



February 28, 1992

OCAN029209

U. S. Nuclear Regulatory Commission
Document Control Desk
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Washington, DC 20555

Subject: Arkansas Nuclear One - Units 1 and 2
Docket Nos. 50-313 & 50-368
License Nos. DPR-51 & NFP-6
Semiannual Radiological Effluent
Release Report for the Third and
Fourth Quarters of 1991

Gentlemen:

Arkansas Nuclear One, Units 1 and 2 (ANO-1 & 2) Technical Specifications 6.12.2.6 and 6.9.3, respectively, require the submittal of a Semiannual Radioactive Effluent Release Report. The purpose of this letter is to complete this reporting requirement for the third and fourth quarters of 1991 at ANO.

Attachment A provides the routine radioactive effluent and solid waste release reports for the third and fourth quarters of 1991. A description of the unplanned release is located in Attachment B. Attachment C describes changes to the Offsite Dose Calculational Manual and Process Control Program that have occurred during the last half of 1991.

Technical Specifications 6.12.2.6 and 6.9.3 also require additional information be provided in the first report filed each year. This additional information includes:

- In accordance with ANO-1 and 2 Technical Specifications 6.12.2.6 (e) and 6.9.3.4.1, respectively, in lieu of including a summary of the meteorological data in this report, the 1991 data is retained at ANO. This data is available for NRC review.
- A summary of radiation doses due to radiological effluents during 1991 and the dose to members of the public due to activities inside the site boundaries. These summaries are included in Attachments D and E respectively; and
- A description of licensee initiated major changes to the radioactive waste systems is provided in Attachment F.

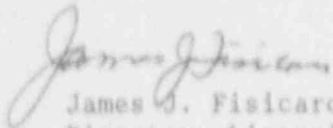
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Should you have any questions regarding this submittal, please contact me.

Very truly yours,



James J. Fisicaro
Director, Licensing

JJF/RWC/sjf
Attachments

cc: Mr. Robert Martin
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ATTACHMENT A

SUMMARY OF THE QUANTITIES
OF RADIOACTIVE LIQUID AND GASEOUS
EFFLUENTS AND SOLID WASTE
RELEASE FROM ANO

REPORT CATEGORY
 TYPE OF ACTIVITY
 REPORTING PERIOD

| TYPE OF EFFLUENT | UNIT | QUARTER 3 | QUARTER 4 | EST. TOTAL | ERROR % |
|------------------|------|-----------|-----------|------------|---------|
| | | HOURS | HOURS | | |
| | | 4345-6552 | 6553-8760 | | |

A. FISSION AND ACTIVATION PRODUCTS

| | | | | |
|--------------------------------------------------------|----------|------------|------------|------------|
| 1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA) | : CURIES | : 3.50E-01 | : 5.47E-02 | : 0.00E-01 |
| 2. AVERAGE DILUTED CONCENTRATION DURING PERIOD | : UCI/ML | : 9.91E-10 | : 2.64E-10 | |
| 3. PERCENT OF APPLICABLE LIMIT | : % | : 3.30E-01 | : 8.79E-02 | |

B. TRITIUM

| | | | | |
|------------------------------------------------|----------|------------|------------|------------|
| 1. TOTAL RELEASE | : CURIES | : 1.06E-02 | : 1.40E-02 | : 0.00E-01 |
| 2. AVERAGE DILUTED CONCENTRATION DURING PERIOD | : UCI/ML | : 4.34E-07 | : 4.36E-07 | |
| 3. PERCENT OF APPLICABLE LIMIT | : % | : 1.81E-02 | : 1.45E-02 | |

C. DISSOLVED AND ENTRAINED GASES

| | | | | |
|------------------------------------------------|----------|------------|------------|------------|
| 1. TOTAL RELEASE | : CURIES | : 1.07E-00 | : 9.48E-00 | : 0.00E-01 |
| 2. AVERAGE DILUTED CONCENTRATION DURING PERIOD | : UCI/ML | : 4.34E-09 | : 2.95E-08 | |
| 3. PERCENT OF APPLICABLE LIMIT | : % | : 2.17E-03 | : 1.48E-02 | |

D. GROSS ALPHA RADIOACTIVITY

| | | | | |
|------------------|----------|------------|------------|------------|
| 1. TOTAL RELEASE | : CURIES | : 6.82E-04 | : 4.43E-04 | : 0.00E-01 |
|------------------|----------|------------|------------|------------|

| | | | | |
|--------------------------------------|-------|------------|------------|------------|
| E. WASTE VOL RELEASED (PPE-DILUTION) | : GAL | : 6.44E 06 | : 7.50E 06 | : 0.00E-01 |
|--------------------------------------|-------|------------|------------|------------|

| | | | | |
|----------------------------------|-------|------------|------------|------------|
| F. VOLUME OF DILUTION WATER USED | : GAL | : 1.01E 11 | : 3.48E 10 | : 0.00E-01 |
|----------------------------------|-------|------------|------------|------------|

| NUCLIDE | UNIT | CONTINUOUS RELEASES | | BATCH RELEASES | |
|---------|------|---------------------|-----------|----------------|-----------|
| | | QUARTER 3 | QUARTER 4 | QUARTER 3 | QUARTER 4 |
| | | HOURS | HOURS | HOURS | HOURS |
| | | 4345-6552 | 6553-8760 | 4345-6552 | 6553-8760 |

ALL NUCLIDES

| | | | | | |
|---------|--------|----------|----------|----------|----------|
| H-3 | CURIES | 0.00E-01 | 0.00E-01 | 1.36E-02 | 1.40E-02 |
| C-14 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| NA-24 | CURIES | 0.00E-01 | 0.00E-01 | 7.63E-03 | 1.05E-02 |
| P-32 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CR-51 | CURIES | 0.00E-01 | 0.00E-01 | 2.44E-03 | 0.00E-01 |
| MN-54 | CURIES | 0.00E-01 | 0.00E-01 | 1.01E-02 | 6.28E-03 |
| MN-56 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| FE-55 | CURIES | 0.00E-01 | 0.00E-01 | 1.54E-01 | 2.10E-02 |
| FE-59 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CO-58 | CURIES | 0.00E-01 | 0.00E-01 | 3.62E-02 | 1.50E-02 |
| CO-60 | CURIES | 0.00E-01 | 0.00E-01 | 7.20E-03 | 3.77E-03 |
| NI-63 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| NI-65 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CU-64 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| ZN-65 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| ZN-69 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BR-83 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BR-84 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BR-85 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| RB-86 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| RB-88 | CURIES | 0.00E-01 | 0.00E-01 | 2.21E-04 | 0.00E-01 |
| Rb-87 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| SR-89 | CURIES | 0.00E-01 | 0.00E-01 | 1.07E-02 | 0.00E-01 |
| SR-91 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| SR-90 | CURIES | 0.00E-01 | 0.00E-01 | 1.26E-04 | 2.26E-05 |
| Y-90 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Y-91M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Y-91 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Y-92 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Y-93 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| ZR-95 | CURIES | 0.00E-01 | 0.00E-01 | 1.96E-03 | 1.10E-04 |
| ZR-97 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| NB-95 | CURIES | 0.00E-01 | 0.00E-01 | 3.10E-03 | 2.94E-04 |
| MO-99 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TC-99M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TC-101 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| RU-103 | CURIES | 0.00E-01 | 0.00E-01 | 1.24E-05 | 0.00E-01 |
| RU-105 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| RU-106 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| AG-110M | CURIES | 0.00E-01 | 0.00E-01 | 2.51E-02 | 5.05E-04 |
| TE-125M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TE-127M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TE-127 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TE-129M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TE-129 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TE-131M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |

| NUCLIDE | UNIT | CONTINUOUS RELEASES | | BATCH RELEASES | |
|---------|------|---------------------|-----------|----------------|-----------|
| | | QUARTER 3 | QUARTER 4 | QUARTER 3 | QUARTER 4 |
| | | HOURS | HOURS | HOURS | HOURS |
| | | 4345-6552 | 6553-8760 | 4345-6552 | 6553-8760 |

ALL NUCLIDES CONTINUED

| | | | | | |
|---------|--------|----------|----------|----------|----------|
| TE-131 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TE-132 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| I-130 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| I-131 | CURIES | 0.00E-01 | 0.00E-01 | 6.80E-05 | 7.18E-04 |
| I-132 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 5.51E-05 |
| I-133 | CURIES | 0.00E-01 | 0.00E-01 | 5.40E-05 | 8.90E-04 |
| I-134 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| I-135 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 3.09E-04 |
| Cl-134 | CURIES | 0.00E-01 | 0.00E-01 | 3.36E-02 | 5.51E-03 |
| Cl-136 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Ca-137 | CURIES | 0.00E-01 | 0.00E-01 | 5.46E-02 | 9.70E-03 |
| CS-136 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BA-134 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BA-140 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BA-141 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BA-142 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| LA-140 | CURIES | 0.00E-01 | 0.00E-01 | 2.14E-03 | 3.83E-04 |
| LA-142 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CL-141 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CL-143 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CL-144 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| PK-143 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| PK-144 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| ND-147 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| W-167 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| NP-239 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| KR-83M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| KR-85M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| KR-85 | CURIES | 0.00E-01 | 0.00E-01 | 1.35E-01 | 5.89E-01 |
| KR-87 | CURIES | 0.00E-01 | 0.00E-01 | 4.09E-05 | 0.00E-01 |
| KR-88 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| KR-89 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| KR-90 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| XE-131M | CURIES | 0.00E-01 | 0.00E-01 | 3.46E-02 | 1.77E-01 |
| XE-133M | CURIES | 0.00E-01 | 0.00E-01 | 6.27E-03 | 3.90E-02 |
| XE-133 | CURIES | 0.00E-01 | 0.00E-01 | 1.49E-00 | 8.55E-00 |
| XE-135M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 2.19E-04 |
| XE-135 | CURIES | 0.00E-01 | 0.00E-01 | 1.45E-04 | 6.85E-04 |
| XE-137 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| XE-138 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| AR-41 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| SR-90 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| G ALPHA | CURIES | 0.00E-01 | 0.00E-01 | 6.82E-04 | 4.43E-04 |
| OTHER | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BE-7 | CURIES | 0.00E-01 | 0.00E-01 | 1.68E-04 | 1.94E-04 |
| K-40 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |

| NUCLIDE | UNIT | CONTINUOUS RELEASES | | BATCH RELEASES | |
|---------|------|---------------------|-----------|----------------|-----------|
| | | QUARTER 3 | QUARTER 4 | QUARTER 3 | QUARTER 4 |
| | | HOURS | HOURS | HOURS | HOURS |
| | | 4345-6552 | 6553-8760 | 4345-6552 | 6553-8760 |

ALL NUCLIDES CONTINUED

| | | | | | |
|------------------|--------|----------|----------|----------|----------|
| CO-56 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CO-57 | CURIES | 0.00E-01 | 0.00E-01 | 7.26E-05 | 0.00E-01 |
| SE-75 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| SR-85 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Y-86 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| NB-94 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| NB-97 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 4.15E-05 |
| MO-90 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CO-109 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CO-113M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| LA-113 | CURIES | 0.00E-01 | 0.00E-01 | 2.41E-04 | 0.00E-01 |
| SB-122 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| SB-124 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 3.48E-05 |
| SB-125 | CURIES | 0.00E-01 | 0.00E-01 | 4.04E-04 | 5.96E-03 |
| SB-127 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BA-133 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CE-134 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| EU-152 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| HG-203 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| PL-214 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BI-214 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| KA-226 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TH-228 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| U-235 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TOTAL FOR PERIOD | CURIES | 0.00E-01 | 0.00E-01 | 1.88E-02 | 1.50E-02 |

: ARKANSAS POWER AND LIGHT COMPANY PAGE 1 OF 4
 : ARKANSAS NUCLEAR ONE : UNIT 1
 : SEMIANNUAL SUMMATION OF ALL RELEASES BY QUARTER
 : ALL AIRBORNE EFFLUENTS
 : QUARTER # 3 AND QUARTER # 4 OF 1991

REPORT CATEGORY
 TYPE OF ACTIVITY
 REPORTING PERIOD

```

-----
                : UNIT : QUARTER 3 : QUARTER 4 : EST. TOTAL :
                :     : HOURS     : HOURS     : ERROR %    :
TYPE OF EFFLUENT :     : 4345-6552 : 6553-8760 :            :
-----
  
```

A. FISSION AND ACTIVATION GASES

```

-----
1. TOTAL RELEASE           :CURIES      : 7.29E 01 : 1.90E 02 : 0.00E+01:
-----
2. AVERAGE RELEASE RATE FOR PERIOD :UCI/SEC     : 9.27E 00 : 2.42E 01 :
-----
3. PERCENT OF APPLICABLE LIMIT      : %           : 1.30E+01 : 3.38E+01 :
-----
  
```

B. RADIOIODINES

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-----
1. TOTAL RELEASE           :CURIES      : 5.00E-06 : 2.78E-06 : 0.00E+01:
-----
2. AVERAGE RELEASE RATE FOR PERIOD :UCI/SEC     : 6.36E-07 : 3.53E-07 :
-----
3. PERCENT OF APPLICABLE LIMIT      : %           : 1.76E+06 : 9.89E+07 :
-----
  
```

C. PARTICULATES

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-----
1. PARTICULATES(HALF-LIFE<30 DAYS) :CURIES      : 4.65E-06 : 3.01E-06 : 0.00E+01:
-----
2. AVERAGE RELEASE RATE FOR PERIOD :UCI/SEC     : 5.91E-07 : 3.63E-07 :
-----
3. PERCENT OF APPLICABLE LIMIT      : %           : 1.05E+06 : 1.07E+06 :
-----
4. GROSS ALPHA RADIOACTIVITY       :CURIES      : 0.00E-01 : 0.00E-01 :
-----
  
```

D. TRITIUM

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-----
1. TOTAL RELEASE           :CURIES      : 3.89E 00 : 3.06E 00 : 0.00E+01:
-----
2. AVERAGE RELEASE RATE FOR PERIOD :UCI/SEC     : 4.95E-01 : 3.89E-01 :
-----
3. PERCENT OF APPLICABLE LIMIT      : %           : 6.93E-04 : 5.44E-04 :
-----
  
```


| | UNIT | ELEVATED | | GROUND | |
|------------------|--------|--------------------|--------------------|--------------------|--------------------|
| | | BATCH | RELEASES | BATCH | RELEASES |
| NUCLIDE | | QUARTER 3 HOURS | QUARTER 4 HOURS | QUARTER 3 HOURS | QUARTER 4 HOURS |
| | | 4345-6552 | 6553-8760 | 4345-6552 | 6553-8760 |
| FISSION GASES | | | | | |
| KR-83M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| KR-85M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| KR-85 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| KR-87 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| KR-88 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| KR-89 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| KR-90 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| XE-131M | CURIES | 0.00E-01 | 0.00E-01 | 2.67E-05 | 0.00E-01 |
| XE-133M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| XE-133 | CURIES | 0.00E-01 | 0.00E-01 | 6.96E 01 | 1.88E 02 |
| XE-135M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| XE-135 | CURIES | 0.00E-01 | 0.00E-01 | 3.28E 00 | 2.05E 00 |
| XE-137 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| XE-136 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| AR-41 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| OTHER | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TOTAL FOR PERIOD | CURIES | 0.00E-01 | 0.00E-01 | 7.29E 01 | 1.90E 02 |
| IODINES | | | | | |
| I-130 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| I-131 | CURIES | 0.00E-01 | 0.00E-01 | 5.00E-06 | 2.78E-06 |
| I-132 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| I-133 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| I-134 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| I-135 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| OTHER | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TOTAL FOR PERIOD | CURIES | 0.00E-01 | 0.00E-01 | 5.00E-06 | 2.78E-06 |
| PARTICULATES | | | | | |
| H-3 | CURIES | 0.00E-01 | 0.00E-01 | 3.89E 00 | 3.06E 00 |
| C-14 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| NA-24 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| P-32 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CR-51 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| MN-54 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| MN-56 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| FE-55 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| FE-59 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CO-58 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CO-60 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| NI-63 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| NI-65 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CU-64 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| ZN-65 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |

| NUCLIDE | UNIT | ELEVATED | | GROUND | |
|------------------------|--------|-----------|-----------|-----------|-----------|
| | | BATCH | RELEASES | BATCH | RELEASES |
| | | QUARTER 3 | QUARTER 4 | QUARTER 3 | QUARTER 4 |
| | | HOURS | HOURS | HOURS | HOURS |
| | | 4345-6552 | 6553-8760 | 4345-6552 | 6553-8760 |
| PARTICULATES CONTINUED | | | | | |
| ZN-69 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BR-83 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BR-84 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BR-85 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| RB-86 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| RE-88 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| RB-89 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| SR-89 | CURIES | 0.00E-01 | 0.00E-01 | 3.27E-06 | 0.00E-01 |
| SR-91 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| SR-92 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Y-90 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Y-91M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Y-91 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Y-92 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Y-93 | CURIES | 3.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| ZR-95 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| ZR-97 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| NB-99 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| MO-99 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TC-99M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TC-101 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| RU-103 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| RU-105 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| KC-106 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| AG-110M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TE-125M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TE-127M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TE-127 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TE-129M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TE-129 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TE-131M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TE-131 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TE-132 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CS-134 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CS-136 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CS-137 | CURIES | 0.00E-01 | 0.00E-01 | 1.37E-06 | 2.84E-06 |
| CS-138 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BA-139 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BA-140 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BA-141 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BA-142 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| LA-140 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| LA-142 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CE-141 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CE-143 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CE-144 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |

| NUCLIDE | UNIT | ELEVATED | | GROUND | |
|------------------------|--------|--------------------|--------------------|--------------------|--------------------|
| | | BATCH | RELEASES | BATCH | RELEASES |
| | | QUARTER 3 HOURS | QUARTER 4 HOURS | QUARTER 3 HOURS | QUARTER 4 HOURS |
| | | 4345-6552 | 6553-8760 | 4345-6552 | 6553-8760 |
| PARTICULATES CONTINUED | | | | | |
| PR-143 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| PR-144 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| ND-147 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| W-187 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| NP-239 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| SR-90 | CURIES | 0.00E-01 | 0.00E-01 | 8.92E-09 | 1.63E-07 |
| G ALPHA | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| OTHLR | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BE-7 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| K-40 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CO-56 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CO-57 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Sc-72 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| SR-85 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Y-86 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| NE-94 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| NO-97 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| MO-99 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CD-107 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CD-113M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| SN-113 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Sr-121 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Sr-124 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Sr-126 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Sr-127 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BA-133 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CE-137 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| EU-152 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| HG-203 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Pb-214 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BI-214 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| RA-226 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TH-226 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| U-235 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TOTAL FOR PERIOD | CURIES | 0.00E-01 | 0.00E-01 | 3.59E 00 | 3.06E 00 |

REPORT CATEGORY
 TYPE OF ACTIVITY
 REPORTING PERIOD

| TYPE OF EFFLUENT | UNIT | QUARTER 3 HOURS | QUARTER 4 HOURS | EST. TOTAL ERROR % |
|------------------|------|--------------------|--------------------|-----------------------|
| | | 14345-6552 | 16553-8760 | |

A. FISSION AND ACTIVATION PRODUCTS

| | | | | |
|--------------------------------------------------------|----------|------------|------------|------------|
| 1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA) | : CURIES | : 2.29E-01 | : 1.43E 00 | : 0.00E-01 |
| 2. AVERAGE DILUTED CONCENTRATION DURING PERIOD | : UCI/ML | : 5.97E-10 | : 4.46E-09 | |
| 3. PERCENT OF APPLICABLE LIMIT | : % | : 1.99E-01 | : 1.49E 00 | |

B. TRITIUM

| | | | | |
|------------------------------------------------|----------|------------|------------|------------|
| 1. TOTAL RELEASE | : CURIES | : 2.63E 01 | : 5.54E 02 | : 0.00E-01 |
| 2. AVERAGE DILUTED CONCENTRATION DURING PERIOD | : UCI/ML | : 6.63E-09 | : 1.73E-08 | |
| 3. PERCENT OF APPLICABLE LIMIT | : % | : 2.26E-03 | : 5.76E-02 | |

C. DISSOLVED AND ENTRAINED GASES

| | | | | |
|------------------------------------------------|----------|------------|------------|------------|
| 1. TOTAL RELEASE | : CURIES | : 6.89E 01 | : 1.06E 02 | : 0.00E-01 |
| 2. AVERAGE DILUTED CONCENTRATION DURING PERIOD | : UCI/ML | : 1.79E-07 | : 3.31E-07 | |
| 3. PERCENT OF APPLICABLE LIMIT | : % | : 6.93E-02 | : 1.65E-01 | |

D. GROSS ALPHA RADIOACTIVITY

| | | | | |
|------------------|----------|------------|------------|------------|
| 1. TOTAL RELEASE | : CURIES | : 3.16E-04 | : 8.37E-07 | : 0.00E-01 |
|------------------|----------|------------|------------|------------|

| | | | | |
|--------------------------------------|-------|------------|------------|------------|
| E. WASTE VOL RELEASED (PRE-DILUTION) | : GAL | : 1.74E 06 | : 3.84E 06 | : 0.00E-01 |
|--------------------------------------|-------|------------|------------|------------|

| | | | | |
|----------------------------------|-------|------------|------------|------------|
| F. VOLUME OF DILUTION WATER USED | : GAL | : 1.01E 11 | : 8.48E 10 | : 0.00E-01 |
|----------------------------------|-------|------------|------------|------------|

| NUCLIDE | UNIT | CONTINUOUS RELEASES | | BATCH RELEASES | |
|---------|------|---------------------|--------------------|--------------------|--------------------|
| | | QUARTER 3 HOURS | QUARTER 4 HOURS | QUARTER 3 HOURS | QUARTER 4 HOURS |
| | | 14345-6552 | 6553-8760 | 4345-6552 | 6553-8760 |

ALL NUCLIDES

| | | | | | |
|---------|--------|----------|----------|----------|----------|
| H-3 | CURIES | 0.00E-01 | 0.00E-01 | 2.63E 01 | 5.54E 02 |
| C-14 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| NA-24 | CURIES | 0.00E-01 | 0.00E-01 | 2.17E-04 | 1.53E-03 |
| P-32 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CR-51 | CURIES | 0.00E-01 | 0.00E-01 | 5.58E-04 | 2.65E-03 |
| MN-54 | CURIES | 0.00E-01 | 0.00E-01 | 2.13E-03 | 5.13E-03 |
| MN-56 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| FE-55 | CURIES | 0.00E-01 | 0.00E-01 | 2.64E-02 | 5.84E-02 |
| FE-59 | CURIES | 0.00E-01 | 0.00E-01 | 1.73E-05 | 3.68E-05 |
| CO-58 | CURIES | 0.00E-01 | 0.00E-01 | 1.42E-02 | 3.22E-02 |
| CO-60 | CURIES | 0.00E-01 | 0.00E-01 | 3.23E-03 | 7.36E-03 |
| NI-63 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| NI-65 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| CU-64 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| ZN-65 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| ZN-69 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BR-80 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BR-81 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BR-82 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| RU-93 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| RE-96 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Ru-97 | CURIES | 0.00E-01 | 0.00E-01 | 1.05E-01 | 7.18E-01 |
| SR-89 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| SR-90 | CURIES | 0.00E-01 | 0.00E-01 | 2.24E-03 | 1.34E-03 |
| SR-91 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| SR-92 | CURIES | 0.00E-01 | 0.00E-01 | 1.94E-04 | 3.54E-04 |
| Y-90 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Y-91M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Y-91 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Y-92 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Y-93 | CURIES | 0.00E-01 | 0.00E-01 | 8.93E-05 | 0.00E-01 |
| ZR-95 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| ZR-97 | CURIES | 0.00E-01 | 0.00E-01 | 9.35E-04 | 1.31E-03 |
| NE-95 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| MO-99 | CURIES | 0.00E-01 | 0.00E-01 | 7.35E-04 | 2.15E-03 |
| TC-99M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 1.09E-02 |
| TC-101 | CURIES | 0.00E-01 | 0.00E-01 | 7.50E-05 | 1.39E-02 |
| RU-103 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| RU-105 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| RU-106 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| AG-110M | CURIES | 0.00E-01 | 0.00E-01 | 4.95E-04 | 0.00E-01 |
| TE-123M | CURIES | 0.00E-01 | 0.00E-01 | 1.56E-02 | 1.26E-02 |
| TC-127M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TE-127 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TE-129M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TE-129 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TE-131M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |

| NUCLIDE | UNIT | CONTINUOUS RELEASES | | BATCH RELEASES | |
|---------|------|---------------------|------------|----------------|------------|
| | | QUARTER 3 | QUARTER 4 | QUARTER 3 | QUARTER 4 |
| | | HOURS | HOURS | HOURS | HOURS |
| | | 14345-6552 | 16553-8760 | 14345-6552 | 16553-8760 |

ALL NUCLIDES CONTINUED

| | | | | | |
|---------|--------|----------|----------|----------|----------|
| TE-131 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| TE-132 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| I-130 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| I-131 | CURIES | 0.00E-01 | 0.00E-01 | 3.12E-02 | 2.16E-01 |
| I-132 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 1.34E-03 |
| I-133 | CURIES | 0.00E-01 | 0.00E-01 | 4.51E-03 | 2.55E-02 |
| I-134 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 3.04E-04 |
| I-135 | CURIES | 0.00E-01 | 0.00E-01 | 4.05E-04 | 3.53E-03 |
| CO-136 | CURIES | 0.00E-01 | 0.00E-01 | 1.33E-03 | 1.26E-01 |
| CS-136 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 2.40E-02 |
| CS-137 | CURIES | 0.00E-01 | 2.00E-01 | 6.30E-03 | 1.42E-01 |
| CS-138 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 1.33E-03 |
| BA-139 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BA-140 | CURIES | 0.00E-01 | 0.00E-01 | 3.00E-01 | 8.43E-05 |
| BA-141 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| BA-142 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| LA-140 | CURIES | 0.00E-01 | 0.00E-01 | 1.93E-04 | 1.60E-04 |
| LA-141 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Cl-143 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| Cl-144 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 8.59E-05 |
| PR-143 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| PR-144 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| ND-147 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| W-157 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| NF-209 | CURIES | 0.00E-01 | 5.00E-01 | 0.00E-01 | 0.00E-01 |
| KR-85M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| KR-85H | CURIES | 0.00E-01 | 0.00E-01 | 1.56E-02 | 4.56E-02 |
| KR-85 | CURIES | 0.00E-01 | 0.00E-01 | 7.57E-03 | 3.49E-02 |
| KR-87 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 7.68E-04 |
| KR-88 | CURIES | 0.00E-01 | 0.00E-01 | 3.94E-03 | 2.47E-02 |
| KR-89 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| KR-90 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| XE-131M | CURIES | 0.00E-01 | 0.00E-01 | 4.51E-01 | 1.03E 00 |
| XL-133M | CURIES | 0.00E-01 | 0.00E-01 | 5.02E 00 | 1.45E 00 |
| XE-133 | CURIES | 0.00E-01 | 0.00E-01 | 6.24E 01 | 1.02E 02 |
| XE-135M | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 4.66E-03 |
| XL-135 | CURIES | 0.00E-01 | 0.00E-01 | 7.03E-01 | 1.77E 00 |
| XL-137 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| XL-136 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| AK-41 | CURIES | 0.00E-01 | 0.00E-01 | 1.82E-05 | 1.31E-03 |
| SA-70 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 2.42E-03 |
| U ALPMA | CURIES | 0.00E-01 | 0.00E-01 | 3.18E-04 | 5.17E-07 |
| UTMA | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| PL-7 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |
| K-80 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 |

| NUCLIDE | UNIT | CONTINUOUS RELEASES | | BATCH RELEASES | |
|---------|------|---------------------|--------------------|--------------------|--------------------|
| | | QUARTER 3 HOURS | QUARTER 4 HOURS | QUARTER 3 HOURS | QUARTER 4 HOURS |
| | | 14345-6552 | 16553-8760 | 14345-6552 | 16553-8760 |

ALL NUCLIDES CONTINUED

| | | | | | |
|------------------|--------|----------|----------|----------|----------|
| CO-56 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| CO-57 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| SE-75 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| SA-85 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Y-86 | CURIES | 0.00E+01 | 0.00E+01 | 2.35E+05 | 3.16E+04 |
| Na-94 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Na-97 | CURIES | 0.00E+01 | 0.00E+01 | 5.67E+05 | 4.56E+04 |
| MO-90 | CURIES | 0.00E+01 | 0.00E+01 | 1.18E+04 | 2.79E+05 |
| CL-104 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| CO-113 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| SR-111 | CURIES | 0.00E+01 | 0.00E+01 | 1.43E+04 | 1.17E+04 |
| SB-122 | CURIES | 0.00E+01 | 0.00E+01 | 5.46E+04 | 6.21E+05 |
| SB-124 | CURIES | 0.00E+01 | 0.00E+01 | 1.40E+04 | 7.93E+04 |
| SB-125 | CURIES | 0.00E+01 | 0.00E+01 | 1.15E+02 | 1.55E+02 |
| SB-127 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| BA-133 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 1.1E+04 |
| CL-134 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| EU-152 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Hf-181 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| RE-214 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Bi-214 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Ra-226 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Th-230 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| U-235 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| TOTAL FOR PERIOD | CURIES | 0.00E+01 | 0.00E+01 | 9.51E+01 | 6.02E+02 |

REPORT CATEGORY
 TYPE OF ACTIVITY
 REPORTING PERIOD

| TYPE OF EFFLUENT | UNIT | QUARTER 3 | QUARTER 4 | EST. TOTAL |
|------------------|------|-----------|-----------|------------|
| | | HOURS | HOURS | ERROR % |
| | | 4345-4542 | 5553-8760 | |

A. FISSION AND ACTIVATION BASES

| | | | | |
|------------------------------------|----------|------------|------------|------------|
| 1. TOTAL RELEASE | :CURIES | : 5.93E 02 | : 5.51E 02 | : 0.00E+01 |
| 2. AVERAGE RELEASE RATE FOR PERIOD | :UCI/SEC | : 7.55E 01 | : 7.01E 01 | : |
| 3. PERCENT OF APPLICABLE LIMIT | : % | : 1.06E 00 | : 9.81E-01 | : |

B. RADIOIODINE

| | | | | |
|------------------------------------|----------|------------|------------|------------|
| 1. TOTAL RELEASE | :MBQI/HR | : 1.97E+05 | : 3.09E+04 | : 0.00E+01 |
| 2. AVERAGE RELEASE RATE FOR PERIOD | :UCI/SEC | : 2.51E+06 | : 3.93E+05 | : |
| 3. PERCENT OF APPLICABLE LIMIT | : % | : 7.04E-01 | : 1.10E-04 | : |

C. PARTICULATE

| | | | | |
|---------------------------------------|----------|------------|------------|------------|
| 1. PARTICULATE (HALF-LIFE OF 30 DAYS) | :MBQI/HR | : 3.77E+05 | : 3.91E+05 | : 0.00E+01 |
| 2. AVERAGE RELEASE RATE FOR PERIOD | :UCI/SEC | : 4.50E+07 | : 4.95E+06 | : |
| 3. PERCENT OF APPLICABLE LIMIT | : % | : 1.34E+06 | : 1.39E+05 | : |
| 4. GROSS ALPHA RADIOACTIVITY | :MBQI/HR | : 0.00E+01 | : 0.00E+01 | : |

D. TRITIUM

| | | | | |
|------------------------------------|----------|------------|------------|------------|
| 1. TOTAL RELEASE | :CURIES | : 2.89E 00 | : 2.75E 00 | : 0.00E+01 |
| 2. AVERAGE RELEASE RATE FOR PERIOD | :UCI/SEC | : 3.68E-01 | : 3.50E-01 | : |
| 3. PERCENT OF APPLICABLE LIMIT | : % | : 5.15E-04 | : 4.90E-04 | : |

| NUCLIDE | UNIT | ELEVATED | | GROUND | |
|---------|------|-----------|-----------|-----------|-----------|
| | | BATCH | RELEASES | BATCH | RELEASES |
| | | QUARTER 3 | QUARTER 4 | QUARTER 3 | QUARTER 4 |
| | | HOURS | HOURS | HOURS | HOURS |
| | | 4345-6552 | 6553-8760 | 4345-6552 | 6553-8760 |

FISSION CASES

| | | | | | |
|------------------|--------|----------|----------|----------|----------|
| KR-83M | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| KA-85M | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 1.74E+02 |
| KA-85 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 5.44E+00 |
| KR-87 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 2.69E+04 |
| KR-88 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 4.39E+04 |
| KR-89 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| KA-90 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| XL-101A | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 1.76E+00 |
| XE-129M | CURIES | 0.00E+01 | 0.00E+01 | 5.70E+06 | 7.67E+00 |
| XL-131 | CURIES | 0.00E+01 | 0.00E+01 | 5.76E+00 | 5.23E+02 |
| XL-131M | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 5.03E+04 |
| XL-132 | CURIES | 0.00E+01 | 0.00E+01 | 1.73E+01 | 1.24E+01 |
| Xe-137 | CURIES | 0.00E+01 | 0.00E+01 | 0.30E+01 | 0.00E+01 |
| XL-138 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 2.91E+04 |
| AR-41 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 2.48E+04 |
| OTHER | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| TOTAL FCS PERIOD | CURIES | 0.00E+01 | 0.00E+01 | 5.93E+00 | 5.51E+02 |

IODINES

| | | | | | |
|------------------|--------|----------|----------|----------|----------|
| I-130 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| I-131 | CURIES | 0.00E+01 | 0.00E+01 | 1.97E+03 | 3.04E+04 |
| I-132 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 2.24E+06 |
| I-133 | CURIES | 0.00E+01 | 0.00E+01 | 1.13E+06 | 5.87E+06 |
| I-134 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| I-135 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| OTHER | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| TOTAL FCS PERIOD | CURIES | 0.00E+01 | 0.00E+01 | 2.09E+05 | 3.17E+04 |

PARTICULATES

| | | | | | |
|-------|--------|----------|----------|----------|----------|
| H-3 | CURIES | 0.00E+01 | 0.00E+01 | 2.89E+00 | 2.75E+00 |
| C-14 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| NA-24 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| P-32 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| KR-81 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| RN-22 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| RN-22 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| FE-59 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| FE-59 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| CO-60 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 3.77E+05 |
| CO-60 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 3.73E+07 |
| NI-63 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| NI-63 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| CU-64 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| ZN-65 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |

| NUCLIDE | UNIT | ELEVATED | | GROUND | |
|------------------------|--------|--------------------|--------------------|--------------------|--------------------|
| | | BATCH | RELEASES | BATCH | RELEASES |
| | | QUARTER 3 HOURS | QUARTER 4 HOURS | QUARTER 3 HOURS | QUARTER 4 HOURS |
| | | 4343-8552 | 5552-8760 | 4343-8552 | 5552-8760 |
| PARTICULATES CONTINUED | | | | | |
| Zn-64 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-66 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-68 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-70 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-72 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-74 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-76 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-78 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-80 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-82 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-84 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-86 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-88 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-90 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-92 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-94 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-96 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-98 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-100 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-102 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-104 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-106 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-108 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-110 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-112 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-114 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-116 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-118 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-120 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-122 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-124 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-126 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-128 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-130 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-132 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-134 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-136 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-138 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-140 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-142 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-144 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-146 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-148 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-150 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-152 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-154 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-156 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-158 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |
| Zn-160 | CURIES | 0.00E+01 | 0.00E+01 | 0.00E+01 | 0.00E+01 |

| | UNIT | ELEVATED | | GROUND | |
|--------|------|-----------|-----------|-----------|-----------|
| | | BATCH | RELEASES | BATCH | RELEASES |
| | | QUARTER 3 | QUARTER 4 | QUARTER 3 | QUARTER 4 |
| | | HOURS | HOURS | HOURS | HOURS |
| NUCLID | | 4345-832 | 6553-8760 | 4345-832 | 6553-8760 |

| PARTICULATES CONTINUED | | | | | | |
|------------------------|--------|----------|----------|----------|----------|--|
| PA-143 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| PA-144 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| ND-147 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| W-147 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| NF-239 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| SA-230 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| G ALPHA | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| OTHER | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| BL-7 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| K-40 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| CO-58 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| CO-57 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| EL-72 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| SA-135 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| Y-90 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| NE-94 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| NE-97 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| MO-98 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| CD-109 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| CD-110 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| SN-113 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| SB-114 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| SB-124 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| SB-125 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| SB-127 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| SA-133 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| Ce-134 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| EU-152 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| HG-203 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| PL-214 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| BI-214 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| RA-226 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| Th-230 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| U-235 | CURIES | 0.00E-01 | 0.00E-01 | 0.00E-01 | 0.00E-01 | |
| TOTAL FOR PERIOD | CURIES | 0.00E-01 | 0.00E-01 | 2.89E 00 | 2.75E 00 | |

*** REGULATORY GUIDE 1.21 REPORT ***

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1991)

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

ARKANSAS NUCLEAR ONE

ROUTE 3 BOX 137G

RUSSELLVILLE, AR 72801

JULY 1, 1991 THROUGH DECEMBER 1, 1991

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 | 1.91E+02 5.74E+02 | 1.51E+00 |
| b. Dry compressible waste, contaminated equip, etc. | m ³ Ci | 1.86E+02 2.14E+01 | 2.10E+00 |
| c. Irradiated components, control rods, etc. | m ³ Ci | 0.00E-00 0.00E-00 | 0.00E-00 |
| d. Other (describe) | m ³ Ci | 0.00E-00 0.00E-00 | 0.00E-00 |

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

| | | |
|----------|--------|----------|
| a. NI 63 | 24.4 % | 1.40E+02 |
| FE 55 | 21.8 % | 1.25E+02 |
| CS 137 | 19.3 % | 1.11E+02 |
| CO 58 | 12.0 % | 6.90E+01 |
| CS 134 | 7.77 % | 4.46E+01 |
| CO 60 | 7.39 % | 4.24E+01 |
| C 14 | 1.59 % | 9.15E+00 |
| NB 95 | 1.16 % | 6.64E+00 |
| MN 54 | 1.05 % | 6.01E+00 |
| CR 51 | 0.93 % | 5.34E+00 |

| | | |
|-----------|--------|----------|
| b. CS 137 | 31.2 % | 6.67E+00 |
| FE 55 | 21.2 % | 4.53E+00 |
| CO 58 | 15.6 % | 3.34E+00 |
| NI 63 | 12.0 % | 2.57E+00 |
| CS 134 | 9.22 % | 1.97E+00 |
| CO 60 | 5.95 % | 1.27E+00 |
| C 14 | 3.29 % | 7.03E-01 |
| NB 95 | 0.48 % | 1.02E-01 |
| ZR 95 | 0.35 % | 7.55E-02 |
| AG 110M | 0.34 % | 7.36E-02 |

| | | |
|----|---|-----|
| c. | % | . E |
|----|---|-----|

| | | |
|----|---|-----|
| d. | % | . E |
|----|---|-----|

3. Solid Waste Disposition

| <u>Number of Shipments</u> | <u>Mode of Transportation</u> | <u>Destination</u> |
|----------------------------|-------------------------------|--------------------|
| 15 | Unshielded Van/Truck | Oak Ridge, TN |
| 11 | Unshielded Van/Truck | Hanford, WA |
| 6 | Cask Shipment (Type A) | Hanford, WA |
| 1 | Cask Shipment (Type A) | Hanford, WA |

B. IRRADIATED FUEL SHIPMENTS (Dispositon)

| <u>Number of Shipments</u> | <u>Mode of Transportation</u> | <u>Destination</u> |
|----------------------------|-------------------------------|--------------------|
| 1 | Spent Fuel Cask | Studsvik, Sweden |

*** REGULATORY GUIDE 1.21 REPORT ***

EFFLUENT AND WASTE DISPOSAL ANNUAL SUMMARY REPORT (1991)

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

ARKANSAS NUCLEAR ONE

ROUTE 3 BOX 137G

RUSSELLVILLE, AR 72801

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

| 1. Type of waste | Unit | 12-month Period | Est. Total Error, % |
|-----------------------------------------------------------|----------------------|----------------------|---------------------|
| a. Spent resins, filter sludges, evaporator bottoms, etc. | m ³ Ci | 1.91E+02 5.74E+02 | 1.51E+00 |
| b. Dry compressible waste, contaminated equip, etc. | m ³ Ci | 2.27E+02 2.92E+01 | 1.74E+00 |
| c. Irradiated components, control rods, etc. | m ³ Ci | 0.00E+00 0.00E+00 | 0.00E+00 |
| d. Other (describe) | m ³ Ci | 0.00E+00 0.00E+00 | 0.00E+00 |

2. Solid Waste Disposition

| <u>Number of Shipments</u> | <u>Mode of Transportation</u> | <u>Destination</u> |
|----------------------------|-------------------------------|--------------------|
| 24 | Unshielded Van/Truck | Oak Ridge, TN |
| 1 | Unshielded Van/Truck | Wampum, PA |
| 11 | Unshielded Van/Truck | Hanford, WA |
| 6 | Cask Shipment (Type A) | Hanford, WA |
| 1 | Cask Shipment (Type B) | Hanford, WA |

B. IRRADIATED FUEL SHIPMENTS (Disposition)

| <u>Number of Shipments</u> | <u>Mode of Transportation</u> | <u>Destination</u> |
|----------------------------|-------------------------------|--------------------|
| 1 | Spent Fuel Cask | Studsvik, Sweden |

SPECIAL NOTE

The Reg. Guide 1.21 Annual Summary Report reflects a reduction in the reported volume of dry compressible waste for the January 1 - June 30 period. Due to a misinterpretation of data in an offsite processor's burial report, it was necessary to reduce the volume for this period from 41.7 cubic meters to 41.2 cubic meters.

ATTACHMENT B

UNPLANNED RELEASES TO UNRESTRICTED AREAS

There were two unplanned releases from ANO during the third and fourth quarters of 1991. A discussion of these releases is provided below.

On November 11, 1991, a control room isolation occurred. Initiation of the isolation was an increase in radiation monitoring reading. Upon further investigation, the source of radiation into the system was caused by the Auxiliary Building ventilation housing being opened for maintenance. Although the exhaust fans were secure, air flow via the condenser off gas system and the 2T12 purge system had not been secured.

Due to the primary to secondary leak on ANO-2, an amount of radiation was released upon opening the vent housing. 171 cubic meters of effluent and 0.007 curies were released. This release produced a quarterly critical organ dose of 0.0650 mrem to members of the public. This represents 0.866% of the quarterly limits.

On December 9, 1991, during the calibration of the PASS SPING, it was found that vent flow from the PASS ventilation system existed. Upon further investigation, it was found that the supply fans to the PASS building were running, the exhaust fans were secured, and the dampers were opened. The supply fans were subsequently secured.

Since the PASS SPING was being calibrated during this release, no monitoring system was in place. Charcoal and particulate samples taken from the SPING prior to calibration were used to determine the radioactive contents of the release along with a gas and tritium sample after the release. Tritium was the only isotope found in the analysis of the samples.

It was determined that 19,770 cubic meters of effluent and 0.00124 curies were released. This release produced a quarterly critical organ dose of 0.0658 mrem to members of the public. This represents 0.877% of the quarterly limits.

ATTACHMENT C

CHANGES TO THE OFFSITE DOSE
CALCULATIONAL MANUAL AND
PROCESS CONTROL PROGRAM

There were no changes made to the Offsite Dose Calculational Manual during the third and fourth quarters of 1991.

No changes to the Process Control Program were made during the third and fourth quarters of 1991.

ATTACHMENT D

RADIATION DOSES DUE TO
RADIOLOGICAL EFFLUENT

 ARKANSAS POWER AND LIGHT
 ARKANSAS NUCLEAR ONE
 LIQUID RADIOACTIVE WASTE DATA FILE
 CUMULATIVE DOSE DATA

| | | TS | |
|-----------------------------------|---|------------|------------|
| | | LIMIT | %LIMIT |
| ** UNIT 1 ** QUARTER 1 OF 1991 ** | | | |
| TOTAL DOSE (MREM) FOR BONE | : | 1.4066E-02 | 5.0 0.281% |
| TOTAL DOSE (MREM) FOR LIVER | : | 2.1474E-02 | 5.0 0.429% |
| TOTAL DOSE (MREM) FOR TOTAL BODY | : | 1.5837E-02 | 1.5 1.056% |
| TOTAL DOSE (MREM) FOR THYROID | : | 3.4077E-02 | 5.0 0.682% |
| TOTAL DOSE (MREM) FOR KIDNEY | : | 7.6324E-03 | 5.0 0.153% |
| TOTAL DOSE (MREM) FOR LUNG | : | 2.7451E-03 | 5.0 0.549% |
| TOTAL DOSE (MREM) FOR GI-LLI | : | 4.9807E-02 | 5.0 0.996% |

| | | TS | |
|-----------------------------------|---|------------|------------|
| | | LIMIT | %LIMIT |
| ** UNIT 1 ** QUARTER 2 OF 1991 ** | | | |
| TOTAL DOSE (MREM) FOR BONE | : | 3.4260E-02 | 5.0 0.685% |
| TOTAL DOSE (MREM) FOR LIVER | : | 5.8551E-02 | 5.0 1.171% |
| TOTAL DOSE (MREM) FOR TOTAL BODY | : | 4.2494E-02 | 1.5 2.833% |
| TOTAL DOSE (MREM) FOR THYROID | : | 1.5481E-02 | 5.0 0.310% |
| TOTAL DOSE (MREM) FOR KIDNEY | : | 1.9527E-02 | 5.0 0.391% |
| TOTAL DOSE (MREM) FOR LUNG | : | 6.5974E-03 | 5.0 0.132% |
| TOTAL DOSE (MREM) FOR GI-LLI | : | 1.5687E-02 | 5.0 0.314% |

| | | TS | |
|-----------------------------------|---|------------|------------|
| | | LIMIT | %LIMIT |
| ** UNIT 1 ** QUARTER 3 OF 1991 ** | | | |
| TOTAL DOSE (MREM) FOR BONE | : | 2.7036E-02 | 5.0 0.741% |
| TOTAL DOSE (MREM) FOR LIVER | : | 6.0377E-02 | 5.0 1.208% |
| TOTAL DOSE (MREM) FOR TOTAL BODY | : | 4.3798E-02 | 1.5 2.920% |
| TOTAL DOSE (MREM) FOR THYROID | : | 2.8508E-04 | 5.0 0.006% |
| TOTAL DOSE (MREM) FOR KIDNEY | : | 2.0058E-02 | 5.0 0.401% |
| TOTAL DOSE (MREM) FOR LUNG | : | 7.0814E-03 | 5.0 0.142% |
| TOTAL DOSE (MREM) FOR GI-LLI | : | 2.9798E-02 | 5.0 0.596% |

| | | TS | |
|-----------------------------------|---|------------|------------|
| | | LIMIT | %LIMIT |
| ** UNIT 1 ** QUARTER 4 OF 1991 ** | | | |
| TOTAL DOSE (MREM) FOR BONE | : | 6.7668E-03 | 5.0 0.135% |
| TOTAL DOSE (MREM) FOR LIVER | : | 1.1704E-02 | 5.0 0.234% |
| TOTAL DOSE (MREM) FOR TOTAL BODY | : | 8.4791E-03 | 1.5 0.565% |
| TOTAL DOSE (MREM) FOR THYROID | : | 5.8925E-04 | 5.0 0.012% |
| TOTAL DOSE (MREM) FOR KIDNEY | : | 4.0083E-03 | 5.0 0.080% |
| TOTAL DOSE (MREM) FOR LUNG | : | 1.8145E-03 | 5.0 0.036% |
| TOTAL DOSE (MREM) FOR GI-LLI | : | 4.0046E-03 | 5.0 0.080% |

| | | TS | |
|----------------------------------|---|------------|-------------|
| | | LIMIT | %LIMIT |
| ** UNIT 1 ** TOTALS FOR 1991 ** | | | |
| TOTAL DOSE (MREM) FOR BONE | : | 9.2129E-02 | 10.0 0.921% |
| TOTAL DOSE (MREM) FOR LIVER | : | 1.5211E-01 | 10.0 1.521% |
| TOTAL DOSE (MREM) FOR TOTAL BODY | : | 1.1061E-01 | 3.0 3.687% |
| TOTAL DOSE (MREM) FOR THYROID | : | 5.0432E-02 | 10.0 0.504% |
| TOTAL DOSE (MREM) FOR KIDNEY | : | 5.1226E-02 | 10.0 0.512% |
| TOTAL DOSE (MREM) FOR LUNG | : | 1.8238E-02 | 10.0 0.182% |
| TOTAL DOSE (MREM) FOR GI-LLI | : | 9.9296E-02 | 10.0 0.993% |

 ARKANSAS POWER AND LIGHT
 ARKANSAS NUCLEAR ONE
 LIQUID RADIOACTIVE WASTE DATA FILE
 CUMULATIVE DOSE DATA

| | | TS | %LIMIT |
|-----------------------------------|--------------|-------|--------|
| | | LIMIT | |
| ** UNIT 2 ** QUARTER 1 OF 1991 ** | | | |
| TOTAL DOSE (MREM) FOR BONE | : 1.8407E-02 | 5.0 | 0.368% |
| TOTAL DOSE (MREM) FOR LIVER | : 2.8441E-02 | 5.0 | 0.569% |
| TOTAL DOSE (MREM) FOR TOTAL BODY | : 2.0412E-02 | 1.5 | 1.361% |
| TOTAL DOSE (MREM) FOR THYROID | : 9.7229E-02 | 5.0 | 1.945% |
| TOTAL DOSE (MREM) FOR KIDNEY | : 1.0444E-02 | 5.0 | 0.209% |
| TOTAL DOSE (MREM) FOR LUNG | : 4.3380E-03 | 5.0 | 0.087% |
| TOTAL DOSE (MREM) FOR GI-LLI | : 7.2258E-02 | 5.0 | 1.445% |

| | | TS | %LIMIT |
|-----------------------------------|--------------|-------|--------|
| | | LIMIT | |
| ** UNIT 2 ** QUARTER 2 OF 1991 ** | | | |
| TOTAL DOSE (MREM) FOR BONE | : 3.2585E-02 | 5.0 | 0.652% |
| TOTAL DOSE (MREM) FOR LIVER | : 5.1585E-02 | 5.0 | 1.032% |
| TOTAL DOSE (MREM) FOR TOTAL BODY | : 3.7225E-02 | 1.5 | 2.482% |
| TOTAL DOSE (MREM) FOR THYROID | : 6.8570E-03 | 5.0 | 0.137% |
| TOTAL DOSE (MREM) FOR KIDNEY | : 1.7455E-02 | 5.0 | 0.349% |
| TOTAL DOSE (MREM) FOR LUNG | : 1.0095E-02 | 5.0 | 0.202% |
| TOTAL DOSE (MREM) FOR GI-LLI | : 2.9440E-01 | 5.0 | 5.888% |

| | | TS | %LIMIT |
|-----------------------------------|--------------|-------|--------|
| | | LIMIT | |
| ** UNIT 2 ** QUARTER 3 OF 1991 ** | | | |
| TOTAL DOSE (MREM) FOR BONE | : 3.7062E-03 | 5.0 | 0.074% |
| TOTAL DOSE (MREM) FOR LIVER | : 5.5060E-03 | 5.0 | 0.110% |
| TOTAL DOSE (MREM) FOR TOTAL BODY | : 3.8040E-03 | 1.5 | 0.254% |
| TOTAL DOSE (MREM) FOR THYROID | : 1.2652E-02 | 5.0 | 0.253% |
| TOTAL DOSE (MREM) FOR KIDNEY | : 1.8366E-03 | 5.0 | 0.037% |
| TOTAL DOSE (MREM) FOR LUNG | : 1.0076E-03 | 5.0 | 0.020% |
| TOTAL DOSE (MREM) FOR GI-LLI | : 6.9880E-03 | 5.0 | 0.140% |

| | | TS | %LIMIT |
|-----------------------------------|--------------|-------|--------|
| | | LIMIT | |
| ** UNIT 2 ** QUARTER 4 OF 1991 ** | | | |
| TOTAL DOSE (MREM) FOR BONE | : 1.1496E-01 | 5.0 | 2.300% |
| TOTAL DOSE (MREM) FOR LIVER | : 1.9415E-01 | 5.0 | 3.883% |
| TOTAL DOSE (MREM) FOR TOTAL BODY | : 1.4606E-01 | 1.5 | 9.373% |
| TOTAL DOSE (MREM) FOR THYROID | : 8.8667E-02 | 5.0 | 1.773% |
| TOTAL DOSE (MREM) FOR KIDNEY | : 6.5434E-02 | 5.0 | 1.309% |
| TOTAL DOSE (MREM) FOR LUNG | : 2.2337E-02 | 5.0 | 0.447% |
| TOTAL DOSE (MREM) FOR GI-LLI | : 2.5086E-02 | 5.0 | 0.502% |

| | | TS | %LIMIT |
|----------------------------------|--------------|-------|--------|
| | | LIMIT | |
| ** UNIT 2 ** TOTALS FOR 1991 ** | | | |
| TOTAL DOSE (MREM) FOR BONE | : 1.6966E-01 | 10.0 | 1.697% |
| TOTAL DOSE (MREM) FOR LIVER | : 2.7968E-01 | 10.0 | 2.797% |
| TOTAL DOSE (MREM) FOR TOTAL BODY | : 2.0750E-01 | 3.0 | 6.917% |
| TOTAL DOSE (MREM) FOR THYROID | : 2.0540E-01 | 10.0 | 2.054% |
| TOTAL DOSE (MREM) FOR KIDNEY | : 9.5170E-02 | 10.0 | 0.952% |
| TOTAL DOSE (MREM) FOR LUNG | : 3.7778E-02 | 10.0 | 0.378% |
| TOTAL DOSE (MREM) FOR GI-LLI | : 3.9873E-01 | 10.0 | 3.987% |

 ARKANSAS POWER AND LIGHT COMPANY
 ARKANSAS NUCLEAR ONE
 GASEOUS RADIOACTIVE WASTE DATA FILE
 CUMULATIVE DOSE DATA

** UNIT 1 ** QUARTER 1 OF 1991 **
 DOSE FROM RADIOIODINES, PARTICULATES, AND TRITIUM
 AT CONTROLLING LOCATION: TS LIMIT %LIMIT

| | | | |
|-------------------------------------|--------------|------|--------|
| TOTAL DOSE (MREM) FOR BONE | : 6.2978E-04 | 7.5 | 0.008% |
| TOTAL DOSE (MREM) FOR LIVER | : 2.1461E-03 | 7.5 | 0.029% |
| TOTAL DOSE (MREM) FOR TOTAL BODY | : 1.7297E-03 | 7.5 | 0.023% |
| TOTAL DOSE (MREM) FOR THYROID | : 1.6503E-03 | 7.5 | 0.022% |
| TOTAL DOSE (MREM) FOR KIDNEY | : 1.8106E-03 | 7.5 | 0.024% |
| TOTAL DOSE (MREM) FOR LUNG | : 1.7090E-03 | 7.5 | 0.023% |
| TOTAL DOSE (MREM) FOR GI-LLI | : 1.6567E-03 | 7.5 | 0.022% |
| NOBLE GAS AIRDOSE AT SITE BOUNDARY: | | | |
| TOTAL GAMMA AIRDOSE (MRAD) | : 1.2676E-03 | 5.0 | 0.025% |
| TOTAL BETA AIRDOSE (MRAD) | : 3.1601E-03 | 10.0 | 0.032% |

** UNIT 1 ** QUARTER 2 OF 1991 **
 DOSE FROM RADIOIODINES, PARTICULATES, AND TRITIUM
 AT CONTROLLING LOCATION: TS LIMIT %LIMIT

| | | | |
|-------------------------------------|--------------|------|--------|
| TOTAL DOSE (MREM) FOR BONE | : 1.0895E-01 | 7.5 | 1.453% |
| TOTAL DOSE (MREM) FOR LIVER | : 1.2540E-01 | 7.5 | 1.672% |
| TOTAL DOSE (MREM) FOR TOTAL BODY | : 4.4914E-02 | 7.5 | 0.599% |
| TOTAL DOSE (MREM) FOR THYROID | : 1.8179E-01 | 7.5 | 2.424% |
| TOTAL DOSE (MREM) FOR KIDNEY | : 5.9518E-02 | 7.5 | 0.794% |
| TOTAL DOSE (MREM) FOR LUNG | : 3.8857E-02 | 7.5 | 0.518% |
| TOTAL DOSE (MREM) FOR GI-LLI | : 2.8329E-02 | 7.5 | 0.378% |
| NOBLE GAS AIRDOSE AT SITE BOUNDARY: | | | |
| TOTAL GAMMA AIRDOSE (MRAD) | : 6.8062E-03 | 5.0 | 0.136% |
| TOTAL BETA AIRDOSE (MRAD) | : 1.9811E-02 | 10.0 | 0.198% |

** UNIT 1 ** QUARTER 3 OF 1991 **
 DOSE FROM RADIOIODINES, PARTICULATES, AND TRITIUM
 AT CONTROLLING LOCATION: TS LIMIT %LIMIT

| | | | |
|-------------------------------------|--------------|------|--------|
| TOTAL DOSE (MREM) FOR BONE | : 5.4428E-05 | 7.5 | 0.001% |
| TOTAL DOSE (MREM) FOR LIVER | : 2.4558E-03 | 7.5 | 0.031% |
| TOTAL DOSE (MREM) FOR TOTAL BODY | : 2.4317E-03 | 7.5 | 0.032% |
| TOTAL DOSE (MREM) FOR THYROID | : 3.3294E-03 | 7.5 | 0.044% |
| TOTAL DOSE (MREM) FOR KIDNEY | : 2.4370E-03 | 7.5 | 0.032% |
| TOTAL DOSE (MREM) FOR LUNG | : 2.4268E-03 | 7.5 | 0.032% |
| TOTAL DOSE (MREM) FOR GI-LLI | : 2.4254E-03 | 7.5 | 0.032% |
| NOBLE GAS AIRDOSE AT SITE BOUNDARY: | | | |
| TOTAL GAMMA AIRDOSE (MRAD) | : 2.6974E-03 | 5.0 | 0.054% |
| TOTAL BETA AIRDOSE (MRAD) | : 7.0779E-03 | 10.0 | 0.071% |

 ARKANSAS POWER AND LIGHT COMPANY
 ARKANSAS NUCLEAR ONE
 GASEOUS RADIOACTIVE WASTE DATA FILE
 CUMULATIVE DOSE DATA

** UNIT 1 ** QUARTER 4 OF 1991 **
 DOSE FROM RADIOIODINES, PARTICULATES, AND TRITIUM
 AT CONTROLLING LOCATION:

| | | TS LIMIT | %LIMIT |
|-------------------------------------|--------------|-------------|--------|
| TOTAL DOSE (MREM) FOR BONE | : 1.9174E-04 | 7.5 | 0.003% |
| TOTAL DOSE (MREM) FOR LIVER | : 1.8952E-03 | 7.5 | 0.025% |
| TOTAL DOSE (MREM) FOR TOTAL BODY | : 1.8672E-03 | 7.5 | 0.025% |
| TOTAL DOSE (MREM) FOR THYROID | : 2.3419E-03 | 7.5 | 0.031% |
| TOTAL DOSE (MREM) FOR KIDNEY | : 1.8536E-03 | 7.5 | 0.025% |
| TOTAL DOSE (MREM) FOR LUNG | : 1.8381E-03 | 7.5 | 0.025% |
| TOTAL DOSE (MREM) FOR GI-LLI | : 1.8325E-03 | 7.5 | 0.024% |
| NOBLE GAS AIRDOSE AT SITE BOUNDARY: | | | |
| TOTAL GAMMA AIRDOSE (MRAD) | : 6.2366E-03 | 5.0 | 0.125% |
| TOTAL BETA AIRDOSE (MRAD) | : 1.7959E-02 | 10.0 | 0.180% |

** UNIT 1 ** TOTALS FOR 1991 **
 DOSE FROM RADIOIODINES, PARTICULATES, AND TRITIUM
 AT CONTROLLING LOCATION:

| | | TS LIMIT | %LIMIT |
|-------------------------------------|--------------|-------------|--------|
| TOTAL DOSE (MREM) FOR BONE | : 1.0983E-01 | 15.0 | 0.732% |
| TOTAL DOSE (MREM) FOR LIVER | : 1.3190E-01 | 15.0 | 0.879% |
| TOTAL DOSE (MREM) FOR TOTAL BODY | : 5.0943E-02 | 15.0 | 0.340% |
| TOTAL DOSE (MREM) FOR THYROID | : 1.8911E-01 | 15.0 | 1.261% |
| TOTAL DOSE (MREM) FOR KIDNEY | : 6.5619E-02 | 15.0 | 0.437% |
| TOTAL DOSE (MREM) FOR LUNG | : 4.4831E-02 | 15.0 | 0.299% |
| TOTAL DOSE (MREM) FOR GI-LLI | : 3.4244E-04 | 15.0 | 0.228% |
| NOBLE GAS AIRDOSE AT SITE BOUNDARY: | | | |
| TOTAL GAMMA AIRDOSE (MRAD) | : 1.7008E-02 | 10.0 | 0.170% |
| TOTAL BETA AIRDOSE (MRAD) | : 4.8008E-02 | 20.0 | 0.240% |

 ARKANSAS POWER AND LIGHT COMPANY
 ARKANSAS NUCLEAR ONE
 GASEOUS RADIOACTIVE WASTE DATA FILE
 CUMULATIVE DOSE DATA

** UNIT 2 ** QUARTER 1 OF 1991 **

| DOSE FROM RADIOIODINES, PARTICULATES, AND TRITIUM AT CONTROLLING LOCATION: | | TS LIMIT | %LIMIT |
|-------------------------------------------------------------------------------|--------------|-------------|--------|
| TOTAL DOSE (MREM) FOR BONE | : 1.7503E-03 | 7.5 | 0.023% |
| TOTAL DOSE (MREM) FOR LIVER | : 3.2082E-03 | 7.5 | 0.043% |
| TOTAL DOSE (MREM) FOR TOTAL BODY | : 2.5179E-03 | 7.5 | 0.034% |
| TOTAL DOSE (MREM) FOR THYROID | : 9.2932E-02 | 7.5 | 1.239% |
| TOTAL DOSE (MREM) FOR KIDNEY | : 2.8410E-03 | 7.5 | 0.038% |
| TOTAL DOSE (MREM) FOR LUNG | : 2.3084E-03 | 7.5 | 0.031% |
| TOTAL DOSE (MREM) FOR GI-LLI | : 2.4014E-03 | 7.5 | 0.032% |
| NOBLE GAS AIRDOSE AT SITE BOUNDARY: | | | |
| TOTAL GAMMA AIRDOSE (MRAD) | : 1.1777E-02 | 5.0 | 0.236% |
| TOTAL BETA AIRDOSE (MRAD) | : 3.3679E-02 | 10.0 | 0.337% |

** UNIT 2 ** QUARTER 2 OF 1991 **

| DOSE FROM RADIOIODINES, PARTICULATES, AND TRITIUM AT CONTROLLING LOCATION: | | TS LIMIT | %LIMIT |
|-------------------------------------------------------------------------------|--------------|-------------|--------|
| TOTAL DOSE (MREM) FOR BONE | : 6.1033E-01 | 7.5 | 8.138% |
| TOTAL DOSE (MREM) FOR LIVER | : 6.8720E-01 | 7.5 | 9.163% |
| TOTAL DOSE (MREM) FOR TOTAL BODY | : 2.4046E-01 | 7.5 | 3.206% |
| TOTAL DOSE (MREM) FOR THYROID | : 2.9493E-01 | 7.5 | 3.932% |
| TOTAL DOSE (MREM) FOR KIDNEY | : 3.1765E-01 | 7.5 | 4.235% |
| TOTAL DOSE (MREM) FOR LUNG | : 2.0798E-01 | 7.5 | 2.773% |
| TOTAL DOSE (MREM) FOR GI-LLI | : 1.5779E-01 | 7.5 | 2.104% |
| NOBLE GAS AIRDOSE AT SITE BOUNDARY: | | | |
| TOTAL GAMMA AIRDOSE (MRAD) | : 3.5573E-03 | 5.0 | 0.071% |
| TOTAL BETA AIRDOSE (MRAD) | : 9.2862E-03 | 10.0 | 0.093% |

** UNIT 2 ** QUARTER 3 OF 1991 **

| DOSE FROM RADIOIODINES, PARTICULATES, AND TRITIUM AT CONTROLLING LOCATION: | | TS LIMIT | %LIMIT |
|-------------------------------------------------------------------------------|--------------|-------------|--------|
| TOTAL DOSE (MREM) FOR BONE | : 3.9097E-05 | 7.5 | 0.001% |
| TOTAL DOSE (MREM) FOR LIVER | : 1.8192E-03 | 7.5 | 0.024% |
| TOTAL DOSE (MREM) FOR TOTAL BODY | : 1.7985E-03 | 7.5 | 0.024% |
| TOTAL DOSE (MREM) FOR THYROID | : 5.4906E-03 | 7.5 | 0.073% |
| TOTAL DOSE (MREM) FOR KIDNEY | : 1.8133E-03 | 7.5 | 0.024% |
| TOTAL DOSE (MREM) FOR LUNG | : 1.7914E-03 | 7.5 | 0.024% |
| TOTAL DOSE (MREM) FOR GI-LLI | : 1.7918E-03 | 7.5 | 0.024% |
| NOBLE GAS AIRDOSE AT SITE BOUNDARY: | | | |
| TOTAL GAMMA AIRDOSE (MRAD) | : 2.1427E-02 | 5.0 | 0.429% |
| TOTAL BETA AIRDOSE (MRAD) | : 5.8621E-02 | 10.0 | 0.586% |

 ARKANSAS POWER AND LIGHT COMPANY
 ARKANSAS NUCLEAR ONE
 GASEOUS RADIOACTIVE WASTE DATA FILE
 CUMULATIVE DOSE DATA

** UNIT 2 ** QUARTER 4 OF 1991 **

| DOSE FROM RADIOIODINES, PARTICULATES, AND TRITIUM AT CONTROLLING LOCATION: | | TS | |
|-------------------------------------------------------------------------------|--------------|-------|--------|
| | | LIMIT | %LIMIT |
| TOTAL DOSE (MREM) FOR BONE | : 2.3410E-04 | 7.5 | 0.003% |
| TOTAL DOSE (MREM) FOR LIVER | : 1.9278E-03 | 7.5 | 0.026% |
| TOTAL DOSE (MREM) FOR TOTAL BODY | : 1.8341E-03 | 7.5 | 0.024% |
| TOTAL DOSE (MREM) FOR THYROID | : 6.7312E-02 | 7.5 | 0.897% |
| TOTAL DOSE (MREM) FOR KIDNEY | : 2.0434E-03 | 7.5 | 0.027% |
| TOTAL DOSE (MREM) FOR LUNG | : 1.7187E-03 | 7.5 | 0.023% |
| TOTAL DOSE (MREM) FOR GI-LLI | : 1.7428E-03 | 7.5 | 0.023% |
| NOBLE GAS AIRDOSE AT SITE BOUNDARY: | | | |
| TOTAL GAMMA AIRDOSE (MRAD) | : 1.8219E-02 | 5.0 | 0.364% |
| TOTAL BETA AIRDOSE (MRAD) | : 5.2117E-02 | 10.0 | 0.521% |

** UNIT 2 ** TOTALS FOR 1991 **

| DOSE FROM RADIOIODINES, PARTICULATES, AND TRITIUM AT CONTROLLING LOCATION: | | TS | |
|-------------------------------------------------------------------------------|--------------|-------|--------|
| | | LIMIT | %LIMIT |
| TOTAL DOSE (MREM) FOR BONE | : 6.1235E-01 | 15.0 | 4.082% |
| TOTAL DOSE (MREM) FOR LIVER | : 6.9416E-01 | 15.0 | 4.628% |
| TOTAL DOSE (MREM) FOR TOTAL BODY | : 2.4661E-01 | 15.0 | 1.644% |
| TOTAL DOSE (MREM) FOR THYROID | : 4.6066E-01 | 15.0 | 3.071% |
| TOTAL DOSE (MREM) FOR KIDNEY | : 3.2434E-01 | 15.0 | 2.162% |
| TOTAL DOSE (MREM) FOR LUNG | : 2.1380E-01 | 15.0 | 1.425% |
| TOTAL DOSE (MREM) FOR GI-LLI | : 1.6372E-01 | 15.0 | 1.092% |
| NOBLE GAS AIRDOSE AT SITE BOUNDARY: | | | |
| TOTAL GAMMA AIRDOSE (MRAD) | : 5.4981E-02 | 10.0 | 0.550% |
| TOTAL BETA AIRDOSE (MRAD) | : 1.5370E-01 | 20.0 | 0.769% |

ATTACHMENT E

RADIATION DOSE TO MEMBERS OF
THE PUBLIC DUE TO THEIR
ACTIVITIES INSIDE OF THE
SITE BOUNDARY

Arkansas Nuclear One

1991 Cumulative Dose Data : Public Activities Inside Site Boundary (mRem)

| | Bone | Liver | T.Body | Thyroid | Kidney | Lung | GI-LLI | Skin |
|-------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|
| Unit 1: | | | | | | | | |
| Gaseous Rel. | | | | | | | | |
| H-3, I-131, & Particulates | 4.80E-02 | 5.76E-02 | 2.23E-02 | 8.27E-02 | 2.87E-02 | 1.96E-02 | 1.50E-02 | |
| Noble Gases | | | 6.29E-03 | | | | | 1.50E-02 |
| Liquid Rel. | | | | | | | | |
| Fish | 9.21E-02 | 1.52E-01 | 1.11E-01 | 5.04E-02 | 5.12E-02 | 1.82E-02 | 9.93E-02 | |
| Sediment | | | 1.81E-03 | | | | | 2.11E-03 |
| Unit 1 Total | 1.40E-01 | 2.10E-01 | 1.41E-01 | 1.33E-01 | 7.99E-02 | 3.78E-02 | 1.14E-01 | 1.72E-02 |
| Unit 2: | | | | | | | | |
| Gaseous Rel. | | | | | | | | |
| H-3, I-131, & Particulates | 2.68E-01 | 3.03E-01 | 1.08E-01 | 2.01E-01 | 1.42E-01 | 9.34E-02 | 7.16E-02 | |
| Noble Gases | | | 2.03E-02 | | | | | 4.83E-02 |
| Liquid Rel. | | | | | | | | |
| Fish | 1.70E-01 | 2.80E-01 | 2.08E-01 | 2.05E-01 | 9.52E-02 | 3.78E-02 | 3.99E-01 | |
| Sediment | | | 3.10E-03 | | | | | 3.62E-03 |
| Unit 2 Total | 4.37E-01 | 5.83E-01 | 3.39E-01 | 4.07E-01 | 2.37E-01 | 1.31E-01 | 4.70E-01 | 5.20E-02 |
| Site Total | 5.77E-01 | 7.93E-01 | 4.80E-01 | 5.40E-01 | 3.17E-01 | 1.69E-01 | 5.85E-01 | 6.91E-02 |
| Limit | 2.50E+01 | 2.50E+01 | 2.50E+01 | 7.50E+01 | 2.50E+01 | 2.50E+01 | 2.50E+01 | 2.50E+01 |
| %Limit | 2.31% | 3.17% | 1.92% | 0.72% | 1.27% | 0.68% | 2.34% | 0.28% |

ATTACHMENT F

CHANGES TO THE RADIOACTIVE
WASTE SYSTEMS

There were no licensee initiated major modifications made to the ANO-1 or 2 liquid, gaseous, or solid radwaste systems during the calendar year of 1991.