<.001										
346	293-294	<.001										
347	294-295	<.001										

URANIUM ANALYSES OF CORE NUM. 2: AM 412-C

HRI No: 10866

HRI Sub No	Interval feet	Fluorimetric		% U_3O_8 Beta-Gamma	% U_3O_8 Beta Equivalent	% U_3O_8 Gamma Equivalent	% U_3O_8 Scaled Gamma Equivalent	% Radon Loss		% V_2O_5	% CO_2	%
254	125-126	<.001										
255	126-127	<.001										
256	127-128	<.001										
257	128-129	.010										
258	129-130	.702		1.11	.567	.424	.433	2		.87		
259	130-131	.295		.57	.262	.181	.186	3		.19	.15	
260	131-132	.251		.42	.256	.214	.214	0		.15		
261	132-133	.080		.10	.109	.112	.112	0		.05		
262	133-134	.068		.10	.077	.071	.071	0		.18		
263	134-135	.048		.04	.058	.062	.062	0		.05		
264	141-142	.109		.12	.141	.146	.148	1		.31	2.4	
265	142-143	.004										
266	143-144	.001										
267	144-145	<.001										

Uranium Analyses of Core No. ER: AM-422c

HRI No: 11168

HRI Sub No	Interval feet	Fluorimetric		% U_3O_8 Beta-Gamma	% U_3O_8 Beta Equivalent	% U_3O_8 Gamma Equivalent	% U_3O_8 Sealed Gamma Equivalent	% Radon Loss		% CO_2	% V_2O_5	%
1	405-406	0.003										
2	406-407	0.007										
3	407-408	0.005										
4	408-409	0.007										
5	409-410	0.021		0.03	0.032	0.031	0.031	0				
6	410-411	0.026		0.04	0.037	0.036	0.036	0				
7	411-412	0.016										
8	412-413	0.010										
9	413-414	0.025		0.04	0.030	0.026	0.026	0				
10	414-415	0.006										
11	450-451	0.004										
12	451-452	0.004										
13	452-453	0.005										
14	453-454	0.024		0.04	0.025	0.016	0.016	0				
15	454-455	0.016		0.03	0.021	0.016	0.016	0		1.31	0.023	
16	455-456	0.022		0.04	0.033	0.030	0.030	0				
17	475-476	0.015		0.02	0.020	0.019	0.019	0				
18	476-477	0.009										
19	477-478	0.010										
20	478-479	0.018		0.03	0.020	0.014	0.014	0				
21	655-656	0.001										
22	656-657	0.004										
23	657-658	0.004										
24	658-659	0.003										
25	659-660	0.003										

URANIUM ANALYSES OF CORE NUMBER: 422C

HRI No: 11168

HRI Sub No	INTERVAL feet			% U_3O_8						% CO_2	% V_2O_5	%
		Fluorimetric		Beta-Gamma	Beta Equivalent	Gamma Equivalent	Scaler Gamma Equivalent	% Radon Loss				
26	660 - 661	0.007										
27	661 - 662	0.003										
28	662 - 663	0.014										
29	663 - 664	0.012										
30	664 - 665	0.289		0.29	0.182	0.097	0.097	0		3.42	0.025	
31	665 - 666	0.010										
32	666 - 667	0.009										
33	667 - 668	0.006										
34	668 - 669	0.002										
35	669 - 670	<.001										
	664 - 665 repeat			0.31	0.186	0.101	0.123	18				

URANIUM ANALYSES OF CORE NUMBER: AM-422C

HRI No: 11184

HRI Sub No	INTERVAL feet			% U_3O_8				%		%	%	%
		Fluorimetric		Beta-Gamma	Beta Equivalent	Gamma Equivalent	Sealed Gamma Equivalent	Radon Loss		CO_2	V_2O_5	
1	456 - 457	0.080		0.09	0.079	0.071	0.071	0				
2	457 - 458	0.101		0.11	0.107	0.105	0.105	0		0.05	0.097 ~~0.023~~	
3	458 - 459	0.044		0.06	0.052	0.049	0.049	0				
4	459 - 460	0.035		0.05	0.043	0.040	0.040	0				
5	460 - 461	0.028		0.04	0.032	0.029	0.029	0				
6	461 - 462	0.025		0.03	0.030	0.026	0.026	0				
7	462 - 463	0.047		0.06	0.050	0.045	0.045	0				
8	463 - 464	0.036		0.06	0.047	0.038	0.038	0		0.10	0.019	
9	464 - 465	0.029		0.05	0.041	0.036	0.036	0				
10	465 - 466	0.033		0.04	0.045	0.044	0.044	0				
11	466 - 467	0.044		0.06	0.044	0.035	0.035	0				
12	467 - 468	0.024		0.03	0.037	0.037	0.039	5		5.36	0.024	
13	468 - 469	0.035		0.04	0.030	0.030	0.030	0				
14	469 - 470	0.033		0.03	0.037	0.039	0.039	0				
15	470 - 471	0.031		0.04	0.038	0.034	0.034	0				
16	471 - 472	0.011		0.02	0.018	0.014	0.014	0				
17	472 - 473	0.009										
18	473 - 474	0.067										
19	474 - 475	0.025		0.03	0.027	0.023	0.023	0		18.4	0.021	
	465-966	repeat		0.04	0.043	0.042	0.057	~~28~~				
	466 - 467	"		0.05	0.041	0.033	0.040	~~33~~ 17				
	467 - 468	"		0.04	0.039	0.040	0.057	30				
	468 - 469	"		0.05	0.034	0.027	0.032	17				

RANIUM ANALYSES OF CORE NUMBER: AM 427

HRI No: 11253

HRI Sub No	Interval feet	% U_3O_8 Fluorimetric		Beta-Gamma	Beta Equivalent	Gamma Equivalent	Sealed Can Equivalent	% Radon Loss		% CO_2	% V_2O_5	%
1	547 - 548	0.005										
2	548 - 549	0.010										
3	549 - 550	0.142		0.14	0.084	0.043	0.043	0				
4	550 - 551	0.023		0.05	0.087	0.117	0.117	0				
5	551 - 552	0.019		0.02	0.015	0.015	0.015	0				
6	552 - 553	0.097		0.09	0.062	0.039	0.039	0		13.5	0.064	
7	553 - 554	0.179		0.20	0.206	0.209	0.209	0		19.9	0.110	
8	554 - 555	0.008										
9	555 - 556	0.006										
10	556 - 557	0.005										
11	557 - 558	0.005										
12	558 - 559	0.003										
13	559 - 560	0.008										
14	560 - 561	0.017		0.03	0.025	0.024	0.024	0				
15	561 - 562	0.015		0.02	0.019	0.019	0.019	0				
16	562 - 563	0.012										
17	563 - 564	0.014										
18	564 - 565	0.012										
19	565 - 566	0.006										
20	566 - 567	0.006										
21	567 - 568	0.005										
22	568 - 569	0.003										
23	569 - 570	0.156		0.15	0.106	0.072	0.072	0		10.5	0.072	
24	570 - 571	0.022		0.03	0.030	0.029	0.029	0		21.1	0.033	
25	571 - 572	0.098		0.13	0.124	0.124	0.124	0				

URANIUM ANALYSES OF CORE NUMBER: AM 427

HRI No: 11253

HRI S.Ab No	INTERVAL feet			% U_3O_8						%	%	%
		Fluorimetric		Beta-Gamma	Beta Equivalent	Gamma Equivalent	Sealed Gamma Equivalent	% Radon Loss				
26	572 - 573	0.038		0.06	0.054	0.047	0.047	0				
27	573 - 574	0.081		0.10	0.087	0.076	0.076	0				
28	574 - 575	0.026		0.03	0.027	0.024	0.024	0				
29	575 - 576	0.012										
30	576 - 577	0.013										
31	577 - 578	0.023		0.03	0.024	0.019	0.019	0				
32	578 - 579	0.012										
33	579 - 580	0.007										
34	580 - 581	0.003										
35	581 - 582	0.004										
36	582 - 582.5	0.004										
37	602 - 603	0.003										
38	603 - 604	0.002										
39	604 - 605	0.002										
40	605 - 606	<0.001										
41	606 - 607	<0.001										
42	607 - 608	<0.001										
43	608 - 609	<0.001										
44	609 - 610	<0.001										
45	610 - 611	<0.001										
46	611 - 611.5	<0.001										

Uranium Analyses of Core Numbers: AM 431C

HRI No: 10958

HRI Sub No	Interval feet	% U_3O_8 Fluorimetric		% U_3O_8 Beta-Gamma	% U_3O_8 Beta Equivalent	% U_3O_8 Gamma Equivalent	% U_3O_8 Sealed Gamma Equivalent	% Radon Loss		% CO_2	%	%
259	543-544	<.001										
260	544-545	<.001										
261	545-546	<.001										
262	546-547	.001										
263	547-548	.002										
264	548-549	<.001										
265	549-550	<.001										
266	550-551	<.001										
267	551-552	<.001										
268	552-553	<.001										
269	553-554	.001										
270	554-555	.002										
271	555-556	.002										
272	556-557	.004										
273	557-558	.014										
274	558-559	.005										
275	559-560	.003										
276	560-561	.003										
277	561-562	.132		0.23	0.205	0.185	0.196	3		23.1		
278	562-563	.058		0.07	0.064	0.055	0.063	13				
279	563-564	.023		0.03	0.023	0.021	0.021	0				
280	564-565	.026		0.04	0.027	0.017	0.019	10				
281	565-566	.032		0.03	0.024	0.018	0.020	10				
282	566-567	.004										
283	567-568	.002										

URANIUM ANALYSES OF CORE NUMBER AM 431c

HRI No: 10958

HRI Sub No	Interval feet	% U_3O_8 Fluorimetric		Beta-Gamma	Beta Equivalent	Gamma Equivalent	Scaled Gamma Equivalent	% Radon Loss		% CO_2	%	%
284	568-569	.003										
285	569-570	.003										
286	570-571	.008										
287	571-572	.016		0.02	0.018	0.014	0.016	12				
288	572-573	.006										
289	573-574	.008										
290	574-575	.006										
291	575-576	.019		0.02	0.019	0.017	0.017	0				
292	576-577	.016		0.02	0.019	0.019	0.024	21				
293	577-578	.039		0.05	0.040	0.034	0.034	0		9.7		
294	578-579	.020		0.02	0.020	0.020	0.022	9				
295	579-580	.013										
296	580-581	.022		0.03	0.028	0.023	0.025	8				
297	581-582	.010										
298	583-584	.010										
299	584-585	.003										
300	585-586	.002										
301	586-587	.010										
302	587-588	.052		0.05	0.041	0.038	0.038	0				
303	588-589	.012		~~0.0~~								
304	589-590	.006										
305	590-591	.012										
306	591-592	.013										
307	592-593	.033		0.04	0.038	0.036	0.036	0				
308	593-594	.011										

URANIUM ANALYSES OF CORE NUMBER: AM 431c

HRI No: 10958

HRI Sub No	INTERVAL feet	% U_3O_8							%	%	%
		Fluorimetric		Beta-Gamma	Beta Equivalent	Gamma Equivalent	Scaled Gamma Equivalent	% Radon Loss				
309	593-594	.004									
310	594-595	.002									
311	595-596	<.001									
312	596-597	<.001									
313	597-598	<.001									
314	598-599	<.001									
315	599-600	<.001									
316	600-601	<.001									
317	601-602	<.001									
318	602-603	<.001									
319	603-604	<.001									
320	604-605	<.001									
321	605-606	<.001									
322	606-607	<.001									
323	607-608	<.001									
324	608-609	<.001									
325	609-610	<.001									
326	610-611	<.001									
327	611-612	<.001									
328	612-613	<.001									
329	613-614	<.001									
330	614-615	<.001									
331	615-616	<.001									
332	616-617	<.001									
333	617-618	<.001									

URANIUM ANALYSES OF CORE NUMBER: AM 434c

HRI No: 10958

HRI Sub No	Interval Feet	% U_3O_8 Fluorimetric		% U_3O_8 Beta-Gamma	% U_3O_8 Beta Equivalent	% U_3O_8 Gamma Equivalent	% U_3O_8 Sealed Gamma Equivalent	% Radon Loss		% CO_2	%	%	
229	515-516	.005											
230	516-517	.005											
231	517-518	.004											
232	518-519	.004											
233	519-520	.005											
234	520-521	.004											
235	521-522	.003											
236	522-523	.005											
237	523-524	.005											
238	524-525	.014											
239	525-526	.004											
240	526-527	.006											
241	527-528	.012											
242	528-529	.021 ✓		<.02									
243	529-530	.044 ✓		0.05	0.041	0.033	0.040	17					—
244	530-531	.014 ✓		0.02	0.017	0.013	0.020	35		<.01			—
245	531-532	.012		<.01									
246	532-533	.008											
247	533-534	.005											
248	534-535	.002											
249	535-536	.003											
250	536-537	.031		0.02	0.027	0.029	0.029	0					
851	537-538	.020		0.02	0.024	0.023	0.025	8					
252	538-539	.008											
253	539-540	.005											

URANIUM ANALYSES OF CORE NUMBER: AM 435c

HRI No: 10958

CORRECT COPY

HRI Sub No	Interval feet	Fluorimetric		% U_3O_8 Beta-Gamma	% U_3O_8 Beta Equivalent	% U_3O_8 Gamma Equivalent	% U_3O_8 Sealed Gamma Equivalent	% Radon Loss		% CO_2	%	%
134	95-96	<.001										
135	96-97	.001										
136	97-98	.002										
137	98-99	.040		0.06	0.047	0.040	0.040	0				
138	99-100	.165		0.19	0.157	0.133	0.135	1		.06		
139	100-101	.029		0.04	0.038	0.039	0.039	0				
140	101-102	.003										
141	102-103	.005										
142	103-104	.035		0.04	0.042	0.039	0.039	0				
143	104-105	.019										
144	105-106	<.001										
145	106-107	<.001										
146	107-108	<.001										
147	108-109	<.001										
148	109-110	<.001										
149	110-111	<.001										
150	111-112	.002										
151	112-113	.002										
152	113-114	.005										
153	114-115	.013		0.01								
154	115-116	.005		0.01								
155	116-117	.002		<.01								
156	117-118	.002		<.01								
157	118-119	.002		<.01	.002	.002	.008	75				
158	119-120	.006		.01	.006	.005	.007	29				

URANIUM ANALYSES OF CORE NUMBER AM 435c

HRI No: 10958

HRI Sub No	Interval feet	Fluorimetric	% U_3O_8 Beta-Gamma	Beta Equivalent	Gamma Equivalent	Scaled Gamma Equivalent	% Radon Loss		% CO_2	%	%	
159	120-121	.003 ✓	<0.01	0.002	0.003	0.005	40					—
160	121-122	.004 ✓	0.01	0.005	0.005	0.007	29					—
161	122-123	.009 ✓	0.01	0.011	0.012	0.012	0					—
162	123-124	.028 ✓	0.03									
163	124-125	.002	<.01									
164	125-126	.002	<.01									
165	126-127	.008	0.01									
166	127-128	.002	0.02									
167	128-129	.016	0.02	0.015	0.013	0.017	23					
168	129-130	.005	0.01									
169	130-131	.008	0.01									
170	131-132	.086 ✓	.09									
171	132-133	.003 ✓	0.01	0.008	0.005	0.009	44					—
172	133-134	.015	<0.01	0.004	0.004	0.006	33					—
173	134-135	.001 ✓	<0.01	0.005	0.005	0.007	29		.02			—
174	135-136	.019	<0.01	0.006	0.008	0.008	0					—
175	136-137	.013	<.01									
176	137-138	.018	<0.01	0.001	0.002	0.006	67					
177	138-139	.010	<0.01									
178	139-140	.016	<.01									
179	165-166	.003	0.01									
180	166-167	.002	<.01									
181	167-168	.009	<0.01									
182	168-169	.007 ✓	0.01	0.008	0.006	0.012	50					—
183	169-170	.012	<0.01									

URANIUM ANALYSES OF CORE NUMBERS AM 435c

HRI No: 10958

HRI Sub No	Interval feet	Fluorimetric		% U_3O_8 Beta-Gamma	% U_3O_8 Beta Equivalent	% U_3O_8 Gamma Equivalent	% U_3O_8 Sealed Gamma Equivalent	% Radon Loss		% CO_2	%	%	
184	170-171	.005		0.01									
185	171-172	.012		0.01									
186	172-173	.012		<0.01									
187	173-174	.005	✓	0.01	0.005	0.006	0.008	25					—
188	174-175	.010		<0.01									
189	175-176	.004		0.01									
190	176-177	.002		0.05									
191	177-178	<.001											
192	178-179	.041	✓	<.05									
193	179-180	.024	✓	0.03	0.024	0.022	0.022	0					
194	180-181	.002	✓	<0.01	0.002	0.004	0.006	33					—
195	181-182	.007		0.01									
196	182-183	.002											
197	183-184	.001											
198	184-185	.001											

URANIUM ANALYSES OF CORE NUMBER AM 436C

HRI No. 10958

HRI Sub No.	Interval feet	Fluorimetric % U_3O_8		% U_3O_8 Beta-Gamma	% U_3O_8 Beta Equivalent	% U_3O_8 Gamma Equivalent	% U_3O_8 Sealed Gamma Equivalent	% Radon Loss		% CO_2	%	%
199	215-216	.001										
200	216-217	.001										
201	217-218	.001										
202	218-219	.002										
203	219-220	.002										
204	220-221	.114		0.14	0.112	0.092	0.094	2		.06		
205	221-222	.082		0.11	0.092	0.081	0.085	5				
206	222-223	.030		0.04	0.041	0.039	0.044	11				
207	223-224	.005										
208	224-225	.003										
209	225-226	.002										
210	226-227	.003										
211	227-228	.003										
212	228-229	.005										
213	229-230	.003										
214	265-266	.002										
215	266-267	.001										
216	267-268	.001										
217	268-269	.001										
218	269-270	.001										
219	270-271	.001										
220	271-272	.006										
221	272-273	.024		0.03	0.031	0.030	0.030	0				
222	273-274	.010										
223	274-275	.006										

- URANIUM ANALYSES OF CORE NUMBER AM 436c

HRI No: 10958

RI DH	INTERVAL feet	% U_3O_8								%	%	%	
		Fluorimetric		Beta-Gamma	Beta Equivalent	Gamma Equivalent	Sealed Gamma Equivalent	% Radon Loss					
24	275-276	.002											
25	276-277	.002											
26	277-278	<.001											
27	278-279	<.001											
28	279-280	<.001											

URANIUM ANALYSES OF CORE NUMBER: 444c

HRI No: 1095B

HRI Sub No	INTERVAL feet			% U_3O_8						% CO_2	%	%
		Fluorimetric		Beta-Gamma	Beta Equivalent	Gamma Equivalent	Sealed Gamma Equivalent	% Radon Loss				
1	300 - 301	.001										
2	301 - 302	.001										
3	302 - 303	<.001										
4	303 - 304	.001										
5	304 - 305	.001										
6	305 - 306	.005										
7	306 - 307	.006										
8	307 - 308	.008										
9	308 - 309	.009										
10	309 - 310	.026										
11	310 - 311	.014										
12	311 - 312	.016		0.02	0.013	0.011	0.013	15				
13	312 - 313	.002										
14	313 - 313'10"	.001										
15	335 - 336	.001										
16	336 - 337	.001										
17	337 - 338	.002										
18	338 - 339	<.001										
19	339 - 340	<.001										
20	340 - 341	.007										
21	341 - 342	.008										
22	342 - 343	.005										
23	343 - 344	.446		0.51	0.377	0.272	0.278	2		0.24		
24	344 - 345	.225		0.24	0.187	0.145	0.147	1				
25	345 - 346	.010										

URANIUM ANALYSES OF CORE NUMBER 444c

HRI No: 10258

HRI Sub No	Interval feet	Fluorimetric		% U_3O_8 Beta-Gamma	% U_3O_8 Beta Equivalent	% U_3O_8 Gamma Equivalent	% U_3O_8 Sealed Gamma Equivalent	% Radon Loss		%	%	%	
26	346-347	.007											
27	347-348	.002											
28	348-349	.002											
29	349-350	.002											
30	350-351	.002											
31	351-352	.002											
32	352-353	.008											
33	353-354	.012											
34	354-355	.019		0.02	0.022	0.021	0.025	16					
35	355-356	.005											
36	356-357	.015		0.02	0.020	0.018	0.020	10					
37	357-358	.018		0.02	0.019	0.017	0.025	32					
38	358-359	.004											
39	359-360	.009											
40	360-361	.009											
41	361-362	.009											
42	362-363	.007											
43	363-364	.009											
44	364-365	.010											
45	365-366	.034		0.04	0.034	0.029	0.031	6					
46	366-367	.019		0.02	0.023	0.021	0.025	16					
47	367-368	.011											
48	368-369	.007											
49	369-370	.005											
50	370-371	.007											

URANIUM ANALYSES OF CORE NUMBER 444c

HRI No: 10958

HRI Sub No	Interval feet	Fluorimetric		% U_3O_8 Beta-Gamma	% U_3O_8 Beta Equivalent	% U_3O_8 Gamma Equivalent	% U_3O_8 Sealed Gamma Equivalent	% Radon Loss		% CO_2	%	%
51	373-374	.007										
52	374-375	.006										
53	375-376	.005										
54	376-377	.005										
55	377-378	.006										
56	378-379	.006										
57	379-380	.006										
58	380-381	.006										
59	381-382	.007										
60	382-383	.014										
61	383-384	.009										
62	384-385	.010										
63	385-386	.015		0.02	0.017	0.012	0.016	25				
64	386-387	.009										
65	387-388	.013										
66	388-389	.018		0.03	0.024	0.020	0.028	29				
67	389-390	.030		0.04	0.027	0.018	0.020	10				
68	390-391	.022		0.03	0.027	0.022	0.028	21				
69	391-392	.009										
70	392-393	.018		0.02	0.024	0.026	0.028	7				
71	393-394	.052		0.07	0.050	0.036	0.042	14		15.7		
72	394-395	.009										
73	395-396	.014										
74	396-397	.006										
75	397-398	.006										

URANIUM ANALYSES OF CORE NUMBER 444c

HRI No: 10958

HRI Sub No	Interval feet			% U_3O_8						%	%	%	
		Fluorimetric		Beta-Gamma	Beta Equivalent	Gamma Equivalent	Sealed Gamma Equivalent	% Radon Loss					
76	398-399	.003											
77	399-400	.003											
78	400-401	.002											
79	401-402	.002											
80	402-403	.004											
81	403-404	.004											
82	404-405	.014											
83	405-406	.011											
84	406-407	.008											
85	407-408	.010											
86	408-409	.005											
87	409-410	.006											
88	410-411	.024		0.03	0.027	0.025	0.025	0					
89	411-412	.013											
90	412-413	.042		0.05	0.043	0.037	0.039	5					
91	413-414	.015		0.02	0.018	0.017	0.021	19					
92	414-415	.003											
93	415-416	.002											
94	416-417	.002											
95	417-418	.001											
96	418-419	<.001											
97	419-420	.001											
98	420-421	.002											
99	421-422	.006											
100	422-423	.019		0.02	0.017	0.016	0.020	20					

URANIUM ANALYSES OF CORE NUMBER 444c

HRI No: 10958

HRI Sub No	Interval feet	Fluorimetric		% U_3O_8 Beta-Gamma	% U_3O_8 Beta Equivalent	% U_3O_8 Gamma Equivalent	% U_3O_8 Sealed Can Equivalent	% Radon Loss		% CO_2	%	%
101	423-424	.030		0.04	0.031	0.022	0.030	27				
102	424-425	.048		0.06	0.051	0.041	0.045	9		0.14		
103	425-426	.016		0.02	0.014	0.010	0.012	17				
104	426-427	.007										
105	427-428	.012										
106	428-429	.006										
107	429-430	.007										
108	430-431	.004										
109	431-432	.004										
110	432-433	.004.										
111	433-434	.003										
112	434-435	.005										
113	435-436	.004										
114	555-556	.002										
115	556-557	<.001										
116	557-558	<.001										
117	558-559	<.001										
118	559-560	<.001										
119	560-561	<.001										
120	561-562	<.001										
121	562-563	.006										
122	563-564	.003										
123	564-565	.113		0.14	0.113	0.094	0.107	12				
124	565-566	.016		0.03	0.028	0.027	0.031	13				
125	566-567	.049		0.07	0.058	0.046	0.054	15				

URANIUM ANALYSES OF CORE NUM. R: 444c

HRI No: 10958

HRI Sub No	INTERVAL feet	Fluorimetric		% U_3O_8 Beta-Gamma	U_3O_8 Beta Equivalent	Gamma Equivalent	Scaled Gamma Equivalent	% Radon Loss		%	%	%	
126	567-568	.005											
127	568-569	<.001											
128	569-570	<.001											
129	570-571	<.001											
130	571-572	.005											
131	572-573	.002											
132	573-574	<.001											
133	574-575	<.001											

ANDERSON MINE

EQUILIBRIUM STUDY

HOLE NO. 184C

	LEACH .015–.030			ORE .030–.050			ORE .050–.090			HIGH GRADE .090– +		
ELEV	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUI
	.012	.016	1.34									
	.013	.022	1.70									
				.032	.060	1.88						
							.060	.066	1.10			
				.046	.055	1.20						
	.029	.032	1.11									
	.023	.020	.87									
	.019	.024	1.27									
										.103	.126	1.23
				.039	.048	1.23						
	.018	.017	.95									
				.034	.032	1.07						
	.019	.015	.79									
	.017	.015	.89									
										.184	.273	1.49
	.015	.015	1.00									
				.043	.045	1.05						
				.039	.032	.95						
							.051	.063	1.24			
				.042	.033	.79						
	.014	.025	1.79									
	.017	.016	.95									
	.016	.025	1.57									
				.035	.070	2.00						
	.012	.023	1.92									
	.015	.015	1.00									
	.026	.030	1.16									
										.117	.139	1.19
							.057	.133	2.34			
	.022	.020	1.22									

ANDERSON MINE

LE NO. 184C cont' EQUILIBRIUM STUDY

	LEACH .015—.030			ORE .030—.050			.050—.090			HIGH GRADE .090— +		
LEV	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL
	.015	.017	1.14									
	.016	.019	1.19									

ANDERSON MINE

EQUILIBRIUM STUDY

HOLE NO. 222C

	LEACH .015–.030			ORE .030–.050			ORE .050–.090			HIGH GRADE .090– +		
ELEV	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUI
										.145	.129	.89
				.032	.028	.88						

ANDERSON MINE

EQUILIBRIUM STUDY

HOLE NO. 229 C

	LEACH .015—.030			ORE .030—.050			.050—.090			HIGH GRADE .090— +		
ELEV	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUI
				.032	.033	1.04						
	.020	.022	1.10							.103	.094	.92
							.079	.080	1.02			
	.024	.032	1.34									
				.038	.031	.82						
				.034	.028	.83						

ANDERSON MINE

EQUILIBRIUM STUDY

HOLE NO. 244C

	LEACH .015–.030			ORE .030–.050			ORE .050–.090			HIGH GRADE .090– +		
ELEV	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUI
				.032	.034	1.07						

ANDERSON MINE

EQUILIBRIUM STUDY

HOLE NO. 254C

	LEACH .015–.030			ORE .030–.050			ORE .050–.090			HIGH GRADE .090– +		
ELEV	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUI
	.021	.015	.72									

ANDERSON MINE

EQUILIBRIUM STUDY

HOLE NO. 273C

	LEACH .015–.030			ORE .030–.050			.050–.090			HIGH GRADE .090– +		
ELEV	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQU
	.015	.016	1.07									
										.193	.241	1.2
	.022	.027	1.23									
	.015	.019	1.27									
	.019	.023	1.21									
	.020	.017	.85									
	.022	.026	1.19									
	.010	.015	1.50									
	.011	.014	1.28									
	.019	.021	1.11									
	.025	.025	1.00									
				.042	.032	.77						
				.041	.040	.98						
				.044	.046	1.05						
	.022	.021	.96									
	.014	.015	1.08									
	.029	.025	.87									
	.023	.023	1.00									
				.032	.022	.69						

ANDERSON MINE

EQUILIBRIUM STUDY

HOLE NO. 274C

	LEACH .015–.030			ORE .030–.050			.050–.090			HIGH GRADE .090–+		
ELEV	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQU
	.051	.048	.95									

ANDERSON MINE

EQUILIBRIUM STUDY

HOLE NO. 275C

	LEACH .015–.030			ORE .030–.050			.050–.090			HIGH GRADE .090–+		
ELEV	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUI
										.090	.068	.76
										.325	.419	1.29
	.024	.022	.92									
	.023	.014	.61									
							.060	.062	1.04			
	.024	.023	.96									

ANDERSON MINE

EQUILIBRIUM STUDY

HOLE NO. 289C

	LEACH .015—.030			ORE .030—.050			.050—.090			HIGH GRADE .090— +		
ELEV	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQU
							.056	.046	.83			
										.090	.079	.88
							.059	.039	.67			
				.044	.020	.46						
							.060	.043	.72			
				.035	.033	.95						
				.037	.022	.60						
	.029	.048	2.00									
	.020	.024	1.20									
	.025	.032	1.28									
							.057	.108	1.90			
	.024	.024	1.00									
	.021	.023	1.10									
	.021	.023	1.10									
	.027	.024	.89									
	.025	.020	.80									
	.025	.025	1.00									
	.017	.016	.95									
	.022	.018	.82									
	.015	.016	1.07									
	.022	.024	1.09									
				.031	.041	1.33						
				.031	.029	.94						
							.079	.106	1.35			
				.030	.030	1.00						

ANDERSON MINE

EQUILIBRIUM STUDY

HOLE NO. 337C

	LEACH .015—.030			ORE .030—.050			ORE .050—.090			HIGH GRADE .090—+		
ELEV	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQU
	.028	.045	1.61									
							.057	.057	1.00			
				.036	.026	.73						

ANDERSON MINE

EQUILIBRIUM STUDY

HOLE NO. 390 C

	LEACH .015—.030			ORE .030—.050			ORE .050—.090			HIGH GRADE .090—+		
ELEV	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQU
	.017	.019	1.12									
							.077	.113	1.47			

ANDERSON MINE

EQUILIBRIUM STUDY

HOLE NO. 412 C

	LEACH .015–.030			ORE .030–.050			.050–.090			HIGH GRADE .090– +		
ELEV	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUI
										.433	.703	1.63
										.186	.295	1.59
										.214	.251	1.18
										.112	.080	.72
							.071	.068	.96			
							.062	.048	.78			
										.148	.109	.74

ANDERSON MINE

EQUILIBRIUM STUDY

HOLE NO. 422C

	LEACH .015–.030			ORE .030–.050			ORE .050–.090			HIGH GRADE .090– +		
ELEV	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUI
				.031	.021	.68						
				.036	.026	.73						
	.020	.025	1.25									
	.016	.024	1.50									
	.016	.016	1.00									
				.030	.022	.74						
	.019	.015	.79									
	.014	.018	1.29							.123		2.3
										* .097	.289	2.98
							.071	.080	1.13			
										.105	.101	.97
				.049	.044	.90						
				.040	.035	.88						
	.029	.028	.97									
	.026	.025	.97									
				.045	.047	1.05						
				.038	.036	.95						
				.036	.029	.81						
			.057	.044	.033	.75						
			.040	.035	.044	1.26						
			.054	.039	.024	.62						
			.032	.030	.035	1.17						
				.039	.033	.85						
				.034	.031	.92						
	.014	.011	.79									
	.023	.025	1.09									

ANDERSON MINE

EQUILIBRIUM STUDY

HOLE NO. 431C

	LEACH .015–.030			ORE .030–.050			.050–.090			HIGH GRADE .090– +		
ELEV	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUI
										.190	.192	1.01
							.063	.058	.92			
	.021	.023	1.10									
	.019	.026	1.37									
	.020	.032	1.60									
	.016	.016	1.00									
	.017	.019	1.12									
	.024	.016	.67									
				.034	.038	1.12						
	.022	.020	.91									
	.025	.022	.88									
				.038	.052	1.37						
				.036	.033	.92						

ANDERSON MINE

EQUILIBRIUM STUDY

HOLE NO. 434C

	LEACH .015–.030			ORE .030–.050			.050–.090			HIGH GRADE .090– +		
ELEV	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUI
				.040	.044	1.10						
	.020	.014	.70									
	.029	.031	1.07									
	.025	.020	.80									

ANDERSON MINE

EQUILIBRIUM STUDY

HOLE NO. 435 C

ELEV	LEACH .015–.030			ORE .030–.050			ORE .050–.090			HIGH GRADE .090– +		
	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUI
				.040	040	1.00						
										.135	.165	1.22
				.039	.029	.74						
				.039	000	.39						
						.26						
	.017	.016	.94									
	.006	.015	2.50									
	.008	.019	2.38									
	.006	.018	3.00									
	.022	.024	1.09									

ANDERSON MINE

EQUILIBRIUM STUDY

HOLE NO. 436C

	LEACH .015–.030			ORE .030–.050			ORE .050–.090			HIGH GRADE .090–+		
ELEV	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUI
										.094	.114	1.22
							.085	.082	.97	.		
				.044	.030	.69						
				.030	.024	.80						

ANDERSON MINE

EQUILIBRIUM STUDY

HOLE NO. 444C

	LEACH .015–.030			ORE .030–.050			ORE .050–.090			HIGH GRADE .090–+		
ELEV	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUI
	.013	.016	1.23									
										.278	.446	1.61
										.147	.225	1.53
	.025	.019	.76									
	.020	.015	.75									
	.025	.018	.72									
				.031	.034	1.10						
	.025	.019	.76									
	.016	.015	.94									
	.028	.018	.65									
	.020	.030	1.50									
	.028	.022	.79									
	.028	.018	.65									
				.042	.052	1.24						
	.025	.024	.96									
				.039	.042	1.08						
	.021	.015	.72									
	.020	.019	.95									
				.030	.030	1.00						
				.045	.048	1.07						
	.012	.016	1.34									
										.107	.113	1.06
				.031	.016	.52						
							.054	.049	.91			

ANDERSON MINE

EQUILIBRIUM STUDY

HOLE NO.

	LEACH .015—.030			ORE .030—.050			ORE .050—.090			HIGH GRADE .090— +		
ELEV	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUIL	GAMMA	CHEM	EQUI

HAZEN RESEARCH, INC.

4601 INDIANA STREET
GOLDEN, COLORADO • 80401
TELEPHONE 303/279-4501

June 2, 1975

Mr. G. E. Marrall
Minerals Exploration Company
P. O. Box 2674
Casper, Wyoming 82601

Re: HRI Project 1757
Uranium Amenability Studies

Dear Mr. Marrall:

The two samples received from you on May 16, 1975, were evaluated for their amenability to ambient and hot sulfuric acid leaching. Sample AM-16c-1 contained 0.101% U_3O_8 and sample AM-16c-2 contained 0.052% U_3O_8. The samples were leached at 33% solids for 24 hours using sulfuric acid and sodium chlorate to control the pH at 1.3 and emf at >400 mv for the first eight hours.

The results are summarized below and the detailed data for each test are attached. The high carbonate content of these samples does not permit economic acid leaching. Thief samples taken at eight hours show that the uranium is readily soluble; so it is probable that the samples would be amenable to carbonate leaching. Additional sample would be necessary for a carbonate leach test.

Sorry the results are not more encouraging.

Yours truly,

John E. Litz
Project Manager

JEL:mgp
Enclosures

Sample	Temp °C	Acid Added lb/ton	Sodium Chlorate Added lb/ton	Uranium Extraction Percent	Acid Addition lb/lb U_3O_8 Dissolved
AM-16c-1	25	165	4.8	73	116
	80	310	8.0	89	172
AM-16c-2	25	825	6.4	56	1313
	80	779	9.6	78	902

Acid Leach Amenability of AM-16c-1
at 25°C, 0.101% U_3O_8

Elapsed Time Hours	Temp °C	pH Read/Adjust	emf mv	H_2SO_4 Cum lb/ton	$NaClO_3$ Cum lb/ton
0	25	6.9/1.3	+310	68	1.6
1	25	1.8/1.3	+390	98	3.2
2	25	1.6/1.3	+390	131	4.8
3	25	1.7/1.3	+490	165	4.8
4	25	1.0	+500	165	4.8
6	25	1.0	+520	165	4.8
8	25	1.0	+520	165	4.8
24	25	1.5	+510	165	4.8

Metallurgical Balance

Sample Time Hours	Filtrate + Wash Volume ml	Filtrate + Wash U_3O_8 g/l	Filtrate + Wash U_3O_8 Grams	Residue Weight Grams	Residue U_3O_8 %	Residue U_3O_8 Grams	Uranium Extraction %
8	75	0.098	0.0074	8.4	0.025	0.0021	78
24	710	0.239	0.1697	236.0	0.027	0.0637	73
	Overall calculated head			0.097% U_3O_8			

Acid Leach Amenability of AM-16c-1 at 80°C, 0.101% U_3O_8

Elapsed Time Hours	Temp °C	pH Read/Adjust	emf mv	H_2SO_4 Cum lb/ton	$NaClO_3$ Cum lb/ton
0	25	7.0/1.3	+250	111	1.6
1	80	2.6/1.3	+350	202	3.2
2	80	2.0/1/3	+350	294	4.8
3	80	1.3	+400	294	4.8
4	80	1.3	+390	294	6.4
6	80	1.4/1.3	+420	302	6.4
8	80	1.4/1.3	+360	310	8.0
24	85	1.5	+350	310	8.0

Metallurgical Balance

Sample Time Hours	Filtrate + Wash Volume ml	Filtrate + Wash U_3O_8 g/l	Filtrate + Wash U_3O_8 Grams	Residue Weight Grams	Residue U_3O_8 %	Residue U_3O_8 Grams	Uranium Extraction %
8	70	0.106	0.0074	11.3	0.010	0.0011	87
24	600	0.363	0.2178	235.0	0.011	0.0259	89
	Overall calculated head			0.101% U_3O_8			

Acid Leach Amenability of AM-16c-2
at 25°C, 0.052% U_3O_8

Elapsed Time Hours	Temp °C	pH Read/Adjust	emf mv	H_2SO_4 Cum lb/ton	$NaClO_3$ Cum lb/ton
0	25	6.7/1.3	+140	613	1.6
1	25	5.2/1.3	+170	705	3.2
2	25	5.0/1.3	+175	745	4.8
3	25	3.7/1.3	+400	771	4.8
4	25	3.3/1.3	+370	797	6.4
6	25	2.8/1.3	+450	818	6.4
8	25	1.4/1.3	+450	825	6.4
24	25	1.4	+450	825	6.4

Metallurgical Balance

Sample Time Hours	Filtrate + Wash Volume ml	U_3O_8 g/l	U_3O_8 Grams	Residue Weight Grams	U_3O_8 %	U_3O_8 Grams	Uranium Extraction %
8	75	0.0298	0.0022	8.4	0.028	0.0024	48
24	800	0.0955	0.0764	275.6	0.022	0.0606	56
	Overall calculated head			0.057% U_3O_8			

Acid Leach Amenability of AM-16c-2 at 80°C, 0.052% U_3O_8

Elapsed Time Hours	Temp °C	pH Read/Adjust	emf mv	H_2SO_4 Cum lb/ton	$NaClO_3$ Cum lb/ton
0	25	7.3/1.3	+250	585	1.6
1	80	2.6/1.3	+370	675	3.2
2	80	2.0/1.3	+365	755	4.8
3	80	1.3	+390	755	4.8
4	80	1.4/1.3	+390	763	6.4
6	80	1.4/1.3	+350	771	8.0
8	80	1.4/1.3	+360	779	9.6
24	80	1.5	+250	779	9.6

Metallurgical Balance

Sample Time Hours	Filtrate + Wash Volume ml	U_3O_8 g/l	U_3O_8 Grams	Residue Weight Grams	U_3O_8 %	U_3O_8 Grams	Uranium Extraction %
8	70	0.0417	0.0029	7.7	0.008	0.0006	82
24	665	0.158	0.1051	266	0.011	0.0293	78
	Overall calculated head				0.055% U_3O_8		

HAZEN RESEARCH, INC.

4601 INDIANA STREET
GOLDEN, COLORADO • 80401
TELEPHONE 303/279-4501

September 25, 1975

Mr. G. E. Marrall
Minerals Exploration Company
P. O. Box 2674
Casper, Wyoming 82601

#1075-92

Re: HRI Project 1833
Uranium Amenability Studies, Anderson Mine

Dear Mr. Marrall:

The sample of split core, "AM-16-c," delivered by you on September 4, 1975, was crushed through 6-mesh and blended to form our sample HRI 8630. An analytical pulp taken from the composite contained 0.107% U_3O_8.

Agitation leaches were performed on portions of the composite ground to 28-mesh. A carbonate leach at 80°C and 33% solids, for 24 hours with 160 lb/ton Na_2CO_3, 80 lb/ton $NaHCO_3$, and 8 lb/ton $KMnO_4$ added, solubilized 86% of the uranium. The resulting leach pulp was very slow filtering. A sulfuric acid leach at 80°C and 33% solids, for 24 hours required the addition of 472 lb/ton sulfuric acid and 36 lb/ton sodium chlorate to solubilize 87% of the uranium into a 1.5 pH leach solution. Data sheets and material balances for these two tests are attached. It would appear that this particular sample is more suited to carbonate leaching.

Two simulations each were made of both the UKAEA and Holmes and Narver acid-bake/cure processes. In the first series, only 200 lb/ton of sulfuric acid was used, whereas, the second series used 400 lb/ton. The UKAEA procedure was to pug 28-mesh ore with the acid and chlorate at 80% solids and hold it at 100°C for three hours. The moist ore was then pulped at 25% solids for 30 minutes, filtered, washed, and dried. Only 7% of the uranium was solubilized in the test with 200 lb/ton sulfuric acid and 2 lb/ton sodium chlorate. Increasing the reagent additions to 400 lb/ton and 4 lb/ton sodium chlorate raised the uranium extraction to 67%.

The Holmes and Narver simulation consisted of wetting 6-mesh ore in a flask with about 13% water. Concentrated sulfuric acid, 96%, was added and the mixture was pugged. The temperature rose to a maximum of 60°C upon the addition of the acid. The flask was then loosely stoppered and was placed in a 60°C oven for 48 hours. The cured ore was then pulped at 25% solids for 30 minutes, filtered, washed, and dried. About 9% of the uranium was solubilized in the test with 200 lb/ton sulfuric acid and only 32% was solubilized in the test with 400 lb/ton sulfuric acid.

It would appear that the shale and clay in the ore are too reactive with the acid to allow good uranium extractions when using low acid addition techniques. The Holmes and Narver technique is also limited by the coarse ore size. Assuming that this sample is representative, it is my opinion that additional tests be made to attempt optimization of the carbonate leaching technique. The poor filterability of the carbonate-leached ore indicates that the uranium recovery from the leach solution would be by a resin-in-pulp technique.

Unless I hear to the contrary, we shall do further carbonate leaches next week.

Yours truly,

John

John E. Litz
Project Manager

JEL:nd
Encls.

Uranium Carbonate Leach Amenability, 472-71
HRI-8630, 0.107% U_3O_8

160 lb/ton Na_2CO_3
80 lb/ton $NaHCO_3$

Elapsed Time Hours	Temp °C	pH Read/Adjust	emf mv	$KMnO_4$ Cum lb/ton
0	45	9.7	-130	8
1	78	9.2	-170	
2	80	9.1	-180	
3	80	9.2	-190	
4	81	9.2	-190	
6	82	9.3	-190	
12	80	9.4	-180	
24	81	9.6	-200	
	25	10.1	-40	

Metallurgical Balance

Sample Time Hours	Filtrate + Wash Volume ml	U_3O_8 g/l	U_3O_8 g	Residue Weight g	U_3O_8 %	U_3O_8 g	U_3O_8 Extraction %
6				17.5	0.019	0.003	82
12				14.5	0.014	0.002	87
24	1260	0.197	0.248	214	0.015	0.032	86

Overall calculated head, 0.114% U_3O_8

Uranium Acid Leach Amenability, 472-72
HRI-8630, 0.107% U_3O_8

Elapsed Time Hours	Temp °C	pH Read/Adjust	emf mv	H_2SO_4 Cum lb/ton	$NaClO_3$ Cum lb/ton
0	72	6.2 / 1.3	340	384	9.6
1	78	1.2	460		13.6
2	80	1.35	450		21.6
3	80	1.6 / 1.3	470	440	25.6
4	81	1.3	480		29.6
6	82	1.5 / 1.3	440	472	36.0
12	80	1.4	430		
24	80	1.8	380		
	25	1.5	310		

Metallurgical Balance

Sample Time Hours	Filtrate + Wash Volume ml	Filtrate + Wash U_3O_8 g/l	Filtrate + Wash U_3O_8 g	Residue Weight g	Residue U_3O_8 %	Residue U_3O_8 g	U_3O_8 Extraction %
6				17	0.018	0.003	83
12				14	0.017	0.002	84
24	1270	0.197	0.250	217	0.015	0.003	87

Overall calculated head, 0.115% U_3O_8

HAZEN RESEARCH, INC.

4601 INDIANA STREET
GOLDEN, COLORADO • 80401
TELEPHONE 303/279-4501

October 28, 1975

Mr. G. E. Marral
Minerals Exploration Company
P. O. Box 2674
Casper, Wyoming 82601

#923-02

Re: HRI Project 1833
Uranium Amenability Studies, Anderson Mine

Dear Mr. Marral:

Additional carbonate leaches were performed on 28-mesh portions of composite "AM-16-C," our sample HRI-8630. Leach tests are summarized in Table 1.

Table 1

Uranium Amenability Studies, Anderson Mine

Conditions: 0.107% U_3O_8, 33% solids, 40 g/l Na_2CO_3
20 g/l Na_2HCO_3, 80°C

		Uranium Extraction		
Test No.	Oxidant	6 Hours	12 Hours	24 Hours
472-75	32 1/	88	88	88
472-76	0	79	81	81
472-77	Air 2/	84	86	85
472-78 3/	0	79	81	82
472-79 4/	Air	-	84	-
472-80	Air	-	77	-
472-81 5/	Air	-	-	90

1/ lb/ton $KMnO_4$
2/ With copper amine catalyst
3/ 80 g/l Na_2CO_3, 20 g/l $NaHCO_3$
4/ 20 g/l Na_2CO_3, 10 g/l $NaHCO_3$
5/ Temperature, 65°C

Leach Test No. 472-81, at 65°C for 24 hours and 10-20 cc/min air bubbling through, solubilized 90% of the uranium. From this particular test it would appear that air is an efficient oxidant. The resulting leach pulp was very slow filtering. On Tests 472-75 and 472-77 a chemical oxidant was added, 88% and 85% of the uranium was solubilized.

The carbonate leach Test No. 472-76, with no oxidant, gave a low uranium extraction. Only 81% was soluble.

Detailed data sheets and material balances for each amenability test are attached.

Thank you for the work and we hope we can assist you further in this project.

Yours truly,

Robert Balderrama

Robert Balderrama
Research Engineer

RB:mk
Enclosures

URANIUM CARBONATE LEACH AMENABILITY, 412-75
HRI-8630, 0.107% U_3O_8
160 lb/ton Na_2CO_3
80 lb/ton $NaHCO_3$

Elapsed Time Hours	Temp °C	pH	emf mv	$KMnO_4$ Cum lb/ton
0	70	9.4	-90	32
2	76	9.4	-140	
4	80	9.8	-150	
6	80	9.9	-170	
12	80	10.0	-190	
24	79	10.1	-190	

Metallurgical Balance

Sample Time Hours	Filtrate+wash Volume ml	U_3O_8 g/l	U_3O_8 g	Residue weight g	U_3O_8 %	U_3O_8 g	U_3O_8 Extraction %
6				20	.013	.003	88
12				17.4	.013	.002	88
24	1070	.247	.264	209.5	.013	.027	88

URANIUM CARBONATE LEACH AMENABILITY, 472-76

HRI-8630, 0.107 % U_3O_8

160 Lb/ton Na_2CO_3

80 Lb/ton $NaHCO_3$

Elapsed Time Hours	Temp °C	pH	emf mv
0	72	9.4	-370
2	76	9.3	-180
4	80	9.75	-200
6	80	9.8	-218
12	81	9.92	-240
24	80	10.0	-215

Metallurgical Balance

Sample Time	Filtrate + wash			Residue			U_3O_8
	Volume	U_3O_8	U_3O_8	weight	U_3O_8	U_3O_8	Extraction
Hours	ml	g/l	g	g	%	g	%
6				18.7	.023	.004	79
12				16.0	.020	.003	81
24	1030	.243	.250	211	.020	.042	81

LABORATORY WORKSHEET
KAZEN RESEARCH, INC.

URANIUM CARBONATE LEACH AMENABILITY, 472-77

HRI-8630, 0.107% U_3O_8

160 lb/ton Na_2CO_3

80 lb/ton $NaHCO_3$

Elapsed Time Hours	Temp °C	pH	emf mv	$CuSO_4$ Cum. lb/ton	NH_3 Cum lb/ton	AIR cc/min
0	74	9.3	-160	8	8	10
2	77	9.3	-130			
4	81	9.7	-150			
6	80	9.8	-135			
12	80	9.92	-130			
24	80	10.0	-155			

Metallurgical Balance

Sample Time Hours	Filtrate+wash Volume ml	U_3O_8 g/l	U_3O_8 g	Residue weight g	U_3O_8 %	U_3O_8 g	U_3O_8 Extraction %
6				19	.017	.003	84
12				16.5	.015	.003	86
24	990	.258	.255	209.3	.016	.034	85

URANIUM CARBONATE LEACH AMENABILITY, 472-78

HRI-8630 0.107 % U_3O_8

320 lb/ton Na_2CO_3

80 lb/ton $NaHCO_3$

Elapsed Time Hours	Temp °C	pH	emf mv
0	75	9.6	-390
2	77	9.6	-210
4	81	9.95	-240
6	80	10.0	-215
12	81	10.1	-230
24	81	10.1	-225

Metallurgical Balance

Sample Time Hours	Filtrate + wash Volume ml	U_3O_8 g/l	U_3O_8 g	Residue weight g	U_3O_8 %	U_3O_8 g	U_3O_8 Extraction %
6				19.2	.023	.004	79
12				16.5	.020	.003	81
24	1060	.241	.255	210.6	.019	.040	82

LABORATORY WORKSHEET
HAZEN RESEARCH, INC.

URANIUM CARBONATE LEACH AMENABILITY, 472-79

HRI- 8630 0.107 % U_3O_8

80 Lb/ton Na_2CO_3

40 Lb/ton $NaHCO_3$

Elapsed Time Hours	Temp °C	pH	emf mv	Air cc/min
0	66	9.2	-160	10-20
2	79	9.0	-190	
4	79	9.1	-200	
6	79	9.3	-180	
12	81	9.4	-170	

Metallurgical Balance

Sample Time	Filtrate + wash			Residue			U_3O_8
	Volume	U_3O_8	U_3O_8	weight	U_3O_8	U_3O_8	Extraction
Hours	ml	g/l	g	g	%	g	%
12	1080	.219	.236	247	.018	.044	84.5

LABORATORY WORKSHEET
HAZEN RESEARCH, INC.

URANIUM CARBONATE LEACH AMENABILITY, #72-80

HRI-8630 0.107 % U_3O_8

160 Lb/ton Na_2CO_3

80 Lb/ton $NaHCO_3$

Elapsed Time Hours	Temp °C	pH	emf mv	Air cc/min
0	67	9.4	-220	10-20
2	79	9.2	-240	
4	79	9.3	-225	
6	80	9.4	-200	
12	81	9.5	-202	

Metallurgical Balance

Sample Time Hours	Filtrate + wash Volume ml	U_3O_8 g/l	U_3O_8 g	Residue weight g	U_3O_8 %	U_3O_8 g	U_3O_8 Extraction %
12	1130	.229	.259	248	.025	.062	77

LABORATORY WORKSHEET
HAZEN RESEARCH, INC.

URANIUM CARBONATE LEACH AMENABILITY, 472-81

HRI-8630 0.107% U_3O_8

160 lb/ton Na_2CO_3

80 lb/ton $NaHCO_3$

Elapsed Time Hours	Temp °C	pH	emf mv	Air cc/min
0	68	9.98	-140	10-20
2	64	9.98	-130	
4	67	9.4	-100	
6	66	9.4	—	
12	66	9.3	—	
24	63	9.2	-25	

Metallurgical Balance

Sample Time Hours	Filtrate+wash Volume ml	U_3O_8 g/l	U_3O_8 g	Residue weight g	U_3O_8 %	U_3O_8 g	U_3O_8 Extraction %
24	1120	.250	.280	245.5	.011	.027	91.0

LABORATORY WORKSHEET
HAZEN RESEARCH, INC.

December 10, 1976

MEMORANDUM

To: J. E. Litz

From: R. B. Balderrama

Subject: HRI Project 4133
Studies on Leaching of Anderson Mine Composites

Two series of acid and alkaline leaching tests were performed on the two samples of ore received from the Anderson Mine of Minerals Exploration Company, near Wickenburg, Arizona. The two sets of leaching tests were designed to study the variables which can affect the solubilization of values during the leaching of uranium-vanadium ores. The variables studied during the acid leaches included:

Temperature
Retention time
Oxidant addition
Ore size
Residual acid concentration
Acid addition.

The variables studies during the alkaline leaches included:

Temperature
Retention time
Ore size
Sodium carbonate
Addition (Lixiviant concentration)

The results from each series of tests are tabulated in Tables 1 and 2. The effects of each variable on the uranium and vanadium extractions was determined by fitting a logarithmic least square curve to the data. The quality of the fit was evaluated by calculating the Coefficient of Determination for each curve. The Coefficient of Determination, r^2, estimates the decimal percentage of the variance of the dependent variable which can be explained by changes in the independent variable. The closer r^2 is to unity, the more variance is explained. Values of r^2 approaching zero indicate the fit of the data has no statistical significance.

Evaluation of the acid leaching results indicates that none of the variables significantly affected the uranium solubility within the ranges studied. The vanadium solubility decreased with increasing oxidation and in the case of Composite 2 (lower zone) increased with increasing acid addition.

Acid leach extractions from the middle zone were 98% for uranium and less than 50% for vanadium from a head of 0.045% U_3O_8 and 0.07% V_2O_5. The required acid addition was 140 lb H_2SO_4 per ton ore. Acid leach extractions from the lower zone were about 95% for uranium and less than 50% for vanadium from a head of 0.05% U_3O_8 and 0.14% V_2O_5. The required acid addition was 260 lb H_2SO_4 per ton.

Evaluation of the alkaline leaching results showed that temperature was the most significant variable with the uranium dissolution increasing with increasing temperature. The data also indicate that the sodium carbonate addition should be a minimum of 120 lb/ton (30 g/l Na_2CO_3 at 33% solids). Alkaline leaching of the middle zone gave uranium extractions of 96%; whereas, the lower zone extractions were about 94-95%.

DESCRIPTION OF SAMPLES TESTED

Two sets of samples were received for compositing into blends representing the middle and lower zones of the Anderson ore body. The analyses of these samples were as follows:

	Middle Zone	Lower Zone
U_3O_8, % analyzed	0.039	0.043
average calculated	0.045	0.050
V_2O_5, %	0.07	0.14
Mo, %	0.001	0.001
CO_2, %	0.75	3.20
Fe, %	3.05	3.06

Splits were taken from each blend and dry ground to nominal 14-, 28-, and 48-mesh sizes. Figures 1 and 2 plot the screen analyses of the three sizes for each ore.

ACID LEACHING STUDIES

The acid leaching studies were performed in two sets. In the first set the additions of reagents were controlled by measurements of the leach pulp pH and emf. In the second set, the reagent additions were fixed. The leaching procedure was to pulp the dry ore in water, bring the pulp up to temperature, add the reagents and digest for a predetermined time. At the conclusion of the leach, the pulp was filtered and washed first with one displacement of 1.5 pH water, then one displacement of demineralized water.

The effect of temperature on the acid leaching of the uranium and vanadium is plotted in Figure 3. The plots show slight increases and decreases in the residual values as the temperature is increased. However, the only Coefficient of Determination having significance is the vanadium extraction from the lower zone which showed increasing vanadium extraction with increasing temperature.

The effect of time on the acid leaching of the uranium and vanadium is plotted in Figure 4. The plots show only slight changes in the residual values with time, indicating the leach time can be as short as four hours.

The effect of sodium chlorate addition on the acid leaching of the uranium and vanadium is plotted in Figure 5. For both ore zones, the uranium extraction improves slightly with oxidant addition; whereas the vanadium extraction decreases with oxidant addition. The Coefficients of Determination for the vanadium are fairly significant, 0.16 and 0.42, indicating that oxidant addition should be a minimum.

The effect of ore size on the acid leaching of the uranium and vanadium is plotted in Figure 6. The uranium extraction improves slightly with finer grinding; however, none of the curves show significant Coefficients of Determination. Figures 7, 8, 9, and 10 compare the screen analyses of the acid leached residues of the 14- and 28-mesh residues with their respective heads.

The effects of residual free acid and the acid addition of the leaching of the uranium and vanadium are plotted in Figures 11 and 12. The residual values from the middle zone decreased with increasing free acid; whereas, they increased with increasing acid addition. This infers that, although the residual free acid is affected by the acid addition, it is affected more by the acid consumption. The acid consumption during the leaching is affected by a combination of the ore size, leaching temperature, and retention time. The residual values from the lower zone did not show the above phenomena with the residual acid having little effect on the residual uranium and

vanadium. The vanadium and uranium extractions did increase slightly with increasing acid addition.

Analysis of the leaching tests indicated that the optimum leaching conditions considering all of the variables would be 60°C, for six hours, 50% solids using ore ground to 80% passing 28-mesh, and an addition of one lb/ton sodium chlorate. The acid addition should be controlled at 0.8 to 1.0 pH, requiring 140 lb/ton for the middle zone and 260 lb/ton for the lower zone. Tests at these conditions gave uranium extractions of 98% from the middle zone and 95% from the lower zone.

ALKALINE LEACHING STUDIES

The alkaline leaching procedure was to pulp the dry ore in water at 33% solids, bring the pulp up to temperature, add the reagents and digest for a predetermined time with air bubbling through the pulp at 10-20 cc/min (0.6-1.3 cfm/ton). At the conclusion of the leach, the pulp was filtered and washed with two displacements of three g/l sodium carbonate solution.

The effect of retention time on the leaching of uranium is plotted in Figure 13. The data indicates a slight decrease in uranium extraction with extended leaching time; however, the Coefficients of Determination do not show this to be statistically significant.

The effect of ore size on the leaching of uranium is plotted in Figure 14. The data indicate that the size had no effect on the uranium extraction.

The effect of the sodium carbonate addition of the uranium leaching is plotted in Figure 15. Both ore zones show increasing uranium solubilization with increasing sodium carbonate addition; however, the lowest residual values also were achieved in leaches with low sodium carbonate additions, 120 lb/ton.

The effect of temperature on the leaching of the uranium is plotted in Figure 16. Both ore zones show increasing uranium extraction with increasing temperature.

Analysis of the leaching data indicated that the optimum conditions appeared to be 80°C, for 16 hours, 33% solids using ore ground to 80% passing 48-mesh with a sodium carbonate addition of 120-160 lb/ton (30-40 g/l). Tests were run during the above program which approximated these conditions. Ninety-size percent of the uranium was extracted from the Middle Zone ore and ninety-four percent was extracted from the Lower Zone ore.

Robert Balderrama
R. B. Balderrama
Research Engineer

RBB:mgp

Table 1

Acid Leach Data

Test No.	976-1	976-2	976-3	976-4	976-9	976-10	976-11	976-12
Sample No. HRI-	10490-1	10490-2	10490-1	10490-2	10490-1	10490-2	10490-1	10490-2
Head Analysis								
% Uranium	0.039	0.043	0.039	0.043	0.039	0.043	0.039	0.043
% Vanadium	0.07	0.14	0.07	0.14	0.07	0.14	0.07	0.14
% Molybdenum	0.001	<0.001	0.001	<0.001	0.001	<0.001	0.001	<0.001
Leach Conditions								
Feed size, mesh	-28	-28	-28	-28	-28	-28	-28	-28
Temperature, °C	80	80	80	80	60	60	60	60
Time, hour	24	24	24	24	24	24	24	24
H_2SO_4 addition, lb/ton	249.3	393.3	453.3	797.3	156	281.3	194.7	342.7
$NaClO_3$ addition, lb/ton	-	-	-	-	-	-	-	-
Leaching Data								
Final pH at temperature	1.5	1.5	0.9	0.7	1.5	1.5	1.2	1.3
Final pH at 25°C	1.1	1.1	0.8	0.6	1.1	1.1	1.0	1.0
Final emf at temperature	>700	>700	>700	560	510	510	520	525
Final emf at 25°C	640	635	580	465	455	465	460	460
Free acid, g/l H_2SO_4	7.29	8.40	24.50	40.59	6.50	6.09	11.18	13.32
Reagent Data								
H_2SO_4 consumed, lb/ton	203	324	293.3	524	125	253	149	281
Leach Residue								
% U_3O_8	0.003	0.005	0.001	0.002	0.002	0.002	0.002	0.002
% V_2O_5	0.07	0.13	0.06	0.02	0.04	0.10	0.04	0.09
Leach Extraction								
Uranium, %	94.5	92.5	98.3	97.2	95.6	96.2	95.8	96.4
Vanadium, %	9.5	14.3	23.8	88.1	47.6	33.3	47.6	40.5

Table 1

Acid Leach Data

Test No.	976-17	976-18	976-19	976-20	976-25	976-26	976-27	976-28
Sample No. HRI-	10490-1	10490-2	10490-1	10490-2	10490-1	10490-2	10490-1	10490-2
Head Analysis								
% Uranium	0.039	0.043	0.039	0.043	0.039	0.043	0.039	0.043
% Vanadium	0.07	0.14	0.07	0.14	0.07	0.14	0.07	0.14
% Molybdenum	0.001	<0.001	0.001	<0.001	0.001	<0.001	0.001	<0.001
Leach Conditions								
Feed size, mesh	-28	-28	-28	-28	-28	-28	-28	-28
Temperature, °C	40	40	40	40	80	80	80	80
Time, hour	24	24	24	24	24	24	24	24
H_2SO_4 addition, lb/ton	113.3	233.3	149.3	280	186.6	329.3	289.3	452
$NaClO_3$ addition, lb/ton	1.3	1.3	0.7	1.3	0.7	0.7	0.3	0.0
Leaching Data								
Final pH at temperature	1.4	1.5	1.2	1.2	1.6	1.6	1.3	1.2
Final pH at 25°C	1.3	1.3	1.1	1.1	1.1	1.1	1.0	0.9
Final emf at temperature	650	655	680	540	515	520	525	520
Final emf at 25°C	630	625	625	505	460	460	460	455
Free acid, g/l H_2SO_4	4.85	4.12	18.72	9.13	16.8	17.4	24.3	31.1
Reagent Data								
H_2SO_4 consumed, lb/ton	92	215	69.3	239	112	252	192.4	303
Leach Residue								
% U_3O_8	0.001	0.002	0.001	0.002	0.001	0.002	0.006	0.002
% V_2O_5	0.07	0.14	0.06	0.10	0.06	0.10	0.05	0.08
Leach Extraction								
Uranium, %	97.6	95.7	97.7	96.2	98.0	96.5	88.0	96.6
Vanadium, %	4.8	4.8	19.0	33.3	19.0	33.3	33.3	47.6

Table 1

Acid Leach Data

Test No.	976-29	976-30	976-31	976-32	976-33	976-34	976-35	976-36
Sample No. HRI-	10490-1	10490-2	10490-1	10490-2	10490-1	10490-2	10490-1	10490-2
Head Analysis								
% Uranium	0.039	0.043	0.039	0.043	0.039	0.043	0.039	0.043
% Vanadium	0.07	0.14	0.07	0.14	0.07	0.14	0.07	0.14
% Molybdenum	0.001	<0.001	0.001	<0.001	0.001	<0.001	0.001	<0.001
Leach Conditions								
Feed size, mesh	-28	-28	-28	-28	-28	-28	-28	-28
Temperature, °C	60	60	50	50	60	60	50	50
Time, hour	8	8	24	24	16	16	16	16
H_2SO_4 addition, lb/ton	170	290	170	290	155	275	140	260
$NaClO_3$ addition, lb/ton	0.5	0.5	1.0	1.0	0.0	0.0	0.5	0.5
Leaching Data								
Final pH at temperature	1.4	1.5	1.5	1.6	1.4	1.5	1.3	1.4
Final pH at 25°C	1.0	1.0	1.0	1.2	1.1	1.2	1.1	1.2
Final emf at temperature	480	495	520	635	435	455	>700	>700
Final emf at 25°C	445	475	480	525	422	430	640	640
Free acid, g/l H_2SO_4	9.42	7.52	7.49	6.30	5.70	4.57	7.14	5.04
Reagent Data								
H_2SO_4 consumed, lb/ton	129	255	141	265	129	256	112	244
Leach Residue								
% U_3O_8	0.001	0.003	0.006	0.002	0.002	0.006	0.002	0.007
% V_2O_5	0.04	0.09	0.05	0.10	0.05	0.09	0.06	0.13
Leach Extraction								
Uranium, %	97.9	94.6	87.0	96.3	95.8	89.1	95.6	85.9
Vanadium, %	47.6	38.1	33.3	28.6	33.3	40.5	19.0	9.5

Table 1

Acid Leach Data

Test No.	976-37	976-38	976-39	976-40	976-41	976-42	976-43	976-44
Sample No. HRI-	10490-1	10490-2	10490-1	10490-2	10490-1	10490-2	10490-1	10490-2
Head Analysis								
% Uranium	0.039	0.043	0.039	0.043	0.039	0.043	0.039	0.043
% Vanadium	0.07	0.14	0.07	0.14	0.07	0.14	0.07	0.14
% Molybdenum	0.001	<0.001	0.001	<0.001	0.001	<0.001	0.001	<0.001
Leach Conditions								
Feed size, mesh	-28	-28	-14	-14	-14	-14	-14	-14
Temperature, °C	70	70	70	70	70	70	60	60
Time, hour	24	24	8	8	4	4	8	8
H_2SO_4 addition, lb/ton	140	260	155	275	170	290	155	275
$NaClO_3$ addition, lb/ton	1.0	1.0	0.0	0.0	0.0	0.0	0.5	0.5
Leaching Data								
Final pH at temperature	1.6	1.7	1.5	1.6	1.4	1.5	1.3	1.5
Final pH at 25°C	1.2	1.3	1.0	1.1	0.95	0.95	1.0	1.1
Final emf at temperature	550	570	450	460	465	480	495	515
Final emf at 25°C	475	490	430	445	435	450	465	480
Free acid, g/l H_2SO_4	3.25	3.33	7.23	7.71	9.83	9.61	10.47	6.85
Reagent Data								
H_2SO_4 consumed, lb/ton	127	245	130	242	127	250	110	246
Leach Residue								
% U_3O_8	0.002	0.006	0.007	0.003	0.001	0.003	0.002	0.003
% V_2O_5	0.07	0.14	0.05	0.08	0.05	0.08	0.04	0.09
Leach Extraction								
Uranium, %	95.6	88.4	85.2	95.0	97.9	95.2	95.7	95.4
Vanadium, %	4.8	2.4	28.6	42.9	33.3	42.9	47.6	40.5

Table 1

Acid Leach Data

Test No.	976-45	976-46	976-47	976-48	976-	976-	976-	976-
Sample No. HRI-	10490-1	10490-2	10490-1	10490-2	10490-1	10490-2	10490-1	10490-2
Head Analysis								
% Uranium	0.039	0.043	0.039	0.043				
% Vanadium	0.07	0.14	0.07	0.14				
% Molybdenum	0.001	<0.001	0.001	<0.001				
Leach Conditions								
Feed size, mesh	-14	-14	-14	-14				
Temperature, °C	60	60	50	50				
Time, hour	4	4	4	4				
H_2SO_4 addition, lb/ton	140	260	155	275				
$NaClO_3$ addition, lb/ton	1.0	1.0	0.0	0.0				
Leaching Data								
Final pH at temperature	1.4	1.5	1.1	1.2				
Final pH at 25°C	1.0	1.0	0.9	0.9				
Final emf at temperature	645	645	445	460				
Final emf at 25°C	660	650	430	440				
Free acid, g/l H_2SO_4	9.28	8.44	10.04	8.94				
Reagent Data								
H_2SO_4 consumed, lb/ton	101	225	114	238				
Leach Residue								
% U_3O_8	0.001	0.004	0.001	0.007				
% V_2O_5	0.06	0.12	0.05	0.10				
Leach Extraction								
Uranium, %	98.0	93.7	97.7	88.1				
Vanadium, %	19.0	19.0	28.6	33.3				

Alkaline Leach Data

Test No.	976-5	976-6	976-7	976-8	976-13	976-14	976-15	976-16
Sample No. HRI-	10490-1	10490-2	10490-1	10490-2	10490-1	10490-2	10490-1	10490-2
Head Analysis								
Uranium	0.039	0.043	0.039	0.043	0.039	0.043	0.039	0.043
Vanadium	0.07	0.14	0.07	0.14	0.07	0.14	0.07	0.14
Molybdenum	0.001	<0.001	0.001	<0.001	0.001	<0.001	0.001	<0.001
Leach Conditions								
Leach head, g	500	500	500	500	500	500	500	500
Ore size, mesh	-28	-28	-28	-28	-28	-28	-28	-28
Temperature, °C	80	80	80	80	60	60	60	60
Time, hour	24	24	24	24	24	24	24	24
Sodium carbonate addition, lb/ton	100	100	160	160	100	100	160	160
Sodium bicarbonate addition, lb/ton	20	20	40	40	20	20	40	40
Leach Filtrate								
Volume, ml	1150	1370	1280	1350	1520	1440	1340	1350
pH	9.8	9.9	9.8	9.9	9.9	9.8	9.9	9.9
emf, mv	+60	+30	+20	-10	-20	-30	-30	-30
U_3O_8, g/l	0.120	0.112	0.133	0.137	0.025	0.057	0.062	0.127
Leach Residue								
Weight, g	483.8	473.4	481.3	470.2	484.5	471.5	489.0	472.0
U_3O_8, %	0.011	0.013	0.004	0.005	0.030	0.028	0.019	0.010
Leach Extraction								
U_3O_8, %	72.2	71.4	89.8	88.7	20.7	38.3	47.2	78.4

Alkaline Leach Data

Test No.	976-21	976-22	976-23	976-24	976-	976-	976-	976-
Sample No. HRI-	10490-1	10490-2	10490-1	10490-2	10490-1	10490-2	10490-1	10490-2
Head Analysis								
Uranium	0.039	0.043	0.039	0.043	0.039	0.043	0.039	0.043
Vanadium	0.07	0.14	0.07	0.14	0.07	0.14	0.07	0.14
Molybdenum	0.001	<0.001	0.001	<0.001	0.001	<0.001	0.001	<0.001
Leach Conditions								
Leach head, g	500	500	500	500	500	500	500	500
Ore size, mesh	-28	-28	-28	-28				
Temperature, °C	40	40	40	40				
Time, hour	24	24	24	24				
Sodium carbonate addition, lb/ton	100	100	160	160				
Sodium bicarbonate addition, lb/ton	20	20	40	40				
Leach Filtrate								
Volume, ml	1240	1295	1200	1340				
pH	10.0	10.0	10.0	10.0				
emf, mv	-30	-30	-30	-30				
U_3O_8, g/l	0.010	0.012	0.021	0.036				
Leach Residue								
Weight, g	482.5	474.5	485.0	471.0				
U_3O_8, %	0.035	0.041	0.034	0.037				
Leach Extraction								
U_3O_8, %	7.2	7.6	13.3	21.8				

Alkaline Leach Data

Test No.	976-49	976-50	976-51	976-52	976-53	976-54	976-55	976-56
Sample No. HRI-	10490-1	10490-2	10490-1	10490-2	10490-1	10490-2	10490-1	10490-2
Head Analysis								
Uranium	0.039	0.043	0.039	0.043	0.039	0.043	0.039	0.043
Vanadium	0.07	0.14	0.07	0.14	0.07	0.14	0.07	0.14
Molybdenum	0.001	<0.001	0.001	<0.001	0.001	<0.001	0.001	<0.001
Leach Conditions								
Leach head, g	500	500	500	500	500	500	500	500
Ore size, mesh	-14	-14	-28	-28	-28	-28	-48	-48
Temperature, °C	80	80	80	80	80	80	80	80
Time, hour	8	8	8	8	16	16	16	16
Sodium carbonate addition, lb/ton	160	160	120	120	160	160	160	160
Sodium bicarbonate addition, lb/ton	40	40	40	40	40	40	40	40
Leach Filtrate								
Volume, ml	1100	1160	1070	1120	1060	1130	1060	1130
pH	9.8	9.8	9.6	9.6	9.8	9.7	9.7	9.8
emf, mv	+150	+70	+90	+95	+90	+90	+90	+90
U_3O_8, g/l	0.130	0.185	0.112	0.182	0.187	0.200	0.187	0.192
Leach Residue								
Weight, g	487.9	475.4	488.0	475.7	484.5	485.5	497.0	480.6
U_3O_8, %	0.011	0.007	0.014	0.007	0.003	0.002	0.003	0.003
Leach Extraction								
U_3O_8, %	72.7	86.6	63.7	86.0	93.2	95.9	93.0	93.8

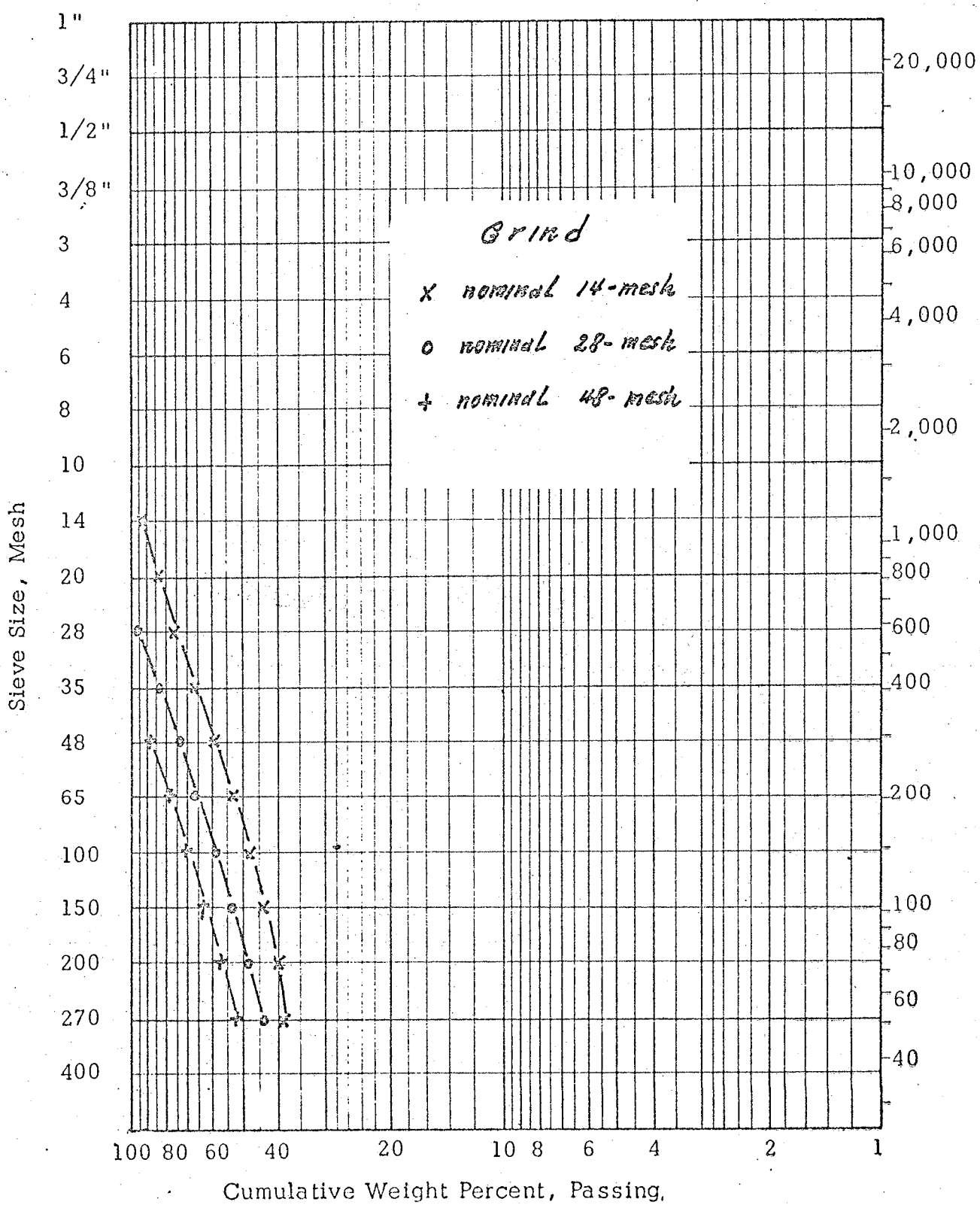
Alkaline Leach Data

Test No.	976-57	976-58	976-59	976-60	976-61	976-62	976-63	976-64
Sample No. HRI-	10490-1	10490-2	10490-1	10490-2	10490-1	10490-2	10490-1	10490-2
Head Analysis								
Uranium	0.039	0.043	0.039	0.043	0.039	0.043	0.039	0.043
Vanadium	0.07	0.14	0.07	0.14	0.07	0.14	0.07	0.14
Molybdenum	0.001	<0.001	0.001	<0.001	0.001	<0.001	0.001	<0.001
Leach Conditions								
Leach head, g	500	500	500	500	500	500	500	500
Ore size, mesh	-48	-48	-28	-28	-14	-14	-28	-28
Temperature, °C	80	80	90	90	90	90	90	90
Time, hour	8	8	16	16	16	16	24	24
Sodium carbonate addition, lb/ton	200	200	200	200	120	120	160	160
Sodium bicarbonate addition, lb/ton	40	40	40	40	40	40	40	40
Leach Filtrate								
Volume, ml	1070	1060	1100	1150	1010	1010	980	1040
pH	9.8	9.9	9.9	9.9	9.7	9.8	9.8	9.9
emf, mv	+85	+85	+75	+75	+70	+75	+70	+70
U_3O_8, g/l	0.185	0.200	0.178	0.187	0.163	0.245	0.196	0.221
Leach Residue								
Weight, g	485.7	482.5	481.6	471.9	482.0	471.7	482.0	471.0
U_3O_8, %	0.003	0.007	0.004	0.003	0.004	0.003	0.004	0.003
Leach Extraction								
U_3O_8, %	93.1	86.3	91.0	93.8	89.5	94.6	90.9	94.2

Alkaline Leach Data

Test No.	976-65	976-66	976-67	976-68	976-	976-	976-	976-
Sample No. HRI-	10490-1	10490-2	10490-1	10490-2	10490-1	10490-2	10490-1	10490-2
Head Analysis								
Uranium	0.039	0.043	0.039	0.043	0.039	0.043	0.039	0.043
Vanadium	0.07	0.14	0.07	0.14	0.07	0.14	0.07	0.14
Molybdenum	0.001	<0.001	0.001	<0.001	0.001	<0.001	0.001	<0.001
Leach Conditions								
Leach head, g	500	500	500	500	500	500	500	500
Ore size, mesh	-48	-48	-14	-14				
Temperature, °C	90	90	90	90				
Time, hour	24	24	24	24				
Sodium carbonate addition, lb/ton	120	120	200	200				
Sodium bicarbonate addition, lb/ton	40	40	40	40				
Leach Filtrate								
Volume, ml	960	990	1080	1090				
pH	9.7	9.7	9.8	9.9				
emf, mv	+60	+70	+60	+65				
U_3O_8, g/l	0.206	0.247	0.186	0.221				
Leach Residue								
Weight, g	483.0	480.0	481.5	473.0				
U_3O_8, %	0.004	0.004	0.004	0.003				
Leach Extraction								
U_3O_8, %	91.1	92.7	91.3	94.4				

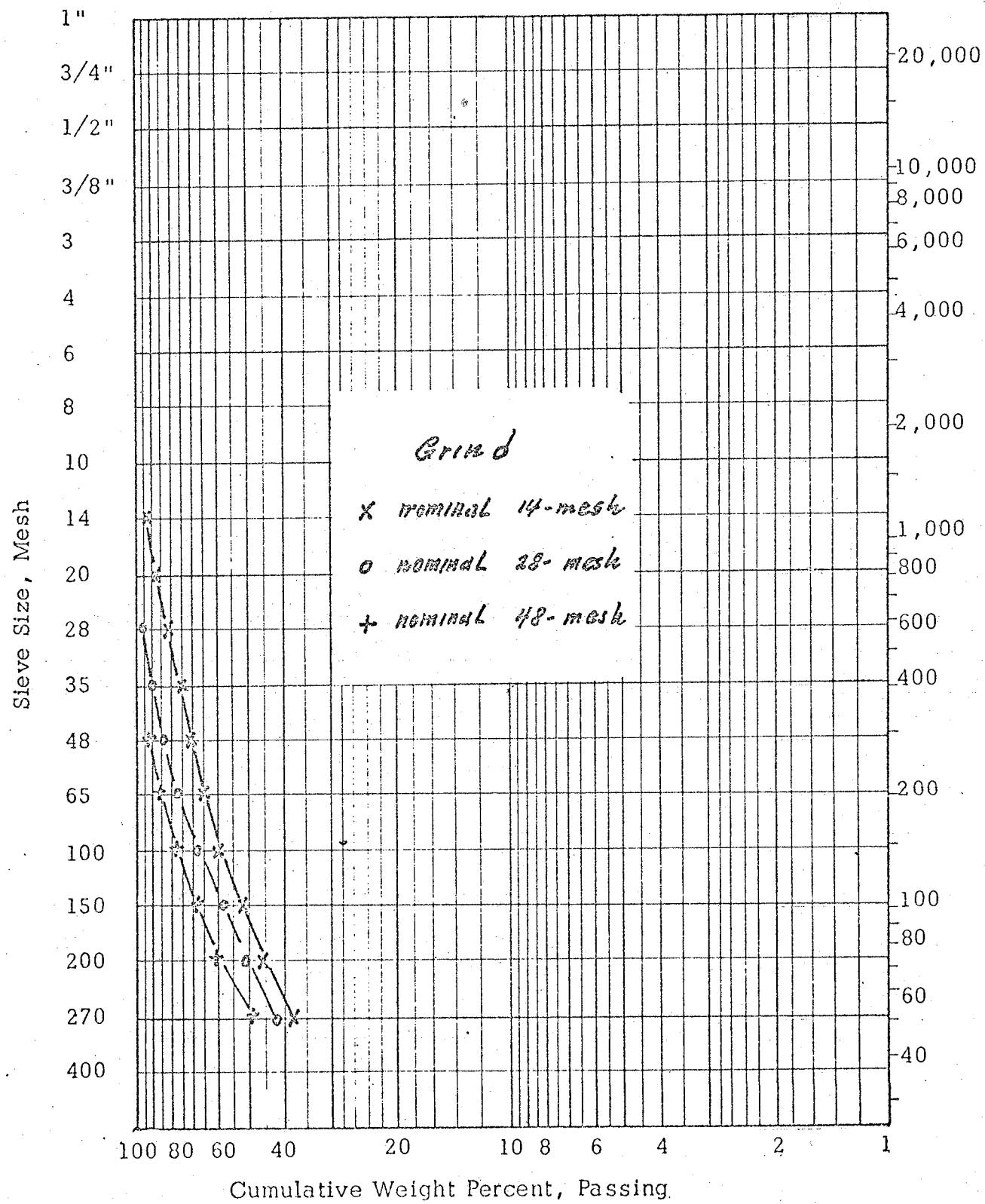
Screen Analysis of Middle Zone
Anderson Mine Composite



hri 50-23, 2/75

Figura 1

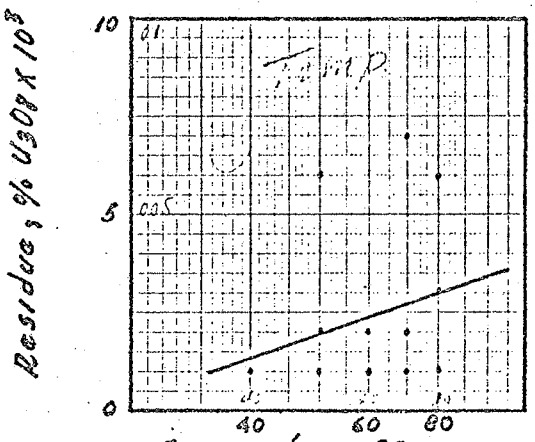
Screen Analysis of Lower Zone Anderson Mine Composite



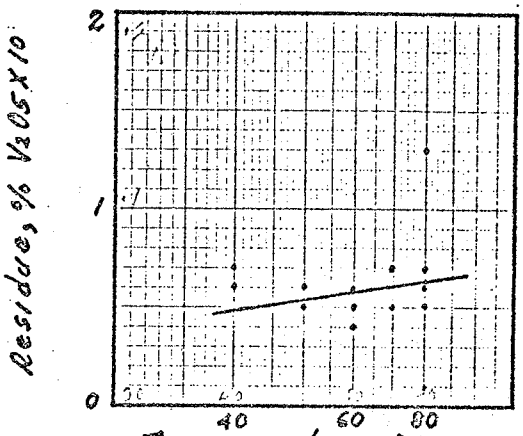
hri 50-23, 2/75

Figure 2

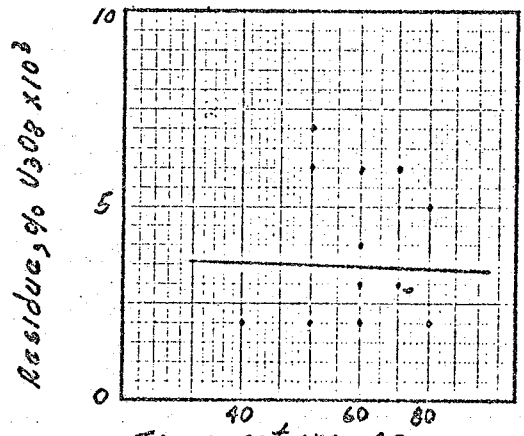
Effect of Temperature on Leaching of Anderson Mine Composites



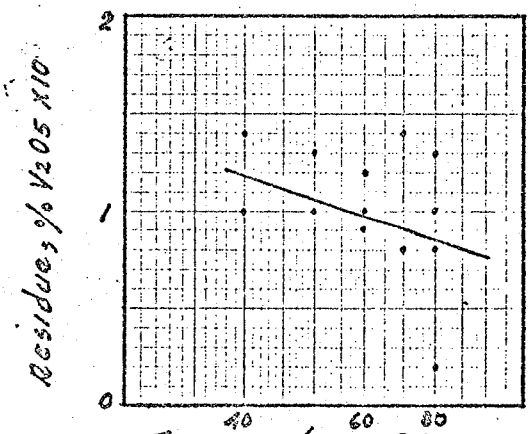
Middle Zone
Uranium: $r^2 = 0.05$



Middle Zone
Vanadium: $r^2 = 0.06$



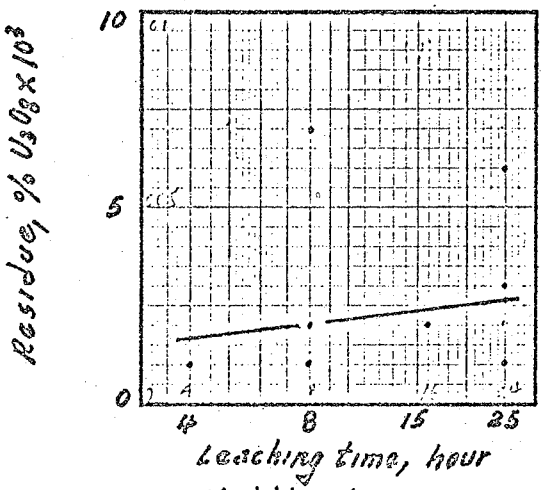
Lower Zone
Uranium: $r^2 = 0.001$



Lower Zone
Vanadium: $r^2 = 0.16$

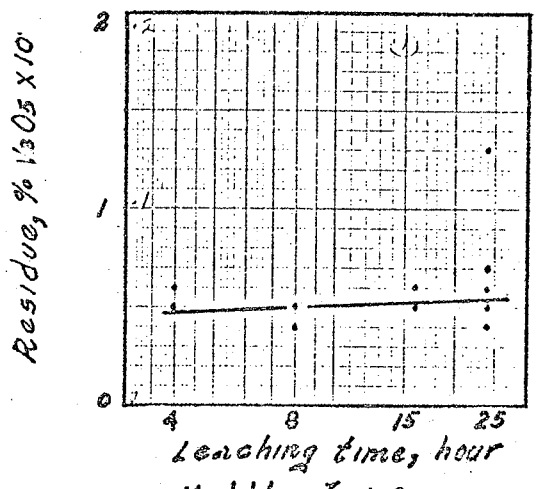
Figure 3

Effect of Time on Leaching of
Anderson Mine Composites



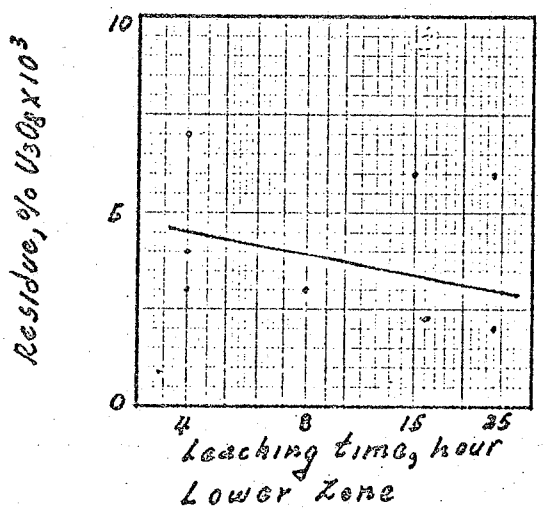
Middle Zone

Uranium: $r^2 = 0.03$



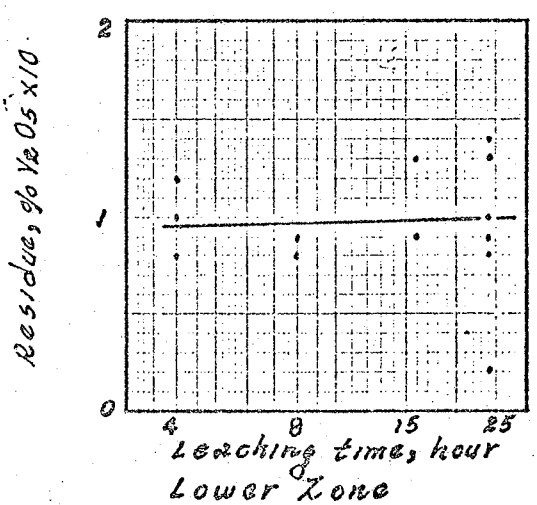
Middle Zone

Vanadium: $r^2 = 0.09$



Lower Zone

Uranium: $r^2 = 0.11$

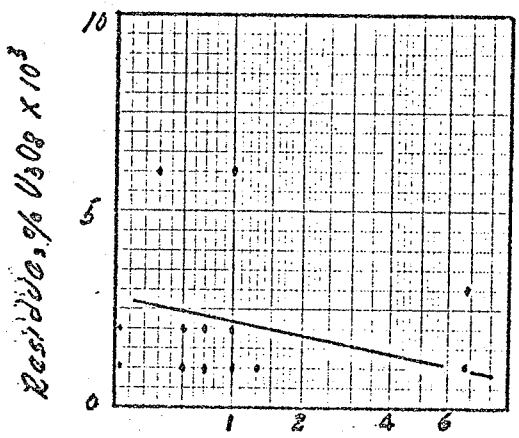


Lower Zone

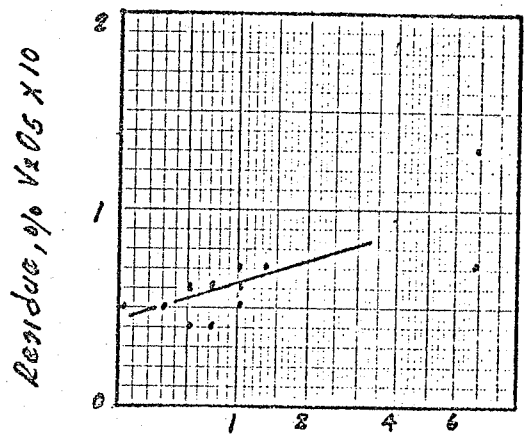
Vanadium: $r^2 = 0.006$

Figure 4

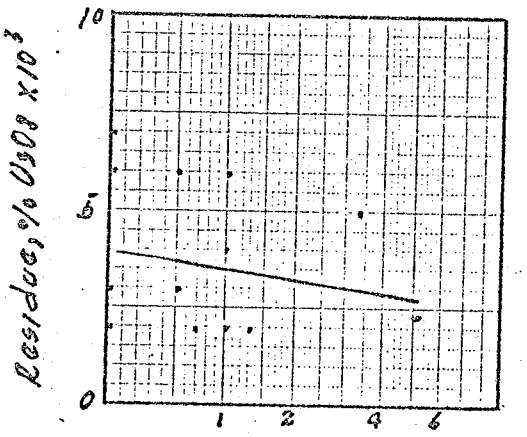
Effect of Oxidant Addition on Leaching of Anderson Mine Composites.



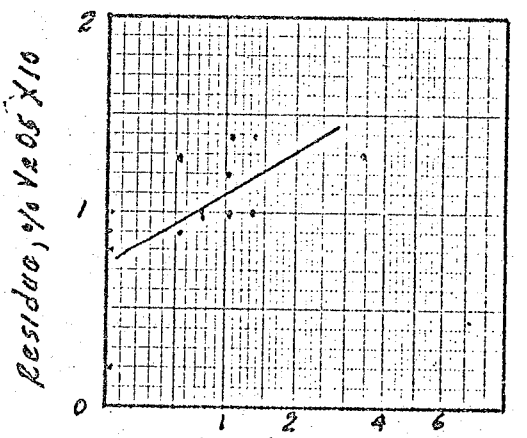
Oxidant Addition, Lb/T
$NaClO_3$
Middle Zone
Uranium: $r^2 = 0.02$



Oxidant Addition, Lb/T
$NaClO_3$
Middle Zone
Vanadium: $r^2 = 0.16$



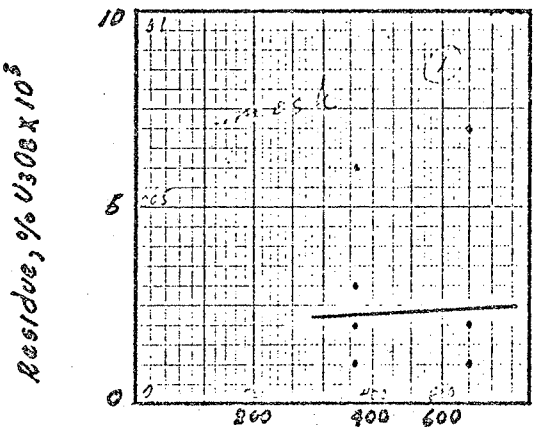
Oxidant Addition, Lb/T
$NaClO_3$
Lower Zone
Uranium: $r^2 = 0.02$



Oxidant Addition, Lb/T
$NaClO_3$
Lower Zone
Vanadium: $r^2 = 0.42$

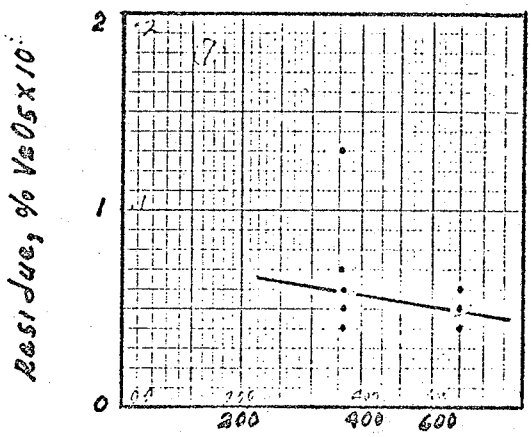
Figure 5

Effect of Grind on Leaching of Anderson Mine Composites



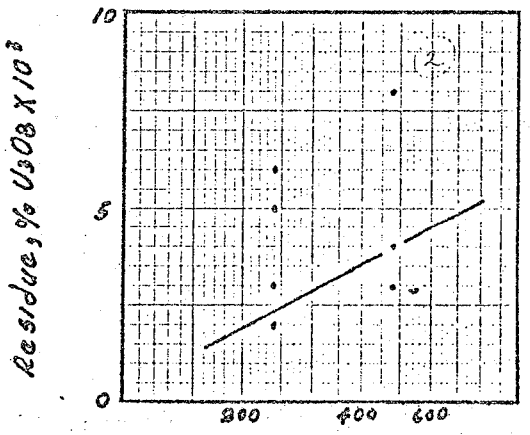
Middle Zone

Uranium: $r^2 = 0.0005$



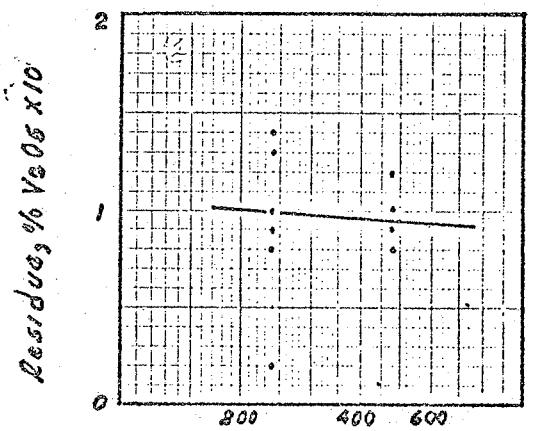
Middle Zone

Vanadium: $r^2 = 0.06$



Lower Zone

Uranium: $r^2 = 0.04$

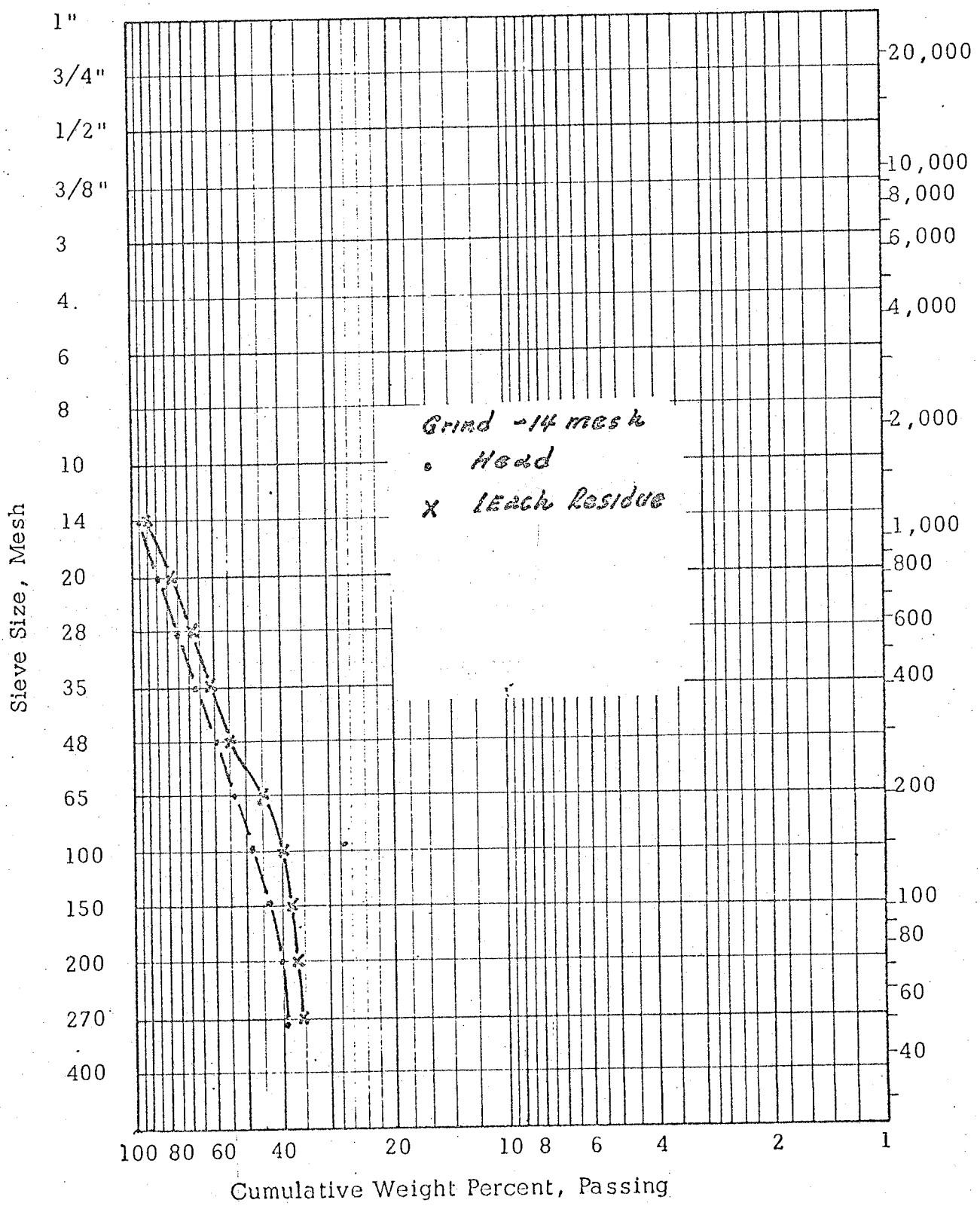


Lower Zone

Vanadium: $r^2 = 0.01$

Figure 6

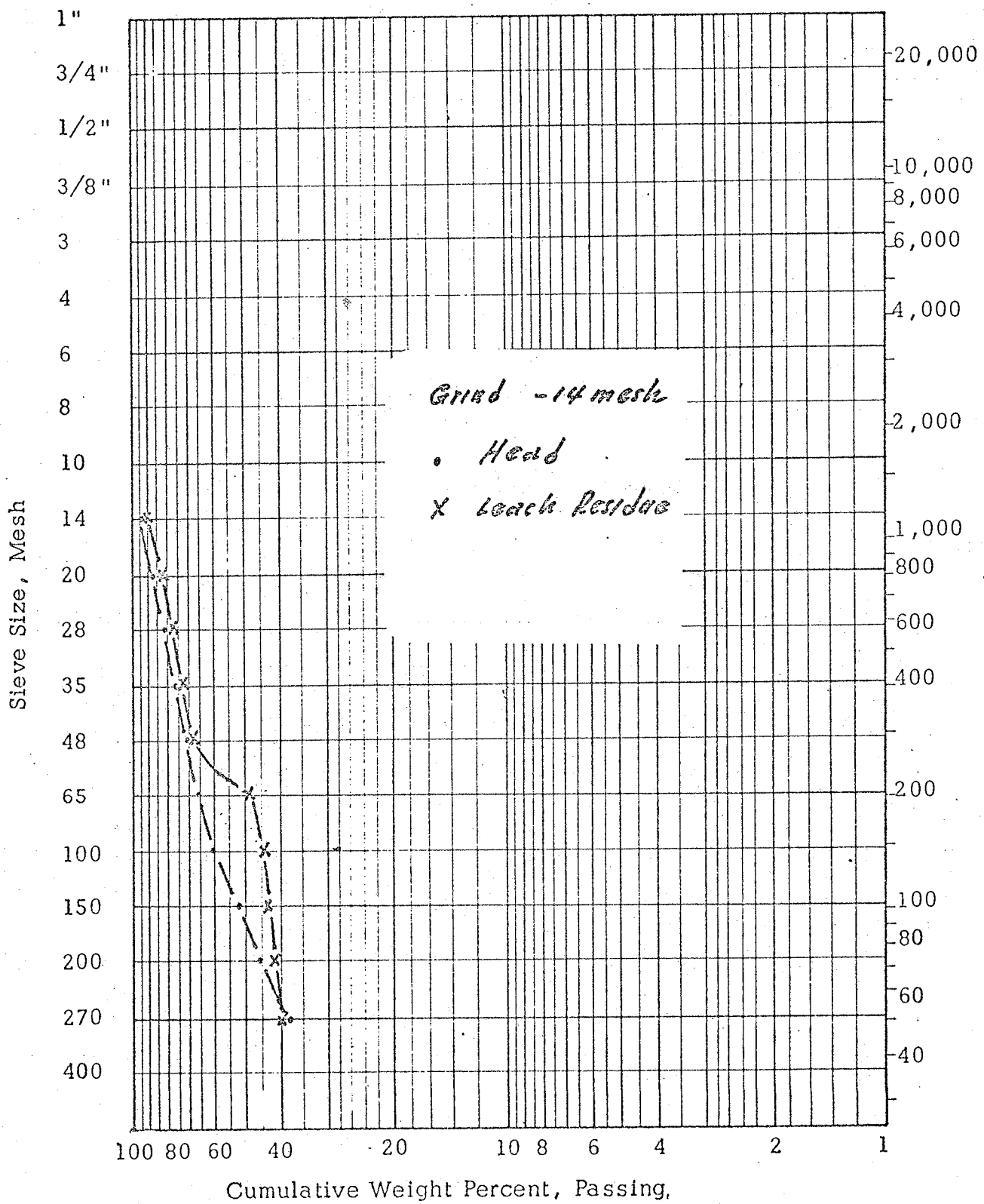
Screen Analysis on Head and Acid Leach residue of Anderson Mine Composite Middle Zone



hri 50-23, 2/75

Figure 7

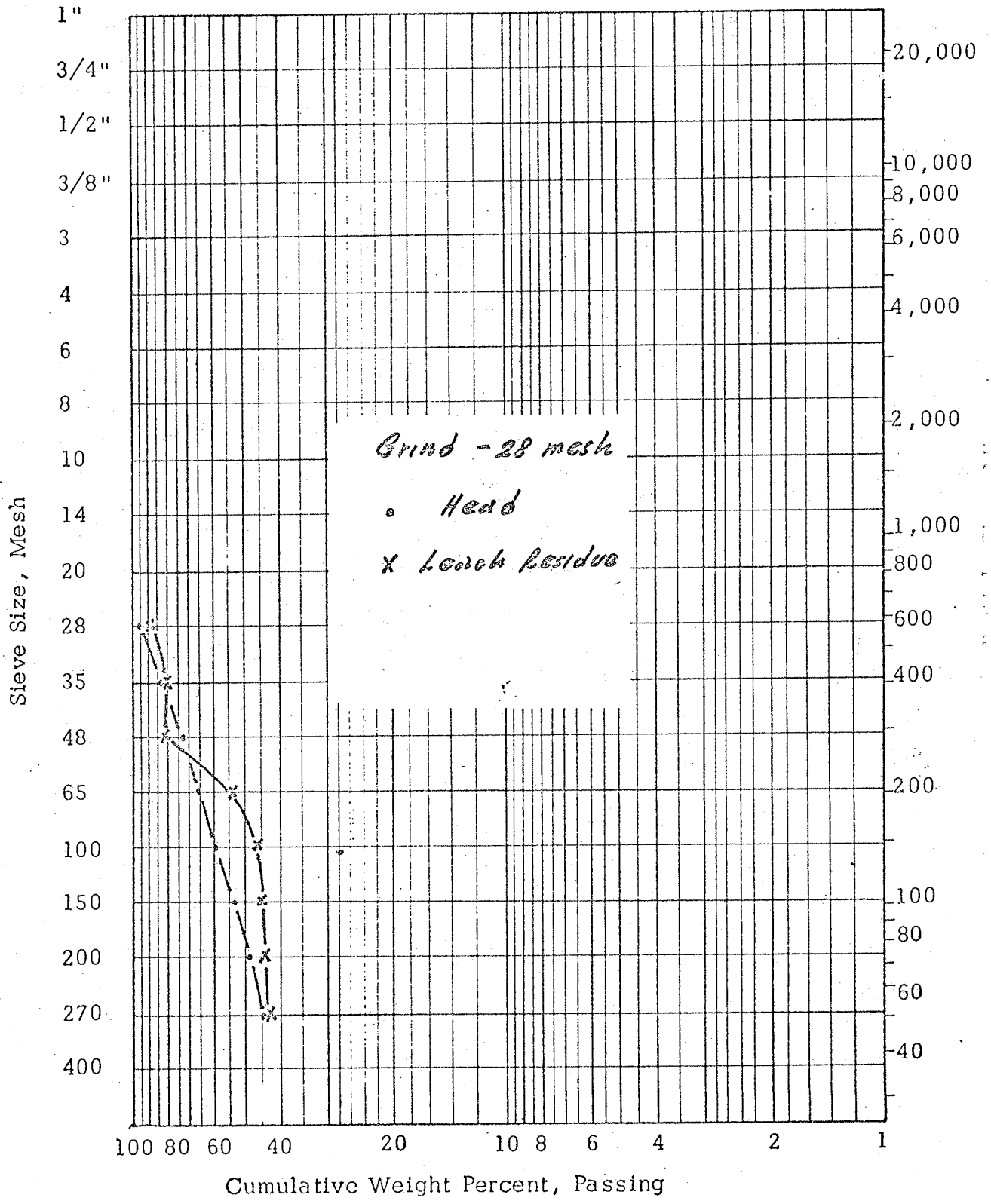
Screen Analysis on Head and Acid Leach residue of Anderson Mine Composite Lower Zone



hri 50-23, 2/75

Figure 8

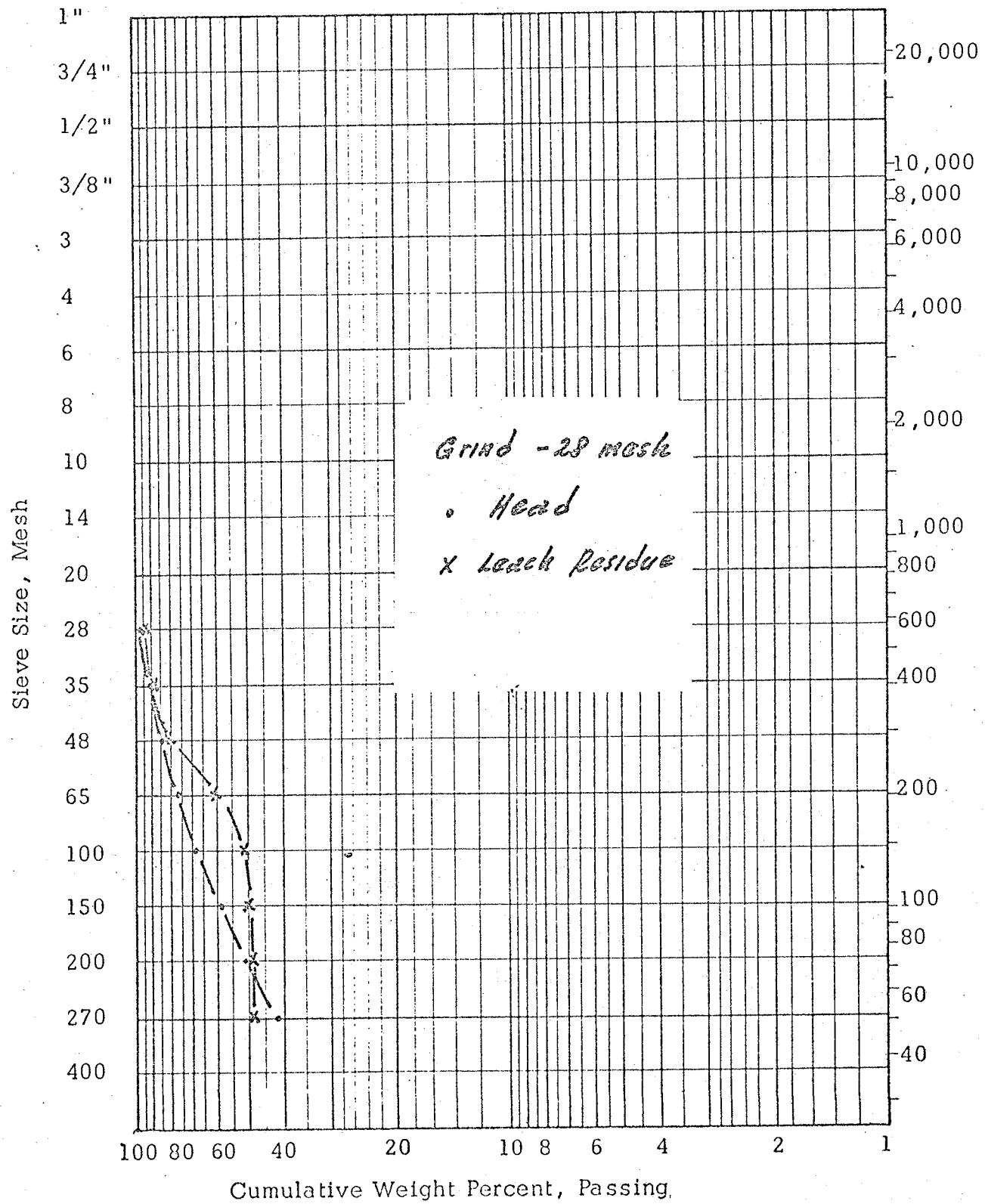
Screen Analysis on Head and Acid Leach residue of Anderson Mine Composite Middle Zone



hri 50-23, 2/75

Figure 9

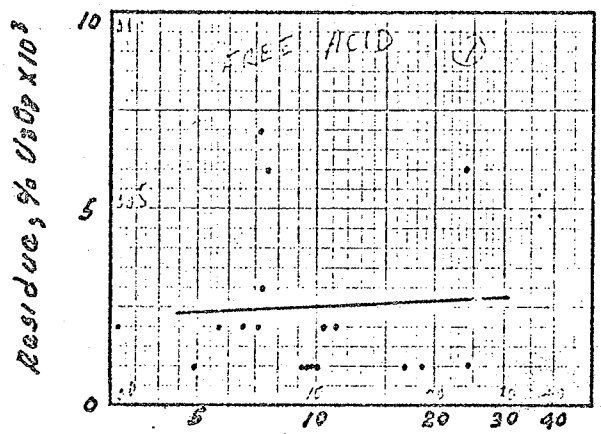
Screen Analysis on Head and Acid Leach residue of Anderson Mine Composite Lower Zone



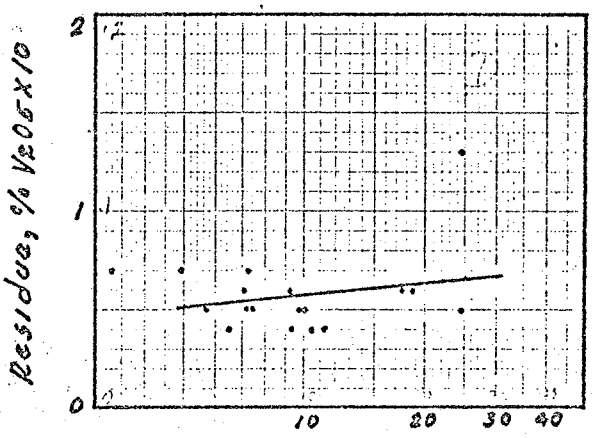
hri 50-23, 2/75

Figure 10

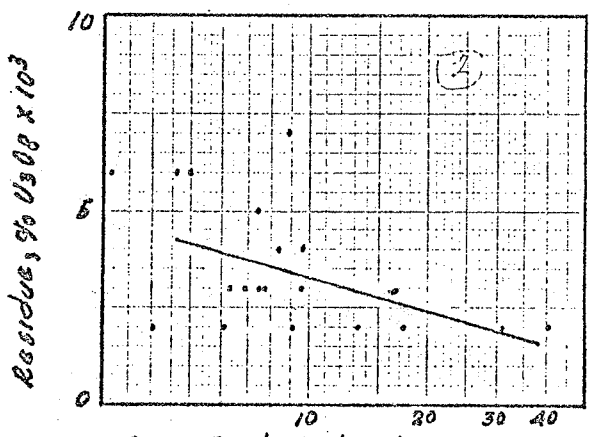
Effect of Final Free Acid Concentration on Leaching of Anderson Mine Composites



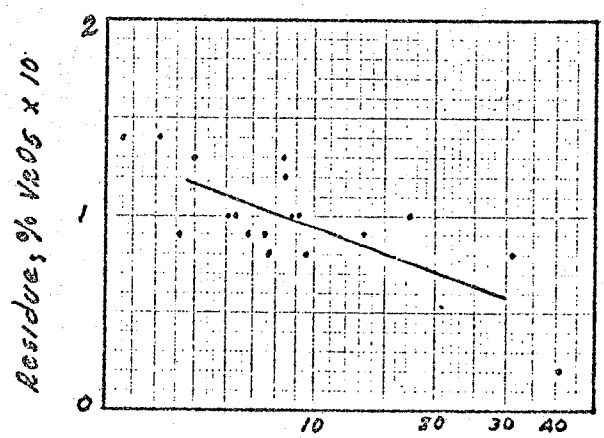
Free Acid, g/l H_2SO_4
Middle Zone
Uranium; $r^2 = 0.0004$



Free Acid, g/l H_2SO_4
Middle Zone
Vanadium; $r^2 = 0.07$



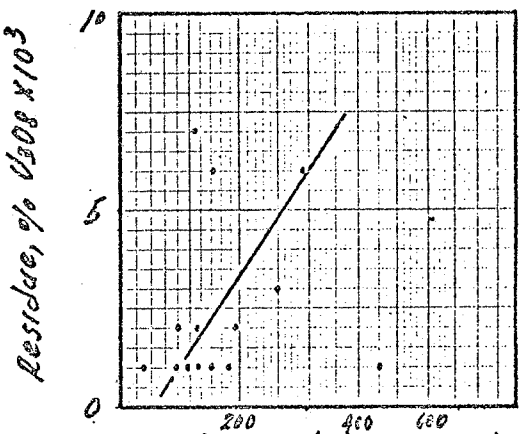
Free Acid, g/l H_2SO_4
Lower Zone
Uranium: $r^2 = 0.21$



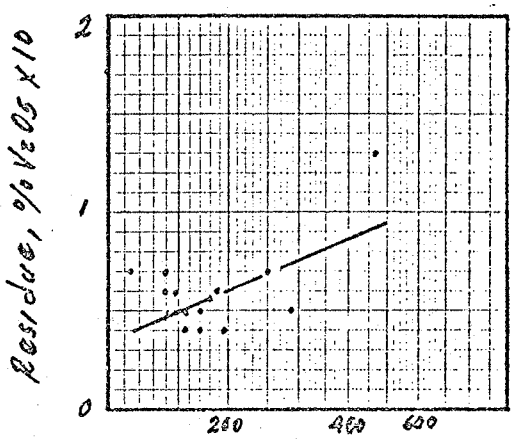
Free Acid, g/l H_2SO_4
Lower Zone
Vanadium: $r^2 = 0.55$

Figure 11

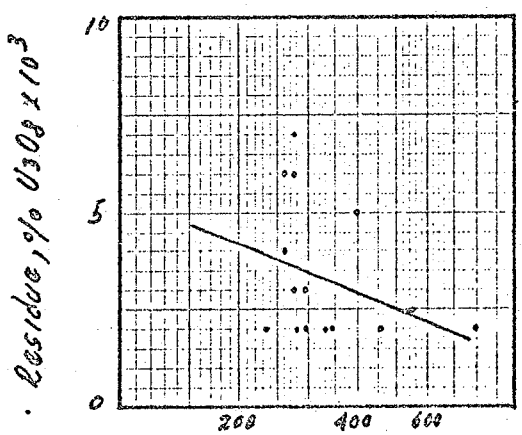
Effect of Sulfuric Acid Addition on Leaching of Anderson Mine Composites



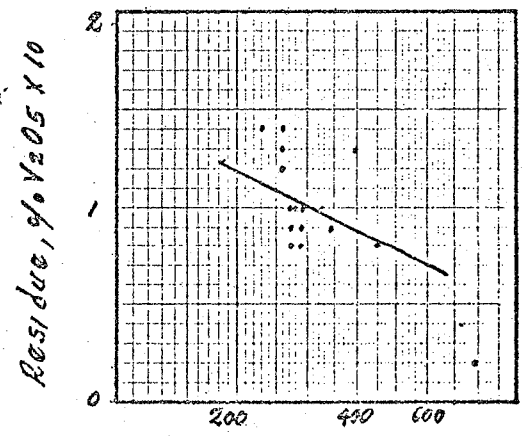
Middle Zone
Uranium: $r^2 = 0.02$



Middle Zone
Vanadium: $r^2 = 0.34$



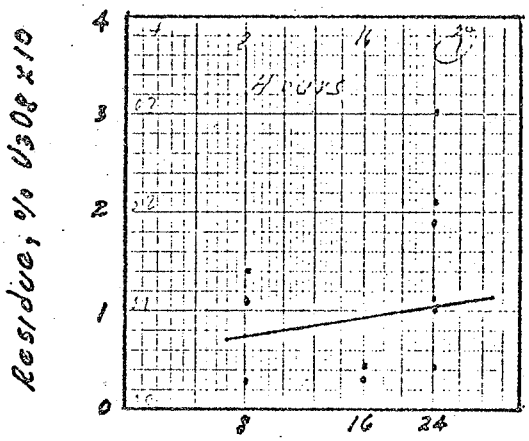
Lower Zone
Uranium: $r^2 = 0.09$



Lower Zone
Vanadium: $r^2 = 0.52$

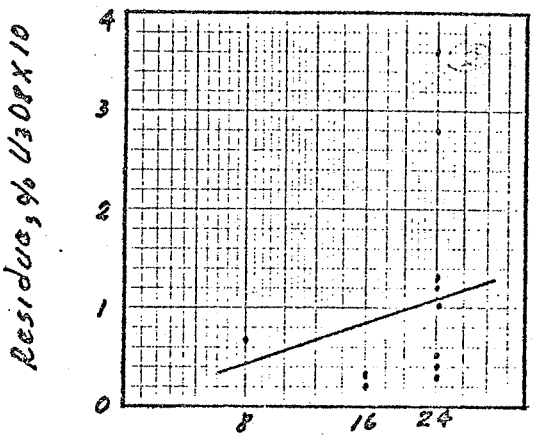
Figure 12

Effect of Time and Grind on Carbonate Leaching of Anderson Mine Composites



Middle Zone

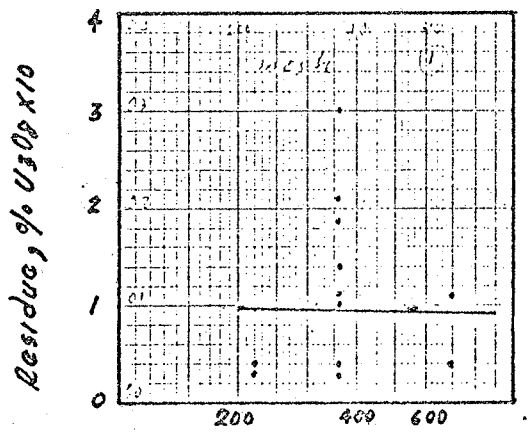
Uranium : $r^2 = 0.03$



Lower Zone

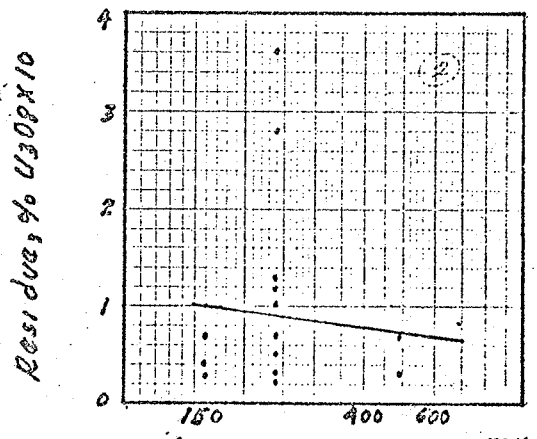
Uranium : $r^2 = 0.08$

Figure 13



Middle Zone

Uranium : $r^2 = 0.0001$



Lower Zone

Uranium : $r^2 = 0.008$

Figure 14