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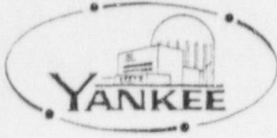
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WYR 78-83

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YANKEE ATOMIC ELECTRIC COMPANY



20 Turnpike Road Westborough, Massachusetts 01581

September 29, 1978

United States Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: United States Nuclear Regulatory Commission
Office of Management & Program Analysis
Operating Data Section, 12105 MNBB

Reference: (a) License No. DPR-3 (Docket No. 50-29)
(b) License No. DPR-28 (Docket No. 50-271)
(c) License No. DPR-36 (Docket No. 50-309)
(d) NRC letters to the above licensees dated
September 12, 1978.

Dear Sir:

Subject: Review of NRC Summary of Commercial Nuclear Power Plant
Radioactive Effluents

The effluent summaries have been reviewed with corrections as noted on the enclosed copy of letter to NRC from YAEC dated September 15, 1977. Unfortunately, a discrepancy still exists regarding the uniform treatment of less-than detectable values as explained in the enclosure. In the 1977 summary the NRC has treated less-than values as real values in all cases. As noted on the corrected copy, there are many instances where the reported total is the sum of minimum detectable activities. Sums of minimum detectable activities should be designated as such or reported as N.D. Where a sum is made up of real and less-than values, the Yankee plants report the sum of the real values only. As such there are differences in the individual isotopic summaries.

After your review, we strongly recommend that Mr. Decker contact Mr. John Parillo (617-366-9011, Ext. 343) so that agreement can be reached concerning the uniform treatment of less-than (<) values.

THIS DOCUMENT CONTAINS
POOR QUALITY PAGES

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

D. W. Edwards
Assistant to the Vice President

JGP/em

Enclosure

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YANKEE ATOMIC ELECTRIC COMPANY



20 Turnpike Road Westborough, Massachusetts 01581

September 15, 1977

United States Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: United States Nuclear Regulatory Commission
Office of Management Information & Program Control
Operating Data Branch, 12105 MNBB

Reference: (a) License No. DPR-3 (Docket No. 50-29)
(b) License No. DPR-28 (Docket No. 50-271)
(c) License No. DPR-36 (Docket No. 50-309)
(d) NRC letters to the above licensees dated
August 26, 1977.

Dear Sir:

Subject: Review of NRC Summary of Commercial Nuclear Power
Plant Radioactive Effluents

Review of your preliminary summary sheets, compiled from our semi-annual submittals, has revealed certain differences regarding uniform treatment of less-than (\leq) values. The use of less-than values in the report represent those calculations based on the minimum detectable limits of the instrumentation. If the input consists of less-than values only, then the total for the period is a summation of the numerical values. However, where input consists of less-than values and real values, only the real values are summarized for the period.

It appears that your summations are not consistent in the use of less-than values. We have prepared summary tables (Attachment I) for each plant consisting of two columns, one including less-than values and the other not including less-than values. Attachment II consists of your preliminary summary sheets with additional marginal notes.

After your review of the attached tables and notes, we recommend that Mr. Decker contact Mr. John Parillo (617-366-9011, Ext. 56-343) for further discussion of our data compilation methods.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

R. H. Groce
Licensing Engineer

PHG/kg

Facility: Maine Yankee Docket No: 50-309
Type: PWR Licensed Power (MWT): 2440.0
Location: 3.9 Mi S Wicasset, ME Initial Criticality: 10/23/72
Cooling Water Source: Back River (Atlantic Ocean)

Operation

Gross Thermal Generation (MWHT): 1.65E+07
Net Electrical (MWHE): 5.14E+06

Summary of Effluents (Curies)

Airborne:

- a) Total Noble Gases 3.50E+00 +03
- b) Total I-131 4.72E-03 ✓
- c) Total Halogens (Including I-131) 5.58E-03 ✓
- d) Total Particulates (T/2 > 8 day) 3.30E-04 ✓
- e) Total Tritium 2.10E+00 ✓

Liquid:

- a) Total Indexed Fission & Activation Products 4.42E-01 ✓
- b) Total Tritium 1.53E+02 ✓
- c) Dissolved Noble Gases 1.34E-02 ✓
- d) Volume of Liquid Waste Released (Liters) 1.12E+02 ✓
- e) Volume of Dilution Water (Liters) 6.96E+11 ✓

Solid Waste:

- a) Volume (Cubic Meters) 1.24E+02 ✓
- b) Activity (Curies) 1.53E+04 2.92E+04
- c) Number of Shipments 19 ✓

NOTE: $1.64E+07 = 1.64 \times 10^7$
ND = Non Detectable
NR = Not Reported

SUMMARY OF EFFLUENTS (CURIES)

Air

KR-	1.78E-01	
KR-	0.00E-01	Note-1
KR-	2.40E-06	"
KR-	2.80E-06	"
XE-1	4.13E-06	✓
XE-1	3.38E+00	✓
XE-1	1.70E+02	✓
XE-1	9.53E+01	✓
XE-1	1.0E-06	Note-1
XE-1	2.0E-06	"
I-13	4.74E-03	✓
I-13	8.76E-04	3.56E-04 - Note-2
I-13	2.00E-04	Note-1
CO-5	2.80E-07	2.00E-07 - Note-2
CO-5	2.24E-04	2.44E-05 Note-2
CO-6	3.00E-04	9.99E-05 Note-2
SR-8	3.75E-05	✓
SR-9	3.31E-07	3.58E-07
CS-1	2.15E-04	6.63E-07 Note-2
CS-1	2.75E-04	8.20E-05 Note-2
BA/	2.00E-04	Note-1
Unl	7.08E-05	✓

Lic

CF-	2.04E-06	Note-1
IN	6.27E-03	✓
CO	1.57E-04	✓
CO	1.40E-01	✓
CO	1.82E-02	✓
FE	7.20E-06	Note-1
ZN	8.78E-06	Note-1
SR	3.99E-03	✓
SR	1.25E-04	✓
ZR/	4.26E-06	Note-1
MO-9	5.38E-06	"
TC-1	2.00E-06	"
I-13	8.08E-02	✓

Note-1 The
be

Note-2 The

of minimum detectable activities and should
be indicated as N.D.

includes some quarters that show
table activities.

Liquid (Cont.)

XE-133	5.00E-02	1.60E-02
XE-135	2.36E-03	✓
CS-134	4.35E-02	✓
CS-137	1.48E-01	✓
CE-141	1.04E-06	- note 1
BA/LA-140	1.44E-05	- note 1
Unidentified	1.76E-04	✓

Facility: Yankee Rowe Docket No: 50-29
Type: PWR Licensed Power (MW): 600.0
Location: 20 Mi NW Greenfield, MA Initial Criticality: 8/19/60
Cooling Water Source: Deerfield River

Operation

Gross Thermal Generation (MW_{GT}): 3.52E+06

Net Electrical (MW_E): 1.03E+06

Summary of Effluents (Curies)

Airborne:

- a) Total Noble Gases 1.25E+02 ✓
- b) Total I-131 5.33E-05 ✓
- c) Total Halogens (Including I-131) 2.28E-04 ✓
- d) Total Particulates (T/2 > 8 day) ~~3.37E-05~~ ⇒ 3.39E-06
- e) Total Tritium 3.27E+00 ✓

Liquid:

- a) Total Mixed Fission & Activation Products 1.80E-02 ✓
- b) Total Tritium 1.39E+02 ✓
- c) Dissolved Noble Gases 3.22E-01 ✓
- d) Volume of Liquid Waste Released (Liters) 4.90E-07
- e) Volume of Dilution Water (Liters) 2.02E+11 ✓

Solid Waste:

- a) Volume (Cubic Meters) 2.81E+02 ✓
- b) Activity (Curies) 3.54E+00 ✓
- c) Number of Shipments 14 ✓

NOTE: $1.61E+07 = 1.64 \times 10^7$
ND = Non Detectable
NR = Not Reported

YR

SUMMARY OF EFFLUENTS (CURIES)

Airborne

AR-37	9.41E-01 ✓
AR-41	4.22E-01 → 4.86 E-01
KR-85	1.30E+00 ✓
KR-85M	1.05E+00 ✓
KR-87	5.10E-01 ✓
KR-88	1.40E+00 ✓
XE-131M	6.20E-01 → 1.07 E+00
XE-133	9.78E+01 ✓
XE-133M	1.43E+00 ✓
XE-135	1.35E+01 ✓
XE-135M	4.67E+00 ✓
XE-138	5.81E-02 ✓

I-131	5.33E-05
I-133	1.36E-04
I-135	8.58E-05

} - NOTE - 2

H-3	3.27E+00 ✓
C-14	2.39E-01 ✓
CR-51	3.35E-06 - Note - 1
MM-54	3.35E-06 → 5.22 E-07 ✓
FE-59	9.86E-07 - Note - 2
CO-58	5.49E-07 - Note - 2
CO-60	6.09E-07 - Note - 2
SE-75	1.93E-07 - Note - 1
SR-89	3.62E-07 - Note - 1
SR-90	2.42E-07 - Note - 1
ZR/AR-95	1.09E-06 - Note - 1
AG-110M	7.36E-07 → 4.18 E-07
CS-131	5.50E-07
CS-137	7.18E-07 ✓
CE-141	3.15E-07 - Note - 2
CE-141	1.25E-06 - Note - 2
SD-124	6.97E-07 - Note - 2
DA/LA-140	1.50E-06 - Note - 1

NOTE - 1 This is the sum of minimum detectable activity and should be designated as such, or indicated as N.D.

Note - 2 The reported total includes some quarters that show minimum detectable activity

Liquid

CR-51	2.06E-05 ✓
HN-54	5.70E-05 ✓
CO-58	1.93E-05 ✓
CO-60	1.18E-04 ✓
FE-59	7.85E-06 ✓
ZH-65	7.42E-06 ✓
SE-75	5.27E-06 - NOTE-1
SR-89	3.17E-04 - NOTE-1
SR-90	3.05E-05 - NOTE-1
ZR/HB-95	7.30E-05 ✓
HO-99	8.36E-06 ✓
TC-99M	7.02E-06 - NOTE-1
AG-110M	6.60E-03 ✓
SB-124	2.58E-05 ✓
I-131	3.51E-03 ✓
I-133	1.35E-03 ✓
XE-133	3.21E-01 ✓
XE-135	6.15E-04 ✓
CS-134	2.36E-04 ✓
CS-137	4.21E-04 ✓
CE-141	4.48E-06 ✓
CE-144	1.64E-03 ✓
BA/LA-140	4.39E-05 - NOTE-1
C-14	1.20E-02 ✓
Unidentified	5.40E-05 - NOTE-1
H-3	1.39E+02 ✓

Facility: Vermont Yankee Docket No: 50-271
Type: BWR Licensed Power (MW): 1593.0
Location: 5 Mi S Brattleboro, VT Initial Criticality: 3/24/72
Cooling Water Source: Connecticut River

Operation

Gross Thermal Generation (MW): 1.11E+07
Net Electrical (MW): 3.54E+06

Summary of Effluents (Curies)

Airborne:

- a) Total Noble Gases 3.53E+03 \Rightarrow 3.35 E + 03
b) Total I-131 6.66E-03 ✓
c) Total Halogens (Including I-131) 2.20E-02 \Rightarrow 2.22E-02
d) Total Particulates (T/2 > 8 day) 7.72E-03 \Rightarrow 7.73 E-03
e) Total Tritium 2.33E+01 ✓

Liquid:

- a) Total Mixed Fission & Activation Products 1.55E-01
b) Total Tritium 6.41E-01 ✓
c) Dissolved Noble Gases 7.53E-02
d) Volume of Liquid Waste Released (Liters) 3.27E+05
e) Volume of Dilution Water (Liters) 6.69E+09

Solid Waste:

- a) Volume (Cubic Meters) 1.00E+02 \Rightarrow 1.59 E + 02
b) Activity (Curies) 1.76E+02 \Rightarrow 3.03 E + 04
c) Number of Shipments 15 \Rightarrow 42

NOTE: $1.61E+07 = 1.61 \times 10^7$
ND = Non Detectable
NR = Not Reported

SUMMARY OF EFFLUENTS (CURIES)

Airborne

KR-85M	3.40E+01 - Note-1
KR-87	6.19E+01 - Note-1
KR-88	5.03E+01 - Note-1
XE-133	7.69E+02 - Note-1
XE-135	6.12E+01 - Note-1
XE-135M	4.47E+02 - Note-1
XE-138	1.93E+03 - Note-1

I-131	6.66E-03 ✓
I-133	1.56E-02 ✓
I-135	1.37E-01 - Note-1

MN-54	8.37E-05
CO-58	5.44E-04 - Note-2
CO-60	2.27E-03 ✓
ZN-65	2.26E-03 ✓
SR-89	6.70E-04 ✓
SR-90	1.09E-05 ✓
ZR-95	2.72E-04 - Note-1
SB-124	1.08E-04 - Note-2
CS-134	1.54E-05 < 1.54 E-04 note-1
CS-137	1.38E-04 - Note-2
CE-141	3.30E-05 - Note-2
BA/LA-140	1.91E-03 ✓

Liquid

CR-51	2.47E-04 - Note-1
MN-54	6.93E-05
MN-56	1.30E-03 ✓
CO-58	3.42E-04 - Note-2
CO-60	1.50E-02 ✓
FE-59	5.21E-05 - Note-1
ZN-65	2.26E-03 ✓
SR-89	2.94E-05 - Note-1
SR-90	9.21E-05 - Note-2
ZR-95	2.90E-04 ✓
MO-99	8.31E-02
TC-99M	3.35E-05 - Note-1

Liquid (Cont.)

SB-124	5.46E-05	- note 2	
I-131	1.41E-03	- note 2	
I-132	1.13E-02	✓	
I-133	3.70E-03	✓	
I-135	2.43E-03	✓	
XE-133	7.63E-03	- note 1	
XE-135	6.77E-02	- note 1	
CS-134	6.84E-04	✓	
CE-141	6.23E-06	- note 1	
BA-140	3.20E-02	✓	
BA/LA-140	5.40E-05	- note 1	
H-3	4.69E-02	⇒ 8.44 E-01	(Reported sum did not include 3rd & 4th quarters)
CS-137	2.57E-03	✓	
ZR/HB-95	4.14E-05	- note 1	

Enviro!
COP