

EXXON NUCLEAR COMPANY, Inc.

2101 Horn Rapids Road
P. O. Box 130, Richland, Washington 99352
Phone: (509) 375-8100 Telex: 15-2878

bcc: ER Astley (Info)
SJ Beard (Info)
DE Clark
DL Cornell
RL Miles
R Nilson
RH Purcell
LEH File/LB

February 4, 1981

Mr. R. H. Engelken, Director
U.S. NRC Region V
Office of Inspection & Enforcement
1990 North California Boulevard
Suite 202, Walnut Creek Plaza
Walnut Creek, CA 94596



Subject: Required Reporting of Effluents Under 10 CFR 70.59

License No.: SNM-1227
Docket No.: 70-1257

Dear Mr. Engelken:

Exxon Nuclear Company, Inc. operates a fuels fabrication plant under U.S. Nuclear Regulatory Commission License No. SNM-1227 at 2101 Horn Rapids Road in Richland, Washington 99352. The discharges from this plant are listed as required by the regulations for the reporting period of July 1, 1980 through December 31, 1980.

Uranium Released to the Atmosphere	20.06 μ Ci
Plutonium Released to the Atmosphere	<0.01 μ Ci
Uranium Released to the Public Sewer	0
Plutonium Released to the Public Sewer	0

A copy of the basic data supporting this information as required by 10 CFR 70.59, is enclosed.

Sincerely,

Leo E. Hansen, Manager
Licensing & Compliance,
Operating Facilities

LEH:DEC:cic
Enclosure as Noted

cc: Director, Inspection & Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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RADIOACTIVE MATERIAL RELEASES - LAST HALF OF 1980

GASEOUS EFFLUENTS

Qtr.	Exhaust Air Volume (cm ³)	Activity (μCi)	
		Pu	U
3	6.0684435 x 10 ¹⁴	0.0047	7.89
4	5.3462027 x 10 ¹⁴	< MDA*	12.17

LIQUID EFFLUENTS

Qtr.	Volume (Liters)	Grams of Material		Activity (μCi)
		Pu	U	
3	132,898,372	< MDA	< MDA	< MDA
4	130,662,521	< MDA	< MDA	< MDA

SOLID WASTES

Qtr.	Grams of Uranium		Activity (Ci)	
	Depleted Uranium Scrap	HEPA Filters (3.1 wt.% ²³⁵ U)	Depleted Uranium Scrap	HEPA Filters (3.1 wt.% ²³⁵ U)
3	515	6407	245	.01
4	0	0	0	0

* MDA is the minimum detectable amount.

TABLE 1A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (YEAR) 1980

GASEOUS EFFLUENTS—SUMMATION OF ALL RELEASES

	Unit	Quarter	Quarter	Est. Total Error, %
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A. Fission & activation gases N.A.

1. Total release	Ci	. E	. E	. E
2. Average release rate for period	$\mu\text{Ci}/\text{sec}$. E	. E	
3. Percent of technical specification limit	%	. E	. E	

B. Iodines N.A.

1. Total iodine-131	Ci	. E	. E	. E
2. Average release rate for period	$\mu\text{Ci}/\text{sec}$	. E	. E	
3. Percent of technical specification limit	%	. E	. E	

C. Particulates

3 4

1. Particulates with half-lives >8 days	Ci	$7.9 \text{ E-}6$	$1.2 \text{ E-}5$	$\pm 5.0 \text{ E}0$
2. Average release rate for period	$\mu\text{Ci}/\text{sec}$	$9.9 \text{ E-}7$	$1.5 \text{ E-}6$	
3. Percent of technical specification limit	%	$1.6 \text{ E}1$	$2.4 \text{ E}1$	
4. Gross alpha radioactivity	Ci	$7.9 \text{ E-}6$	$1.2 \text{ E-}5$	

D. Tritium

N.A.

1. Total release	Ci	. E	. E	. E
2. Average release rate for period	$\mu\text{Ci}/\text{sec}$	. E	. E	
3. Percent of technical specification limit	%	. E	. E	

* Technical specification limit = 50 μCi per quarter.

GASEOUS EFFLUENTS—ELEVATED RELEASE

CONTINUOUS MODE BATCH MODE

Nuclides Released	Unit	CONTINUOUS MODE		BATCH MODE	
		Quarter	Quarter	Quarter	Quarter

1. Fission gases N.A.

krypton-85	Ci	. E	. E	. E	. E
krypton-85m	Ci	. E	. E	. E	. E
krypton-87	Ci	. E	. E	. E	. E
krypton-88	Ci	. E	. E	. E	. E
xenon-133	Ci	. E	. E	. E	. E
xenon-135	Ci	. E	. E	. E	. E
xenon-135m	Ci	. E	. E	. E	. E
xenon-138	Ci	. E	. E	. E	. E
Others (specify)	Ci	. E	. E	. E	. E
	Ci	. E	. E	. E	. E
	Ci	. E	. E	. E	. E
unidentified	Ci	. E	. E	. E	. E
Total for period	Ci	. E	. E	. E	. E

2. Iodines N.A.

iodine-131	Ci	. E	. E	. E	. E
iodine-133	Ci	. E	. E	. E	. E
iodine-135	Ci	. E	. E	. E	. E
Total for period	Ci	. E	. E	. E	. E

3. Particulates

3 4

strontium-89	Ci	. E	. E	. E	. E
strontium-90	Ci	. E	. E	. E	. E
cesium-134	Ci	. E	. E	. E	. E
cesium-137	Ci	. E	. E	. E	. E
barium-lanthanum-140	Ci	. E	. E	. E	. E
Others (specify)	Ci	. E	. E	. E	. E
U	Ci	7.9 E-6	1.2 E-5	. E	. E
Pu	Ci	4.7 E-9	0.0 E0	. E	. E
unidentified	Ci	. E	. E	. E	. E

POOR ORIGINAL

TABLE 1C

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (YEAR) 1980

GASEOUS EFFLUENTS—GROUND-LEVEL RELEASES

Nuclides Released	Unit	CONTINUOUS MODE		BATCH MODE	
		Quarter	Quarter	Quarter	Quarter

3 4

1. Fission gases

N.A.

krypton-85	Ci	. E	. E	. E	. E
krypton-85m	Ci	. E	. E	. E	. E
krypton-87	Ci	. E	. E	. E	. E
krypton-88	Ci	. E	. E	. E	. E
xenon-133	Ci	. E	. E	. E	. E
xenon-135	Ci	. E	. E	. E	. E
xenon-135m	Ci	. E	. E	. E	. E
xenon-138	Ci	. E	. E	. E	. E
Others (specify)	Ci	. E	. E	. E	. E
	Ci	. E	. E	. E	. E
	Ci	. E	. E	. E	. E
unidentified	Ci	. E	. E	. E	. E
Total for period	Ci	. E	. E	. E	. E

2. Iodines

N.A.

iodine-131	Ci	. E	. E	. E	. E
iodine-133	Ci	. E	. E	. E	. E
iodine-135	Ci	. E	. E	. E	. E
Total for period	Ci	. E	. E	. E	. E

3. Particulates

N.A.

strontium-89	Ci	. E	. E	. E	. E
strontium-90	Ci	. E	. E	. E	. E
cesium-134	Ci	. E	. E	. E	. E
cesium-137	Ci	. E	. E	. E	. E
barium-lanthanum-140	Ci	. E	. E	. E	. E
Others (specify)	Ci	. E	. E	. E	. E
	Ci	. E	. E	. E	. E
	Ci	. E	. E	. E	. E
unidentified	Ci	. E	. E	. E	. E

TABLE 2A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (YEAR) 1980

LIQUID EFFLUENTS—SUMMATION OF ALL RELEASES

	Unit	Quarter	Quarter	Est. Total Error, %
A. Fission and activation products	N.A.	3	4	
1. Total release (not including tritium, gases, alpha)	Ci	. E	. E	. E
2. Average diluted concentration during period	$\mu\text{Ci/ml}$	. E	. E	
3. Percent of applicable limit	%	. E	. E	
B. Tritium	N.A.			
1. Total release	Ci	. E	. E	. E
2. Average diluted concentration during period	$\mu\text{Ci/ml}$	. E	. E	
3. Percent of applicable limit	%	. E	. E	
C. Dissolved and entrained gases	N.A.			
1. Total release	Ci	. E	. E	. E
2. Average diluted concentration during period	$\mu\text{Ci/ml}$	. E	. E	
3. Percent of applicable limit	%	. E	. E	
D. Gross alpha radioactivity				
1. Total release	Ci	0.0 E0	0.0 E0	0.0 E0 (< MDA)*
	(Diluted)			
E. Volume of waste released (prior to dilution)	liters	1.33E8	1.31E8	+5.0 E0
F. Volume of dilution water used during period	liters	. E	. E	. E

* Less than minimum detectable amount.

TABLE 2B

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (YEAR) 1980

LIQUID EFFLUENTS

Nuclides Released	Unit	CONTINUOUS MODE		BATCH MODE	
		Quarter 3	Quarter 4	Quarter	Quarter
strontium-89	Ci	. E	. E	. E	. E
strontium-90	Ci	. E	. E	. E	. E
cesium-134	Ci	. E	. E	. E	. E
cesium-137	Ci	. E	. E	. E	. E
iodine-131	Ci	. E	. E	. E	. E
cobalt-58	Ci	. E	. E	. E	. E
cobalt-60	Ci	. E	. E	. E	. E
nickel-59	Ci	. E	. E	. E	. E
zinc-65	Ci	. E	. E	. E	. E
manganese-54	Ci	. E	. E	. E	. E
chromium-51	Ci	. E	. E	. E	. E
zirconium-niobium-95	Ci	. E	. E	. E	. E
molybdenum-99	Ci	. E	. E	. E	. E
technetium-99m	Ci	. E	. E	. E	. E
barium-lanthanum-140	Ci	. E	. E	. E	. E
cerium-141	Ci	. E	. E	. E	. E
Other (specify)	Ci	. E	. E	. E	. E
	Ci	. E	. E	. E	. E
U	Ci	0.0 E 0	0.0 E 0	. E	. E
Pu	Ci	0.0 E 0	0.0 E 0	. E	. E
	Ci	. E	. E	. E	. E
unidentified	Ci	. E	. E	. E	. E
* Total for period (above)	Ci	0.0 E 0	0.0 E 0	. E	. E
xenon-133	Ci	. E	. E	. E	. E
xenon-135	Ci	. E	. E	. E	. E

* Less than minimum detectable amount.

TABLE 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (YEAR) 1980
 SOLID WASTE AND IRRADIATED FUEL SHIPMENTS (Last Half)

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (Not irradiated fuel)

1. Type of waste	Unit	6-month Period	Est. Total Error, %
a. Spent resins, filter sludges, evaporator bottoms, etc.	m ³ Ci	E E	E
b. Dry compressible waste, contaminated equip, etc.	m ³ Ci	E E	E
c. Irradiated components, control rods, etc.	m ³ Ci	E E	E
d. Other (describe) HEPA Air Filters & Depl. Uranium fuel scrap	m ³ Ci	E 1.1 E-2	E +1.0E0

2. Estimate of major nuclide composition (by type of waste)

a.		E	
		E	
		E	
b.		E	
		E	
		E	
c.		E	
		E	
		E	
d. Natural Uranium enriched to 3.1 w/o in U-235 (in HEPA filters) Depl. U Scrap Fuel		92.8 E 0	
		E	
		7.7 E 0	

3. Solid Waste Disposition

Number of Shipments

3

Mode of Transportation

Motorized overland freight vehicle

Destination

Nuclear Engineering Company Beatty, NV & Hanford, WA sites.

B. IRRADIATED FUEL SHIPMENTS (Disposition)

N.A.

Number of Shipments

Mode of Transportation

Destination

POOR ORIGINAL