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EXXON MINERALS COMPANY, U.S.A.
POST OFFICE BOX 2180 - HOUSTON, TEXAS 77001

GERALD O. ORTLOFF
REGULATORY AFFAIRS MANAGER

May 7, 1979

Docket No. 40-8064
Request for Amendment
License No. SUA-1064
(Solution Mine R&D)

Mr. J. D. Martin, Director
Division of Waste Management
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Dr. Ray Cooperstein
Uranium Recovery Licensing Branch

Dear Mr. Martin:

Exxon requests amendment of Source Material License No. SUA-1064, covering Solution Mine (solution extraction) R&D at our Highland Uranium Operations, to make the excursion monitoring and verification procedure consistent with the program which NRC has approved for our commercial solution mine operation (Amendment 15 to License No. SUA-1139) and with the procedures that the Wyoming Department of Environmental Quality has approved for the R&D site. We believe approval of the amendment can eliminate dual excursion control procedures and unnecessary analyses without impairing the effectiveness of environmental monitoring and controls.

As part of our excursion parameter evaluation program at the new R&D site, water from each of the ten production wells (Figure 1) was sampled and analyzed for all the excursion parameters after increases in uranium and/or bicarbonate were indicated. Complete results of these analyses are attached. The analyses summarized in Table I show that there were no significant changes in the values for arsenic, selenium and pH even after increases of 10 to 20 mg/l in the uranium concentrations and 200 to 400 mg/l increases in the bicarbonate concentrations. These data show that arsenic, selenium and pH would not be reliable indicators of an excursion. We therefore request that arsenic, selenium and pH be deleted from Condition 11 of the license.

We also request that total dissolved solids and conductivity be removed from the list of excursion parameters, but retained as required data to be measured

and recorded when the sample is taken. Conductivity is an indirect indicator of the concentration of ions such as carbonate and chloride, and is not an independent excursion parameter. Conductivity is also highly variable, and we have seen conductivity shifts of 100 micromhos or more in samples taken from the same well only minutes apart. We have, also, seen similar shifts in conductivity values for successive samples from the monitor wells, and some of these single, high conductivity values have resulted in the initiation of the required seven-day sampling sequence. By removing conductivity from the excursion parameter list but continuing to record the information when the sample is taken, this data will be available for use in future evaluations but will not result in unnecessary sampling and analyses.

Modifications to License Conditions 12 and 13 which specify the upper control limits (UCL) and the excursion verification procedures for the R&D site are also requested in order to eliminate the dual sets of UCL values and verification procedures. The revised UCL's would specify the following: UCL's for carbonate and bicarbonate to be 20 mg/l above the highest value recorded for the well in the baseline sampling program; UCL's for chloride to be 10 mg/l above the highest value recorded for the well; and UCL for uranium to be 5 mg/l. The amendment would also provide for future modification of the UCL values with NRC approval. A comparison of the current and proposed UCL values is included in Table II. The new verification procedure would state that an excursion would be considered to have occurred if the values for any two excursion parameters exceed the UCL's and these levels are confirmed by analyses of two verification samples taken within 48 hours and within 96 hours, respectively, after the results of the first analyses are received. These procedures have been approved for our commercial project and the change would allow us to use the same procedures for NRC and the State in the R&D project.

If the above changes are acceptable to NRC, the revised Conditions 11, 12 and 13 could read as follows:

11. Observation and monitor wells discussed on page 5 of the January 19, 1978 application shall be sampled every two weeks during mining operations and analyzed for bicarbonate, carbonate, chloride, and uranium. Conductivity and water levels in these wells shall also be measured and recorded.

12. The Upper Control Limit (UCL) for the biweekly excursion indicator parameters listed in Condition 11 shall be as follows: UCL's for bicarbonate and carbonate shall be 20 mg/l above the highest value recorded for the well in the baseline sampling program; UCL's for chloride shall be 10 mg/l above the highest value recorded for the well in the baseline sampling program; and UCL's for uranium shall be 5 mg/l. Use of UCL values other than those determined above must be approved by NRC.

13. When any two UCL values are exceeded, the licensee shall sample and analyze the water of the affected well(s) within 48 hours and again within 96 hours after the results of the first analyses are received. If the condition holds or becomes

aggravated, corrective action shall be initiated. Written notification shall be provided to the NRC, Division of Waste Management, and Region IV, Office of Inspection and Enforcement, within 30 days of confirming an excursion, describing the condition, the corrective actions taken and the results obtained. If corrective action is ongoing at the time the report is filed, a final report shall be submitted describing the end results of the corrective actions.

Based on discussions with Dr. Ray Cooperstein of your staff, the foregoing is expected to be classified as a minor safety and environmental amendment for a R&D project; therefore, a check in the amount of $760 is attached.

Your early review and consideration of the requested amendment will be appreciated.

Sincerely,

Gerald D. Ortloff

Gerald D. Ortloff

GDO:dh
Attachments

EXXON COMPANY, U.S.A.

A DIVISION OF EXXON CORPORATION
HOUSTON, TEXAS

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CHECK NUMBER
FC39366

DATE	CHECK NO.	REFERENCE	PAY TO THE ORDER OF	AMOUNT
APR24 79	FC 39366	34020	NUCLEAR REGULATORY COMMISSION FUEL PROCESSING AND FABRICATION	$760.00

EXACTLY E6542 760 AND 00 CTS

CONTROL ACCOUNT

TEXAS COMMERCE BANK
NATIONAL ASSOCIATION
HOUSTON, TEXAS

"00039366" :113000609: 075-8631"

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TABLE I

ANALYSES OF SAMPLES TAKEN AFTER INCREASES IN URANIUM CONCENTRATION AT NEW R&D SITE PRODUCTION WELLS

Well No.	Carbonate mg/l	Bicarbonate mg/l	Uranium mg/l	Chloride mg/l	Arsenic mg/l	Selenium mg/l	pH	Conductivity micromhos
P-1	0	561	17.5	90	ND(1)	ND(1)	7.6	1025
P-2	0	500	10.0	60	ND	ND	7.7	835
P-3	0	671	61.0	90	ND	ND	7.6	1110
P-4	0	659	16.0	100	ND	ND	7.7	1050
P-5	0	476	14.0	80	ND	ND	7.6	900
P-6	0	647	8.8	110	ND	ND	7.6	1110
P-7	0	512	0.5	100	ND	ND	7.6	1000
P-8	0	537	7.0	100	ND	ND	7.5	1000
P-9	0	671	19.0	10[illegible]	ND	ND	7.6	1150
P-10	0	634	19.5	100	ND	ND	7.7	1125
Baseline(2)	32	195	0.3	42	ND	ND	9.1	463

(1) Not detected; detection level = 0.01 mg/l

(2) Average of the highest values recorded in the baseline sampling program for six wells located in the leach field area.

TABLE II

COMPARISON OF CURRENT UPPER CONTROL LIMIT (UCL) VALUES
VS.
PROPOSED UCL VALUES
WITH APPROVAL OF THE AMENDMENT

SOLUTION MINE R&D SITE
CONVERSE COUNTY, WYOMING

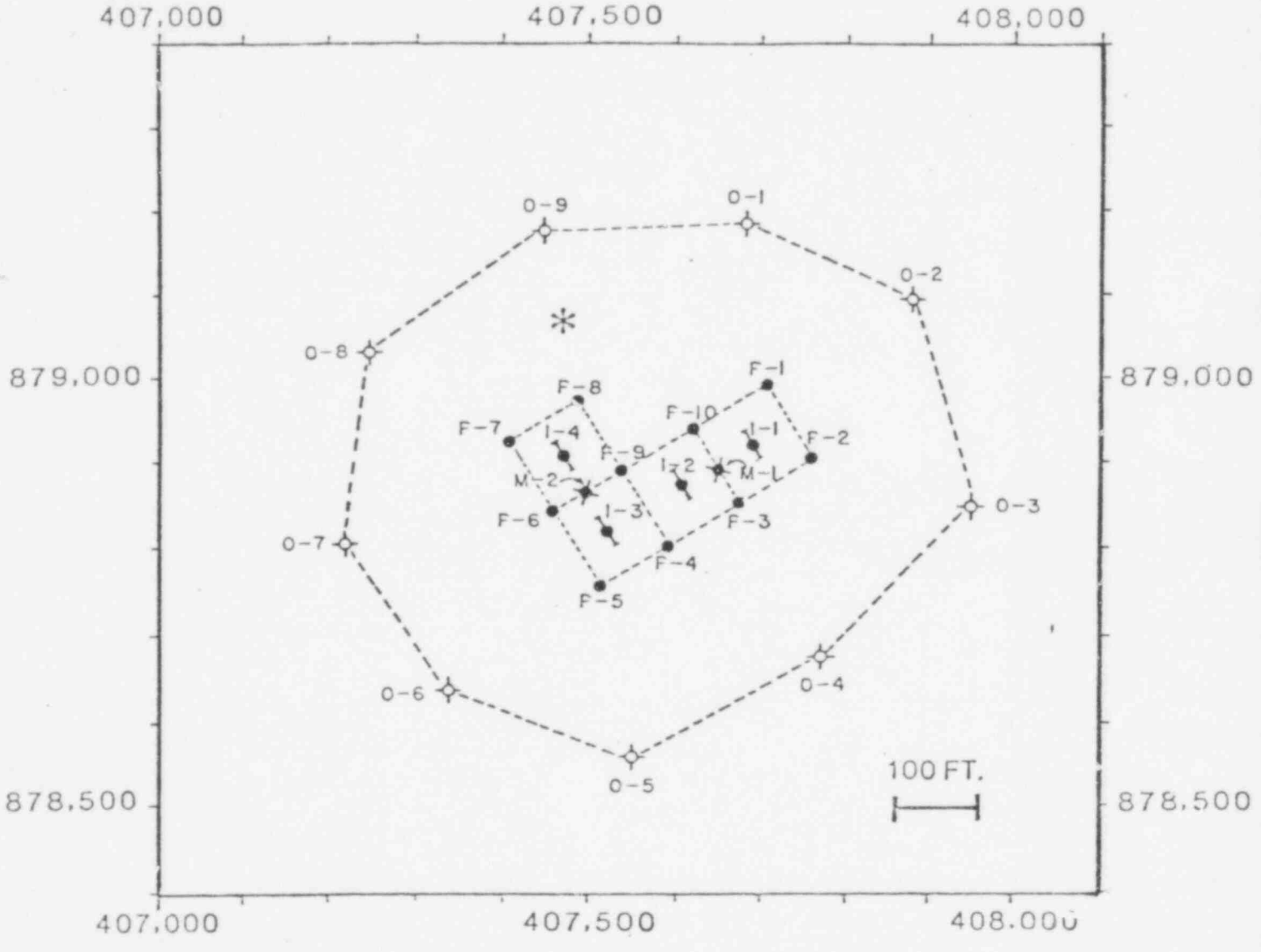
Monitor Well Number	Carbonate mg/l		Bicarbonate mg/l		Chloride mg/l		Uranium mg/l	
	Current UCL	Proposed UCL	Current UCL	Proposed UCL	Current UCL	Proposed UCL	Current UCL	Proposed UCL
O-1	29	44	241	221	17	24	1.028	5
O-2	15	32	234	240	19	40	1.23	5
O-3(1)	29	44	245	224	19	26	1.03	5
O-4	22	38	241	221	10	18	1.008	5
O-5	43	56	205	191	24	30	1.20	5
O-6	29	44	248	227	22	28	1.084	5
O-7	29	44	264	240	96	90	1.017	5
O-8	29	44	278	252	12	20	1.05	5
O-9(2)	58	68	260	238	142	128	1.03	5
M-1	29	44	248	227	14	22	1.068	5
M-2	43	56	204	190	31	36	1.045	5

(1) Bicarbonate UCL value as revised in the Quarterly Report

(2) Bicarbonate and chloride UCL values as revised in the Quarterly Report

FIGURE I

SOLUTION MINE WELL PATTERN
HIGHLAND R&D PROGRAM
CONVERSE COUNTY, WYOMING
(NEW PILOT AREA)



LEGEND

- PRODUCTION WELL
- INJECTION WELL
- MONITOR WELL
- NEW SAMPLE WELL LOCATION

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Casper, Wyoming

ANALYTICAL REPORT

From Exxon Co., U.S.A.-Highland Operations Product Water

Address Casper, Wyoming Date January 31, 1979

Other Pertinent Data

Analyzed by Staff Date February 16, 1979 Lab No. 29927-1

WATER ANALYSIS

Area E Well No. P-1
January 18, 1979

	mg/l		mg/l
Total dissolved solids	723	Barium (Ba)	ND(0.05)
Conductivity, micromhos @ 68°F.	1025	Cadmium (Cd)	ND(0.002)
Total alkalinity as $CaCO_3$	460	Chromium (Cr)	ND(0.01)
Total hardness as $CaCO_3$	485	Copper (Cu)	ND(0.01)
Sodium (Na)	83	Fluoride (F)	0.26
Potassium (K)	11	Iron (Fe)(total)	ND(0.01)
Calcium (Ca)	140	Lead (Pb)	ND(0.05)
Magnesium (Mg)	33	Manganese (Mn)	ND(0.01)
Chloride (Cl)	90	Mercury (Hg)	ND(0.001)
Sulfate (SO_4)	90	Nitrate (as N)	2.4
Carbonate (CO_3)	0	Selenium (Se)	ND(0.01)
Bicarbonate (HCO_3)	561	Zinc (Zn)	ND(0.01)
pH, units	7.6	Molybdenum (Mo)	ND(0.05)
Aluminum (Al)	ND(0.05)	Uranium (U_3O_8)	17.5
Arsenic (As)	ND(0.01)	Silver (Ag)	ND(0.02)
Boron (B)	ND(1.0)	Vanadium (V_2O_5)	ND(0.05)

ND = Not detected at level given in parentheses.

Above tests were made in accordance with Standard Methods, 14th Edition, 1975, ASTM, WQO and AEC methods.

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ANALYTICAL REPORT

From Exxon Co., U.S.A.-Highland Operations Product Water

Address Casper, Wyoming Date January 31, 1979

Other Pertinent Data

Analyzed by Staff Date February 16, 1979 Lab No. 29927-2

WATER ANALYSIS

Area E Well No. P-2
January 18, 1979

	mg/l		mg/l
Total dissolved solids	595	Barium (Ba)	ND(0.05)
Conductivity, micromhos @ 68°F.	835	Cadmium (Cd)	ND(0.002)
Total alkalinity as $CaCO_3$	410	Chromium (Cr)	ND(0.01)
Total hardness as $CaCO_3$	414	Copper (Cu)	0.10
Sodium (Na)	64	Fluoride (F)	0.15
Potassium (K)	10	Iron (Fe)(total)	0.01
Calcium (Ca)	118	Lead (Pb)	ND(0.05)
Magnesium (Mg)	29	Manganese (Mn)	0.09
Chloride (Cl)	60	Mercury (Hg)	ND(0.001)
Sulfate (SO_4)	68	Nitrate (as N)	1.3
Carbonate (CO_3)	0	Selenium (Se)	ND(0.01)
Bicarbonate (HCO_3)	500	Zinc (Zn)	0.49
pH, units	7.7	Molybdenum (Mo)	ND(0.05)
Aluminum (Al)	ND(0.05)	Uranium (U_3O_8)	10.0
Arsenic (As)	ND(0.01)	Silver (Ag)	ND(0.02)
Boron (B)	ND(1.0)	Vanadium (V_2O_5)	ND(0.05)

ND = Not detected at level given in parentheses.

Above tests were made in accordance with Standard Methods, 14th Edition, 1975, ASTM, WQO and AEC methods.

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ANALYTICAL REPORT

From Exxon Co., U.S.A.-Highland Operations Product Water

Address Casper, Wyoming Date January 31, 1979

Other Pertinent Data

Analyzed by Staff Date February 16, 1979 Lab No. 29927-7

WATER ANALYSIS

Area E Well No. P-3
January 26, 1979

	mg/l		mg/l
Total dissolved solids	837	Barium (Ba)	ND(0.05)
Conductivity, micromhos @ 68°F.	1110	Cadmium (Cd)	ND(0.002)
Total alkalinity as $CaCO_3$	550	Chromium (Cr)	ND(0.01)
Total hardness as $CaCO_3$	552	Copper (Cu)	ND(0.01)
Sodium (Na)	100	Fluoride (F)	0.11
Potassium (K)	12	Iron (Fe)(total)	ND(0.01)
Calcium (Ca)	167	Lead (Pb)	ND(0.05)
Magnesium (Mg)	33	Manganese (Mn)	ND(0.01)
Chloride (Cl)	90	Mercury (Hg)	ND(0.001)
Sulfate (SO_4)	105	Nitrate (as N)	3.0
Carbonate (CO_3)	0	Selenium (Se)	ND(0.01)
Bicarbonate (HCO_3)	671	Zinc (Zn)	ND(0.01)
pH, units	7.6	Molybdenum (Mo)	ND(0.05)
Aluminum (Al)	ND(0.05)	Uranium (U_3O_8)	61.0
Arsenic (As)	ND(0.01)	Silver (Ag)	ND(0.02)
Boron (B)	ND(1.0)	Vanadium (V_2O_5)	ND(0.05)

ND = Not detected at level given in parentheses.

Above tests were made in accordance with Standard Methods, 14th Edition, 1975, ASTM, WQO and AEC methods.

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ANALYTICAL REPORT

From Exxon Co., U.S.A.-Highland Operations Product Water

Address Casper, Wyoming Date January 31, 1979

Other Pertinent Data

Analyzed by Staff Date February 16, 1979 Lab No. 29927-3

WATER ANALYSIS

Area E Well No. P-4
January 18, 1979

	mg/l		mg/l
Total dissolved solids	816	Barium (Ba)	ND(0.05)
Conductivity, micromhos @ 68°F.	1050	Cadmium (Cd)	ND(0.002)
Total alkalinity as $CaCO_3$	541	Chromium (Cr)	ND(0.01)
Total hardness as $CaCO_3$	537	Copper (Cu)	ND(0.01)
Sodium (Na)	100	Fluoride (F)	0.60
Potassium (K)	12	Iron (Fe)(total)	ND(0.01)
Calcium (Ca)	161	Lead (Pb)	ND(0.05)
Magnesium (Mg)	33	Manganese (Mn)	ND(0.01)
Chloride (Cl)	100	Mercury (Hg)	ND(0.001)
Sulfate (SO_4)	85	Nitrate (as N)	4.2
Carbonate (CO_3)	0	Selenium (Se)	ND(0.01)
Bicarbonate (HCO_3)	659	Zinc (Zn)	ND(0.01)
pH, units	7.7	Molybdenum (Mo)	ND(0.05)
Aluminum (Al)	ND(0.05)	Uranium (U_3O_8)	16.0
Arsenic (As)	ND(0.01)	Silver (Ag)	ND(0.02)
Boron (B)	ND(1.0)	Vanadium (V_2O_5)	ND(0.05)

ND = Not detected at level given in parentheses.

Above tests were made in accordance with Standard Methods, 14th Edition, 1975 ASTM, WQO and AEC methods.

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ANALYTICAL REPORT

From Exxon Co., U.S.A.-Highland Operations Product Water

Address Casper, Wyoming Date January 31, 1979

Other Pertinent Data

Analyzed by Staff Date February 16, 1979 Lab No. 29927-4

WATER ANALYSIS

Area E Well No. P-5
January 18, 1979

	mg/l		mg/l
Total dissolved solids	616	Barium (Ba)	ND(0.05)
Conductivity, micromhos @ 68°F.	900	Cadmium (Cd)	ND(0.002)
Total alkalinity as $CaCO_3$	391	Chromium (Cr)	ND(0.01)
Total hardness as $CaCO_3$	377	Copper (Cu)	ND(0.01)
Sodium (Na)	86	Fluoride (F)	0.14
Potassium (K)	10	Iron (Fe)(total)	ND(0.01)
Calcium (Ca)	113	Lead (Pb)	ND(0.05)
Magnesium (Mg)	23	Manganese (Mn)	ND(0.01)
Chloride (Cl)	80	Mercury (Hg)	ND(0.001)
Sulfate (SO_4)	70	Nitrate (as N)	2.8
Carbonate (CO_3)	0	Selenium (Se)	ND(0.01)
Bicarbonate (HCO_3)	476	Zinc (Zn)	ND(0.01)
pH, units	7.6	Molybdenum (Mo)	ND(0.05)
Aluminum (Al)	ND(0.05)	Uranium (U_3O_8)	14.0
Arsenic (As)	ND(0.01)	Silver (Ag)	ND(0.02)
Boron (B)	ND(1.0)	Vanadium (V_2O_5)	ND(0.05)

ND = Not detected at level given in parentheses.

Above tests were made in accordance with Standard Methods, 14th Edition, 1975, ASTM, WQO and AEC methods.

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ANALYTICAL REPORT

From Exxon Co., U.S.A.-Highland Operations Product Water

Address Casper, Wyoming Date January 31, 1979

Other Pertinent Data

Analyzed by Staff Date February 16, 1979 Lab No. 29927-8

WATER ANALYSIS

Area E Well No. P-6
January 26, 1979

	mg/l		mg/l
Total dissolved solids	829	Barium (Ba)	ND(0.05)
Conductivity, micromhos @ 68°F.	1110	Cadmium (Cd)	ND(0.002)
Total alkalinity as $CaCO_3$	531	Chromium (Cr)	ND(0.01)
Total hardness as $CaCO_3$	537	Copper (Cu)	ND(0.01)
Sodium (Na)	104	Fluoride (F)	0.45
Potassium (K)	12	Iron (Fe)(total)	ND(0.01)
Calcium (Ca)	161	Lead (Pb)	ND(0.05)
Magnesium (Mg)	33	Manganese (Mn)	ND(0.01)
Chloride (Cl)	110	Mercury (Hg)	ND(0.001)
Sulfate (SO_4)	90	Nitrate (as N)	3.0
Carbonate (CO_3)	0	Selenium (Se)	ND(0.01)
Bicarbonate (HCO_3)	647	Zinc (Zn)	ND(0.01)
pH, units	7.6	Molybdenum (Mo)	ND(0.05)
Aluminum (Al)	ND(0.05)	Uranium (U_3O_8)	8.80
Arsenic (As)	ND(0.01)	Silver (Ag)	ND(0.02)
Boron (B)	ND(1.0)	Vanadium (V_2O_5)	ND(0.05)

ND = Not detected at level given in parentheses.

Above tests were made in accordance with Standard Methods, 14th Edition, 1975, ASTM, WQO and AEC methods.

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ANALYTICAL REPORT

From Exxon Co., U.S.A.-Highland Operations Product Water

Address Casper, Wyoming Date January 31, 1979

Other Pertinent Data

Analyzed by Staff Date February 16, 1979 Lab No. 29927-9

WATER ANALYSIS

Area E Well No. P-7
January 26, 1979

	mg/l		mg/l
Total dissolved solids	681	Barium (Ba)	ND(0.05)
Conductivity, micromhos @ 68°F.	1000	Cadmium (Cd)	ND(0.002)
Total alkalinity as $CaCO_3$	420	Chromium (Cr)	ND(0.01)
Total hardness as $CaCO_3$	485	Copper (Cu)	ND(0.01)
Sodium (Na)	67	Fluoride (F)	0.20
Potassium (K)	11	Iron (Fe)(total)	ND(0.01)
Calcium (Ca)	135	Lead (Pb)	ND(0.05)
Magnesium (Mg)	36	Manganese (Mn)	ND(0.01)
Chloride (Cl)	100	Mercury (Hg)	ND(0.001)
Sulfate (SO_4)	80	Nitrate (as N)	3.5
Carbonate (CO_3)	0	Selenium (Se)	ND(0.01)
Bicarbonate (HCO_3)	512	Zinc (Zn)	ND(0.01)
pH, units	7.6	Molybdenum (Mo)	ND(0.05)
Aluminum (Al)	ND(0.05)	Uranium (U_3O_8)	0.50
Arsenic (As)	ND(0.01)	Silver (Ag)	ND(0.02)
Boron (B)	ND(1.0)	Vanadium (V_2O_5)	ND(0.05)

ND = Not detected at level given in parentheses.

Above tests were made in accordance with Standard Methods, 14th Edition, 1975, ASTM, WQO and AEC methods.

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Casper, Wyoming

ANALYTICAL REPORT

From Exxon Co., U.S.A.-Highland Operations Product Water

Address Casper, Wyoming Date January 31, 1979

Other Pertinent Data

Analyzed by Staff Date February 16, 1979 Lab No. 29927-10

WATER ANALYSIS

Area E Well No. P-9
January 26, 1979

	mg/l		mg/l
Total dissolved solids	745	Barium (Ba)	ND(0.05)
Conductivity, micromhos @ 68°F.	1000	Cadmium (Cd)	ND(0.002
Total alkalinity as $CaCO_3$	441	Chromium (Cr)	ND(0.01)
Total hardness as $CaCO_3$	469	Copper (Cu)	ND(0.01)
Sodium (Na)	95	Fluoride (F)	0.60
Potassium (K)	12	Iron (Fe)(total)	ND(0.01)
Calcium (Ca)	140	Lead (Pb)	ND(0.05)
Magnesium (Mg)	29	Manganese (Mn)	ND(0.01)
Chloride (Cl)	100	Mercury (Hg)	ND(0.001
Sulfate (SO_4)	105	Nitrate (as N)	3.5
Carbonate (CO_3)	0	Selenium (Se)	ND(0.01)
Bicarbonate (HCO_3)	537	Zinc (Zn)	ND(0.01)
pH, units	7.5	Molybdenum (Mo)	ND(0.05)
Aluminum (Al)	ND(0.05)	Uranium (U_3O_8)	7.0
Arsenic (As)	ND(0.01)	Silver (Ag)	ND(0.02)
Boron (B)	ND(1.0)	Vanadium (V_2O_5)	ND(0.05)

ND = Not detected at level given in parentheses.

Above tests were made in accordance with Standard Methods, 14th Edition, 1975, ASTM, WQO and AEC methods.

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Casper, Wyoming

ANALYTICAL REPORT

From Exxon Co., U.S.A.-Highland Operations Product Water

Address Casper, Wyoming Date January 31, 1979

Other Pertinent Data

Analyzed by Staff Date February 16, 1979 Lab No. 29927-5

WATER ANALYSIS

Area E Well No. P-9
January 18, 1979

	mg/l		mg/l
Total dissolved solids	847	Barium (Ba)	ND(0.05)
Conductivity, micromhos @ 68°F.	1150	Cadmium (Cd)	ND(0.002)
Total alkalinity as $CaCO_3$	550	Chromium (Cr)	ND(0.01)
Total hardness as $CaCO_3$	552	Copper (Cu)	ND(0.01)
Sodium (Na)	104	Fluoride (F)	0.29
Potassium (K)	13	Iron (Fe)(total)	ND(0.01)
Calcium (Ca)	167	Lead (Pb)	ND(0.05)
Magnesium (Mg)	33	Manganese (Mn)	ND(0.01)
Chloride (Cl)	100	Mercury (Hg)	ND(0.001)
Sulfate (SO_4)	100	Nitrate (as N)	3.2
Carbonate (CO_3)	0	Selenium (Se)	ND(0.01)
Bicarbonate (HCO_3)	671	Zinc (Zn)	ND(0.01)
pH, units	7.6	Molybdenum (Mo)	ND(0.05)
Aluminum (Al)	ND(0.05)	Uranium (U_3O_8)	19.0
Arsenic (As)	ND(0.01)	Silver (Ag)	ND(0.02)
Boron (B)	ND(1.0)	Vanadium (V_2O_5)	ND(0.05)

ND = Not detected at level given in parentheses.

Above tests were made in accordance with Standard Methods, 14th Edition, 1975, ASTM, WQO and AEC methods.

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Casper, Wyoming

ANALYTICAL REPORT

From Exxon Co., U.S.A.-Highland Operations Product Water

Address Casper, Wyoming Date January 31, 1979

Other Pertinent Data

Analyzed by Staff Date February 16, 1979 Lab No. 29927-6

WATER ANALYSIS

Area E Well No. P-10
January 18, 1979

	mg/l		mg/l
Total dissolved solids	821	Barium (Ba)	ND(0.05)
Conductivity, micromhos @ 68°F.	1125	Cadmium (Cd)	ND(0.002)
Total alkalinity as $CaCO_3$	520	Chromium (Cr)	ND(0.01)
Total hardness as $CaCO_3$	537	Copper (Cu)	ND(0.01)
Sodium (Na)	100	Fluoride (F)	0.27
Potassium (K)	12	Iron (Fe)(total)	ND(0.01)
Calcium (Ca)	156	Lead (Pb)	ND(0.05)
Magnesium (Mg)	36	Manganese (Mn)	ND(0.01)
Chloride (Cl)	100	Mercury (Hg)	ND(0.001)
Sulfate (SO_4)	105	Nitrate (as N)	3.2
Carbonate (CO_3)	0	Selenium (Se)	ND(0.01)
Bicarbonate (HCO_3)	634	Zinc (Zn)	ND(0.01)
pH, units	7.7	Molybdenum (Mo)	ND(0.05)
Aluminum (Al)	ND(0.05)	Uranium (U_3O_8)	19.5
Arsenic (As)	ND(0.01)	Silver (Ag)	ND(0.02)
Boron (B)	ND(1.0)	Vanadium (V_2O_5)	ND(0.05)

ND = Not detected at level given in parentheses.

Above tests were made in accordance with Standard Methods, 14th Edition, 1975, ASTM, WQO and AEC methods.

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