THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

PERRY NUCLEAR POWER PLANT
UNIT 1

ADDENDUM TO THE SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

1991: QUARTERS 1 & 2

Approved By:

Steven F. Penuche
Director, Perry Nuclear
Engineering Department

1/9/92
General Manager, Perry Nuclear
Power Plant

1991 QUARTER 1 & 2 SRERR ADDENDUM

SUMMARY

The analysis results for strontium 89/90 and iron 55, for the second quarter of 1991, were not included in the Semi-annual Radioactive Effluent Release Report for the first and second quarters of 1991. These results were omitted because the analysis had not been completed by the contracted vendor laboratory.

The changes incorporating the strontium 89/90 and iron 55 results on the attached data sheets are in bold and indicated with a revision bar in the right hand margin. A summary of these changes is provided as follows:

1. ONSITE DOSE FOR LIQUID EFFLUENTS, page 5

   a. The **Total Body** dose, for the second quarter of 1991, increased from the reported value of 5.7E-03 mrem to **5.8E-03 mrem.**

2. RADIOLOGICAL IMPACT ON MAN (DOSE SUMMARIES) Attachment 1, page 20

   a. The **Individual Liquid Total Body** dose, for the second quarter of 1991, increased from the report value of 7.86E-04 mrem to **8.02E-04 mrem.**

   b. The **Individuai Liquid Organ (Liver)** dose, for the second quarter of 1991, increased from the reported value of 1.49E-03 mrem to **1.52E-03 mrem.**

   c. The **Population Liquid Total Body** dose, for the second quarter of 1991 increased from the reported value of 5.4E-02 rem to **5.5E-02 rem.**

3. LIQUID EFFLUENTS Attachment 4, pages 27,28

a. The **Fission and Activation Products Total Release** (excluding tritium, gases and alpha), for the second quarter of 1991, increased from the reported value of 1.96E-02 curies to **3.21E-02 curies.**

b. The **Fission and Activation Products Average Diluted Concentration**, for the second quarter of 1991, increased from the reported value of 7.76E-10 uci/ml to **1.27E-09 uci/ml.**

c. The total curie release of Fe55, for the second quarter of 1991, increased from the reported value of 0.00E+00 curies to **1.05E-02 curies.**

d. The total curie release of Sr89, for the second quarter of 1991, went from an unreported value to **2.04E-03 curies.**

e. The total curie release (minus Xe133 and Xe135), for the second quarter of 1991, increased from the reported value of 3.09E+00 curies to **3.11E+00 curies.**

4. GASEOUS EFFLUENTS Attachment 5, pages 30,31

a. The total curie release, for **Particulates with half-lives greater than 8 days**, for the second quarter of 1991, increased from the reported value of 2.76E-07 curies to **9.56E-05 curies.**

b. The **Particulate Average Release Rate**, for the second quarter of 1991, increased from the reported value of 3.51E-08 uci/sec to **1.22E-05 uci/sec.**

c. The total curie release of Sr89, for the second quarter of 1991, increased from the reported value of 2.70E-07 curies to **9.55E-05 curies.**

d. The total curie release of Sr90 for the second quarter of 1991, increased from the reported value of 6.00E-09 curies to **2.47E-08 curies.**

e. The total curie release of Sr89 and Sr90, for the second quarter of 1991, increased from the reported value of 2.76E-07 curies to **9.56E-05 curies.**

RADIOLOGICAL IMPACT ON MAN

Sampling and analysis of liquid and gaseous effluents were performed in accordance with the frequencies, types of analysis, and Lower Limit of Detection (LLD) outlined in the PNPP Unit 1 Technical Specifications.

Radioactive material was detected in some of the liquid and gaseous effluent samples analyzed. Dose calculations, using measured effluent flow and meteorological data, resulted in dose to individuals at levels below 10CFR20 and 10CFR50, Appendix I limits. Direct radiation resulting from plant operation, as measured by environmental thermoluminescent dosimeters located around the plant, did not contribute any measurable dose to members of the public for the reporting period and, as there are no other nearby fuel cycle sources, 40CFR190 limits were not exceeded.

Summaries of maximum individual and population doses resulting from liquid and gaseous radioactive effluent releases are given, in Regulatory Guide 1.21 format, in Attachment 1.

Technical Specification 6.9.1.7 requires assessment of radiation doses from radioactive liquid and gaseous effluent to members of the public while onsite. These onsite doses are assessed relative to offsite dose values, and are adjusted for appropriate dilution, dispersion, and occupancy factors.

ONSITE DOSE FOR LIQUID EFFLUENTS

The onsite liquid effluent pathway of concern for members of the public is shore exposure while fishing along the Lake Erie coast. Occupancy is assumed to be 60 hours per year and the dilution factor for the point of exposure is 10. Ratioing this exposure pathway to doses calculated for offsite locations yields the following onsite dose values.

	Total Body	Organ
Quarters 1 & 2	3.9 E-01 mrem	1.5 E-03 mrem (skin)
Quarter 1	3.8 E-01 mrem	1.4 E-03 mrem (skin)
Quarter 2	5.8 E-03 mrem	1.3 E-04 mrem (skin)

Radiological Impact on Man (Dose Summaries)
1991: Quarter 2

SUMMARY OF MAXIMUM INDIVIDUAL DOSES
LAST ACCUMULATIONS FOR PERIODS:
LIQUID 91 4 1 1-91 63024
GASEOUS 91 4 1 1-91 63024
AIR 91 4 1 1-91 63024

EFFLUENT	APPLICABLE ORGAN	ESTIMATED DOSE (MREM)	AGE GROUP	LOCATION DIST (M)	DIR (TOWARD)	% OF APPLICABLE LIMIT	LIMIT (MREM)
LIQUID	TOTAL BODY	8.02E-04	ADULT	RECEPTOR 1		2.7E-02	3.0E+00
LIQUID	LIVER	1.52E-03	TEEN	RECEPTOR 1		1.5E-02	1.0E+01
NOBLE GAS	AIR DOSE (GAMMA-MRAD)	3.96E-02		283.	WNW	4.0E-01	1.0E+01
NOBLE GAS	AIR DOSE (BETA-MRAD)	5.38E-02		283.	WNW	2.7E-01	2.0E+01
NOBLE GAS	T.BODY	2.56E-02	ALL	283.	WNW	5.1E-01	5.0E+00
NOBLE GAS	SKIN	6.77E-02	ALL	283.	WNW	4.5E-01	1.5E+01
IODINE& PARTICULATES	THYROID	4.58E-01	INFANT	283.	WNW	3.1E+00	1.5E+01

SUMMARY OF POPULATION DOSES
LAST ACCUMULATIONS FOR PERIODS:
LIQUID 91 4 1 1-91 63024
GASEOUS 91 4 1 1-91 63024

EFFLUENT	APPLICABLE ORGAN	ESTIMATED POPULATION DOSE (PERSON-REM)
LIQUID	TOTAL BODY	5.5E-02
LIQUID	THYROID	7.7E-03
GASEOUS	TOTAL BODY	2.1E-03
GASEOUS	THYROID	1.6E-01

Attachment 4 (Page 1 of 2)
Liquid Effluents

QUARTER 1 : START DATE 91010101 END DATE 91033124
QUARTER 2 : START DATE 91040101 END DATE 91063024

EFFLUENT AND WASTE DISPOSAL REPORT

LIQUID EFFLUENTS -- SUMMATION OF ALL RELEASES

	UNITS	QUARTER 1	QUARTER 2
A. FISSION AND ACTIVATION PRODUCTS			
1. TOTAL RELEASE (EXCL. TRIT., GASES, ALPHA)	CI	3.92E-02	3.21E-02
2. AVERAGE DILUTED CONC. DURING PERIOD	UCI/ML	3.24E-09	1.27E-09
3. PERCENT OF APPLICABLE LIMIT	%	0.00E+00	0.00E+00
B. TRITIUM			
1. TOTAL RELEASE	CI	1.01E+00	3.07E+00
2. AVERAGE DILUTED CONC. DURING PERIOD	UCI/ML	8.37E-08	1.22E-07
3. PERCENT OF APPLICABLE LIMIT	%	2.79E-03	4.06E-03
C. DISSOLVED AND ENTRAINED GASES			
1. TOTAL RELEASE	CI	1.17E-03	1.33E-03
2. AVERAGE DILUTED CONC. DURING PERIOD	UCI/ML	9.64E-11	5.26E-11
3. PERCENT OF APPLICABLE LIMIT	%	4.82E-05	2.63E-05
D. GROSS ALPHA RADIOACTIVITY			
1. TOTAL RELEASE	CI	9.29E-05	0.00E+00
E. VOLUME WASTE RELEASED (PRIOR TO DILUTION)	LITERS	1.90E+09	4.19E+09
F. VOLUME DILUTION WATER USED DURING PERIOD	LITERS	1.21E+10	2.52E+10

Liquid Effluents

QUARTER 1 : START DATE 91010101 END DATE 91033124
QUARTER 2 : START DATE 91040101 END DATE 91063024
DATE OF REPORT: DEC. 12, 1991
PREPARED BY:

NUCLIDES RELEASED	UNITS	CONTINUOUS MODE QUARTER 1	CONTINUOUS MODE QUARTER 2	BATCH MODE QUARTER 1	BATCH MODE QUARTER 2
H3	CI	0.00E+00	0.00E+00	1.01E+00	3.07E+00
CR51	CI	0.00E+00	0.00E+00	8.47E-04	1.31E-02
MN54	CI	0.00E+00	0.00E+00	2.36E-03	1.16E-04
FE55	CI	0.00E+00	0.00E+00	2.79E-03	1.05E-02
CO58	CI	0.00E+00	0.00E+00	0.00E+00	1.66E-04
CO60	CI	0.00E+00	0.00E+00	1.37E-02	2.79E-03
ZN65	CI	0.00E+00	0.00E+00	4.96E-03	2.58E-03
SR89	CI	0.00E+00	0.00E+00	0.00E+00	2.04E-03
TC99M	CI	0.00E+00	0.00E+00	8.42E-06	0.00E+00
AG110M	CI	0.00E+00	0.00E+00	2.10E-05	7.45E-04
CS134	CI	0.00E+00	0.00E+00	5.94E-03	1.55E-05
CS137	CI	0.00E+00	0.00E+00	8.37E-03	1.02E-04
* SB125	CI	0.00E+00	0.00E+00	2.42E-04	0.00E+00
TOTAL FOR PERIOD (ABOVE)	CI	0.00E+00	0.00E+00	1.05E+00	3.11E+00
* XE133	CI	0.00E+00	0.00E+00	1.06E-03	1.20E-03
* XE135	CI	0.00E+00	0.00E+00	1.01E-04	1.31E-04

Attachment 5 (Page 1 of 2)
Gaseous Effluents

QUARTER 1 : START DATE 91010101 END DATE 91033124
QUARTER 2 : START DATE 91040101 END DATE 91063024

EFFLUENT AND WASTE DISPOSAL REPORT

GASEOUS EFFLUENTS -- SUMMATION OF ALL RELEASES

	UNITS	QUARTER 1	QUARTER 2
A. FISSION AND ACTIVATION GASES			
1. TOTAL RELEASE	CI	3.80E+00	1.33E+01
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	4.89E-01	1.69E+00
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	0.00E+00	0.00E+00
B. IODINES			
1. TOTAL IODINE-131	CI	6.74E-04	3.35E-03
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	8.66E-05	4.26E-04
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	0.00E+00	0.00E+00
C. PARTICULATES			
1. PARTICULATES WITH HALF-LIVES >8 DAYS	CI	4.87E-05	9.56E-05
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.27E-06	1.22E-05
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	0.00E+00	0.00E+00
4. GROSS ALPHA RADIOACTIVITY	CI	8.96E-06	2.62E-05
D. TRITIUM			
1. TOTAL RELEASE	CI	0.00E+00	0.00E+00
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	0.00E+00	0.00E+00
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%	0.00E+00	0.00E+00

Gaseous Effluents

QUARTER 1 : START DATE 91010101 END DATE 91033124
QUARTER 2 : START DATE 91040101 END DATE 91063024
DATE OF REPORT: DEC. 12, 1991
PREPARED BY:

NUCLIDES RELEASED	UNITS	CONTINUOUS MODE QUARTER 1	CONTINUOUS MODE QUARTER 2	BATCH MODE QUARTER 1	BATCH MODE QUARTER 2
1. FISSION AND ACTIVATION GASES					
KR85M	CI	0.00E+00	1.37E-03	--------	--------
KR87	CI	2.14E-02	6.97E-02	--------	--------
KR88	CI	7.08E-03	3.17E-02	--------	--------
XE133	CI	3.83E-01	1.22E+00	--------	--------
XE135M	CI	8.31E-01	5.37E+00	--------	--------
XE135	CI	2.06E+00	5.93E+00	--------	--------
XE137	CI	2.59E-01	2.59E-01	--------	--------
XE138	CI	2.41E-01	4.37E-01	--------	--------
TOTAL FOR PERIOD (ABOVE)	CI	3.80E+00	1.33E+01	--------	--------
2. IODINES					
I131	CI	6.74E-04	3.35E-03	--------	--------
I133	CI	1.82E-03	6.85E-03	--------	--------
TOTAL FOR PERIOD (ABOVE)	CI	2.49E-03	1.02E-02	--------	--------
3. PARTICULATES					
SR89	CI	4.77E-05	9.55E-05	--------	--------
SR90	CI	1.06E-06	2.47E-08	--------	--------
TOTAL FOR PERIOD (ABOVE)	CI	4.87E-05	9.56E-05	--------	--------