

ATTACHMENT

Consumers Power Company
Palisades Plant
Docket 50-255

1984 ANNUAL ENVIRONMENT REPORT
ADDENDUM

September 19, 1985

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9 Pages

Palisades 1984 Environmental Annual
Report Addendum

A. Introduction

This supplement to the Palisades 1984 Environmental Monitoring Annual Report incorporates a total of twenty-five (25) pieces of analytical data that were unavailable during initial report preparation. The following sampling media types affected by the additional data are: 1) crops, 2) sediment and 3) aquatic biota. There were no significant changes in data interpretation with the incorporation of the completed results. Sampling media data changes in the Environmental Monitoring Program are detailed in Table RSD-E-03A. Table RSD-E-03D tabulates the high, low and average annual concentration of isotopes per sampling location. All data changes are noted in the right-hand margin.

B. Discussion and Interpretation of Results

1. Sediment

Ten (10) previously unavailable sample results (5-Sr89 and 5-Sr90) were incorporated into the 1984 Environmental Monitoring Annual Report. With the additional data, one (1) reporting location was changed. The highest concentration of Sr89 shifted from the South Haven beach location to the plant discharge. All other reporting locations (per specified isotope) remained the same; although there was a slight increase in reporting average for Sr-90. No reportable levels of Sr-89 or Sr-90 were reached.

2. Fish

Initially, ten (10) previously unavailable analyses (5-Sr89 and 5-Sr90) were to be incorporated into the Palisades supplemental Environmental Annual Report. However, due to some analytical errors and lack of enough remaining sample quantities to complete any reanalyses; only eight (8) sample results (4-Sr89 and 4-Sr90) could be used. There were no changes in highest reporting locations for either Sr89 or Sr90 concentrations. Loss of the two (2) data results did not appear to adversely affect the Environmental Monitoring Program. No reportable limits for Sr-89 or Sr-90 were exceeded.

3. Crops

Again, twelve (12) previously unavailable analyses (2-gross beta, 5-Sr89 and 5-Sr90) were to be incorporated into the supplemental Environmental Annual Report. However, due to some analytical errors and limited sample quantities for the reanalyses; only seven (7) sample results (1-gross beta, 3-Sr89 and 3-Sr90) could be used. With the additional data, both the Sr-89 and Sr-90 highest reporting locations were changed to location JS (3.5 mi SE of Palisades). The isotopic averages for Sr-89 and Sr-90 also increased. The missing

data appeared to have minimal impact on the Environmental Sampling locations. No Sr-89 or Sr-90 limits were exceeded.

C. Summary

No required Technical Specification analyses were missed in 1984. Seven (7) analytical results (1-gross beta, 3-Sr89 and 3-Sr90) were missing because of the unavailability of adequate sample quantities (per specified media) for reanalysis. The missing results did not constitute a significant reduction in the overall Environmental Program. No reporting levels of Sr-89 or Sr-90 were exceeded.

TABLE RSD-E-03A

Environmental Radiological Monitoring Program Summary
Palisades Nuclear Plant, Docket DPR-20
Van Buren County, Michigan, January 1, 1984 to December 31, 1984

| Medium or Pathway Sampled Unit of Measurement | Analysis and Total Number of Analyses Performed | | Lower Limit of Detection(a) LLD | All Indicator Locations Mean(b) Range(b) | Location with Highest Annual Mean | | All Control Locations Mean(b) Range(b) | Nonroutine Reported Measurements(c) |
|---|---|-----|--|---|--------------------------------------|---------------------|--|---|
| | | | | | | | | |
| | | | | | Name Distance & Direction | Mean(b) Range(b) | | |
| Air (pCi/m ³) | Gross Beta | 627 | 0.01 | (457/468) 0.02(.02-.03) | GR 55 mi NNE | .03 (.007-.087) | (152/159) 0.02(.02-.03) | None |
| | I-131 | 627 | 0.02 | all LLD | N/A | | LLD | None |
| Lake Water (pCi/l) | Gross Alpha | 24 | 1.0 | (0/12) 1 (1) | Discharge | 1 (1) | (0/12) 1 | None |
| | Gross Beta | 24 | 1.0 | (12/12) 2.4(1.2-3.6) | Discharge | 2.4(1.2-3.6) | (12/12) 2.3(1.1-3.0) | None |
| | Tritium | 24 | 100.0 | (12/12) 490.8(100-1570) | Discharge | 490.8 (100-1570) | (12/12) 189.2(100-400) | None |
| Drinking Water (pCi/l) | Gross Beta | 12 | 1.0 | Control, lake and well water samples are drinking water supplies. | | | | |
| | Tritium | 12 | 100.0 | | | | | |
| Well Water (pCi/l) | Gross Beta | 36 | 1.0 | (12/12) 1.4(1-1.8) | State Park (1 mi N) | 4.8 (2.4-9.3) | (24/24) 3.2(0.7-9.3) | None |

TABLE RSD-E-03A

Environmental Radiological Monitoring Program Summary

Palisades Nuclear Plant, Docket DPR-20

Van Buren County, Michigan, January 1, 1984 to December 31, 1984

| Medium or Pathway Sampled Unit of Measurement | Analysis and Total Number of Analyses Performed | | Lower Limit of Detection(a) LLD | All Indicator Locations Mean(b) Range(b) | Location with Highest | | All Control Locations Mean(b) Range(b) | Nonroutine Reported Measurements(c) |
|---|---|-----|--|--|-----------------------------------|----------------------|--|---|
| | | | | | Annual Mean | | | |
| | | | | | Name Distance & Direction | Mean(b) Range(b) | | |
| Milk (pCi/l) | I-131 | 48 | .5 | (0/36) | All LLD | N/A | 0/12 LLD | None |
| | Sr-89 | 48 | 5.0 | (0/36) | All LLD | N/A | 0/12 LLD | None |
| | Sr-90 | 48 | 1.0 | (36/36) 2.8(1-4.5) | GM (5 mi SE) | 2.8 (2.1-4.2) | (12/12) 1.5(1-2.6) | None |
| | Cs-137 | 48 | 1.0 | (0/36) | All LLD | N/A | 0/12 LLD | None |
| | Other Gamma | | 1.0 | (0/36) | N/A | N/A | 0/12 LLD | None |
| Gamma Exposure (mR/month) (mR/quarter) | TLD (monthly) | 276 | 1.0 | (234/240) 5.3(3.3-11.1) | ST-18 (.75 mi SE) On Perimeter | 5.9 (3.9-11.1) | (36/36) 5.3(3.9-7.2) | None |
| | TLD (quarterly) | 92 | | (78/80) 15.4(12.2-27.0) | ST-04 3.5 mi ESE | 19.5 (16.2-27.0) | (12/12) 15.2(13.2-17.8) | None |
| | TLD (annually) | 23 | | (19/20) (42.0-64.0) 52.0 | ST-20 (0.5 mi S) On Perimeter | 64.0 | (3/3) (49.0-55.5) 52.6 | None |
| Crops | Gross Beta | 13 | 1.0 | (12/13) 2.2(0.8-7.0) | JS (3.5 mi SE) Turnip Greens | 2.3 (1.0-7.0) | None | None |
| | Sr-89 | 13 | 0.025 | (2/13) 0.080(.025-.52) | JS (3.5 mi SE) Turnip Greens | 0.110 (.025-.520) | None | None |

TABLE RSD-E-03A

Environmental Radiological Monitoring Program Summary
 Palisades Nuclear Plant, Docket DPR-20
 Van Buren County, Michigan, January 1, 1984 to December 31, 1984

| Medium or Pathway Sampled Unit of Measurement | Analysis and Total Number of Analyses Performed | | Lower Limit of Detection(a) LLD | All Indicator Locations Mean(b) Range(b) | Location with Highest Annual Mean Name Distance & Direction | | All Control Locations Mean(b) Range(b) | Nonroutine Reported Measurements(c) |
|---|---|----|--|--|--|----------------------|--|---|
| | | | | | | | | |
| | | | | | | | | |
| Crops | Sr-90 | 13 | 0.005 | (3/13) 0.010(.005-.040) | JS (3.5 mi SE) Turnip Greens | .011 (.005-0.040) | None | None |
| | Cs-137 | 13 | 0.08 | (0/13) MDL | N/A | | None | None |
| | I-131 | 13 | 0.08 | (0/13) MDL | N/A | | None | None |
| | Other Gamma | 13 | 0.1 | (0/13) MDL | N/A | | None | None |
| Sediment | Gross Beta | 12 | 1.0 | (8/8) 8.2(5.8-10.8) | Ludington S Pier | 13.3 N/A | (4/4) 10.4(7.5-13.3) | None |
| | Sr-89 | 12 | 0.025 | (5/8) 0.05(.025-0.11) | Discharge | .068 (.025-0.11) | (1/4) .044(.025-0.10) | None |
| | Sr-90 | 12 | 0.005 | (8/8) 0.020(.016-.032) | Discharge | .027 (.022-.032) | (1/4) .009(.005-.019) | None |
| | Cs-137 | 12 | 0.08 | (0/8) all LLD | N/A | | (0/4) LLD | None |
| | Other Gamma | 12 | 0.1 | (0/8) all LLD | N/A | | (0/4) LLD | None |
| | ***I-131 | 12 | 0.05 | (4/8) 0.72(.05-3.46) | Discharge | 1.76 (0.5-3.46) | (3/4) 0.29(.05-.73) | None |

NOTE: *** I-131 results have elevated LLD's due to delay in sample counting times.
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TABLE RSD-E-03A

Environmental Radiological Monitoring Program Summary
Palisades Nuclear Plant, Docket DPR-20
 Van Buren County, Michigan, January 1, 1984 to December 31, 1984

| Medium or Pathway Sampled Unit of Measurement | Analysis and Total Number of Analyses Performed | | Lower Limit of Detection(a) LLD | All Indicator Locations Mean(b) Range(b) | Location with Highest Annual Mean Name Distance & Direction | | All Control Locations Mean(b) Range(b) | Nonroutine Reported Measurements(c) |
|---|---|----|--|--|--|----------------------|--|---|
| | | | | | | | | |
| Aquatic (pCi/g Wet) | Gross Beta | 13 | 1.0 | (7/7) 2.2(1.6-3.1) | Vicinity of discharge & Ludington S Pier | 2.6 (1.9-3.1) | (6/6) 2.3(1.4-3.4) | None |
| | Sr89 | 13 | 0.025 | (0/7) All LLD | Ludington S Pier | 0.039 (.025-.083) | (1/6) .039(.025-.083) | None |
| | Sr90 | 13 | 0.005 | (2/7) 0.006(.005-.008) | Ludington S Pier | .007 (.005-.009) | (2/6) .007(.005-.009) | None |
| | Gamma | 13 | 0.1 | (0/13) All LLD | N/A | | None | None |
| | Cs-137 | 13 | 0.08 | (0/13) All LLD | N/A | | None | None |
| | ***I-131 | 12 | 0.05 | (4/7) 0.39(.05-2.0) | Vicinity of discharge | 1.03 (.05-2.0) | (3/5) 0.59(.05-1.94) | None |

a. Nominal Lower Limit of Detection (LLD) as defined in HASL-300 (Rev 8/73), pages D-08-01, 02, and 03.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses.

c. Nonroutine reported measurements are defined in the Palisades Technical Specifications, Section 6.9.3.2.

NOTE: *** I-131 results have elevated LLD's due to delay in sample counting times.

TABLE RSD -E-03D

HIGH, LOW AND AVERAGE CONCENTRATIONS FOR HIGHEST AVERAGE SAMPLING LOCATION
 PALISADES NUCLEAR PLANT
 JANUARY 1, 1984 to DECEMBER 31, 1984

| Medium | Type of Analysis(1) | Location | High | Low | Average(5) |
|----------------|---------------------|---------------------|--------------------------|--------------------------|-------------------------|
| Air | Gross Beta | GR 55 mi NNE | 0.087 pCi/m ³ | 0.007 pCi/m ³ | 0.03 pCi/m ³ |
| | I-131 | All LLD | | | .02 pCi/m ³ |
| Lake Water | Gross Beta | Discharge | 3.6 pCi/l | 1.2 pCi/l | 2.4 pCi/l |
| | Gross Alpha | Discharge | 1 pCi/l | 1 pCi/l | 1 pCi/l |
| | Tritium | Discharge | 1570 pCi/l | 100 pCi/l | 490.8 pCi/l |
| Drinking Water | Gross Beta | See Table RSD-E-03A | | | |
| | Tritium (4) | See Table RSD-E-03A | | | |
| Well Water | Gross Beta | State Park (1 mi N) | 9.3 pCi/l | 2.4 pCi/l | 4.8 pCi/l |

(1) Minimum detectable level (MDL) = air, gross beta 0.01 pCi/m³, I-131 0.02 pCi/m³; water, gross beta 1.0 pCi/l, gross alpha 1.0 pCi/l, H-3 100 pCi/l; milk, I-131 0.5 pCi/l, Sr-89 5.0 pCi/l, gamma isotopic 1.0 pCi/l; crops and sediment, gross beta 1.0 pCi/g, Sr-89 0.025 pCi/g, Sr-90 0.005 pCi/g, gamma isotopic 0.05 pCi/g; some samples may have higher MDLs due to sample size, shipping delays or statistical phenomenon.

(2) Samples collected monthly in season.

(3) Two samples per location.

(4) Tritium analysis performed on South Haven treated only.

(5) Only samples greater than LLD included in average.

(6) Includes transit dose which averages approximately 6.4 mR/round trip.

TABLE RSD -E-03D

HIGH, LOW AND AVERAGE CONCENTRATIONS FOR HIGHEST AVERAGE SAMPLING LOCATIONPALISADES NUCLEAR PLANT

JANUARY 1, 1984 to DECEMBER 31, 1984

| <u>Medium</u> | <u>Type of Analysis(1)</u> | <u>Location</u> | <u>High</u> | <u>Low</u> | <u>Average(5)</u> |
|----------------|----------------------------|-----------------------------------|-------------|-------------|-------------------|
| Milk | I-131 | All LLD | -- | -- | -- |
| | Sr-89 | All LLD | -- | -- | -- |
| | Sr-90 | GM (5 mi SE) | 2.8 pCi/l | 2.1 pCi/l | 4.2 pCi/l |
| | Cs-137 | All LLD | -- | -- | -- |
| | Other Gamma | All LLD | -- | -- | -- |
| Gamma Dose (6) | TLD (Monthly) | ST-13 .75 mi SE (on perimeter) | 11.1 mR | 3.9 mR | 5.9 mR |
| | TLD (Quarterly) | ST-04 3.5 mi ESE | 27.0 mR | 16.2 mR | 19.5 mR |
| | TLD (Annual) | ST-20 0.5 mi S (on perimeter) | -- | -- | -- |
| Crops (2) | Gross Beta | JS(3.5 mi SE) | 7.0 pCi/g | 1.0 pCi/g | 2.3 pCi/g |
| | Sr-89 | JS (3.5 mi SE) | 0.520 pCi/g | 0.025 pCi/g | 0.110 pCi/g |
| | Sr-90 | JS (3.5 mi SE) | 0.040 pCi/g | 0.005 pCi/g | 0.011 pCi/g |
| | Cs-137 | All LLD | -- | -- | -- |
| | Other Gamma | All LLD | -- | -- | -- |
| | I-131 | All LLD | -- | -- | -- |

TABLE RSD -E-03D

HIGH, LOW AND AVERAGE CONCENTRATIONS FOR HIGHEST AVERAGE SAMPLING LOCATION
 PALISADES NUCLEAR PLANT
 JANUARY 1, 1984 to DECEMBER 31, 1984

| <u>Medium</u> | <u>Type of Analysis(1)</u> | <u>Location</u> | <u>High</u> | <u>Low</u> | <u>Average(5)</u> |
|---------------|----------------------------|--------------------------------|-------------|-------------|-------------------|
| Sediment(3) | Gross Beta | Ludington S Pier | 13.3 pCi/g | 7.5 pCi/g | 10.4 pCi/g |
| | Sr-89 | Discharge | 0.11 | 0.025 | .068 |
| | Sr-90 | Discharge | .032 | 0.022 | .027 |
| | Cs-137 | All LLD | -- | -- | -- |
| | Other Gamma | All LLD | -- | -- | -- |
| | *** I-131 | Discharge | 3.46 | 0.05 | 1.76 |
| Aquatic | Gross Beta | Discharge and Ludington S Pier | 3.1 pCi/g | 1.9 pCi/g | 2.6 pCi/g |
| | Sr-89 | Ludington S Pier | 0.083 pCi/g | 0.025 pCi/g | 0.039 pCi/g |
| | Sr-90 | Ludington S Pier | 0.009 pCi/ | 0.005 pCi/g | 0.007 pCi/g |
| | Gamma | All LLD | -- | -- | -- |
| | *** I-131 | Discharge | 2.0 | 0.05 | 1.03 |

NOTE: *** I-131 results have elevated LLD's due to delay in sample counting times.