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AMERICAN NUCLEAR CORPORATION

August 27, 1990

JOHN C. FERGUSON, PRESIDENT
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RETURN ORIGINAL TO PDR, HQ.

U.S. NUCLEAR REGULATORY COMMISSION
Region IV
Uranium Recovery Field Office
P.O. Box 25325
Denver, CO 80225



Gentlemen:

In accordance with the license conditions of Source Materials License, SUA-667 and in compliance with Title 10 CFR 40.65, American Nuclear Corporation submits the Semi-Annual Report for the first half of 1990.

If you have any questions, please do not hesitate to contact me.

Sincerely,

William C. Salisbury
William C. Salisbury
Manager, Special Projects

WCS/mk

Enclosures - 5

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PDR ADOCK 04004492
C FDC

DESIGNATED ORIGINAL

Certified By *Mary C. Hood*

JFoz
90-0780

40-4492

SEMI-ANNUAL REPORT
ON
RADIOACTIVE EFFLUENT PER
10 CFR 40.65
BY
AMERICAN NUCLEAR CORPORATION
January - June, 1990

90-0780

AMERICAN NUCLEAR CORPORATION
Gas Hills Project

Environmental TLD Summary For The 1st & 2nd Quarters 1990

All Readings in mR

Sample Number	First Quarter	Second Quarter	Total	Average per Quarter	Sample Location
2	70	72	142	71	upwind restricted area boundary
3	NO SAMPLE REQUIRED				Puddle Springs Ranch
4	100	100	200	100	downwind restricted area boundary
5	110	44	154	77	NE corner of restricted area boundary
6	NO SAMPLE REQUIRED				LOCO Shop
7	34	31	65	33	Office
8	12	12	24	12	Control

AMERICAN NUCLEAR CORPORATION
Gas Hills Project

Soil Sample Results For Spring 1990

Same Location As The Low Volume Air Samples

Sample Location	Radionuclide	Concentration uCi/gm	Error Estimate +/- uCi/gm	LLD uCi/gm
2 upwind restricted area boundary	Radium 226	7.4×10^{-6}	0.3×10^{-6}	4×10^{-8}
	Lead 210	4.6×10^{-6}	1.2×10^{-6}	4×10^{-8}
	U natural	6.6×10^{-6}	NA	4×10^{-8}
3 Puddle Springs Ranch	Radium 226	NO SAMPLE REQUIRED		
	Lead 210	NO SAMPLE REQUIRED		
	U natural	NO SAMPLE REQUIRED		
4 downwind restricted area boundary	Radium 226	18.2×10^{-6}	0.4×10^{-6}	4×10^{-8}
	Lead 210	9.1×10^{-6}	1.4×10^{-6}	4×10^{-8}
	U natural	12.0×10^{-6}	NA	4×10^{-8}
5 NE corner of restricted area boundary	Radium 226	2.7×10^{-6}	0.2×10^{-6}	4×10^{-8}
	Lead 210	2.6×10^{-6}	1.1×10^{-6}	4×10^{-8}
	U natural	1.8×10^{-6}	NA	4×10^{-8}
6 LOCO Shop Background	Radium 226	NO SAMPLE REQUIRED		
	Lead 210	NO SAMPLE REQUIRED		
	U natural	NO SAMPLE REQUIRED		

AMERICAN NUCLEAR CORPORATION
Gas Hills Project

Vegetation Sample Results For 1990

Sample Location			Radionuclide	Concentration uCi/kg	Error Estimate +/- uCi/kg	LLD uCi/kg
#1	June	1990	Radium 226	3.6×10^{-5}	0.18×10^{-5}	5×10^{-8}
	September		Radium 226			
	June		Lead 210	1.1×10^{-4}	0.13×10^{-4}	1×10^{-6}
	September		Lead 210			
#2	June	1990	Radium 226	3.4×10^{-5}	0.14×10^{-5}	5×10^{-8}
	September		Radium 226			
	June		Lead 210	6.5×10^{-5}	1.01×10^{-5}	1×10^{-6}
	September		Lead 210			
#3	June	1990	Radium 226	1.9×10^{-5}	0.10×10^{-5}	5×10^{-8}
	September		Radium 226			
	June		Lead 210	4.8×10^{-4}	0.81×10^{-4}	1×10^{-6}
	September		Lead 210			

AMERICAN NUCLEAR CORPORATION
Gas Hills Project

First Quarter 1990 Water Results

Sample Location	Type	Radionuclide	Concentration uCi/ml	Error Estimate +/- uCi/ml	LLD uCi/ml
Well #TP2-2	Ground	Radium 226	combined		
		Radium 228	26.2×10^{-9}	4.1×10^{-9}	1×10^{-9}
		Thorium 230	0.7×10^{-9}	0.7×10^{-9}	2×10^{-10}
		Gross Alpha	8.2×10^{-9}	2.9×10^{-9}	1×10^{-9}
		U natural	6.4×10^{-8}	NA	2×10^{-10}
Well #TP2-3	Ground	Radium 226	combined		
		Radium 228	29.7×10^{-9}	4.5×10^{-9}	1×10^{-9}
		Thorium 230	$<2.0 \times 10^{-10}$		2×10^{-10}
		Gross Alpha	10.3×10^{-9}	0.5×10^{-9}	1×10^{-9}
		U natural	1.4×10^{-6}	NA	2×10^{-10}
Well #R-4	Ground	Radium 226	combined		
		Radium 228	70.3×10^{-9}	6.0×10^{-9}	1×10^{-9}
		Thorium 230	199×10^{-9}	16.8×10^{-9}	2×10^{-10}
		Gross Alpha	255×10^{-9}	16.0×10^{-9}	1×10^{-9}
		U natural	2.0×10^{-6}	NA	2×10^{-10}
Willow Springs	Surface	Radium 226	SHORT LIST REQUIRED		
		Thorium 230			
		Lead 210			
		Polonium 210			
		U natural			

AMERICAN NUCLEAR CORPORATION
Gas Hills Project

Second Quarter 1990 Water Results

Sample Location	Type	Radionuclide	Concentration uCi/ml	Error Estimate +/- uCi/ml	LLD uCi/ml
Well #TP2-2	Ground	Radium 226	combined		1 x 10 ⁻⁹
		Radium 228	SHORT LIST REQUIRED		2 x 10 ⁻¹⁰
		Thorium 230			1 x 10 ⁻⁹
		Gross Alpha			2 x 10 ⁻¹⁰
		U natural			
Well #TP2-3	Ground	Radium 226	combined		1 x 10 ⁻⁹
		Radium 228	SHORT LIST REQUIRED		2 x 10 ⁻¹⁰
		Thorium 230			1 x 10 ⁻⁹
		Gross Alpha			2 x 10 ⁻¹⁰
		U natural			
Well #R-4	Ground	Radium 226	combined		1 x 10 ⁻⁹
		Radium 228	SHORT LIST REQUIRED		2 x 10 ⁻¹⁰
		Thorium 230			1 x 10 ⁻⁹
		Gross Alpha			2 x 10 ⁻¹⁰
		U natural			
Willow Springs	Surface	Radium 226	SHORT LIST REQUIRED		
		Radium 228			
		Thorium 230			
		Gross Alpha			
		U natural			

AMERICAN NUCLEAR CORPORATION
Gas Hills Project
WATER QUALITY FOR FIRST & SECOND QUARTERS 1990

Well I.D.	TP-2-2	TP-2-2
Type	Ground	Ground
Water Level (ft)	38.78'	39.43'
Quarter	First	Second

PARAMETERS (mg/l):

Sulfate	585	819
Chloride	28.1	36.4
Nitrate	0.09	1.02
TDS	1176	1642
pH	7.28	7.66

Be	<0.05
Cd	<0.01
CN	<0.005
Ni	<0.05
Se	<0.001
V	<0.10
U	0.094

AMERICAN NUCLEAR CORPORATION
Gas Hills Project
WATER QUALITY FOR FIRST & SECOND QUARTERS 1990

Well I.D.	TP-2-3	TP-2-3
Type	Ground	Ground
Water Level (ft)	108.50'	108.62'
Quarter	First	Second

PARAMETERS (mg/l):

Sulfate	1362	1388
Chloride	73.1	67.5
Nitrate	15.5	13.5
TDS	2396	2389
pH	7.36	7.00

Be	<0.05
Cd	<0.01
CN	<0.005
Ni	<0.05
Se	0.003
V	<0.10
U	2.080

AMERICAN NUCLEAR CORPORATION
Gas Hills Project
WATER QUALITY FOR FIRST & SECOND QUARTERS 1990

Well I.D.	R-4	R-4
Type	Ground	Ground
Water Level (ft)	56.68'	56.87'
Quarter	First	Second

PARAMETERS (mg/l):

Sulfate	6737	6361
Chloride	345	333
Nitrate	3.60	1.86
TDS	10294	9409
pH	3.60	3.61

Be	0.21
Cd	0.12
CN	0.008
Ni	2.90
Se	0.207
V	1.00
U	2.960

AMERICAN NUCLEAR CORPORATION
Gas Hills Project
WATER QUALITY FOR FIRST & SECOND QUARTERS 1990

Well I.D.	Willow Springs	Willow Springs
Type	Surface	Surface
Water Level (ft)	NA	NA
Quarter	First	Second

PARAMETERS (mg/l):

Sulfate	No Sampled	3494
Chloride	Required	136
Nitrate		3.11
TDS		3489
pH		7.38

Be
Cd
CN
Ni
Se
V

U

AMERICAN NUCLEAR CORPORATION
 QUARTERLY PERIMETER AIR MONITORING

SAMPLE LOCATION: CORRALS #2
 Report Date: 07-31-90

Quarter Units	Radionuclide	Conc. uCi/ml	Error Est uCi/ml	L.L.D. uCi/ml	MPC uCi/ml	% MPC %
90-4657	U-nat	2.90E-15	N/A	1.00E-16	5.00E-12	5.79E-02
First Quarter 1990	Th-230	6.42E-16	6.42E-16	1.00E-16	8.00E-14	8.02E-01
12-31-89	Ra-226	1.14E-15	1.43E-16	1.00E-16	3.00E-12	3.80E-02
to	Pb-210	1.02E-14	1.57E-15	2.00E-15	4.00E-12	2.56E-01
03-31-90			Rn222 W.L.			
Vol. 5.30e9 ml	Rn-222 Bcg	7.00E-10	7.78E-03	1.00E-10	3.00E-09	2.33E+01
90-18089	U-nat	1.42E-15	N/A	1.00E-16	5.00E-12	2.85E-02
Second Quarter 1990	Th-230	3.21E-16	2.50E-16	1.00E-16	8.00E-14	4.01E-01
04-1-90	Pa-226	1.07E-16	7.13E-17	1.00E-16	3.00E-12	3.57E-03
to	Pb-210	8.56E-15	9.98E-16	2.00E-15	4.00E-12	2.14E-01
07-01-90			Rn222 W.L.			
Vol. 5.30e9 ml	Rn-222 Bcg	1.60E-09	1.78E-02	1.00E-10	3.00E-09	5.33E+01

MPC from CFR10 Part 20 - Appendix B - Table II - Insoluble

AMERICAN NUCLEAR CORPORATION
 QUARTERLY PERIMETER AIR MONITORING

SAMPLE LOCATION: CORRALS #2

Report Date: 07-31-90

Quarter Units	Radionuclide	Conc. uCi/ml	Error Est uCi/ml	L.L.D. uCi/ml	MPC uCi/ml	% MPC %
90-4657	U-nat	2.90E-15	N/A	1.00E-16	5.00E-12	5.79E-02
First Quarter 1990	Th-230	6.42E-16	6.42E-16	1.00E-16	8.00E-14	8.02E-01
12-31-89	Ra-226	1.14E-15	1.43E-16	1.00E-16	3.00E-12	3.80E-02
to	Pb-210	1.02E-14	1.57E-15	2.00E-15	4.00E-12	2.56E-01
03-31-90			Rn222 W.L.			
Vol. 5.30e9 ml	Rn-222 Bcg	7.00E-10	7.78E-03	1.00E-10	3.00E-09	2.33E+01
90-18089	U-nat	1.42E-15	N/A	1.00E-16	5.00E-12	2.85E-02
Second Quarter 1990	Th-230	3.21E-16	2.50E-16	1.00E-16	8.00E-14	4.01E-01
04-1-90	Ra-226	1.07E-16	7.13E-17	1.00E-16	3.00E-12	3.57E-03
to	Pb-210	8.56E-15	9.98E-16	2.00E-15	4.00E-12	2.14E-01
07-01-90			Rn222 W.L.			
Vol. 5.30e9 ml	Rn-222 ucg	1.60E-09	1.78E-02	1.00E-10	3.00E-09	5.33E+01

MPC from CFR10 Part 20 - Appendix B - Table II - Insoluble

AMERICAN NUCLEAR CORPORATION
 QUARTERLY PERIMETER AIR MONITORING

SAMPLE LOCATION: WELL 13 #4
 Report Date: 07-31-90

Quarter Units	Radionuclide	Conc. uCi/ml	Error Est uCi/ml	L.L.D. uCi/ml	MPC uCi/ml	% MPC %
90-4658	U-nat	6.52E-15	N/A	1.00E-16	5.00E-12	1.30E-01
First Quarter 1990	Th-230	1.14E-15	8.56E-16	1.00E-16	8.00E-14	1.43E+00
12-31-89	Ra-226	2.00E-15	1.78E-16	1.00E-16	3.00E-12	6.66E-02
to	Pb-210	1.15E-14	1.60E-15	2.00E-15	4.00E-12	2.87E-01
03-31-90			Rn222 W.L.			
Vol. 5.30e9 ml	Rn-222 above bg	3.00E-10	3.33E-03	1.00E-10	3.00E-09	1.00E+01
90-18088	U-nat	1.83E-15	N/A	1.00E-16	5.00E-12	3.67E-02
Second Quarter 1990	Th-230	<1.00E-16	N/A	1.00E-16	8.00E-14	1.25E-01
04-1-90	Ra-226	2.50E-16	1.07E-16	1.00E-16	3.00E-12	8.32E-03
to	Pb-210	1.15E-14	1.07E-15	2.00E-15	4.00E-12	2.87E-01
07-01-90			Rn222 W.L.			
Vol. 5.30e9 ml	Rn-222 above bg	<1.00E-10	1.11E-03	1.00E-10	3.00E-09	<3.33E+00

MPC from CFR10 Part 20 - Appendix B - Table II - Insoluble

Q.A. MANAGER:
 Energy Laboratories, Inc.
 Casper, WY 82601

AMERICAN NUCLEAR CORPORATION
 QUARTERLY PERIMETER AIR MONITORING

SAMPLE LOCATION: WELL 13 #4

Report Date: 07-31-90

Quarter Units	Radionuclide	Conc. uCi/ml	Error Est uCi/ml	L.L.D. uCi/ml	MPC uCi/ml	% MPC %
90-4658	U-nat	6.52E-15	N/A	1.00E-16	5.00E-12	1.30E-01
First Quarter 1990	Th-230	1.14E-15	8.56E-16	1.00E-16	8.00E-14	1.43E+00
12-31-89	Ra-226	1.00E-15	1.78E-16	1.00E-16	3.00E-12	6.66E-02
to	Pb-210	1.15E-14	1.60E-15	2.00E-15	4.00E-12	2.87E-01
03-31-90			Rn222 W.L.			
Vol. 5.30e9 ml	Rn-222 above bg	3.00E-10	3.33E-03	1.00E-10	3.00E-09	1.00E+01
90-18088	U-nat	1.83E-15	N/A	1.00E-16	5.00E-12	3.67E-02
Second Quarter 1990	Th-230	<1.00E-16	N/A	1.00E-16	8.00E-14	1.25E-01
04-1-90	Ra-226	2.50E-16	1.07E-16	1.00E-16	3.00E-12	8.32E-03
to	Pb-210	1.15E-14	1.07E-15	2.00E-15	4.00E-12	2.87E-01
07-01-90			Rn222 W.L.			
Vol. 5.39e9 ml	Rn-222 above bg	<1.00E-10	1.11E-03	1.00E-10	3.00E-09	<3.33E+00

MPC from CFR10 Part 20 - Appendix B - Table II - Insoluble

AMERICAN NUCLEAR CORPORATION
 QUARTERLY PERIMETER AIR MONITORING

SAMPLE LOCATION: NECORA #5
 Report Date: 07-31-90

Quarter Units	Radionuclide	Conc. uCi/ml	Error Est uCi/ml	L.L.D. uCi/ml	MPC uCi/ml	% MPC %
90-4659	U-nat	2.41E-15	N/A	1.00E-16	5.00E-12	4.83E-02
First Quarter 1990	Th-230	1.68E-15	8.92E-16	1.00E-16	8.00E-14	2.10E+00
12-31-89	Ra-226	4.64E-16	1.07E-16	1.00E-16	3.00E-12	1.55E-02
to	Pb-210	1.06E-14	1.57E-15	2.00E-15	4.00E-12	2.65E-01
03-31-90			Rn222 W.L.			
Vol. 5.30e9 ml	Rn222 above bg	1.20E-09	1.33E-02	1.00E-10	3.00E-09	4.00E+01
90-18090	U-nat	2.25E-15	N/A	1.00E-16	5.00E-12	4.49E-02
Second Quarter 1990	Th-230	<1.00E-16	N/A	1.00E-16	8.00E-14	1.25E-01
04-1-90	Ra-226	3.21E-16	1.43E-16	1.00E-16	3.00E-12	1.07E-02
to	Pb-210	1.37E-14	1.11E-15	2.00E-15	4.00E-12	3.41E-01
07-01-90			Rn222 W.L.			
Vol. 5.30e9 ml	Rn222 above bg	<1.00E-10	1.11E-03	1.00E-10	3.00E-09	<3.33E+00

MPC from CFR10 Part 20 - Appendix B - Table II - Insoluble

AMERICAN NUCLEAR CORPORATION
 QUARTERLY PERIMETER AIR MONITORING

SAMPLE LOCATION: NECORA #5
 Report Date: 07-31-90

Quarter Units	Radionuclide	Conc. uCi/ml	Error Est uCi/ml	L.L.D. uCi/ml	MPC uCi/ml	% MPC %
90-4659	U-nat	2.41E-15	N/A	1.00E-16	5.00E-12	4.83E-02
First Quarter 1990	Th-230	1.68E-15	8.92E-16	1.00E-16	8.00E-14	2.10E+00
12-31-89	Ra-226	4.64E-16	1.07E-16	1.00E-16	3.00E-12	1.55E-02
to	Pb-210	1.06E-14	1.57E-15	2.00E-15	4.60E-12	2.65E-01
03-31-90			Rn222 W.L.			
Vol. 5.30e9 ml	Rn222 above bg	1.20E-09	1.33E-02	1.00E-10	3.00E-09	4.00E+01
90-18090	U-nat	2.25E-15	N/A	1.00E-16	5.00E-12	4.49E-02
Second Quarter 1990	Th-230	<1.00E-16	N/A	1.00E-16	8.00E-14	1.25E-01
04-1-90	Ra-226	3.21E-16	1.43E-16	1.00E-16	3.00E-12	1.07E-02
to	Pb-210	1.37E-14	1.11E-15	2.00E-15	4.00E-12	3.41E-01
07-01-90			Rn222 W.L.			
Vol. 5.30e9 ml	Rn222 above bg	<1.00E-10	1.11E-03	1.00E-10	3.00E-09	<3.33E+00

NPC from CFR10 Part 20 - Appendix B - Table II - Insoluble

AMERICAN NUCLEAR CORPORATION
Gas Hills Project

Radon (Rn^{222}) Air Sampling Results
First Quarter 1990

90 pCi/l = 1 Working Level (WL)

MPC = 0.033 WL

Sample Location	Date Collected	Concentration pCi/l	Working Level	WL Above Background
#2 Corrals	First Quarter 1990	1.3	0.0144	Background
#4 Well 13 Downwind Restricted Area	First Quarter 1990	2.4	0.0267	0.0123
#5 NECORA NE Corner of Restricted Area	First Quarter 1990	1.1	0.0122	<Background

AMERICAN NUCLEAR CORPORATION
Gas Hills Project

Radon (Rn^{222}) Air Sampling Results
Second Quarter 1990

90 pCi/l = 1 Working Level (WL)

MPC = 0.033 WL

Sample Location	Date Collected	Concentration pCi/l	Working Level	WL Above Background
#2 Corrals	Second Quarter 1990	1.6	0.0178	Background
#4 Well 13 Downwind Restricted Area	Second Quarter 1990	1.0	0.0111	<Background
#5 NECORA NE Corner of Restricted Area	Second Quarter 1990	1.4	0.0156	0.002