POEF-SH-40

**An Examination of Criticality Accident Alarm
Coverage of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth
Gaseous Diffusion Plant**

January 1996

by

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Under LMUS Contract 400183

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TABLE OF CONTENTS

	Page
EXECUTIVE SUMMARY	1
1.0 INTRODUCTION	2
2.0 FACILITY DESCRIPTIONS	5
3.0 ANALYSIS	13
3.1 Facility Models	13
3.2 Source	20
3.3 Flux Tallies and Variance Reduction	23
3.4 Flux to Absorbed Dose Rate Conversion	23
4.0 RESULTS	26
5.0 DISCUSSION	27
6.0 CONCLUSIONS	28
7.0 REFERENCES	29
APPENDIX A SAMPLE MCNP INPUTS FOR THE X-333, X-330, AND X-326 MODELS	
APPENDIX B ABSORBED DOSE RATE CALCULATION SPREADSHEETS	

TABLE OF CONTENTS

(continued)

LIST OF TABLES

Table 1. CAAS Detector Locations	7
Table 2. Material Compositions	20
Table 3. Criticality Accident Source Locations	22
Table 4. Henderson Free-in-Air Flux-to-Dose Conversion Factors	25
Table 5. Detector Responses	26

LIST OF FIGURES

Figure 1. Plant layout showing the locations of the X-710, X-760, and X-7725 buildings and the X-7745-R storage pad.	3
Figure 2. The X-710 building layout - first floor	8
Figure 3. The X-710 building layout - second floor	9
Figure 4. The X-760 building layout - first floor	10
Figure 5. The X-760 building layout - second floor	11
Figure 6. The X-7725 building layout - Level IV	12
Figure 7. SABRINA ¹¹ representation of the X-710 building - first floor	15
Figure 8. SABRINA ¹¹ representation of the X-710 building - second floor	16
Figure 9. SABRINA ¹¹ representation of the X-760 building - first floor	17
Figure 10. SABRINA ¹¹ representation of the X-760 building - second floor	18

Final Report

*An Examination of Criticality Accident Alarm
Coverage of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Page ii

EXECUTIVE SUMMARY

This report summarizes the results of an evaluation of Criticality Accident Alarm System (CAAS) coverage of the X-710 and X-760 buildings and the north half of the X-7745-R storage lot located east of the X-7725 building at the Portsmouth Gaseous Diffusion Plant. In order to evaluate coverage, the facilities were modeled using the Monte Carlo N-Particle Transport Computer Code (MCNP). MCNP was then used to simulate criticality accidents at various locations in the X-710 and X-760 buildings and the north half of the X-7745-R storage lot. The associated neutron flux at current detector locations was calculated. The neutron flux was then converted to an absorbed dose rate (in tissue) and compared with the Portsmouth criticality accident alarm set-point of 5mrad/hr.¹ The parameters defining the simulated criticality accidents have been calculated as "the minimum accident of concern" as defined in ANSI Standard ANS 8.3-1986.² These calculations are documented in Portsmouth report POEF-SH-31.³

The results of this evaluation indicate that the X-710 and X-760 buildings and surrounding roads are adequately covered by the CAAS systems that are currently in place in those buildings. The X-7745-R storage pad is also adequately covered by the CAAS in the X-7725 building.

Final Report

*An Examination of Criticality Accident Alarm
Coverage of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Page 1

1.0 INTRODUCTION

The Portsmouth Gaseous Diffusion Plant (PORTS), located in Piketon, Ohio, is one of two operating gaseous diffusion plants leased from the U.S. Department of Energy (DOE) by the United States Enrichment Corporation (USEC) and managed and operated by Lockheed Martin Utility Services (LMUS). At these plants, uranium (U) in the form of uranium hexafluoride (UF_6) is enriched (using a gaseous diffusion process) from its naturally occurring isotopic concentration of about 0.7% ^{235}U to approximately 5% ^{235}U , with a plant maximum of 10%. The diffusion cascade processing equipment is located in the X-333, X-330, and X-326 buildings. There are several other buildings located in close proximity to the X-333, X-330, and X-326 buildings. The X-710 and X-760 buildings are two of these buildings. Figure 1 shows the approximate locations of these two buildings.

Because uranium operations are performed within these buildings and because of their close proximity to the cascade facilities, Criticality Accident Alarm Systems (CAAS) are in place to alarm in the event of a criticality accident. This report summarizes the results of an evaluation of the adequacy of CAAS coverage in the X-710 and X-760 buildings.

In addition to the X-710 and X-760 building coverage analyses, this report also summarizes an evaluation of the adequacy of CAAS coverage of the north half of the X-7745-R storage pad located east of the X-7725 building. The X-7725 building was originally built to house centrifuge separation processes. When the centrifuge program was canceled in the 1980s, the building was reconfigured for use as a Resource Conservation and Recovery Act (RCRA) hazardous waste storage facility. The building is also used to store mixed (RCRA hazardous and radioactive) wastes. Because these mixed wastes contain fissile material, a CAAS system was installed and is operational.

Final Report

*An Examination of Criticality Accident Alarm
Coverage of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Page 2

Figure 1. Plant layout showing the locations of the X-710, X-760, and X-7725 buildings and the X-7745-R storage pad.

The wastes stored inside the X-7725 building belong to the U.S. Department of Energy and are not considered in this report. However, there is an outside storage pad located east of the X-7725 building. The waste on the north half of this pad is owned by the U. S. Enrichment Corporation (USEC). The south half of the pad is used to store waste owned by the US DOE and is not considered as part of this report. Both the USEC and USDOE waste on the X-7745-R storage pad contain fissile material and the CAAS detectors inside the X-7725 building are used to provide criticality accident alarm coverage. Figure 1 shows the location of the X-7725 building and the X-7745-R storage pad. This report includes an evaluation of CAAS coverage of the north half of the X-7745-R storage pad.

According to ANSI standard ANS 8.3-1986 "Criticality Accident Alarm System," the CAAS "shall be designed to detect immediately the minimum accident of concern." The minimum accident of concern is further defined by Reference 3, "Calculated In-Air Leakage Spectra and Power Levels for the ANSI Standard Minimum Accident of Concern."

Final Report

*An Examination of Criticality Accident Alarm
Coverage of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Page 4

2.0 FACILITY DESCRIPTIONS

2.1 The X-710 Building

The X-710 Building serves as the location for laboratory services and operations support. These include laboratories for process, environmental, and product analysis, instrumentation development and testing, R&D (laboratory services for evaluation and fabrication), offices, and a technical library.

The original part of the X-710 Building is equipped with four radiation alarm clusters. The addition to the X-710 Building is equipped with one alarm cluster. Figures 2 and 3 show the dimensions of the building, the general layout of the two floors and the addition, and the location of the radiation alarm clusters.

The X-710 Building Radiation Alarm System also activates horns in the X-101, X-102, X-103, X-300A, X-540, X-300 SCADA, and X-750 Buildings.

2.2 The X-760 Building

Currently, most of the X-760 Building equipment has been abandoned and most of the former operations are no longer performed. Former operations included housing unit operations test equipment (e.g., flowmeters and heat exchangers), small mechanical fabrication shops, offices, and an environmental test chamber.

Of the operations conducted in the X-760 Building, the only one that used any amount of hazardous material was the environmental chamber. This chamber was a hermetically sealed box used to observe the effects of UF_6 releases of varying size into normal ambient

Final Report

*An Examination of Criticality Accident Alarm
Coverage of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

atmospheres of varying relative humidity. The assay of UF_6 was low (less than 0.711%) and the amounts were small (usually less than 50 grams). The chamber was sealed prior to UF_6 release and was not opened until all UF_6 and/or reaction products (UO_2F_2 and HF) had cleared.

2.3 The X-7725 Building

The X-7725 building was originally built for the centrifuge gaseous diffusion processing equipment. When the centrifuge program was canceled, the building was converted into a Resource Conservation and Recovery Act (RCRA) waste storage facility. The building is also referred to as the R/A building because of its original design purpose. Because mixed (both regulated hazardous and radioactive) wastes are also stored in the building, a CAAS was installed and is operational. The waste located inside of this building is owned by the US DOE and managed by LMES. To the east of this building there is an outdoor storage pad called the X-7745-R storage pad. The north half of this pad is used for wastes owned by the USEC and managed by LMUS. The building X-7725 CAAS is used to cover potential criticality accidents on this storage pad. The location of the storage pad is marked on Figure 1. Figure 6 shows the floor plan of the fourth level of the X-7725 building. Although there are several radiation detectors in the X-7725 Building, the model used the one located on the fourth level because it is closest to the storage pad..

Final Report

*An Examination of Criticality Accident Alarm
Coverage of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

Table 1. CAAS Detector Locations

See Figures 2,3,4,5, and 6 for the Column and Room Locations

Building	Detector	Column Location
X-710	1 (room 143)	G-6 1st floor
	2 (room 111)	D-12 1st floor
	3 (room 185)	A-17 1st floor
	4 (room 244)	D-5 2nd floor
	5 (room 280)	G-11 2nd floor
X-760	1	Column 2-C
X-7725	RA-6	9A-25 Level IV*

* Other detectors are located in the X-7725 building; however, because this detector was closest to the source points that were located outside of the building, it was the only detector included in the model.

Final Report

*An Examination of Criticality Accident Alarm
Coverage of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

Figure 2. The X-710 building layout - first floor

Figure 3. The X-710 building layout - second floor

Figure 4. The X-760 building layout - first floor

Final Report

An Examination of Criticality Accident Alarm Coverage of the X-710, X-760 Buildings and the North Half of the X-7745-R Storage Pad at the Portsmouth Gaseous Diffusion Plant

Figure 5. The X-760 building layout - second floor

Figure 6. The X-7725 building layout - Level IV

3.0 ANALYSIS

The analysis of CAAS coverage of the buildings was performed in four steps. A suitable geometry approximating the buildings was developed. An accurate source term describing an appropriate criticality accident was determined. The CAAS detectors were then modeled using the MCNP code and flux tallies were implemented, with appropriate variance reduction techniques, in a manner which provided accurate values of the flux spectrum at the detector locations. Finally, a flux to dose conversion was applied to the tally results to determine the detector response. These steps are described in detail in the sections that follow.

3.1 Facility Models

Each of the three buildings was modeled individually. Building components were simplified in order to allow the computer analysis to be completed in a reasonable amount of time. Simplifications include the elimination of doors and windows. All significant concrete walls were included. Each facility was modeled on a 30 m thick concrete slab and surrounded by a large hemisphere of air with a radius of 8 km. Only the exterior building walls and the interior concrete block walls were modeled. The exterior walls of the X-710 and the X-760 buildings were modeled as full density concrete. The exterior walls of the X-7725 building were modeled as sheet metal. Interior concrete block walls were modeled as half-density concrete of the appropriate thickness. The models are shown in figures 7-11.

Only the walls between the X-7725 building detector and the two source points located outside of the building were included in the X-7725 model. The rest of the building was modeled as empty rooms. This simplification was made to conserve resources and could be expanded upon in the future. All concrete floors were modeled as well as the roof.

The X-7745-R storage pad waste was included in the model. This waste is generally made up of Personal Protective Equipment (PPE), scrap metal, and floor sweepings. Since the waste is not segregated by type, it was conservatively modeled as wood at 50% density. Wood was used because it adequately represents these other materials from a neutron shielding standpoint, thus providing a reasonable approximation of the waste.

For consistency with previous calculations of criticality alarm response in the PORTS buildings, the number densities of air, concrete, and steel used in these analyses were taken from Westfall et al.⁸ The number densities for wood (assumed to be half-density oak) were taken from the Standard Composition Library for Scale 4.2¹⁰. Table 2 lists the materials used and their number densities.

Final Report

*An Examination of Criticality Accident Alarm
Coverage of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Page 14

Sn = Source Points
Dn = Detectors

Figure 7. SABRINA¹¹ representation of the X-710 building - first floor

Figure 8. SABRINA¹¹ representation of the X-710 building - second floor

Figure 9. SABRINA¹¹ representation of the X-760 building - first floor

Figure 10. SABRINA¹¹ representation of the X-760 building - second floor

Sn = Source Point
D = Detector

Figure 11. A SADRINA¹¹ representation of the X-7725 Building Model and the X-7745-R Storage Pad. The view is looking north.

Final Report

*An Examination of Criticality Accident Alarm
Coverage of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Page 19

Table 2. Material Compositions

Material	Element	Number Density (Atom barn-1 cm-1)
Air	Nitrogen	3.570E-05
	Oxygen	7.840E-06
Concrete	Hydrogen	1.487E-02
	Carbon	3.814E-03
	Oxygen	4.152E-02
	Sodium	3.040E-04
	Magnesium	5.870E-04
	Aluminum	7.350E-04
	Silicon	6.037E-03
	Calcium	1.159E-02
	Iron	1.968E-04
Steel	Carbon	3.921E-03
	Iron	8.349E-02
Wood	Carbon	2.86E-01
	Hydrogen	4.76E-01
	Oxygen	2.38E-01

3.2 Source Term

To completely model the criticality accident sources used in the MCNP analysis, the source location, source neutron production rate (power level), and the source neutron energy spectra must be known. The development of each is discussed briefly below.

3.2.1 Source Locations

Source locations were chosen that would maximize the distance and/or shielding between the source and the detector. These source locations result in the smallest absorbed dose rates at the detectors. Therefore, any other source location would result in a smaller distance or smaller thickness of shielding between the source and detector and will be bounded by the cases analyzed. Several different source locations were used in this analysis. These source locations are tabulated in Table 3 and briefly described below.

Seven source locations were selected for the X-710 building. The locations of these sources are identified in Figures 2, 3, 7, and 8. These source locations were chosen because they maximized the distance and shielding between the source and detector. These sources were modeled as having a ^{235}U enrichment of 100%.

Four source locations were chosen for the X-760 building. These locations are identified in Figures 4, 5, 9, and 10. The first three source locations were chosen inside the building and the fourth was located 50 feet east of the building. Again, the locations were chosen to maximize distance and shielding thus providing worst case scenarios to analyze. All sources were modeled to have an enrichment of 100% ^{235}U .

Two source locations were defined for the X-7745-R storage lot. These source locations are shown in Figure 11. Both sources were modeled to have a ^{235}U enrichment of 100%.

Final Report

*An Examination of Criticality Accident Alarm
Coverage of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

3.2.2 Source Power Level and Energy Spectrum

In each case, an isotropic point source of an appropriate ^{235}U enrichment was modeled. The associated power level and neutron energy spectrum were taken from POEF-SH-31.³ In each case, the power level and neutron energy spectrum simulate the minimum accident of concern as defined in ANSI Standard ANS/ANSI 8.3-1986² and further defined in POEF-SH-31.³

Table 3. Criticality Accident Source Locations

Source	Building	Description	^{235}U Enrichment (%)	Power Level (W)
710-1	710	NE corner of first floor	100	1281
710-2	710	NW corner of first floor	100	1281
710-3	710	NE corner of room 192 - first floor	100	1281
710-4	710	NE corner of room 286 - second floor	100	1281
710-5	710	Close to the SW elevator - second floor	100	1281
710-6	710	South center of building - in computer area	100	1281
710-7	710	On centerline - 50 feet north of building	100	1281
760-1	760	NE corner of building - first floor	100	1281
760-2	760	NE corner of building - second floor	100	1281
760-3	760	SE corner of dry chemical storage room	100	1281
760-4	760	On centerline - 50 feet east of building	100	1281
X-7725-1	X-7725	NE corner of the storage lot	100	1281
X-7725-2	X-7725	Center of storage lot	100	1281

Final Report

*An Examination of Criticality Accident Alarm
Coverage of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Page 22

3.3 Flux Tallies and Variance Reduction

The CAAS detectors used at the PORTS site are set to alarm at an absorbed dose rate in tissue of 5 mrad/hr¹. Values of the neutron flux in air, calculated by MCNP, will be converted to absorbed dose rates in tissue through the use of an appropriate flux to absorbed dose rate conversion factor (see section 3.4). Therefore, the detectors modeled in MCNP must tally the neutron flux spectra in air.

The MCNP detectors were modeled at locations corresponding to the currently installed CAAS detectors. The neutron fluence at the various detectors was calculated using a next event estimator (point detector) at the center of the detector model. Because of the enormous amount of computer time required to track all neutron events, and the minimal contribution to detector response from neutrons below 17 keV for the applied response function, a 17 keV cut-off was used to kill neutrons and prevent their further tracking once they drop below 17 keV.

3.4 Flux to Absorbed Dose Rate Conversion

MCNP was used to calculate the neutron fluence per source neutron at the modeled detector locations. In order to calculate the absorbed dose rate in the detector, the neutron fluence per source neutron was first converted to neutron flux. Then, a flux to neutron absorbed dose rate conversion factor was applied to calculate the neutron absorbed dose rate in the detector.

To convert the neutron fluence per source particle to neutron flux, the neutron production rate of the source must be known. The source neutron production rate was determined according to the following equation:

$$N\left(\frac{\text{neutrons}}{\text{sec}}\right) = \phi_p \left(\frac{\#}{\text{cm}^2\text{-sec-watt}} \right) * P(W) * A(\text{cm}^2)$$

where

- N = the source neutron production rate
- ϕ_p = the neutron flux per unit power
- P = power for the minimum critical accident of concern
- A = the surface area of the detector sphere (r=2m)

Using the appropriate values for ϕ_p and P from POEF-SH-31³, the neutron source rates for each source term were calculated. The neutron source rate corresponding to the 100% ²³⁵U enriched source terms is 5.467×10^{13} n/s. It should be noted that these neutron sources are based on the Henderson Flux to Dose Conversion Factors in POEF-SH-31³ and should not be used with any other response function.

A neutron flux to neutron absorbed dose rate conversion factor was applied to the neutron flux to calculate the neutron absorbed dose rate. In this analysis, the neutron absorbed dose rate was calculated on a per energy bin basis. The absorbed dose rate at the detector was calculated using the following equation:

$$D\left(\frac{\text{mrad}}{\text{hr}}\right) = \sum_{i=1}^{27} N\left(\frac{n}{s}\right) * \phi_{i,\text{mcnp}} \left(\frac{\frac{\#}{\text{cm}^2}}{n} \right) * k_i \left(\frac{\frac{\text{rad}}{n}}{\text{cm}^2} \right) * \left(\frac{3600\text{sec}}{\text{hr}} \right) * \left(\frac{1000\text{mrad}}{\text{rad}} \right)$$

where

- D = neutron absorbed dose rate at detector
- $\phi_{i,\text{mcnp}}$ = the neutron fluence per source particle at the detector
- N = source neutron production rate
- k_i = neutron flux to neutron absorbed dose rate conversion factor
- i = energy bin index

The Henderson Free in Air flux to dose conversion factors, as shown in Table 4, were used.

Table 4. Henderson Free-in-Air Flux-to-Dose Conversion Factors

Upper Energy Boundary (MeV)	Henderson Free in Air Flux-to-Dose Conversion Factor (rads/(n/cm ²))
1.00E-11	0.00E+00
1.00E-08	6.03E-17
3.00E-08	2.46E-16
5.00E-08	3.69E-16
1.00E-07	6.52E-16
2.25E-07	1.40E-15
3.25E-07	2.54E-15
4.00E-07	3.37E-15
8.00E-07	5.39E-15
1.00E-06	8.37E-15
1.13E-06	9.93E-15
1.30E-06	1.13E-14
1.77E-06	1.42E-14
3.05E-06	2.20E-14
1.00E-05	5.46E-14
3.00E-05	1.70E-13
1.00E-04	5.43E-13
5.50E-04	2.36E-12
3.00E-03	1.35E-11
1.70E-02	7.20E-11
1.00E-01	3.12E-10
4.00E-01	1.08E-09
9.00E-01	1.79E-09
1.40E+00	2.44E-09
1.85E+00	2.79E-09
3.00E+00	3.22E-09
6.43E+00	4.18E-09
2.00E+01	4.72E-09

Final Report

*An Examination of Criticality Accident Alarm
Coverage of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Page 25

4.0 RESULTS

Table 5 lists the highest detector response with statistical significance for each point analyzed. Appendix B has the complete tabulated results of the detector responses for each point that was analyzed.

Table 5. Detector Responses

Source Location	Detector Location	Detector Response (mrad/hr)	Standard Deviation (mrad/hr)
710-1 NE corner of 1st floor	5 (room 280)	24.14	2.09
710-2 NW corner of 1st floor	5 (room 280)	16.69	0.89
710-3 NE corner of room 192 - 1st floor	3 (room 185)	10.62	0.24
710-4 NE corner of room 286 - second floor	5 (room 280)	275.036	11.60
710-5 Close to the SW elevator - second floor	3 (room 185)	224.17	27.75
710-6 South center of building - in former computer area	4 (room 244)	47.95	2.41
710-7 On centerline - 50 feet north of building	5 (room 280)	206.63	7.64
760-1 NE corner of building - 1st floor	Column 2-C	24.19	1.44
760-2 NE corner of building - second floor	Column 2-C	203.76	10.56
760-3 SE corner of dry chemical storage room	Column 2-C	5584.12	47.41
760-4 On centerline - 50 feet east of building	Column 2-C	69.19	2.68
X-7725 NE corner of the storage lot	9A-25 Level IV	8.92	0.24
X-7725 Center of storage lot	9A-25 Level IV	15.74	0.48

Final Report

*An Examination of Criticality Accident Alarm
Coverage of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

5.0 DISCUSSION

This analysis determines coverage or non-coverage of a source location by comparing calculated detector responses to the PORTS CAAS alarm setpoint of 5 mrad/hr¹. MCNP was run using point detectors to tally the neutron fluence per source particle. The problem was run until the tally for one of the detectors had a fractional uncertainty of about 5%. At this point, the response of this detector was calculated as outlined in section 3.5. If the calculated detector response was greater than or equal to 5 mrad/hr, the area was then considered to be covered by the CAAS. Using this method, complete coverage was shown for the X-710 and X-760 buildings as well as the north half of the X-7745-R storage pad located east of the X-7725 building.

Final Report

*An Examination of Criticality Accident Alarm
Coverage of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Page 27

6.0 CONCLUSIONS

Complete coverage of the X-710 and X-760 buildings and surrounding roads was shown as well as coverage of the north half of the X-7745-R storage pad located east of the X-7725 building.

Final Report

*An Examination of Criticality Accident Alarm
Coverage of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Page 28

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Final Report

*An Examination of Criticality Accident Alarm
Coverage of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

APPENDIX A

SAMPLE MCNP INPUTS

January 1996

Final Report
*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

Appendix

This is a model of the X710 building

c

c

c *****

c cell cards

c *****

c

c here is the air in the rooms on the first floor

c

```

10      10      4.354e-5  ((40 -2000 1260 -1270 1410 -1420):
                        (40 -150 1220 -1260 1410 -1420):
                        (2010 -150 1260 -1310 1410 -1420):
                        (40 -2010 1280 -1310 1410 -1420))
                        6020 imp:n=1 $
c 10      10      4.354e-5  40 -150 1220 -1310 1410 -1420 6020 imp:n=1 $
20      10      4.354e-5  20 -70 1150 -1210 1410 -1420 imp:n=1 $
30      10      4.354e-5  80 -150 1205 -1210 1410 -1420 imp:n=1 $
40      10      4.354e-5  80 -150 1150 -1200 1410 -1420 imp:n=1 $
50      10      4.354e-5  20 -710 1130 -1140 1410 -1420 imp:n=1 $
60      10      4.354e-5  40 -50 970 -1120 1410 -1420 imp:n=1 $
70      10      4.354e-5  (60 -90 1050 -1120 1410 -1420):
                        (90 -140 1050 -1060 1410 -1420):
                        (140 -150 1050 -1090 1410 -1420):
                        (120 -150 1090 -1120 1410 -1420) imp:n=1 $
80      10      4.354e-5  (100 -110 1070 -1120 1410 -1420):
                        (110 -130 1070 -1080 1410 -1420) imp:n=1 $
90      10      4.354e-5  60 -150 1010 -1040 1410 -1420 imp:n=1 $
100     10      4.354e-5  60 -70 990 -1000 1410 -1420 imp:n=1 $
110     10      4.354e-5  60 -70 970 -980 1410 -1420 imp:n=1 $
120     10      4.354e-5  80 -150 970 -1000 1410 -1420 imp:n=1 $
130     10      4.354e-5  40 -710 950 -960 1410 -1420 imp:n=1 $
140     10      4.354e-5  40 -150 910 -940 1410 -1420 imp:n=1 $
150     10      4.354e-5  160 -170 910 -950 1410 -1420 imp:n=1 $
160     10      4.354e-5  160 -170 960 -1130 1410 -1420 imp:n=1 $
170     10      4.354e-5  160 -170 1140 -1260 1410 -1420 imp:n=1 $
180     10      4.354e-5  160 -170 1270 -1310 1410 -1420 imp:n=1 $
190     10      4.354e-5  180 -390 1205 -1210 1410 -1420 imp:n=1 $
195     10      4.354e-5  420 -690 1205 -1210 1410 -1420 imp:n=1 $
200     10      4.354e-5  180 -390 1010 -1040 1410 -1420 imp:n=1 $
205     10      4.354e-5  420 -690 1010 -1040 1410 -1420 imp:n=1 $
210     10      4.354e-5  (180 -190 1280 -1310 1410 -1420):
                        (190 -220 1300 -1310 1410 -1420):
                        (220 -250 1280 -1310 1410 -1420) imp:n=1 $
220     10      4.354e-5  200 -210 1280 -1290 1410 -1420 imp:n=1 $

```

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

230	10	4.354e-5	((180 -270 1220 -1250 1410 -1420): (270 -300 1240 -1250 1410 -1420): (300 -310 1220 -1250 1410 -1420)) 6010 imp:n=1 \$
240	10	4.354e-5	180 -290 1150 -1200 1410 -1420 imp:n=1 \$
250	10	4.354e-5	300 -310 1190 -1200 1410 -1420 imp:n=1 \$
260	10	4.354e-5	300 -310 1150 -1180 1410 -1420 imp:n=1 \$
270	10	4.354e-5	180 -230 1050 -1120 1410 -1420 imp:n=1 \$
280	10	4.354e-5	240 -270 1090 -1120 1410 -1420 imp:n=1 \$
290	10	4.354e-5	240 -270 1050 -1080 1410 -1420 imp:n=1 \$
300	10	4.354e-5	280 -310 1050 -1120 1410 -1420 imp:n=1 \$
310	10	4.354e-5	(180 -200 990 -1000 1410 -1420): (200 -230 970 -1000 1410 -1420) imp:n=1 \$
320	10	4.354e-5	180 -190 970 -980 1410 -1420 imp:n=1 \$
330	10	4.354e-5	(240 -260 990 -1000 1410 -1420): (260 -310 970 -1000 1410 -1420) imp:n=1 \$
340	10	4.354e-5	240 -250 970 -980 1410 -1420 imp:n=1 \$
350	10	4.354e-5	180 -190 910 -940 1410 -1420 imp:n=1 \$
360	10	4.354e-5	200 -210 930 -940 1410 -1420 imp:n=1 \$
370	10	4.354e-5	200 -210 910 -920 1410 -1420 imp:n=1 \$
380	10	4.354e-5	(220 -330 910 -940 1410 -1420): (330 -350 930 -940 1410 -1420) imp:n=1 \$
390	10	4.354e-5	260 -310 1280 -1310 1410 -1420 imp:n=1 \$
400	10	4.354e-5	320 -330 1300 -1310 1410 -1420 imp:n=1 \$
410	10	4.354e-5	320 -330 1280 -1290 1410 -1420 imp:n=1 \$
420	10	4.354e-5	340 -350 1280 -1310 1410 -1420 imp:n=1 \$
430	10	4.354e-5	360 -390 1280 -1310 1410 -1420 imp:n=1 \$
440	10	4.354e-5	280 -290 1220 -1230 1410 -1420 imp:n=1 \$
450	10	4.354e-5	320 -350 1220 -1250 1410 -1420 imp:n=1 \$
460	10	4.354e-5	360 -390 1220 -1250 1410 -1420 imp:n=1 \$
470	10	4.354e-5	(320 -390 1190 -1200 1410 -1420): (340 -370 1150 -1190 1410 -1420) imp:n=1 \$
480	10	4.354e-5	320 -330 1150 -1180 1410 -1420 imp:n=1 \$
490	10	4.354e-5	380 -390 1150 -1180 1410 -1420 imp:n=1 \$
500	10	4.354e-5	(320 -350 1050 -1120 1410 -1420): (350 -390 1050 -1100 1410 -1420) imp:n=1 \$
510	10	4.354e-5	360 -370 1110 -1120 1410 -1420 imp:n=1 \$
520	10	4.354e-5	380 -390 1110 -1120 1410 -1420 imp:n=1 \$
530	10	4.354e-5	320 -330 990 -1000 1410 -1420 imp:n=1 \$
540	10	4.354e-5	(320 -340 970 -980 1410 -1420): (340 -390 970 -1000 1410 -1420) imp:n=1 \$
550	10	4.354e-5	360 -390 930 -940 1410 -1420 imp:n=1 \$
560	10	4.354e-5	340 -390 910 -920 1410 -1420 imp:n=1 \$
570	10	4.354e-5	400 -410 1280 -1310 1410 -1420 imp:n=1 \$
575	10	4.354e-5	160 -750 1260 -1270 1410 -1420 imp:n=1 \$

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

580	10	4.354e-5	400 -410 1140 -1260 1410 -1420	imp:n=1	\$
590	10	4.354e-5	400 -410 960 -1130 1410 -1420	imp:n=1	\$
600	10	4.354e-5	400 -410 910 -950 1410 -1420	imp:n=1	\$
610	10	4.354e-5	420 -750 1280 -1310 1410 -1420	imp:n=1	\$
620	10	4.354e-5	(420 -490 1220 -1250 1410 -1420):		
			(490 -540 1240 -1250 1410 -1420):		
			(540 -610 1220 -1250 1410 -1420)	imp:n=1	\$
630	10	4.354e-5	500 -530 1220 -1230 1410 -1420	imp:n=1	\$
640	10	4.354e-5	500 -530 1190 -1200 1410 -1420	imp:n=1	\$
650	10	4.354e-5	(420 -490 1150 -1200 1410 -1420):		
			(490 -540 1150 -1180 1410 -1420):		
			(540 -610 1150 -1200 1410 -1420)	imp:n=1	\$
660	10	4.354e-5	420 -450 1050 -1120 1410 -1420	imp:n=1	\$
670	10	4.354e-5	460 -550 1050 -1120 1410 -1420	6000 imp:n=1	\$
680	10	4.354e-5	(560 -590 1080 -1120 1410 -1420):		
			(560 -610 1050 -1080 1410 -1420)	imp:n=1	\$
690	10	4.354e-5	600 -610 1090 -1120 1410 -1420	imp:n=1	\$
700	10	4.354e-5	420 -470 970 -1000 1410 -1420	imp:n=1	\$
710	10	4.354e-5	480 -550 970 -1000 1410 -1420	imp:n=1	\$
720	10	4.354e-5	(560 -580 990 -1000 1410 -1420):		
			(580 -690 970 -1000 1410 -1420)	imp:n=1	\$
730	10	4.354e-5	560 -570 970 -980 1410 -1420	imp:n=1	\$
740	10	4.354e-5	420 -510 910 -940 1410 -1420	imp:n=1	\$
750	10	4.354e-5	520 -550 910 -940 1410 -1420	imp:n=1	\$
760	10	4.354e-5	420 -650 890 -900 1410 -1420	imp:n=1	\$
770	10	4.354e-5	580 -630 910 -940 1410 -1420	imp:n=1	\$
780	10	4.354e-5	420 -430 830 -880 1410 -1420	imp:n=1	\$
790	10	4.354e-5	440 -450 830 -880 1410 -1420	imp:n=1	\$
800	10	4.354e-5	460 -510 830 -880 1410 -1420	imp:n=1	\$
810	10	4.354e-5	520 -550 830 -880 1410 -1420	imp:n=1	\$
820	10	4.354e-5	(560 -590 830 -860 1410 -1420):		
			(580 -590 860 -880 1410 -1420)	imp:n=1	\$
825	10	4.354e-5	600 -610 830 -880 1410 -1420	imp:n=1	\$
830	10	4.354e-5	620 -630 850 -880 1410 -1420	imp:n=1	\$
840	10	4.354e-5	(540 -630 810 -820 1410 -1420):		
			(620 -630 820 -840 1410 -1420)	imp:n=1	\$
850	10	4.354e-5	420 -530 810 -820 1410 -1420	imp:n=1	\$
860	10	4.354e-5	640 -650 810 -820 1410 -1420	imp:n=1	\$
870	10	4.354e-5	640 -650 830 -890 1410 -1420	imp:n=1	\$
880	10	4.354e-5	560 -570 900 -950 1410 -1420	imp:n=1	\$
890	10	4.354e-5	640 -710 910 -940 1410 -1420	imp:n=1	\$
900	10	4.354e-5	720 -750 910 -940 1410 -1420	imp:n=1	\$
910	10	4.354e-5	720 -750 950 -960 1410 -1420	imp:n=1	\$
920	10	4.354e-5	700 -710 960 -1130 1410 -1420	imp:n=1	\$

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

930	10	4.354e-5	720	-750	970	-1160	1410	-1420	imp:n=1	\$
940	10	4.354e-5	620	-630	1050	-1080	1410	-1420	imp:n=1	\$
950	10	4.354e-5	620	-630	1090	-1120	1410	-1420	imp:n=1	\$
960	10	4.354e-5	640	-650	1090	-1120	1410	-1420	imp:n=1	\$
970	10	4.354e-5	(640 -660 1050 -1080 1410 -1420):							
			(660 -690 1050 -1120 1410 -1420) imp:n=1							\$
980	10	4.354e-5	620	-650	1150	-1200	1410	-1420	imp:n=1	\$
990	10	4.354e-5	660	-690	1150	-1200	1410	-1420	imp:n=1	\$
1000	10	4.354e-5	720	-750	1170	-1180	1410	-1420	imp:n=1	\$
1010	10	4.354e-5	700	-710	1140	-1260	1410	-1420	imp:n=1	\$
1020	10	4.354e-5	720	-730	1190	-1210	1410	-1420	imp:n=1	\$
1030	10	4.354e-5	740	-750	1190	-1210	1410	-1420	imp:n=1	\$
1040	10	4.354e-5	620	-670	1220	-1250	1410	-1420	imp:n=1	\$
1050	10	4.354e-5	680	-690	1220	-1250	1410	-1420	imp:n=1	\$
1060	10	4.354e-5	720	-750	1220	-1250	1410	-1420	imp:n=1	\$
1070	10	4.354e-5	560	-570	870	-880	1410	-1420	imp:n=1	\$

c

c here are the concrete walls on the first floor

c

1200	20	3.9827e-2	30	-760	1310	-1320	1410	-1420	imp:n=1	\$
1210	20	3.9827e-2	30	-40	1220	-1310	1410	-1420	imp:n=1	\$
1215	20	7.9654e-2	40	-2010	1270	-1280	1410	-1420	imp:n=1	\$
1217	20	7.9654e-2	2000	-2010	1260	-1270	1410	-1420	imp:n=1	\$
1220	20	3.9827e-2	10	-160	1210	-1220	1410	-1420	imp:n=1	\$
1230	20	3.9827e-2	10	-20	1150	-1210	1410	-1420	imp:n=1	\$
1240	20	3.9827e-2	10	-20	1130	-1140	1410	-1420	imp:n=1	\$
1250	20	3.9827e-2	10	-160	1140	-1150	1410	-1420	imp:n=1	\$
1260	20	3.9827e-2	70	-80	1205	-1210	1410	-1420	imp:n=1	\$
1270	20	3.9827e-2	70	-80	1150	-1200	1410	-1420	imp:n=1	\$
1280	20	3.9827e-2	70	-160	1200	-1205	1410	-1420	imp:n=1	\$
1290	20	3.9827e-2	10	-160	1120	-1130	1410	-1420	imp:n=1	\$
1300	20	3.9827e-2	30	-40	970	-1120	1410	-1420	imp:n=1	\$
1310	20	3.9827e-2	30	-40	950	-960	1410	-1420	imp:n=1	\$
1320	20	3.9827e-2	30	-40	910	-940	1410	-1420	imp:n=1	\$
1330	20	3.9827e-2	30	-160	960	-970	1410	-1420	imp:n=1	\$
1340	20	3.9827e-2	30	-160	940	-950	1410	-1420	imp:n=1	\$
1350	20	3.9827e-2	30	-560	900	-910	1410	-1420	imp:n=1	\$
1360	20	3.9827e-2	150	-160	910	-940	1410	-1420	imp:n=1	\$
1370	20	3.9827e-2	150	-160	970	-1000	1410	-1420	imp:n=1	\$
1380	20	3.9827e-2	70	-80	970	-980	1410	-1420	imp:n=1	\$
1390	20	3.9827e-2	50	-80	980	-990	1410	-1420	imp:n=1	\$
1400	20	3.9827e-2	50	-60	970	-980	1410	-1420	imp:n=1	\$
1410	20	3.9827e-2	50	-60	990	-1000	1410	-1420	imp:n=1	\$
1420	20	3.9827e-2	50	-60	1010	-1040	1410	-1420	imp:n=1	\$

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

1430	20	3.9827e-2	50	-60	1050	-1120	1410	-1420	imp:n=1	\$
1440	20	3.9827e-2	50	-160	1000	-1010	1410	-1420	imp:n=1	\$
1450	20	3.9827e-2	50	-160	1040	-1050	1410	-1420	imp:n=1	\$
1460	20	3.9827e-2	150	-160	1010	-1040	1410	-1420	imp:n=1	\$
1470	20	3.9827e-2	150	-160	1050	-1120	1410	-1420	imp:n=1	\$
1480	20	3.9827e-2	90	-100	1070	-1120	1410	-1420	imp:n=1	\$
1490	20	3.9827e-2	90	-140	1060	-1070	1410	-1420	imp:n=1	\$
1500	20	3.9827e-2	130	-140	1070	-1080	1410	-1420	imp:n=1	\$
1510	20	3.9827e-2	110	-140	1080	-1090	1410	-1420	imp:n=1	\$
1520	20	3.9827e-2	110	-120	1090	-1120	1410	-1420	imp:n=1	\$
1530	20	3.9827e-2	150	-160	1150	-1200	1410	-1420	imp:n=1	\$
1540	20	3.9827e-2	150	-160	1205	-1210	1410	-1420	imp:n=1	\$
1550	20	3.9827e-2	150	-160	1220	-1310	1410	-1420	imp:n=1	\$
1560	20	3.9827e-2	70	-80	990	-1000	1410	-1420	imp:n=1	\$
1570	20	3.9827e-2	170	-760	1270	-1280	1410	-1420	imp:n=1	\$
1580	20	3.9827e-2	190	-220	1290	-1300	1410	-1420	imp:n=1	\$
1585	20	3.9827e-2	410	-700	1250	-1260	1410	-1420	imp:n=1	\$
1590	20	3.9827e-2	310	-340	1290	-1300	1410	-1420	imp:n=1	\$
1595	20	3.9827e-2	170	-400	1250	-1260	1410	-1420	imp:n=1	\$
1600	20	3.9827e-2	490	-540	1230	-1240	1410	-1420	imp:n=1	\$
1605	20	3.9827e-2	270	-300	1230	-1240	1410	-1420	imp:n=1	\$
1610	20	3.9827e-2	410	-700	1210	-1220	1410	-1420	imp:n=1	\$
1620	20	3.9827e-2	170	-400	1210	-1220	1410	-1420	imp:n=1	\$
1630	20	3.9827e-2	170	-400	1200	-1205	1410	-1420	imp:n=1	\$
1640	20	3.9827e-2	410	-700	1200	-1205	1410	-1420	imp:n=1	\$
1650	20	3.9827e-2	290	-340	1180	-1190	1410	-1420	imp:n=1	\$
1660	20	3.9827e-2	370	-400	1180	-1190	1410	-1420	imp:n=1	\$
1670	20	3.9827e-2	490	-540	1180	-1190	1410	-1420	imp:n=1	\$
1680	20	3.9827e-2	710	-760	1250	-1260	1410	-1420	imp:n=1	\$
1690	20	3.9827e-2	710	-760	1210	-1220	1410	-1420	imp:n=1	\$
1700	20	3.9827e-2	710	-760	1180	-1190	1410	-1420	imp:n=1	\$
1710	20	3.9827e-2	710	-760	1160	-1170	1410	-1420	imp:n=1	\$
1720	20	3.9827e-2	410	-700	1140	-1150	1410	-1420	imp:n=1	\$
1730	20	3.9827e-2	170	-400	1140	-1150	1410	-1420	imp:n=1	\$
1740	20	3.9827e-2	170	-400	1120	-1130	1410	-1420	imp:n=1	\$
1750	20	3.9827e-2	410	-700	1120	-1130	1410	-1420	imp:n=1	\$
1760	20	3.9827e-2	230	-280	1080	-1090	1410	-1420	imp:n=1	\$
1770	20	3.9827e-2	350	-400	1100	-1110	1410	-1420	imp:n=1	\$
1780	20	3.9827e-2	590	-660	1080	-1090	1410	-1420	imp:n=1	\$
1800	20	3.9827e-2	410	-700	1040	-1050	1410	-1420	imp:n=1	\$
1810	20	3.9827e-2	170	-400	1040	-1050	1410	-1420	imp:n=1	\$
1820	20	3.9827e-2	170	-400	1000	-1010	1410	-1420	imp:n=1	\$
1830	20	3.9827e-2	410	-700	1000	-1010	1410	-1420	imp:n=1	\$
1840	20	3.9827e-2	170	-200	980	-990	1410	-1420	imp:n=1	\$

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

1850	20	3.9827e-2	230	-260	980	-990	1410	-1420	imp:n=1	\$
1860	20	3.9827e-2	310	-340	980	-990	1410	-1420	imp:n=1	\$
1870	20	3.9827e-2	550	-580	980	-990	1410	-1420	imp:n=1	\$
1880	20	3.9827e-2	710	-760	960	-970	1410	-1420	imp:n=1	\$
1890	20	3.9827e-2	410	-700	960	-970	1410	-1420	imp:n=1	\$
1900	20	3.9827e-2	170	-400	960	-970	1410	-1420	imp:n=1	\$
1910	20	3.9827e-2	170	-400	940	-950	1410	-1420	imp:n=1	\$
1920	20	3.9827e-2	410	-560	940	-950	1410	-1420	imp:n=1	\$
1930	20	3.9827e-2	330	-400	920	-930	1410	-1420	imp:n=1	\$
1940	20	3.9827e-2	190	-220	920	-930	1410	-1420	imp:n=1	\$
1950	20	3.9827e-2	570	-760	940	-950	1410	-1420	imp:n=1	\$
1960	20	3.9827e-2	570	-760	900	-910	1410	-1420	imp:n=1	\$
1970	20	3.9827e-2	410	-640	880	-890	1410	-1420	imp:n=1	\$
1980	20	3.9827e-2	550	-580	860	-870	1410	-1420	imp:n=1	\$
1990	20	3.9827e-2	610	-640	840	-850	1410	-1420	imp:n=1	\$
2000	20	3.9827e-2	410	-620	820	-830	1410	-1420	imp:n=1	\$
2010	20	3.9827e-2	630	-660	820	-830	1410	-1420	imp:n=1	\$
2020	20	3.9827e-2	410	-660	800	-810	1410	-1420	imp:n=1	\$
2100	20	3.9827e-2	170	-180	1280	-1310	1410	-1420	imp:n=1	\$
2110	20	3.9827e-2	190	-200	1280	-1290	1410	-1420	imp:n=1	\$
2120	20	3.9827e-2	210	-220	1280	-1290	1410	-1420	imp:n=1	\$
2130	20	3.9827e-2	250	-260	1280	-1310	1410	-1420	imp:n=1	\$
2140	20	3.9827e-2	310	-320	1280	-1290	1410	-1420	imp:n=1	\$
2150	20	3.9827e-2	310	-320	1300	-1310	1410	-1420	imp:n=1	\$
2160	20	3.9827e-2	330	-340	1300	-1310	1410	-1420	imp:n=1	\$
2170	20	3.9827e-2	330	-340	1280	-1290	1410	-1420	imp:n=1	\$
2180	20	3.9827e-2	350	-360	1280	-1310	1410	-1420	imp:n=1	\$
2190	20	3.9827e-2	390	-400	1280	-1310	1410	-1420	imp:n=1	\$
2200	20	3.9827e-2	410	-420	1280	-1310	1410	-1420	imp:n=1	\$
2210	20	3.9827e-2	750	-760	1280	-1310	1410	-1420	imp:n=1	\$
2220	20	3.9827e-2	750	-760	1260	-1270	1410	-1420	imp:n=1	\$
2230	20	3.9827e-2	170	-180	1220	-1250	1410	-1420	imp:n=1	\$
2240	20	3.9827e-2	170	-180	1205	-1210	1410	-1420	imp:n=1	\$
2250	20	3.9827e-2	170	-180	1150	-1200	1410	-1420	imp:n=1	\$
2260	20	3.9827e-2	270	-280	1220	-1230	1410	-1420	imp:n=1	\$
2270	20	3.9827e-2	290	-300	1190	-1200	1410	-1420	imp:n=1	\$
2280	20	3.9827e-2	290	-300	1150	-1180	1410	-1420	imp:n=1	\$
2290	20	3.9827e-2	290	-300	1220	-1230	1410	-1420	imp:n=1	\$
2300	20	3.9827e-2	310	-320	1220	-1250	1410	-1420	imp:n=1	\$
2310	20	3.9827e-2	310	-320	1190	-1200	1410	-1420	imp:n=1	\$
2320	20	3.9827e-2	310	-320	1150	-1180	1410	-1420	imp:n=1	\$
2330	20	3.9827e-2	330	-340	1150	-1180	1410	-1420	imp:n=1	\$
2340	20	3.9827e-2	350	-360	1220	-1250	1410	-1420	imp:n=1	\$
2350	20	3.9827e-2	370	-380	1150	-1180	1410	-1420	imp:n=1	\$

Final Report
*Examination of Criticality, Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

2360	20	3.9827e-2	390	-400	1220	-1250	1410	-1420	imp:n=1	\$
2370	20	3.9827e-2	390	-400	1205	-1210	1410	-1420	imp:n=1	\$
2380	20	3.9827e-2	390	-400	1190	-1200	1410	-1420	imp:n=1	\$
2390	20	3.9827e-2	390	-400	1150	-1180	1410	-1420	imp:n=1	\$
2400	20	3.9827e-2	410	-420	1150	-1200	1410	-1420	imp:n=1	\$
2410	20	3.9827e-2	410	-420	1205	-1210	1410	-1420	imp:n=1	\$
2420	20	3.9827e-2	410	-420	1220	-1250	1410	-1420	imp:n=1	\$
2430	20	3.9827e-2	490	-500	1220	-1230	1410	-1420	imp:n=1	\$
2440	20	3.9827e-2	490	-500	1190	-1200	1410	-1420	imp:n=1	\$
2450	20	3.9827e-2	530	-540	1220	-1230	1410	-1420	imp:n=1	\$
2460	20	3.9827e-2	530	-540	1190	-1200	1410	-1420	imp:n=1	\$
2470	20	3.9827e-2	610	-620	1220	-1250	1410	-1420	imp:n=1	\$
2480	20	3.9827e-2	610	-620	1150	-1200	1410	-1420	imp:n=1	\$
2490	20	3.9827e-2	650	-660	1150	-1200	1410	-1420	imp:n=1	\$
2500	20	3.9827e-2	670	-680	1220	-1250	1410	-1420	imp:n=1	\$
2510	20	3.9827e-2	690	-700	1220	-1250	1410	-1420	imp:n=1	\$
2520	20	3.9827e-2	690	-700	1205	-1210	1410	-1420	imp:n=1	\$
2530	20	3.9827e-2	690	-700	1150	-1200	1410	-1420	imp:n=1	\$
2540	20	3.9827e-2	710	-720	1220	-1250	1410	-1420	imp:n=1	\$
2550	20	3.9827e-2	710	-720	1190	-1210	1410	-1420	imp:n=1	\$
2560	20	3.9827e-2	710	-720	1170	-1180	1410	-1420	imp:n=1	\$
2570	20	3.9827e-2	710	-720	970	-1160	1410	-1420	imp:n=1	\$
2580	20	3.9827e-2	750	-760	1220	-1250	1410	-1420	imp:n=1	\$
2590	20	3.9827e-2	750	-760	1190	-1210	1410	-1420	imp:n=1	\$
2600	20	3.9827e-2	750	-760	1170	-1180	1410	-1420	imp:n=1	\$
2610	20	3.9827e-2	750	-760	970	-1160	1410	-1420	imp:n=1	\$
2620	20	3.9827e-2	730	-740	1190	-1210	1410	-1420	imp:n=1	\$
2625	20	3.9827e-2	170	-180	1050	-1120	1410	-1420	imp:n=1	\$
2630	20	3.9827e-2	170	-180	1010	-1040	1410	-1420	imp:n=1	\$
2640	20	3.9827e-2	170	-180	990	-1000	1410	-1420	imp:n=1	\$
2650	20	3.9827e-2	170	-180	970	-980	1410	-1420	imp:n=1	\$
2660	20	3.9827e-2	190	-200	970	-980	1410	-1420	imp:n=1	\$
2670	20	3.9827e-2	230	-240	990	-1000	1410	-1420	imp:n=1	\$
2680	20	3.9827e-2	230	-240	970	-980	1410	-1420	imp:n=1	\$
2690	20	3.9827e-2	230	-240	1090	-1120	1410	-1420	imp:n=1	\$
2700	20	3.9827e-2	230	-240	1050	-1080	1410	-1420	imp:n=1	\$
2710	20	3.9827e-2	250	-260	970	-980	1410	-1420	imp:n=1	\$
2720	20	3.9827e-2	270	-280	1090	-1120	1410	-1420	imp:n=1	\$
2730	20	3.9827e-2	270	-280	1050	-1080	1410	-1420	imp:n=1	\$
2740	20	3.9827e-2	310	-320	1050	-1120	1410	-1420	imp:n=1	\$
2750	20	3.9827e-2	310	-320	990	-1000	1410	-1420	imp:n=1	\$
2760	20	3.9827e-2	310	-320	970	-980	1410	-1420	imp:n=1	\$
2770	20	3.9827e-2	330	-340	990	-1000	1410	-1420	imp:n=1	\$
2780	20	3.9827e-2	350	-360	1110	-1120	1410	-1420	imp:n=1	\$

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

2790	20	3.9827e-2	370	-380	1110	-1120	1410	-1420	imp:n=1	\$
2800	20	3.9827e-2	390	-400	1110	-1120	1410	-1420	imp:n=1	\$
2810	20	3.9827e-2	390	-400	1050	-1100	1410	-1420	imp:n=1	\$
2820	20	3.9827e-2	390	-400	1010	-1040	1410	-1420	imp:n=1	\$
2830	20	3.9827e-2	390	-400	970	-1000	1410	-1420	imp:n=1	\$
2840	20	3.9827e-2	410	-420	1050	-1120	1410	-1420	imp:n=1	\$
2850	20	3.9827e-2	450	-460	1050	-1120	1410	-1420	imp:n=1	\$
2860	20	3.9827e-2	410	-420	1010	-1040	1410	-1420	imp:n=1	\$
2870	20	3.9827e-2	410	-420	970	-1000	1410	-1420	imp:n=1	\$
2880	20	3.9827e-2	470	-480	970	-1000	1410	-1420	imp:n=1	\$
2890	20	3.9827e-2	550	-560	1050	-1120	1410	-1420	imp:n=1	\$
2900	20	3.9827e-2	550	-560	990	-1000	1410	-1420	imp:n=1	\$
2910	20	3.9827e-2	550	-560	970	-980	1410	-1420	imp:n=1	\$
2920	20	3.9827e-2	570	-580	970	-980	1410	-1420	imp:n=1	\$
2930	20	3.9827e-2	590	-600	1090	-1120	1410	-1420	imp:n=1	\$
2940	20	3.9827e-2	610	-620	1090	-1120	1410	-1420	imp:n=1	\$
2950	20	3.9827e-2	610	-620	1050	-1080	1410	-1420	imp:n=1	\$
2960	20	3.9827e-2	630	-640	1050	-1080	1410	-1420	imp:n=1	\$
2970	20	3.9827e-2	630	-640	1090	-1120	1410	-1420	imp:n=1	\$
2980	20	3.9827e-2	650	-660	1090	-1120	1410	-1420	imp:n=1	\$
2990	20	3.9827e-2	690	-700	970	-1000	1410	-1420	imp:n=1	\$
3000	20	3.9827e-2	690	-700	1010	-1040	1410	-1420	imp:n=1	\$
3010	20	3.9827e-2	690	-700	1050	-1120	1410	-1420	imp:n=1	\$
3020	20	3.9827e-2	170	-180	910	-940	1410	-1420	imp:n=1	\$
3030	20	3.9827e-2	190	-200	930	-940	1410	-1420	imp:n=1	\$
3040	20	3.9827e-2	190	-200	910	-920	1410	-1420	imp:n=1	\$
3050	20	3.9827e-2	210	-220	930	-940	1410	-1420	imp:n=1	\$
3060	20	3.9827e-2	210	-220	910	-920	1410	-1420	imp:n=1	\$
3070	20	3.9827e-2	330	-340	910	-920	1410	-1420	imp:n=1	\$
3080	20	3.9827e-2	350	-360	930	-940	1410	-1420	imp:n=1	\$
3090	20	3.9827e-2	390	-400	910	-920	1410	-1420	imp:n=1	\$
3100	20	3.9827e-2	390	-400	930	-940	1410	-1420	imp:n=1	\$
3110	20	3.9827e-2	410	-420	910	-940	1410	-1420	imp:n=1	\$
3120	20	3.9827e-2	510	-520	910	-940	1410	-1420	imp:n=1	\$
3130	20	3.9827e-2	550	-560	910	-940	1410	-1420	imp:n=1	\$
3140	20	3.9827e-2	570	-580	910	-940	1410	-1420	imp:n=1	\$
3150	20	3.9827e-2	630	-640	910	-940	1410	-1420	imp:n=1	\$
3160	20	3.9827e-2	710	-720	910	-940	1410	-1420	imp:n=1	\$
3170	20	3.9827e-2	710	-720	950	-960	1410	-1420	imp:n=1	\$
3180	20	3.9827e-2	750	-760	950	-960	1410	-1420	imp:n=1	\$
3190	20	3.9827e-2	750	-760	910	-940	1410	-1420	imp:n=1	\$
3200	20	3.9827e-2	410	-420	890	-900	1410	-1420	imp:n=1	\$
3210	20	3.9827e-2	410	-420	830	-880	1410	-1420	imp:n=1	\$
3220	20	3.9827e-2	410	-420	810	-820	1410	-1420	imp:n=1	\$

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix


```

3230 20 3.9827e-2 430 -440 830 -880 1410 -1420 imp:n=1 $
3240 20 3.9827e-2 450 -460 830 -880 1410 -1420 imp:n=1 $
3250 20 3.9827e-2 510 -520 830 -880 1410 -1420 imp:n=1 $
3260 20 3.9827e-2 550 -560 870 -880 1410 -1420 imp:n=1 $
3270 20 3.9827e-2 570 -580 870 -880 1410 -1420 imp:n=1 $
3280 20 3.9827e-2 550 -560 830 -860 1410 -1420 imp:n=1 $
3290 20 3.9827e-2 590 -600 830 -880 1410 -1420 imp:n=1 $
3300 20 3.9827e-2 610 -620 850 -880 1410 -1420 imp:n=1 $
3305 20 3.9827e-2 610 -620 830 -840 1410 -1420 imp:n=1 $
3310 20 3.9827e-2 630 -640 850 -880 1410 -1420 imp:n=1 $
3320 20 3.9827e-2 630 -640 830 -840 1410 -1420 imp:n=1 $
3340 20 3.9827e-2 650 -660 830 -900 1410 -1420 imp:n=1 $
3350 20 3.9827e-2 650 -660 810 -820 1410 -1420 imp:n=1 $
3360 20 3.9827e-2 630 -640 810 -820 1410 -1420 imp:n=1 $
3370 20 3.9827e-2 530 -540 810 -820 1410 -1420 imp:n=1 $
c
c     here is the concrete under and around building
c
3500 20 7.9654e-2 10 -760 800 -1320 1400 -1410 imp:n=1 $ conc under
building
3510 20 7.9654e-2 (-9998 1400 -1410)
(-10:760:-800:1320) imp:n=1 $ concrete ground around
building
3520 20 7.9654e-2 (10 -30 1120 -1220 1420 -1430):
(30 -760 900 -1320 1420 -1430):
(410 -660 800 -900 1420 -1430) imp:n=1 $ conc between
floors
c
c     here is air around building
c
3600 10 4.354e-5 660 -760 800 -900 1410 -1450 imp:n=1 $ air a
3610 10 4.354e-5 (30 -410 800 -900 1410 -1450):
(10 -30 800 -1120 1410 -1450) imp:n=1 $ air b
3620 10 4.354e-5 10 -30 1220 -1320 1410 -1450 imp:n=1 $ air c
3630 10 4.354e-5 (-10:760:-800:1320:1450) -9998 1410 imp:n=1 $ giant air
c
c     here are detector cells
c
3700 10 4.354e-5 -6000 imp:n=1 $ detectpr X-710-NE
3710 10 4.354e-5 -6010 imp:n=1 $ detector X-710-SW
3720 10 4.354e-5 -6020 imp:n=1 $ detector X-710-SA
3730 10 4.354e-5 -6030 imp:n=1 $ detector X-710-SE
3740 10 4.354e-5 -6040 imp:n=1 $ detector X-710-NW
c

```

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

c here is air in the second floor

c

4000	10	4.354e-5	40	-2000	1280	-1310	1430	-1440	imp:n=1	\$
4010	10	4.354e-5	2010	-2040	1280	-1310	1430	-1440	imp:n=1	\$
4020	10	4.354e-5	2050	-150	1280	-1310	1430	-1440	imp:n=1	\$
4030	10	4.354e-5	40	-710	1260	-1270	1430	-1440	imp:n=1	\$
4040	10	4.354e-5	2030	-90	1220	-1250	1430	-1440	imp:n=1	\$
4050	10	4.354e-5	100	-150	1220	-1250	1430	-1440	imp:n=1	\$
4060	10	4.354e-5	20	-30	1150	-1210	1430	-1440	imp:n=1	\$
4070	10	4.354e-5	2030	-150	1205	-1210	1430	-1440	imp:n=1	\$
4075	10	4.354e-5	40	-2020	960	-1260	1430	-1440	imp:n=1	\$
4080	10	4.354e-5	2030	-2000	1150	-1200	1430	-1440	imp:n=1	\$
4090	10	4.354e-5	(2030 -2010 1110 -1140 1430 -1440):							
			(2010 -110 1110 -1200 1430 -1440):							
			(110 -150 1150 -1200 1430 -1440) imp:n=1							\$
4100	10	4.354e-5	20	-30	1130	-1140	1430	-1440	imp:n=1	\$
4110	10	4.354e-5	120	-150	1130	-1140	1430	-1440	imp:n=1	\$
4120	10	4.354e-5	(2030 -110 1050 -1100 1430 -1440):							
			(80 -110 1020 -1050 1430 -1440):							
			(80 -150 970 -1020 1430 -1440):							
			(2030 -80 970 -1000 1430 -1440):							
			(2030 -50 1000 -1040 1430 -1440) imp:n=1							\$
4130	10	4.354e-5	120	-150	1030	-1120	1430	-1440	imp:n=1	\$
4140	10	4.354e-5	60	-70	1010	-1040	1430	-1440	imp:n=1	\$
4150	10	4.354e-5	40	-710	950	-960	1430	-1440	imp:n=1	\$
4160	10	4.354e-5	40	-150	910	-940	1430	-1440	imp:n=1	\$
4170	10	4.354e-5	160	-170	1270	-1310	1430	-1440	imp:n=1	\$
4180	10	4.354e-5	160	-170	1140	-1260	1430	-1440	imp:n=1	\$
4190	10	4.354e-5	160	-170	960	-1130	1430	-1440	imp:n=1	\$
5100	10	4.354e-5	160	-170	910	-950	1430	-1440	imp:n=1	\$
5110	10	4.354e-5	(180 -190 1280 -1310 1430 -1440):							
			(190 -210 1300 -1310 1430 -1440) imp:n=1							\$
5120	10	4.354e-5	200	-210	1280	-1290	1430	-1440	imp:n=1	\$
5130	10	4.354e-5	220	-230	1280	-1310	1430	-1440	imp:n=1	\$
5140	10	4.354e-5	240	-250	1280	-1310	1430	-1440	imp:n=1	\$
5150	10	4.354e-5	260	-2080	1280	-1310	1430	-1440	imp:n=1	\$
5160	10	4.354e-5	2090	-330	1300	-1310	1430	-1440	imp:n=1	\$
5170	10	4.354e-5	2090	-330	1280	-1290	1430	-1440	imp:n=1	\$
5180	10	4.354e-5	340	-350	1300	-1310	1430	-1440	imp:n=1	\$
5190	10	4.354e-5	340	-350	1280	-1290	1430	-1440	imp:n=1	\$
5200	10	4.354e-5	360	-390	1280	-1310	1430	-1440	imp:n=1	\$
5210	10	4.354e-5	400	-410	1280	-1310	1430	-1440	imp:n=1	\$
5220	10	4.354e-5	420	-2100	1300	-1310	1430	-1440	imp:n=1	\$
5230	10	4.354e-5	420	-2100	1280	-1290	1430	-1440	imp:n=1	\$

Final Report

Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant

January 1996

Appendix

5240	10	4.354e-5	2110	-610	1280	-1310	1430	-1440	imp:n=1	\$
5250	10	4.354e-5	620	-650	1280	-1310	1430	-1440	imp:n=1	\$
5260	10	4.354e-5	(660	-730	1280	-1310	1430	-1440):		
			(730	-750	1300	-1310	1430	-1440)	imp:n=1	\$
5270	10	4.354e-5	740	-750	1280	-1290	1430	-1440	imp:n=1	\$
5280	10	4.354e-5	180	-210	1220	-1250	1430	-1440	imp:n=1	\$
5290	10	4.354e-5	220	-230	1240	-1250	1430	-1440	imp:n=1	\$
5300	10	4.354e-5	(220	-2060	1220	-1230	1430	-1440):		
			(240	-250	1230	-1250	1430	-1440)	imp:n=1	\$
5310	10	4.354e-5	260	-310	1240	-1250	1430	-1440	imp:n=1	\$
5330	10	4.354e-5	2070	-310	1220	-1230	1430	-1440	imp:n=1	\$
5340	10	4.354e-5	320	-350	1220	-1250	1430	-1440	imp:n=1	\$
5350	10	4.354e-5	360	-390	1220	-1250	1430	-1440	imp:n=1	\$
5360	10	4.354e-5	180	-390	1205	-1210	1430	-1440	imp:n=1	\$
5370	10	4.354e-5	(180	-200	1190	-1200	1430	-1440):		
			(200	-250	1150	-1200	1430	-1440)	imp:n=1	\$
5380	10	4.354e-5	180	-190	1150	-1180	1430	-1440	imp:n=1	\$
5390	10	4.354e-5	260	-2060	1150	-1180	1430	-1440	imp:n=1	\$
5400	10	4.354e-5	(260	-2070	1190	-1200	1430	-1440):		
			(2070	-350	1150	-1200	1430	-1440)	imp:n=1	\$
5410	10	4.354e-5	360	-390	1150	-1200	1430	-1440	imp:n=1	\$
5420	10	4.354e-5	400	-410	1140	-1260	1430	-1440	imp:n=1	\$
5425	10	4.354e-5	420	-690	1205	-1210	1430	-1440	imp:n=1	\$
5430	10	4.354e-5	420	-2100	1220	-1250	1430	-1440	imp:n=1	\$
5440	10	4.354e-5	(2110	-510	1220	-1250	1430	-1440):		
			(510	-550	1220	-1230	1430	-1440)	imp:n=1	\$
5450	10	4.354e-5	520	-550	1240	-1250	1430	-1440	imp:n=1	\$
5460	10	4.354e-5	560	-610	1220	-1250	1430	-1440	imp:n=1	\$
5470	10	4.354e-5	620	-630	1240	-1250	1430	-1440	imp:n=1	\$
5480	10	4.354e-5	620	-630	1220	-1230	1430	-1440	imp:n=1	\$
5490	10	4.354e-5	640	-670	1220	-1250	1430	-1440	imp:n=1	\$
5500	10	4.354e-5	680	-690	1240	-1250	1430	-1440	imp:n=1	\$
5510	10	4.354e-5	680	-690	1220	-1230	1430	-1440	imp:n=1	\$
5520	10	4.354e-5	(420	-2110	1190	-1200	1430	-1440):		
			(2110	-550	1150	-1200	1430	-1440)	imp:n=1	\$
5530	10	4.354e-5	420	-2100	1150	-1180	1430	-1440	imp:n=1	\$
5540	10	4.354e-5	560	-630	1150	-1200	1430	-1440	6040 imp:n=1	\$
5550	10	4.354e-5	640	-670	1150	-1200	1430	-1440	imp:n=1	\$
5560	10	4.354e-5	680	-690	1170	-1200	1430	-1440	imp:n=1	\$
5570	10	4.354e-5	680	-690	1150	-1160	1430	-1440	imp:n=1	\$
5580	10	4.354e-5	700	-710	1140	-1260	1430	-1440	imp:n=1	\$
5590	10	4.354e-5	720	-750	1260	-1270	1430	-1440	imp:n=1	\$
5600	10	4.354e-5	720	-2140	1240	-1250	1430	-1440	imp:n=1	\$
5610	10	4.354e-5	2150	-750	1240	-1250	1430	-1440	imp:n=1	\$

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

5620	10	4.354e-5	720	-2140	1220	-1230	1430	-1440	imp:n=1	\$
5630	10	4.354e-5	2150	-750	1220	-1230	1430	-1440	imp:n=1	\$
5640	10	4.354e-5	720	-2140	1190	-1210	1430	-1440	imp:n=1	\$
5650	10	4.354e-5	2150	-750	1190	-1210	1430	-1440	imp:n=1	\$
5660	10	4.354e-5	720	-2140	1170	-1180	1430	-1440	imp:n=1	\$
5670	10	4.354e-5	2150	-750	1170	-1180	1430	-1440	imp:n=1	\$
5680	10	4.354e-5	160	-710	1130	-1140	1430	-1440	imp:n=1	\$
5690	10	4.354e-5	(180	-230	1050	-1120	1430	-1440):		
			(230	-250	1050	-1100	1430	-1440)	imp:n=1	\$
5700	10	4.354e-5	240	-250	1110	-1120	1430	-1440	imp:n=1	\$
5710	10	4.354e-5	260	-310	1090	-1120	1430	-1440	imp:n=1	\$
5720	10	4.354e-5	(260	-2060	1050	-1080	1430	-1440):		
			(2060	-290	1050	-1060	1430	-1440)	imp:n=1	\$
5730	10	4.354e-5	2070	-290	1070	-1080	1430	-1440	imp:n=1	\$
5740	10	4.354e-5	320	-2080	1090	-1120	1430	-1440	imp:n=1	\$
5750	10	4.354e-5	300	-350	1050	-1080	1430	-1440	imp:n=1	\$
5760	10	4.354e-5	2090	-350	1090	-1120	1430	-1440	imp:n=1	\$
5770	10	4.354e-5	360	-390	1050	-1120	1430	-1440	imp:n=1	\$
5780	10	4.354e-5	400	-410	960	-1130	1430	-1440	imp:n=1	\$
5790	10	4.354e-5	180	-390	1010	-1040	1430	-1440	imp:n=1	\$
5800	10	4.354e-5	180	-190	2210	-1000	1430	-1440	imp:n=1	\$
5810	10	4.354e-5	(180	-200	2190	-2200	1430	-1440):		
			(200	-210	2190	-1000	1430	-1440):		
			(210	-230	2190	-980	1430	-1440)	imp:n=1	\$
5820	10	4.354e-5	220	-230	990	-1000	1430	-1440	imp:n=1	\$
5830	10	4.354e-5	240	-250	2190	-1000	1430	-1440	imp:n=1	\$
5840	10	4.354e-5	180	-190	970	-2180	1430	-1440	imp:n=1	\$
5850	10	4.354e-5	200	-210	970	-2180	1430	-1440	imp:n=1	\$
5860	10	4.354e-5	220	-230	970	-2180	1430	-1440	imp:n=1	\$
5870	10	4.354e-5	240	-250	970	-2180	1430	-1440	imp:n=1	\$
5880	10	4.354e-5	260	-310	970	-1000	1430	-1440	6030 imp:n=1	\$
5890	10	4.354e-5	(320	-330	970	-1000	1430	-1440):		
			(330	-380	2210	-1000	1430	-1440):		
			(380	-390	970	-1000	1430	-1440)	imp:n=1	\$
5900	10	4.354e-5	340	-350	970	-2200	1430	-1440	imp:n=1	\$
5910	10	4.354e-5	360	-370	970	-2200	1430	-1440	imp:n=1	\$
5920	10	4.354e-5	420	-2100	1110	-1120	1430	-1440	imp:n=1	\$
5930	10	4.354e-5	(420	-2110	1050	-1100	1430	-1440):		
			(2110	-550	1050	-1120	1430	-1440)	imp:n=1	\$
5940	10	4.354e-5	560	-630	1050	-1120	1430	-1440	imp:n=1	\$
5950	10	4.354e-5	640	-650	1090	-1120	1430	-1440	imp:n=1	\$
5960	10	4.354e-5	640	-650	1050	-1080	1430	-1440	imp:n=1	\$
5970	10	4.354e-5	660	-690	1050	-1120	1430	-1440	imp:n=1	\$
5980	10	4.354e-5	700	-710	960	-1130	1430	-1440	imp:n=1	\$

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

5990	10	4.354e-5	420	-690	1010	-1040	1430	-1440	imp:n=1	\$
6000	10	4.354e-5	420	-550	970	-1000	1430	-1440	imp:n=1	\$
6010	10	4.354e-5	560	-2120	970	-1000	1430	-1440	imp:n=1	\$
6020	10	4.354e-5	(2130 -620 2190 -1000 1430 -1440) :							
			(620	-650	970	-1000	1430	-1440)	imp:n=1	\$
6030	10	4.354e-5	2130	-610	970	-2180	1430	-1440	imp:n=1	\$
6040	10	4.354e-5	660	-690	970	-1000	1430	-1440	imp:n=1	\$
6060	10	4.354e-5	720	-2140	1130	-1160	1430	-1440	imp:n=1	\$
6070	10	4.354e-5	2150	-750	1130	-1160	1430	-1440	imp:n=1	\$
6080	10	4.354e-5	720	-2140	1090	-1120	1430	-1440	imp:n=1	\$
6090	10	4.354e-5	2150	-750	1090	-1120	1430	-1440	imp:n=1	\$
6100	10	4.354e-5	720	-2140	1030	-1080	1430	-1440	imp:n=1	\$
6110	10	4.354e-5	2150	-750	1030	-1080	1430	-1440	imp:n=1	\$
6120	10	4.354e-5	720	-2140	990	-1020	1430	-1440	imp:n=1	\$
6130	10	4.354e-5	2150	-750	990	-1020	1430	-1440	imp:n=1	\$
6140	10	4.354e-5	720	-2140	970	-980	1430	-1440	imp:n=1	\$
6150	10	4.354e-5	2150	-750	970	-980	1430	-1440	imp:n=1	\$
6160	10	4.354e-5	720	-750	950	-960	1430	-1440	imp:n=1	\$
6170	10	4.354e-5	180	-190	930	-940	1430	-1440	imp:n=1	\$
6180	10	4.354e-5	180	-190	910	-920	1430	-1440	imp:n=1	\$
6190	10	4.354e-5	200	-210	930	-940	1430	-1440	imp:n=1	\$
6200	10	4.354e-5	200	-210	910	-920	1430	-1440	imp:n=1	\$
6210	10	4.354e-5	220	-250	910	-940	1430	-1440	imp:n=1	\$
6220	10	4.354e-5	260	-2060	930	-940	1430	-1440	imp:n=1	\$
6230	10	4.354e-5	2070	-310	930	-940	1430	-1440	imp:n=1	\$
6240	10	4.354e-5	260	-2060	910	-920	1430	-1440	imp:n=1	\$
6250	10	4.354e-5	2070	-310	910	-920	1430	-1440	imp:n=1	\$
6260	10	4.354e-5	320	-330	930	-940	1430	-1440	imp:n=1	\$
6270	10	4.354e-5	320	-330	910	-920	1430	-1440	imp:n=1	\$
6280	10	4.354e-5	340	-350	930	-940	1430	-1440	imp:n=1	\$
6290	10	4.354e-5	340	-350	910	-920	1430	-1440	imp:n=1	\$
6300	10	4.354e-5	360	-370	930	-940	1430	-1440	imp:n=1	\$
6310	10	4.354e-5	360	-370	910	-920	1430	-1440	imp:n=1	\$
6320	10	4.354e-5	380	-390	930	-940	1430	-1440	imp:n=1	\$
6330	10	4.354e-5	380	-390	910	-920	1430	-1440	imp:n=1	\$
6340	10	4.354e-5	400	-410	910	-950	1430	-1440	imp:n=1	\$
6350	10	4.354e-5	420	-510	910	-940	1430	-1440	imp:n=1	\$
6360	10	4.354e-5	520	-650	910	-940	1430	-1440	imp:n=1	\$
6365	10	4.354e-5	660	-690	910	-940	1430	-1440	imp:n=1	\$
6370	10	4.354e-5	700	-2140	910	-940	1430	-1440	imp:n=1	\$
6380	10	4.354e-5	2150	-730	2170	-940	1430	-1440	imp:n=1	\$
6390	10	4.354e-5	740	-750	2170	-940	1430	-1440	imp:n=1	\$
6400	10	4.354e-5	2150	-750	910	-2160	1430	-1440	imp:n=1	\$
6410	10	4.354e-5	420	-430	850	-900	1430	-1440	imp:n=1	\$

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

```

6420 10 4.354e-5 440 -470 850 -900 1430 -1440 imp:n=1 $
6430 10 4.354e-5 480 -530 850 -900 1430 -1440 imp:n=1 $
6450 10 4.354e-5 540 -550 870 -900 1430 -1440 imp:n=1 $
6460 10 4.354e-5 540 -550 850 -860 1430 -1440 imp:n=1 $
6470 10 4.354e-5 (420 -560 810 -840 1430 -1440):
          (560 -650 810 -900 1430 -1440) imp:n=1 $

```

c

c here are the concrete walls on the second floor

c

```

6500 20 3.9827e-2 30 -760 1310 -1320 1430 -1440 imp:n=1 $
6510 20 3.9827e-2 30 -160 1270 -1280 1430 -1440 imp:n=1 $
6520 20 3.9827e-2 2020 -160 1250 -1260 1430 -1440 imp:n=1 $
6530 20 3.9827e-2 2020 -160 1210 -1220 1430 -1440 imp:n=1 $
6540 20 3.9827e-2 10 -40 1210 -1220 1430 -1440 imp:n=1 $
6550 20 3.9827e-2 2020 -160 1200 -1205 1430 -1440 imp:n=1 $
6560 20 3.9827e-2 2020 -2010 1140 -1150 1430 -1440 imp:n=1 $
6570 20 3.9827e-2 10 -40 1140 -1150 1430 -1440 imp:n=1 $
6580 20 3.9827e-2 10 -40 1120 -1130 1430 -1440 imp:n=1 $
6590 20 3.9827e-2 110 -160 1140 -1150 1430 -1440 imp:n=1 $
6600 20 3.9827e-2 110 -160 1120 -1130 1430 -1440 imp:n=1 $
6610 20 3.9827e-2 2020 -120 1100 -1110 1430 -1440 imp:n=1 $
6620 20 3.9827e-2 2020 -80 1040 -1050 1430 -1440 imp:n=1 $
6630 20 3.9827e-2 50 -80 1000 -1010 1430 -1440 imp:n=1 $
6640 20 3.9827e-2 110 -160 1020 -1030 1430 -1440 imp:n=1 $
6650 20 3.9827e-2 2020 -160 960 -970 1430 -1440 imp:n=1 $
6660 20 3.9827e-2 30 -160 940 -950 1430 -1440 imp:n=1 $
6670 20 3.9827e-2 30 -760 900 -910 1430 -1440 imp:n=1 $
6680 20 3.9827e-2 30 -40 1280 -1310 1430 -1440 imp:n=1 $
6690 20 3.9827e-2 2000 -2010 1280 -1310 1430 -1440 imp:n=1 $
6700 20 3.9827e-2 2040 -2050 1280 -1310 1430 -1440 imp:n=1 $
6710 20 3.9827e-2 150 -160 1280 -1310 1430 -1440 imp:n=1 $
6720 20 3.9827e-2 30 -40 1220 -1270 1430 -1440 imp:n=1 $
6730 20 3.9827e-2 2020 -2030 1220 -1250 1430 -1440 imp:n=1 $
6740 20 3.9827e-2 90 -100 1220 -1250 1430 -1440 imp:n=1 $
6750 20 3.9827e-2 150 -160 1220 -1250 1430 -1440 imp:n=1 $
6760 20 3.9827e-2 150 -160 1205 -1210 1430 -1440 imp:n=1 $
6770 20 3.9827e-2 150 -160 1150 -1200 1430 -1440 imp:n=1 $
6780 20 3.9827e-2 2000 -2010 1150 -1200 1430 -1440 imp:n=1 $
6790 20 3.9827e-2 2020 -2030 1205 -1210 1430 -1440 imp:n=1 $
6800 20 3.9827e-2 2020 -2030 1150 -1200 1430 -1440 imp:n=1 $
6810 20 3.9827e-2 30 -40 1150 -1210 1430 -1440 imp:n=1 $
6820 20 3.9827e-2 10 -20 1150 -1210 1430 -1440 imp:n=1 $
6830 20 3.9827e-2 10 -20 1130 -1140 1430 -1440 imp:n=1 $
6840 20 3.9827e-2 30 -40 1130 -1140 1430 -1440 imp:n=1 $

```

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

6850	20	3.9827e-2	2020	-2030	1110	-1140	1430	-1440	imp:n=1	\$
6860	20	3.9827e-2	110	-120	1130	-1140	1430	-1440	imp:n=1	\$
6870	20	3.9827e-2	110	-120	1110	-1120	1430	-1440	imp:n=1	\$
6880	20	3.9827e-2	150	-160	1130	-1140	1430	-1440	imp:n=1	\$
6890	20	3.9827e-2	150	-160	1030	-1120	1430	-1440	imp:n=1	\$
6900	20	3.9827e-2	110	-120	1030	-1100	1430	-1440	imp:n=1	\$
6910	20	3.9827e-2	70	-80	1010	-1040	1430	-1440	imp:n=1	\$
6920	20	3.9827e-2	50	-60	1010	-1040	1430	-1440	imp:n=1	\$
6930	20	3.9827e-2	2020	-2030	1050	-1100	1430	-1440	imp:n=1	\$
6940	20	3.9827e-2	2020	-2030	970	-1040	1430	-1440	imp:n=1	\$
6945	20	3.9827e-2	30	-40	950	-1120	1430	-1440	imp:n=1	\$
6950	20	3.9827e-2	150	-160	970	-1020	1430	-1440	imp:n=1	\$
6960	20	3.9827e-2	30	-40	910	-940	1430	-1440	imp:n=1	\$
6970	20	3.9827e-2	150	-160	910	-940	1430	-1440	imp:n=1	\$
6980	20	3.9827e-2	170	-180	1280	-1310	1430	-1440	imp:n=1	\$
6990	20	3.9827e-2	190	-200	1280	-1290	1430	-1440	imp:n=1	\$
7000	20	3.9827e-2	210	-220	1300	-1310	1430	-1440	imp:n=1	\$
7010	20	3.9827e-2	210	-220	1280	-1290	1430	-1440	imp:n=1	\$
7020	20	3.9827e-2	230	-240	1280	-1310	1430	-1440	imp:n=1	\$
7030	20	3.9827e-2	250	-260	1280	-1310	1430	-1440	imp:n=1	\$
7040	20	3.9827e-2	2080	-2090	1300	-1310	1430	-1440	imp:n=1	\$
7050	20	3.9827e-2	2080	-2090	1280	-1290	1430	-1440	imp:n=1	\$
7060	20	3.9827e-2	330	-340	1300	-1310	1430	-1440	imp:n=1	\$
7070	20	3.9827e-2	330	-340	1280	-1290	1430	-1440	imp:n=1	\$
7080	20	3.9827e-2	350	-360	1300	-1310	1430	-1440	imp:n=1	\$
7085	20	3.9827e-2	350	-360	1280	-1290	1430	-1440	imp:n=1	\$
7090	20	3.9827e-2	390	-400	1280	-1310	1430	-1440	imp:n=1	\$
7100	20	3.9827e-2	410	-420	1300	-1310	1430	-1440	imp:n=1	\$
7110	20	3.9827e-2	410	-420	1280	-1290	1430	-1440	imp:n=1	\$
7120	20	3.9827e-2	2100	-2110	1300	-1310	1430	-1440	imp:n=1	\$
7130	20	3.9827e-2	2100	-2110	1280	-1290	1430	-1440	imp:n=1	\$
7140	20	3.9827e-2	610	-620	1280	-1310	1430	-1440	imp:n=1	\$
7150	20	3.9827e-2	650	-660	1280	-1310	1430	-1440	imp:n=1	\$
7160	20	3.9827e-2	730	-740	1280	-1290	1430	-1440	imp:n=1	\$
7170	20	3.9827e-2	750	-760	1300	-1310	1430	-1440	imp:n=1	\$
7175	20	3.9827e-2	750	-760	1280	-1290	1430	-1440	imp:n=1	\$
7180	20	3.9827e-2	750	-760	1260	-1270	1430	-1440	imp:n=1	\$
7190	20	3.9827e-2	710	-720	1260	-1270	1430	-1440	imp:n=1	\$
7200	20	3.9827e-2	170	-180	1220	-1250	1430	-1440	imp:n=1	\$
7210	20	3.9827e-2	210	-220	1240	-1250	1430	-1440	imp:n=1	\$
7220	20	3.9827e-2	210	-220	1220	-1230	1430	-1440	imp:n=1	\$
7225	20	3.9827e-2	230	-240	1240	-1250	1430	-1440	imp:n=1	\$
7230	20	3.9827e-2	250	-260	1240	-1250	1430	-1440	imp:n=1	\$
7240	20	3.9827e-2	2060	-2070	1220	-1230	1430	-1440	imp:n=1	\$

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

7250	20	3.9827e-2	310	-320	1240	-1250	1430	-1440	imp:n=1	\$
7260	20	3.9827e-2	310	-320	1220	-1230	1430	-1440	imp:n=1	\$
7270	20	3.9827e-2	350	-360	1220	-1250	1430	-1440	imp:n=1	\$
7280	20	3.9827e-2	390	-400	1220	-1250	1430	-1440	imp:n=1	\$
7290	20	3.9827e-2	170	-180	1205	-1210	1430	-1440	imp:n=1	\$
7300	20	3.9827e-2	170	-180	1190	-1200	1430	-1440	imp:n=1	\$
7310	20	3.9827e-2	170	-180	1150	-1180	1430	-1440	imp:n=1	\$
7320	20	3.9827e-2	190	-200	1150	-1180	1430	-1440	imp:n=1	\$
7330	20	3.9827e-2	250	-260	1190	-1200	1430	-1440	imp:n=1	\$
7340	20	3.9827e-2	250	-260	1150	-1180	1430	-1440	imp:n=1	\$
7350	20	3.9827e-2	2060	-2070	1150	-1180	1430	-1440	imp:n=1	\$
7360	20	3.9827e-2	350	-360	1150	-1200	1430	-1440	imp:n=1	\$
7370	20	3.9827e-2	390	-400	1150	-1200	1430	-1440	imp:n=1	\$
7380	20	3.9827e-2	390	-400	1205	-1210	1430	-1440	imp:n=1	\$
7390	20	3.9827e-2	410	-420	1220	-1250	1430	-1440	imp:n=1	\$
7400	20	3.9827e-2	410	-420	1205	-1210	1430	-1440	imp:n=1	\$
7410	20	3.9827e-2	410	-420	1190	-1200	1430	-1440	imp:n=1	\$
7420	20	3.9827e-2	410	-420	1150	-1180	1430	-1440	imp:n=1	\$
7430	20	3.9827e-2	2100	-2110	1150	-1180	1430	-1440	imp:n=1	\$
7440	20	3.9827e-2	2100	-2110	1220	-1250	1430	-1440	imp:n=1	\$
7450	20	3.9827e-2	510	-520	1240	-1250	1430	-1440	imp:n=1	\$
7460	20	3.9827e-2	550	-560	1240	-1250	1430	-1440	imp:n=1	\$
7465	20	3.9827e-2	550	-560	1220	-1230	1430	-1440	imp:n=1	\$
7470	20	3.9827e-2	550	-560	1150	-1200	1430	-1440	imp:n=1	\$
7480	20	3.9827e-2	610	-620	1240	-1250	1430	-1440	imp:n=1	\$
7490	20	3.9827e-2	610	-620	1220	-1230	1430	-1440	imp:n=1	\$
7500	20	3.9827e-2	630	-640	1240	-1250	1430	-1440	imp:n=1	\$
7510	20	3.9827e-2	630	-640	1220	-1230	1430	-1440	imp:n=1	\$
7520	20	3.9827e-2	670	-680	1240	-1250	1430	-1440	imp:n=1	\$
7530	20	3.9827e-2	670	-680	1220	-1230	1430	-1440	imp:n=1	\$
7540	20	3.9827e-2	690	-700	1240	-1250	1430	-1440	imp:n=1	\$
7550	20	3.9827e-2	690	-700	1220	-1230	1430	-1440	imp:n=1	\$
7560	20	3.9827e-2	630	-640	1150	-1200	1430	-1440	imp:n=1	\$
7570	20	3.9827e-2	670	-680	1170	-1200	1430	-1440	imp:n=1	\$
7580	20	3.9827e-2	670	-680	1150	-1160	1430	-1440	imp:n=1	\$
7590	20	3.9827e-2	690	-700	1170	-1200	1430	-1440	imp:n=1	\$
7600	20	3.9827e-2	690	-700	1150	-1160	1430	-1440	imp:n=1	\$
7610	20	3.9827e-2	690	-700	1205	-1210	1430	-1440	imp:n=1	\$
7620	20	3.9827e-2	710	-720	1240	-1250	1430	-1440	imp:n=1	\$
7630	20	3.9827e-2	2140	-2150	1240	-1250	1430	-1440	imp:n=1	\$
7640	20	3.9827e-2	750	-760	1240	-1250	1430	-1440	imp:n=1	\$
7650	20	3.9827e-2	710	-720	1220	-1230	1430	-1440	imp:n=1	\$
7660	20	3.9827e-2	2140	-2150	1220	-1230	1430	-1440	imp:n=1	\$
7670	20	3.9827e-2	750	-760	1220	-1230	1430	-1440	imp:n=1	\$

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

7680	20	3.9827e-2	710	-720	1190	-1210	1430	-1440	imp:n=1	\$
7690	20	3.9827e-2	2140	-2150	1190	-1210	1430	-1440	imp:n=1	\$
7700	20	3.9827e-2	750	-760	1190	-1210	1430	-1440	imp:n=1	\$
7710	20	3.9827e-2	710	-720	1170	-1180	1430	-1440	imp:n=1	\$
7720	20	3.9827e-2	2140	-2150	1170	-1180	1430	-1440	imp:n=1	\$
7730	20	3.9827e-2	750	-760	1170	-1180	1430	-1440	imp:n=1	\$
7740	20	3.9827e-2	710	-720	1130	-1160	1430	-1440	imp:n=1	\$
7750	20	3.9827e-2	2140	-2150	1130	-1160	1430	-1440	imp:n=1	\$
7760	20	3.9827e-2	750	-760	1130	-1160	1430	-1440	imp:n=1	\$
7770	20	3.9827e-2	170	-180	1050	-1120	1430	-1440	imp:n=1	\$
7780	20	3.9827e-2	170	-180	1010	-1040	1430	-1440	imp:n=1	\$
7790	20	3.9827e-2	170	-180	2210	-1000	1430	-1440	imp:n=1	\$
7800	20	3.9827e-2	170	-180	2190	-2200	1430	-1440	imp:n=1	\$
7802	20	3.9827e-2	230	-240	1110	-1120	1430	-1440	imp:n=1	\$
7810	20	3.9827e-2	170	-180	970	-2180	1430	-1440	imp:n=1	\$
7812	20	3.9827e-2	250	-260	1110	-1120	1430	-1440	imp:n=1	\$
7820	20	3.9827e-2	190	-200	2210	-1000	1430	-1440	imp:n=1	\$
7822	20	3.9827e-2	250	-260	1090	-1100	1430	-1440	imp:n=1	\$
7830	20	3.9827e-2	210	-220	990	-1000	1430	-1440	imp:n=1	\$
7832	20	3.9827e-2	250	-260	1050	-1080	1430	-1440	imp:n=1	\$
7840	20	3.9827e-2	190	-200	970	-2180	1430	-1440	imp:n=1	\$
7842	20	3.9827e-2	290	-300	1050	-1060	1430	-1440	imp:n=1	\$
7850	20	3.9827e-2	210	-220	970	-2180	1430	-1440	imp:n=1	\$
7852	20	3.9827e-2	2060	-2070	1070	-1080	1430	-1440	imp:n=1	\$
7860	20	3.9827e-2	230	-240	970	-2180	1430	-1440	imp:n=1	\$
7862	20	3.9827e-2	290	-300	1070	-1080	1430	-1440	imp:n=1	\$
7870	20	3.9827e-2	250	-260	970	-2180	1430	-1440	imp:n=1	\$
7872	20	3.9827e-2	310	-320	1090	-1120	1430	-1440	imp:n=1	\$
7880	20	3.9827e-2	230	-240	2190	-980	1430	-1440	imp:n=1	\$
7882	20	3.9827e-2	2080	-2090	1090	-1120	1430	-1440	imp:n=1	\$
7885	20	3.9827e-2	250	-260	2190	-1000	1430	-1440	imp:n=1	\$
7887	20	3.9827e-2	310	-320	970	-1000	1430	-1440	imp:n=1	\$
7890	20	3.9827e-2	230	-240	990	-1000	1430	-1440	imp:n=1	\$
7900	20	3.9827e-2	330	-340	970	-2200	1430	-1440	imp:n=1	\$
7910	20	3.9827e-2	350	-360	1090	-1120	1430	-1440	imp:n=1	\$
7920	20	3.9827e-2	350	-360	1050	-1080	1430	-1440	imp:n=1	\$
7930	20	3.9827e-2	390	-400	1050	-1120	1430	-1440	imp:n=1	\$
7940	20	3.9827e-2	390	-400	1010	-1040	1430	-1440	imp:n=1	\$
7950	20	3.9827e-2	350	-360	970	-2200	1430	-1440	imp:n=1	\$
7960	20	3.9827e-2	370	-380	970	-2200	1430	-1440	imp:n=1	\$
7970	20	3.9827e-2	390	-400	970	-1000	1430	-1440	imp:n=1	\$
7980	20	3.9827e-2	410	-420	1110	-1120	1430	-1440	imp:n=1	\$
7990	20	3.9827e-2	410	-420	1050	-1100	1430	-1440	imp:n=1	\$
8000	20	3.9827e-2	410	-420	1010	-1040	1430	-1440	imp:n=1	\$

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

8010	20	3.9827e-2	410	-420	970	-1000	1430	-1440	imp:n=1	\$
8020	20	3.9827e-2	2100	-2110	1110	-1120	1430	-1440	imp:n=1	\$
8030	20	3.9827e-2	550	-560	1050	-1120	1430	-1440	imp:n=1	\$
8040	20	3.9827e-2	550	-560	970	-1000	1430	-1440	imp:n=1	\$
8050	20	3.9827e-2	2120	-2130	2190	-1000	1430	-1440	imp:n=1	\$
8060	20	3.9827e-2	2120	-2130	970	-2180	1430	-1440	imp:n=1	\$
8070	20	3.9827e-2	610	-620	970	-2180	1430	-1440	imp:n=1	\$
8080	20	3.9827e-2	630	-640	1090	-1120	1430	-1440	imp:n=1	\$
8090	20	3.9827e-2	630	-640	1050	-1080	1430	-1440	imp:n=1	\$
8100	20	3.9827e-2	650	-660	1090	-1120	1430	-1440	imp:n=1	\$
8110	20	3.9827e-2	650	-660	1050	-1080	1430	-1440	imp:n=1	\$
8120	20	3.9827e-2	650	-660	970	-1000	1430	-1440	imp:n=1	\$
8130	20	3.9827e-2	690	-700	1050	-1120	1430	-1440	imp:n=1	\$
8140	20	3.9827e-2	690	-700	1010	-1040	1430	-1440	imp:n=1	\$
8150	20	3.9827e-2	690	-700	970	-1000	1430	-1440	imp:n=1	\$
8160	20	3.9827e-2	710	-720	1090	-1120	1430	-1440	imp:n=1	\$
8170	20	3.9827e-2	710	-720	1030	-1080	1430	-1440	imp:n=1	\$
8180	20	3.9827e-2	710	-720	990	-1020	1430	-1440	imp:n=1	\$
8190	20	3.9827e-2	710	-720	970	-980	1430	-1440	imp:n=1	\$
8200	20	3.9827e-2	2140	-2150	1090	-1120	1430	-1440	imp:n=1	\$
8210	20	3.9827e-2	2140	-2150	1030	-1080	1430	-1440	imp:n=1	\$
8220	20	3.9827e-2	2140	-2150	990	-1020	1430	-1440	imp:n=1	\$
8230	20	3.9827e-2	2140	-2150	970	-980	1430	-1440	imp:n=1	\$
8240	20	3.9827e-2	750	-760	1090	-1120	1430	-1440	imp:n=1	\$
8250	20	3.9827e-2	750	-760	1030	-1080	1430	-1440	imp:n=1	\$
8260	20	3.9827e-2	750	-760	990	-1020	1430	-1440	imp:n=1	\$
8265	20	3.9827e-2	750	-760	970	-980	1430	-1440	imp:n=1	\$
8270	20	3.9827e-2	750	-760	950	-960	1430	-1440	imp:n=1	\$
8280	20	3.9827e-2	710	-720	950	-960	1430	-1440	imp:n=1	\$
8290	20	3.9827e-2	170	-180	910	-920	1430	-1440	imp:n=1	\$
8300	20	3.9827e-2	170	-180	930	-940	1430	-1440	imp:n=1	\$
8310	20	3.9827e-2	190	-200	930	-940	1430	-1440	imp:n=1	\$
8320	20	3.9827e-2	190	-200	910	-920	1430	-1440	imp:n=1	\$
8330	20	3.9827e-2	210	-220	930	-940	1430	-1440	imp:n=1	\$
8340	20	3.9827e-2	210	-220	910	-920	1430	-1440	imp:n=1	\$
8350	20	3.9827e-2	250	-260	930	-940	1430	-1440	imp:n=1	\$
8360	20	3.9827e-2	250	-260	910	-920	1430	-1440	imp:n=1	\$
8370	20	3.9827e-2	2060	-2070	930	-940	1430	-1440	imp:n=1	\$
8380	20	3.9827e-2	2060	-2070	910	-920	1430	-1440	imp:n=1	\$
8390	20	3.9827e-2	310	-320	930	-940	1430	-1440	imp:n=1	\$
8400	20	3.9827e-2	310	-320	910	-920	1430	-1440	imp:n=1	\$
8410	20	3.9827e-2	330	-340	930	-940	1430	-1440	imp:n=1	\$
8420	20	3.9827e-2	330	-340	910	-920	1430	-1440	imp:n=1	\$
8430	20	3.9827e-2	350	-360	930	-940	1430	-1440	imp:n=1	\$

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

8440	20	3.9827e-2	350	-360	910	-920	1430	-1440	imp:n=1	\$
8450	20	3.9827e-2	370	-380	930	-940	1430	-1440	imp:n=1	\$
8460	20	3.9827e-2	370	-380	910	-920	1430	-1440	imp:n=1	\$
8470	20	3.9827e-2	390	-400	930	-940	1430	-1440	imp:n=1	\$
8480	20	3.9827e-2	390	-400	910	-920	1430	-1440	imp:n=1	\$
8490	20	3.9827e-2	410	-420	910	-940	1430	-1440	imp:n=1	\$
8500	20	3.9827e-2	510	-520	910	-940	1430	-1440	imp:n=1	\$
8510	20	3.9827e-2	410	-420	850	-900	1430	-1440	imp:n=1	\$
8520	20	3.9827e-2	430	-440	850	-900	1430	-1440	imp:n=1	\$
8530	20	3.9827e-2	470	-480	850	-900	1430	-1440	imp:n=1	\$
8540	20	3.9827e-2	530	-540	870	-900	1430	-1440	imp:n=1	\$
8550	20	3.9827e-2	530	-540	850	-860	1430	-1440	imp:n=1	\$
8560	20	3.9827e-2	550	-560	870	-900	1430	-1440	imp:n=1	\$
8570	20	3.9827e-2	550	-560	850	-860	1430	-1440	imp:n=1	\$
8580	20	3.9827e-2	410	-420	810	-840	1430	-1440	imp:n=1	\$
8590	20	3.9827e-2	650	-660	810	-900	1430	-1440	imp:n=1	\$
8600	20	3.9827e-2	650	-660	910	-940	1430	-1440	imp:n=1	\$
8610	20	3.9827e-2	690	-700	910	-940	1430	-1440	imp:n=1	\$
8620	20	3.9827e-2	2140	-2150	910	-2160	1430	-1440	imp:n=1	\$
8630	20	3.9827e-2	2140	-2150	2170	-940	1430	-1440	imp:n=1	\$
8640	20	3.9827e-2	730	-740	2170	-940	1430	-1440	imp:n=1	\$
8650	20	3.9827e-2	750	-760	2170	-940	1430	-1440	imp:n=1	\$
8660	20	3.9827e-2	750	-760	910	-2160	1430	-1440	imp:n=1	\$
8670	20	3.9827e-2	190	-220	1290	-1300	1430	-1440	imp:n=1	\$
8680	20	3.9827e-2	2080	-360	1290	-1300	1430	-1440	imp:n=1	\$
8690	20	3.9827e-2	410	-2110	1290	-1300	1430	-1440	imp:n=1	\$
8700	20	3.9827e-2	730	-760	1290	-1300	1430	-1440	imp:n=1	\$
8710	20	3.9827e-2	170	-760	1270	-1280	1430	-1440	imp:n=1	\$
8720	20	3.9827e-2	170	-400	1250	-1260	1430	-1440	imp:n=1	\$
8730	20	3.9827e-2	410	-700	1250	-1260	1430	-1440	imp:n=1	\$
8740	20	3.9827e-2	710	-760	1250	-1260	1430	-1440	imp:n=1	\$
8750	20	3.9827e-2	210	-240	1230	-1240	1430	-1440	imp:n=1	\$
8760	20	3.9827e-2	250	-320	1230	-1240	1430	-1440	imp:n=1	\$
8770	20	3.9827e-2	510	-560	1230	-1240	1430	-1440	imp:n=1	\$
8780	20	3.9827e-2	610	-640	1230	-1240	1430	-1440	imp:n=1	\$
8790	20	3.9827e-2	670	-700	1230	-1240	1430	-1440	imp:n=1	\$
8810	20	3.9827e-2	710	-760	1230	-1240	1430	-1440	imp:n=1	\$
8820	20	3.9827e-2	170	-400	1210	-1220	1430	-1440	imp:n=1	\$
8830	20	3.9827e-2	410	-700	1210	-1220	1430	-1440	imp:n=1	\$
8840	20	3.9827e-2	170	-400	1200	-1205	1430	-1440	imp:n=1	\$
8850	20	3.9827e-2	410	-700	1200	-1205	1430	-1440	imp:n=1	\$
8860	20	3.9827e-2	710	-760	1210	-1220	1430	-1440	imp:n=1	\$
8870	20	3.9827e-2	170	-200	1180	-1190	1430	-1440	imp:n=1	\$
8880	20	3.9827e-2	250	-2070	1180	-1190	1430	-1440	imp:n=1	\$

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

```

8890 20 3.9827e-2 410 -2110 1180 -1190 1430 -1440 imp:n=1 $
8900 20 3.9827e-2 670 -700 1160 -1170 1430 -1440 imp:n=1 $
8910 20 3.9827e-2 710 -760 1180 -1190 1430 -1440 imp:n=1 $
8920 20 3.9827e-2 710 -760 1160 -1170 1430 -1440 imp:n=1 $
8923 20 3.9827e-2 170 -400 1140 -1150 1430 -1440 imp:n=1 $
8927 20 3.9827e-2 410 -700 1140 -1150 1430 -1440 imp:n=1 $
8930 20 3.9827e-2 170 -400 1120 -1130 1430 -1440 imp:n=1 $
8940 20 3.9827e-2 410 -700 1120 -1130 1430 -1440 imp:n=1 $
8950 20 3.9827e-2 710 -760 1120 -1130 1430 -1440 imp:n=1 $
8960 20 3.9827e-2 230 -260 1100 -1110 1430 -1440 imp:n=1 $
8970 20 3.9827e-2 250 -360 1080 -1090 1430 -1440 imp:n=1 $
8980 20 3.9827e-2 2060 -300 1060 -1070 1430 -1440 imp:n=1 $
8990 20 3.9827e-2 410 -2110 1100 -1110 1430 -1440 imp:n=1 $
9000 20 3.9827e-2 630 -660 1080 -1090 1430 -1440 imp:n=1 $
9010 20 3.9827e-2 710 -760 1080 -1090 1430 -1440 imp:n=1 $
9020 20 3.9827e-2 170 -400 1040 -1050 1430 -1440 imp:n=1 $
9030 20 3.9827e-2 410 -700 1040 -1050 1430 -1440 imp:n=1 $
9040 20 3.9827e-2 710 -760 1020 -1030 1430 -1440 imp:n=1 $
9050 20 3.9827e-2 170 -400 1000 -1010 1430 -1440 imp:n=1 $
9060 20 3.9827e-2 410 -700 1000 -1010 1430 -1440 imp:n=1 $
9070 20 3.9827e-2 170 -200 2200 -2210 1430 -1440 imp:n=1 $
9080 20 3.9827e-2 170 -260 2180 -2190 1430 -1440 imp:n=1 $
9090 20 3.9827e-2 210 -240 980 -990 1430 -1440 imp:n=1 $
9100 20 3.9827e-2 330 -380 2200 -2210 1430 -1440 imp:n=1 $
9110 20 3.9827e-2 2120 -620 2180 -2190 1430 -1440 imp:n=1 $
9120 20 3.9827e-2 710 -760 980 -990 1430 -1440 imp:n=1 $
9130 20 3.9827e-2 170 -400 960 -970 1430 -1440 imp:n=1 $
9140 20 3.9827e-2 410 -700 960 -970 1430 -1440 imp:n=1 $
9150 20 3.9827e-2 710 -760 960 -970 1430 -1440 imp:n=1 $
9160 20 3.9827e-2 170 -400 940 -950 1430 -1440 imp:n=1 $
9170 20 3.9827e-2 410 -760 940 -950 1430 -1440 imp:n=1 $
9180 20 3.9827e-2 170 -220 920 -930 1430 -1440 imp:n=1 $
9190 20 3.9827e-2 250 -400 920 -930 1430 -1440 imp:n=1 $
9200 20 3.9827e-2 2140 -760 2160 -2170 1430 -1440 imp:n=1 $
9210 20 3.9827e-2 530 -560 860 -870 1430 -1440 imp:n=1 $
9220 20 3.9827e-2 410 -560 840 -850 1430 -1440 imp:n=1 $
9230 20 3.9827e-2 410 -660 800 -810 1430 -1440 imp:n=1 $

```

c

c

```

9300 30 8.7411e-2 (10 -30 1120 -1220 1440 -1450):
                  (30 -760 900 -1320 1440 -1450):
                  (410 -660 800 -900 1440 -1450) imp:n=1 $ roof

```

c

```

9900 0 (9998 -9999): (-1400 -9998) imp:n=1 $ internal world

```

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

9910 0 9999 imp:n=0 \$ external world

c

c

c *****

c surface cards

c *****

c

10	px	-20	\$
20	px	0	\$
30	px	590	\$
40	px	610	\$
50	px	1575	\$
60	px	1595	\$
70	px	1839	\$
80	px	1859	\$
90	px	2307	\$
100	px	2327	\$
110	px	2649	\$
120	px	2669	\$
130	px	2911	\$
140	px	2931	\$
150	px	3033	\$
160	px	3053	\$
170	px	3297	\$
180	px	3317	\$
190	px	3673	\$
200	px	3693	\$
210	px	4049	\$
220	px	4069	\$
230	px	4425	\$
240	px	4445	\$
250	px	4801	\$
260	px	4821	\$
270	px	5052	\$
280	px	5072	\$
290	px	5302	\$
300	px	5322	\$
310	px	5553	\$
320	px	5573	\$
330	px	5919	\$
340	px	5939	\$
350	px	6284	\$
360	px	6304	\$

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

370	px	6650	\$
380	px	6670	\$
390	px	7016	\$
400	px	7036	\$
410	px	7260	\$
420	px	7280	\$
430	px	7504	\$
440	px	7524	\$
450	px	7747	\$
460	px	7767	\$
470	px	7991	\$
480	px	8011	\$
490	px	8242	\$
500	px	8262	\$
510	px	8367	\$
520	px	8387	\$
530	px	8492	\$
540	px	8512	\$
550	px	8743	\$
560	px	8763	\$
570	px	8987	\$
580	px	9007	\$
590	px	9230	\$
600	px	9250	\$
610	px	9474	\$
620	px	9494	\$
630	px	9840	\$
640	px	9860	\$
650	px	10206	\$
660	px	10226	\$
670	px	10572	\$
680	px	10592	\$
690	px	10938	\$
700	px	10958	\$
710	px	11202	\$
720	px	11222	\$
730	px	11578	\$
740	px	11598	\$
750	px	11954	\$
760	px	11974	\$
800	py	-1239	\$
810	py	-1219	\$
820	py	-609	\$
830	py	-589	\$

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

840	py	-460	\$
850	py	-440	\$
860	py	-301	\$
870	py	-281	\$
880	py	-142	\$
890	py	-122	\$
900	py	0	\$
910	py	20	\$
920	py	467	\$
930	py	487	\$
940	py	721	\$
950	py	741	\$
960	py	986	\$
970	py	1006	\$
980	py	1385	\$
990	py	1405	\$
1000	py	1707	\$
1010	py	1727	\$
1020	py	1783	\$
1030	py	1803	\$
1040	py	1839	\$
1050	py	1859	\$
1060	py	2049	\$
1070	py	2069	\$
1080	py	2182	\$
1090	py	2202	\$
1100	py	2315	\$
1110	py	2335	\$
1120	py	2581	\$
1130	py	2601	\$
1140	py	2845	\$
1150	py	2865	\$
1160	py	3028	\$
1170	py	3048	\$
1180	py	3244	\$
1190	py	3264	\$
1200	py	3510	\$
1205	py	3530	\$
1210	py	3642	\$
1220	py	3662	\$
1230	py	4041	\$
1240	py	4061	\$
1250	py	4440	\$
1260	py	4460	\$

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

1270	py	4704	\$
1280	py	4724	\$
1290	py	5065	\$
1300	py	5085	\$
1310	py	5425	\$
1320	py	5445	\$
1400	pz	-914	\$
1410	pz	0	\$
1420	pz	396	\$
1430	pz	427	\$
1440	pz	789	\$
1450	pz	789.191	\$

c

c extra planes for second floor

c

2000	px	1221	\$
2010	px	1241	\$
2020	px	867	\$
2030	px	887	\$
2040	px	1941	\$
2050	px	1961	\$
2060	px	5177	\$
2070	px	5197	\$
2080	px	5797	\$
2090	px	5817	\$
2100	px	7626	\$
2110	px	7646	\$
2120	px	9109	\$
2130	px	9129	\$
2140	px	11453	\$
2150	px	11473	\$
2160	py	361	\$
2170	py	381	\$
2180	py	1252	\$
2190	py	1272	\$
2200	py	1517	\$
2210	py	1537	\$

c

c

c detector spheres

c

6000	s	8560.1	1910.1	152.1	50.1	\$ sphere for det x710-NE
6010	s	4984.1	3714.1	152.1	50.1	\$ sphere for det x710-SW
6020	s	2300.1	5372.1	152.1	50.1	\$ sphere for det x710-SA

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix


```

6030 s 5187.1 1656.1 579.1 50.1 $ sphere for det x710-SE
6040 s 9190.1 3459.1 579.1 50.1 $ sphere for det x710-NW
C
C
9998 so 800000 $
9999 so 1000000 $
C
C
C
C *****
C
C source term
C
C *****
C
C sdef sur=9998 nrm=-1 dir=d1
C sb1 -21 2
C
C sdef pos=11953.1 21.1 1.1 erg=d1
C scl from h/u=120 100% enrichment normalized to 1281 W
C sil h 1.00e-11 1.00e-8 3.00e-8 5.00e-8 1.00e-7 2.25e-7
C 3.25e-7 4.00e-7 8.00e-7 1.00e-6 1.13e-6 1.3e-6
C 1.77e-6 3.05e-6 1.00e-5 3.00e-5 1.00e-4 5.5e-4
C 0.003 0.017 0.1 0.4 0.9 1.4
C 1.85 3.0 6.43 20
C spl d 0 1.04e+2 5.67e+2 7.14e+2 1.28e+3 1.29e+3
C 4.84e+2 2.74e+2 9.66e+2 3.17e+2 1.68e+2 1.92e+2
C 4.79e+2 7.91e+2 1.79e+3 1.71e+3 2.09e+3 3.21e+3
C 3.52e+3 3.99e+3 5.83e+3 8.89e+3 1.03e+4 7.25e+3
C 5.88e+3 1.13e+4 1.02e+4 1.28e+3
C
C *****
C
C material cards
C
C *****
C
C m10 7014.50c 3.570e-5
C 8016.50c 7.840e-6 $ air
C m20 1001.50c 1.487e-2
C 6012.50c 3.814e-3
C 8016.50c 4.152e-2
C 11023.50c 3.040e-4

```

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

```

12000.51c  5.870e-4
13027.50c  7.350e-4
14000.50c  6.037e-3
20000.51c  1.159e-2
26000.50c  1.968e-4  $ concrete
m30  6012.50c  3.921e-3
26000.50c  8.349e-2  $ steel
m40  6012.50c  6.0
1001.50c  10.0
8016.50c  5.0  $ wood
m70  1001.50c  2.0
8016.50c  1.5  $ water
c
c
c  *****
c
c  tally cards
c
c  *****
c
fc4  track det 1. X-710-NE
f4:n  6000
fc14  track det 2 X-710-SW
f14:n  6100
fc24  track det 3 X-710-SA
f24:n  6200
fc34  track det 4 X-710-SE
f34:n  6300
fc44  track det 5 X-710-NW
f44:n  6400
fc5  point det 1. X-710-NE
f5:n  8560.1 1910.1 152.1 50
fc15  point det 2 X-710-SW
f15:n  4984.1 3714.1 152.1 50
f25c  point det 3 X-710-SA
f25:n  2300.1 5372.1 152.1 50
f35c  point det 4 X-710-SE
f35:n  5187.1 1656.1 579.1 50
f45c  point det 5 X-710-NW
f45:n  9190.1 3459.1 579.1 50
e0  1.00e-11 1.00e-8 3.00e-8 5.00e-8 1.00e-7 2.25e-7
    3.25e-7 4.00e-7 8.00e-7 1.00e-6 1.13e-6 1.3e-6
    1.77e-6 3.05e-6 1.00e-5 3.00e-5 1.00e-4 5.5e-4
    0.003 0.017 0.1 0.4 0.9 1.4

```

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

1.85 3.0 6.43 20

c
c
c *****
c
c peripheral cards
c
c *****
c
mode n
c 17 keV cut off
cut:n j 0.017
ctme 2880
c void
nps 90000000
prdmp 3j 4
c dbcn 31277116122605
print

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

This is a model of the x760 building

c

c 10 4.354e-5 20 3.9827e-2 or 7.9654E-2 30 8.7411e-2 40
9.0726E-2

c *****

c cell cards

c *****

c

c first floor cards

c

c air first floor

c

10	10	4.354e-5	20	-90	390	-400	510	-520	imp:n=1	\$
20	10	4.354e-5	(20	-40	370	-380	510	-520):		
			(40	-90	330	-380	510	-520)	imp:n=1	\$
30	10	4.354e-5	20	-30	310	-360	510	-520	imp:n=1	\$
40	10	4.354e-5	20	-30	270	-300	510	-520	imp:n=1	\$
50	10	4.354e-5	40	-50	240	-330	510	-520	imp:n=1	\$
60	10	4.354e-5	60	-90	290	-320	510	-520	imp:n=1	\$
70	10	4.354e-5	20	-30	230	-260	510	-520	imp:n=1	\$
80	10	4.354e-5	60	-90	250	-280	510	-520	imp:n=1	\$
90	10	4.354e-5	(20	-40	210	-220	510	-520):		
			(40	-70	210	-240	510	-520):		
			(70	-90	210	-220	510	-520)	imp:n=1	\$
95	10	4.354e-5	80	-90	230	-240	510	-520	imp:n=1	\$
100	10	4.354e-5	130	-140	410	-420	510	-520	imp:n=1	\$
110	10	4.354e-5	100	-170	350	-400	510	-520	600 imp:n=1	\$
120	10	4.354e-5	100	-170	210	-340	510	-520	imp:n=1	\$

c

c concrete walls

c

130	20	3.9827e-2	120	-150	420	-430	510	-520	imp:n=1	\$
140	20	3.9827e-2	10	-180	400	-410	510	-520	imp:n=1	\$
150	20	3.9827e-2	10	-100	380	-390	510	-520	imp:n=1	\$
160	20	3.9827e-2	10	-40	360	-370	510	-520	imp:n=1	\$
165	20	3.9827e-2	90	-180	340	-350	510	-520	imp:n=1	\$
170	20	3.9827e-2	50	-100	320	-330	510	-520	imp:n=1	\$
180	20	3.9827e-2	10	-40	300	-310	510	-520	imp:n=1	\$
190	20	3.9827e-2	50	-100	280	-290	510	-520	imp:n=1	\$
200	20	3.9827e-2	10	-40	260	-270	510	-520	imp:n=1	\$
210	20	3.9827e-2	50	-100	240	-250	510	-520	imp:n=1	\$
220	20	3.9827e-2	70	-100	220	-230	510	-520	imp:n=1	\$
230	20	3.9827e-2	10	-40	220	-230	510	-520	imp:n=1	\$
240	20	3.9827e-2	10	-180	200	-210	510	-520	imp:n=1	\$

Final Report

Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant

January 1996

Appendix

250	20	3.9827e-2	10	-20	390	-400	510	-520	imp:n=1	\$
260	20	3.9827e-2	10	-20	370	-380	510	-520	imp:n=1	\$
270	20	3.9827e-2	10	-20	310	-360	510	-520	imp:n=1	\$
280	20	3.9827e-2	10	-20	270	-300	510	-520	imp:n=1	\$
290	20	3.9827e-2	10	-20	230	-260	510	-520	imp:n=1	\$
300	20	3.9827e-2	10	-20	210	-220	510	-520	imp:n=1	\$
310	20	3.9827e-2	30	-40	310	-360	510	-520	imp:n=1	\$
320	20	3.9827e-2	30	-40	270	-300	510	-520	imp:n=1	\$
330	20	3.9827e-2	30	-40	230	-260	510	-520	imp:n=1	\$
340	20	3.9827e-2	50	-60	290	-320	510	-520	imp:n=1	\$
350	20	3.9827e-2	50	-60	250	-280	510	-520	imp:n=1	\$
355	20	3.9827e-2	70	-80	230	-240	510	-520	imp:n=1	\$
360	20	3.9827e-2	90	-100	390	-400	510	-520	imp:n=1	\$
370	20	3.9827e-2	90	-100	350	-380	510	-520	imp:n=1	\$
380	20	3.9827e-2	90	-100	330	-340	510	-520	imp:n=1	\$
390	20	3.9827e-2	90	-100	290	-320	510	-520	imp:n=1	\$
400	20	3.9827e-2	90	-100	250	-280	510	-520	imp:n=1	\$
410	20	3.9827e-2	90	-100	230	-240	510	-520	imp:n=1	\$
420	20	3.9827e-2	90	-100	210	-220	510	-520	imp:n=1	\$
430	20	3.9827e-2	120	-130	410	-420	510	-520	imp:n=1	\$
440	20	3.9827e-2	140	-150	410	-420	510	-520	imp:n=1	\$
450	20	3.9827e-2	170	-180	350	-400	510	-520	imp:n=1	\$
460	20	3.9827e-2	170	-180	210	-340	510	-520	imp:n=1	\$

c

c concrete between floors

c

470	20	7.9654E-2	(10	-110	200	-410	520	-530):		
			(110	-160	395	-410	520	-530):		
			(110	-160	200	-220	520	-530):		
			(160	-180	200	-410	520	-530)	imp:n=1	\$

c

c air between floors

c

480	10	4.354e-5	110	-160	350	-395	520	-530	imp:n=1	\$
490	10	4.354e-5	110	-160	220	-340	520	-530	imp:n=1	\$

c

c roof on dry chem. storage

c

495	40	9.0726E-2	120	-150	410	-430	520	-525	imp:n=1	\$
-----	----	-----------	-----	------	-----	------	-----	------	---------	----

c

c air on second floor

c

500	10	4.354e-5	20	-90	210	-400	530	-540	imp:n=1	\$
510	10	4.354e-5	100	-170	350	-400	530	-540	imp:n=1	\$

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

```

520  10    4.354e-5   100 -170 210 -340 530 -540  imp:n=1    $
c
c  concrete walls second floor
c
530  20    3.9827e-2   10  -180 400 -410 530 -540  imp:n=1    $
540  20    3.9827e-2   90  -180 340 -350 530 -540  imp:n=1    $
545  20    3.9827e-2  110  -160 340 -350 520 -530  imp:n=1    $
550  20    3.9827e-2   10  -180 200 -210 530 -540  imp:n=1    $
560  20    3.9827e-2   10  -20  210 -400 530 -540  imp:n=1    $
570  20    3.9827e-2   90  -100 350 -400 530 -540  imp:n=1    $
580  20    3.9827e-2   90  -100 210 -340 530 -540  imp:n=1    $
590  20    3.9827e-2  170  -180 350 -400 530 -540  imp:n=1    $
600  20    3.9827e-2  170  -180 210 -340 530 -540  imp:n=1    $
c
c  roof on building
c
610  40    9.0726E-2   10  -180 200 -410 540 -550  imp:n=1    $
c
c  air on south side of building
c
700  10    4.354e-5    10  -120 410 -430 510 -550  imp:n=1    $  air 1
710  10    4.354e-5   150  -180 410 -430 510 -550  imp:n=1    $  air 2
720  10    4.354e-5   120  -150 410 -430 525 -550  imp:n=1    $  air 3
c
c  air outside building
c
730  10    4.354e-5    (-10:180:-200:430:550) -1998 510 imp:n=1    $  big
air
c
c
c
740  20    7.9654E-2   (500 -510 -1998)  imp:n=1    $  big concrete
c
c
c  detector
c
800  10    4.354e-5   -600    imp:n=1    $ detector
c
c  internal and external worlds
c
990  0          (1998 -1999): (-500 -1998)  imp:n=1    $  internal
world
1000 0          1999          imp:n=0    $  external
world

```

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

c

c

c *****

c surface cards

c *****

c

10	px	0.0	\$
20	px	30.48	\$
30	px	270.5	\$
40	px	285.75	\$
50	px	373.38	\$
60	px	388.62	\$
70	px	604.5	\$
80	px	614.6	\$
90	px	660.4	\$
100	px	690.88	\$
110	px	873.76	\$
120	px	1259.8	\$
130	px	1280.16	\$
140	px	1677.67	\$
150	px	1697.9	\$
160	px	2306.32	\$
170	px	2489.2	\$
180	px	2519.68	\$

c

c

200	py	0.0	\$
210	py	30.48	\$
220	py	213.36	\$
230	py	259.08	\$
240	py	336.55	\$
250	py	351.79	\$
260	py	436.88	\$
270	py	452.12	\$
280	py	534.67	\$
290	py	549.91	\$
300	py	723.9	\$
305	py	726.44	\$
310	py	739.14	\$
320	py	763.27	\$
330	py	778.51	\$
340	py	939.8	\$
350	py	970.28	\$
360	py	1019.8	\$

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

```

370 py      1035.05 $
375 py      1183.64 $
380 py      1300.48 $
390 py      1315.72 $
395 py      1696.72 $
400 py      1879.6  $
410 py      1910.08 $
420 py      2153.92 $
430 py      2174.24 $
c
c
500 pz     -3000.0  $
510 pz       0.0    $
520 pz      393.7   $
525 pz      396.24  $
530 pz      424.18  $
540 pz      873.76  $
550 pz      876.3   $
c
c
600 s        1847.76 1021.28 100.0 50.1 $ detector sphere
c
c
1998 so      800000   $ internal world sphere
1999 so     1000000   $ external world sphere
c
c
c
c
c          source term
c
c          *****
sdef pos=31.1 31.1 425.1 erg=d1
c sdef sur=1998 nrm=-1 dir=d1
c sb1 -21 2
sc1 from h/u=120 100% enrichment normalized to 1281 W
sil h 1.00e-11 1.00e-8 3.00e-8 5.00e-8 1.00e-7 2.25e-7
      3.25e-7 4.00e-7 8.00e-7 1.00e-6 1.13e-6 1.3e-6
      1.77e-6 3.05e-6 1.00e-5 3.00e-5 1.00e-4 5.5e-4
      0.003 0.017 0.1 0.4 0.9 1.4
      1.85 3.0 6.43 20

```

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix


```

spl d 0 1.04e+2 5.67e+2 7.14e+2 1.28e+3 1.29e+3
        4.84e+2 2.74e+2 9.66e+2 3.17e+2 1.68e+2 1.92e+2
        4.79e+2 7.91e+2 1.79e+3 1.71e+3 2.09e+3 3.21e+3
        3.52e+3 3.99e+3 5.83e+3 8.89e+3 1.03e+4 7.25e+3
        5.88e+3 1.13e+4 1.02e+4 1.28e+3

```

c

c

c

c

c

material cards

c

c

c

```

m10 7014.50c 3.570e-5 $ air
    8016.50c 7.840e-6
m20 1001.50c 1.487e-2 $ concrete
    6012.50c 3.814e-3
    8016.50c 4.152e-2
    11023.50c 3.040e-4
    12000.51c 5.870e-4
    13027.50c 7.350e-4
    14000.50c 6.037e-3
    20000.51c 1.159e-2
    26000.50c 1.968e-4
m30 6012.50c 3.921e-3 $ steel
    26000.50c 8.349e-2
m40 1001.50c 4.288e-2 $ roof
    6012.50c 1.812e-2
    8016.50c 1.896e-3
    26000.50c 2.783e-2
m50 6012.50c 6.0 $ wood
    1001.50c 10.0
    8016.50c 5.0
m60 92238.50c 8.682e-3 $ UF6
    9019.50c 5.209e-2

```

c

c

c

c

c

tally cards

c

c

c

c

```

fc4      track detector col 2-C
f4:n      800
fc5      point detector col 2-C
f5:n      1847.76  1021.28  100.0  50.0
e0        1.00e-11  1.00e-8  3.00e-8  5.00e-8  1.00e-7  2.25e-7
          3.25e-7  4.00e-7  8.00e-7  1.00e-6  1.13e-6  1.3e-6
          1.77e-6  3.05e-6  1.00e-5  3.00e-5  1.00e-4  5.5e-4
          0.003    0.017    0.1      0.4      0.9      1.4
          1.85     3.0      6.43    20
c
c
c      *****
c
c      peripheral cards
c
c      *****
c
mode     n
c      17 keV cut off
cut:n    j  0.017
ctme     700
c      void
nps      50000000
prdmp    3j  4
c      dbcn  31277116122605
print
c
c

```

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-10, X-60 Buildings and the
North Half of the X-45-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

This is a model of the RA building

```

c
c 10 4.354e-5      20  3.9827e-2 or 7.9654E-2  30 8.7411e-2  40
9.0726E-2
c *****
c      cell cards
c *****
c
c
c
10  10 4.354e-5  11 -20 51 -60 80 -90      imp:n=1  $ air in 1 floor
20  10 4.354e-5  11 -20 51 -60 100 -110    imp:n=1  $ air in 2 floor
30  10 4.354e-5  11 -20 51 -60 120 -130    imp:n=1  $ air in 3 floor
40  10 4.354e-5  11 -20 51 -60 140 -150 200 imp:n=1  $ air in 4 floor
50  10 4.354e-5  11 -20 51 -60 160 -170    imp:n=1  $ air in 5 floor
60  20 7.9654E-2  11 -20 51 -60 90 -100     imp:n=1  $ conc. 2 floor
70  20 7.9654E-2  11 -20 51 -60 110 -120   imp:n=1  $ conc. 2 floor
80  20 7.9654E-2  11 -20 51 -60 130 -140   imp:n=1  $ conc. 2 floor
90  20 7.9654E-2  11 -20 51 -60 150 -160   imp:n=1  $ conc. 2 floor
100 40 9.0726E-2  10 -21 50 -61 170 -180    imp:n=1  $ roof
110 30 8.7411e-2  10 -11 51 -60 80 -170    imp:n=1  $ steel walls
120 30 8.7411e-2  20 -21 51 -60 80 -170    imp:n=1  $ steel walls
130 30 8.7411e-2  10 -21 50 -51 80 -170    imp:n=1  $ steel walls
140 30 8.7411e-2  10 -21 60 -61 80 -170    imp:n=1  $ steel walls
200 10 4.354e-5  -200                      imp:n=1  $ detector
c
c      repeating structures cells
c
310 50 -0.375      300 -310 340 -350      u=2  imp:n=1  $ inside 668 box
320 10 4.354e-5    (-300:310:-340:350) u=2  imp:n=1  $ outside 668 Box
330 0
    -330 320 -370 360 -390 380 imp:n=1
    lat=1 u=1 fill=0:18 0:31 0:0
    2 607r                      $ array of boxes
350 0
    30 -35 50 -55 80 -85 fill=1 imp:n=1  $ lot
c
c
400 20 7.9654E-2  70 -80 -1998            imp:n=1  $ conc. ground
500 10 4.354e-5  -1998 80
    (-10:21:-50:61:180)
    (-30:35:-50:55:85)          imp:n=1  $ giant air
1000 0
    (1998 -1999):(-70 -1998)    imp:n=1  $ internal world
2000 0
    1999                        imp:n=0  $ external world
c
c

```

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

C *****

C surface cards

C *****

C

C

C

10	px	0.0	\$
11	px	0.191	\$
20	px	22555	\$
21	px	22555.191	\$
30	px	25603	\$
35	px	34381	\$
40	px	34747	\$
50	py	0.0	\$
51	py	0.191	\$
55	py	15117	\$
60	py	15240	\$
61	py	15240.191	\$
70	pz	-3000	\$
80	pz	0.0	\$
85	pz	243.84	\$
90	pz	513	\$
100	pz	528	\$
110	pz	1041	\$
120	pz	1056	\$
130	pz	1570	\$
140	pz	1585	\$
150	pz	2098	\$
160	pz	2113	\$
170	pz	2626	\$
180	pz	2629	\$
200	s	18898 4267 1768.1 50.1	

C

C repeating structure surfaces

C

300	px	25602.9	\$
310	px	25785.88	\$
320	px	25602.99	\$
330	px	26090.68	\$
340	py	-0.1	\$
350	py	182.88	\$
360	py	-0.01	\$
370	py	487.68	\$
380	pz	-0.01	\$

Final Report

Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant

January 1996

Appendix

390 pz 243.94 \$
 1998 so 800000
 1999 so 1000000

```

c
c
c *****
c
c          source term
c
c *****
c sdef pos=34106.68 14812.1 0.1 erg=d1
c sdef sur=1998 nrm=-1 dir=d1
c sbl -21 2
c sc1 from h/u=120 100% enrichment normalized to 1281 W
c sil h 1.00e-11 1.00e-8 3.00e-8 5.00e-8 1.00e-7 2.25e-7
c       3.25e-7 4.00e-7 8.00e-7 1.00e-6 1.13e-6 1.3e-6
c       1.77e-6 3.05e-6 1.00e-5 3.00e-5 1.00e-4 5.5e-4
c       0.003 0.017 0.1 0.4 0.9 1.4
c       1.85 3.0 6.43 20
c spl d 0 1.04e+2 5.67e+2 7.14e+2 1.28e+3 1.29e+3
c       4.84e+2 2.74e+2 9.66e+2 3.17e+2 1.68e+2 1.92e+2
c       4.79e+2 7.91e+2 1.79e+3 1.71e+3 2.09e+3 3.21e+3
c       3.52e+3 3.99e+3 5.83e+3 8.89e+3 1.03e+4 7.25e+3
c       5.88e+3 1.13e+4 1.02e+4 1.28e+3
c
c
c *****
c
c          material cards
c
c *****
c
c m10 7014.50c 3.570e-5 $ air
c     8016.50c 7.840e-6
c m20 1001.50c 1.487e-2 $ concrete
c     6012.50c 3.814e-3
c     8016.50c 4.152e-2
c     11023.50c 3.040e-4
c     12000.51c 5.870e-4
c     13027.50c 7.350e-4
c     14000.50c 6.037e-3
c     20000.51c 1.159e-2
c     26000.50c 1.968e-4

```

Final Report

*Examination of Criticality Accident Alarm Coverage
 of the X-710, X-760 Buildings and the
 North Half of the X-7745-R Storage Pad
 at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

```

m30  6012.50c  3.921e-3  $ steel
      26000.50c 8.349e-2
m40  1001.50c  4.288e-2  $ roof
      6012.50c  1.812e-2
      8016.50c  1.896e-3
      26000.50c 2.783e-2
m50  6012.50c   6.0      $ wood
      1001.50c  10.0
      8016.50c   5.0
m60  92238.50c 8.682e-3  $ UF6
      9019.50c  5.209e-2

```

c

c

c

c

c

tally cards

c

c

c

c

fc4 track detector col A-9

f4:n 200

fc5 point detector col A-9

f5:n 18898 4267 1768.1 50

e0 1.00e-11 1.00e-8 3.00e-8 5.00e-8 1.00e-7 2.25e-7

3.25e-7 4.00e-7 8.00e-7 1.00e-6 1.13e-6 1.3e-6

1.77e-6 3.05e-6 1.00e-5 3.00e-5 1.00e-4 5.5e-4

0.003 0.017 0.1 0.4 0.9 1.4

1.85 3.0 6.43 20

c

c

c

c

c

peripheral cards

c

c

c

mode n

c 17 keV cut off

cut:n j 0.017

ctme 700

c void

nps 50000000

prdmp 3j 4

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

c dbcn 31277116122605
print
c

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-7745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

APPENDIX B

ABSORBED DOSE RATE CALCULATION SPREADSHEETS

Final Report

*Examination of Criticality Accident Alarm Coverage
of the X-710, X-760 Buildings and the
North Half of the X-745-R Storage Pad
at the Portsmouth Gaseous Diffusion Plant*

January 1996

Appendix

Detector Response for the X-710 Building.						
The source is located on the 1st floor in the NE corner of building.						
	Upper Energy Boundary (MeV)	Henderson Free in Air Tissue Kerma Factor (rads/(n/cm^2))	Detector 1-1st floor/NE Neutron Fluence/sp	Relative Error	Absorbed Dose Rate (rads/s)	Error
Source Rate (n/s)	1.00E-11	6.03E-17		0		
5.47E+13	1.00E-08	6.03E-17		0	0	0
100% U-235	3.00E-08	2.46E-16		0	0	0
P = 1281 W	5.00E-08	3.69E-16		0	0	0
	1.00E-07	6.52E-16		0	0	0
	2.25E-07	1.40E-15		0	0	0
	3.25E-07	2.54E-15		0	0	0
	4.00E-07	3.37E-15		0	0	0
	8.00E-07	5.39E-15		0	0	0
	1.00E-06	8.37E-15		0	0	0
	1.13E-06	9.93E-15		0	0	0
	1.30E-06	1.13E-14		0	0	0
	1.77E-06	1.42E-14		0	0	0
	3.05E-06	2.20E-14		0	0	0
	1.00E-05	5.46E-14		0	0	0
	3.00E-05	1.70E-13		0	0	0
	1.00E-04	5.43E-13		0	0	0
	5.50E-04	2.46E-12		0	0	0
	3.00E-03	1.35E-11		0	0	0
	1.70E-02	7.20E-11		0	0	0
	1.00E-01	3.12E-10	7.99E-14	0.5512	1.36299E-09	7.5128E-10
	4.00E-01	1.08E-09	9.71E-14	0.4862	5.73385E-09	2.7878E-09
	9.00E-01	1.79E-09	3.00E-13	0.8101	2.94032E-08	2.38195E-08
	1.40E+00	2.44E-09	3.47E-14	0.5047	4.62999E-09	2.33676E-09
	1.85E+00	2.79E-09	1.26E-13	0.6628	1.91975E-08	1.27241E-08
	3.00E+00	3.22E-09	7.30E-14	0.1701	1.28576E-08	2.18707E-09
	6.43E+00	4.18E-09	4.06E-14	0.2648	9.29048E-09	2.46012E-09
	2.00E+01	4.72E-09	1.85E-14	0.4028	4.78702E-09	1.92821E-09
				Total AD (rad/s)=	8.72626E-08	2.75249E-08
				Total AD (mrad/hr) =	0.314145253	0.099089766

[illegible]

[illegible]

Detector Response for the X-710 Building.						
The source is located on the first floor in the NW corner.						
	Upper Energy Boundary (MeV)	Henderson Free in Air Tissue Kerma Factor (rads/(n/cm^2))	Detector 1-1st floor/NE corner		Absorbed Dose Rate (rads/s)	Error
			Neutron Fluence/sp	Relative Error		
Source Rate (n/s)	1.00E-11	6.03E-17	0	0		
5.47E+13	1.00E-08	6.03E-17	0	0	0	0
100% U-235	3.00E-08	2.46E-16	0	0	0	0
P = 1281 W	5.00E-08	3.69E-16	0	0	0	0
	1.00E-07	6.52E-16	0	0	0	0
	2.25E-07	1.40E-15	0	0	0	0
	3.25E-07	2.54E-15	0	0	0	0
	4.00E-07	3.37E-15	0	0	0	0
	8.00E-07	5.39E-15	0	0	0	0
	1.00E-06	8.37E-15	0	0	0	0
	1.13E-06	9.93E-15	0	0	0	0
	1.30E-06	1.13E-14	0	0	0	0
	1.77E-06	1.42E-14	0	0	0	0
	3.05E-06	2.20E-14	0	0	0	0
	1.00E-05	5.46E-14	0	0	0	0
	3.00E-05	1.70E-13	0	0	0	0
	1.00E-04	5.43E-13	0	0	0	0
	5.50E-04	2.46E-12	0	0	0	0
	3.00E-03	1.35E-11	0	0	0	0
	1.70E-02	7.20E-11	0	0	0	0
	1.00E-01	3.12E-10	7.21E-15	0.7653	1.23115E-10	9.42199E-11
	4.00E-01	1.08E-09	1.24E-13	0.6664	7.30811E-09	4.87013E-09
	9.00E-01	1.79E-09	1.60E-14	0.581	1.56556E-09	9.09591E-10
	1.40E+00	2.44E-09	1.29E-14	0.7027	1.72258E-09	1.21046E-09
	1.85E+00	2.79E-09	1.04E-14	0.7868	1.58452E-09	1.2467E-09
	3.00E+00	3.22E-09	1.16E-14	0.3617	2.0375E-09	7.36964E-10
	6.43E+00	4.18E-09	5.57E-15	0.4088	1.2727E-09	5.20281E-10
	2.00E+01	4.72E-09	1.20E-15	0.3481	3.08724E-10	1.07467E-10
				Total AD (rad/s)=	1.59228E-08	5.32909E-09
				Total AD (mrad/hr) =	0.057322134	0.019184723

[illegible]

Detector 4-2nd floor/SE				Detector 5-2nd floor/NW			
Neutron Fluence/sp	Relative Error	Absorbed Dose Rate (rads/s)	Error	Neutron Fluence/sp	Relative Error	Absorbed Dose Rate (rads/s)	Error
	0				0		
	0	0	0		0	0	0
	0	0	0		0	0	0
	0	0	0		0	0	0
	0	0	0		0	0	0
	0	0	0		0	0	0
	0	0	0		0	0	0
	0	0	0		0	0	0
	0	0	0		0	0	0
	0	0	0		0	0	0
	0	0	0		0	0	0
	0	0	0		0	0	0
	0	0	0		0	0	0
	0	0	0		0	0	0
	0	0	0		0	0	0
	0	0	0		0	0	0
	0	0	0		0	0	0
	0	0	0		0	0	0
	0	0	0		0	0	0
	0	0	0		0	0	0
	0	0	0		0	0	0
	0	0	0		0	0	0
9.87E-12	0.2373	1.68445E-07	3.99721E-08	2.26E-11	0.0792	3.85701E-07	3.05475E-08
6.07E-12	0.0868	3.58591E-07	3.11257E-08	1.97E-11	0.0942	1.1638E-06	1.0963E-07
3.26E-12	0.0955	3.19196E-07	3.04833E-08	1.33E-11	0.1341	1.30224E-06	1.74631E-07
1.73E-12	0.1416	2.309E-07	3.26954E-08	6.01E-12	0.1563	8.02143E-07	1.25375E-07
1.43E-12	0.3574	2.18237E-07	7.79978E-08	2.19E-12	0.0676	3.34222E-07	2.25934E-08
6.44E-13	0.09	1.1343E-07	1.02087E-08	2.40E-12	0.0692	4.22722E-07	2.92523E-08
2.68E-13	0.2202	6.12771E-08	1.34932E-08	9.38E-13	0.1505	2.1447E-07	3.22777E-08
9.91E-15	0.1389	2.5586E-09	3.5539E-10	3.72E-14	0.1159	9.60444E-09	1.11316E-09
	Total AD (rad/s)=	1.47264E-06	1.0457E-07		Total AD (rad/s)=	4.6349E-06	2.48145E-07
	Total AD (mrad/hr) =	5.301487172	0.376451526		Total AD (mrad/hr) =	16.68564678	0.893321307

Detector Response for the X-710 Building.						
The source is located in the NE corner of the Instrument Development Lab.						
	Upper Energy Boundary (MeV)	Henderson Free in Air Tissue Kerma Factor (rads/(n/cm^2))	Detector 1-1st floor/NE corner		Absorbed Dose Rate (rads/s)	Error
			Neutron Fluence/sp	Relative Error		
Source Rate (n/s)	1.00E-11	6.03E-17	0	0		
5.47E+13	1.00E-08	6.03E-17	0	0	0	0
100% U-235	3.00E-08	2.46E-16	0	0	0	0
P = 1281 W	5.00E-08	3.69E-16	0	0	0	0
	1.00E-07	6.52E-16	0	0	0	0
	2.25E-07	1.40E-15	0	0	0	0
	3.25E-07	2.54E-15	0	0	0	0
	4.00E-07	3.37E-15	0	0	0	0
	8.00E-07	5.39E-15	0	0	0	0
	1.00E-06	8.37E-15	0	0	0	0
	1.13E-06	9.93E-15	0	0	0	0
	1.30E-06	1.13E-14	0	0	0	0
	1.77E-06	1.42E-14	0	0	0	0
	3.05E-06	2.20E-14	0	0	0	0
	1.00E-05	5.46E-14	0	0	0	0
	3.00E-05	1.70E-13	0	0	0	0
	1.00E-04	5.43E-13	0	0	0	0
	5.50E-04	2.46E-12	0	0	0	0
	3.00E-03	1.35E-11	0	0	0	0
	1.70E-02	7.20E-11	0	0	0	0
	1.00E-01	3.12E-10	4.25E-14	0.8749	7.25322E-10	6.34584E-10
	4.00E-01	1.08E-09	3.35E-14	0.9319	1.97668E-09	1.84207E-09
	9.00E-01	1.79E-09	2.64E-14	0.7863	2.58787E-09	2.03484E-09
	1.40E+00	2.44E-09	1.19E-16	0.4261	1.58348E-11	6.7472E-12
	1.85E+00	2.79E-09	5.35E-16	0.4115	8.16824E-11	3.36123E-11
	3.00E+00	3.22E-09	1.21E-15	0.351	2.12779E-10	7.46853E-11
	6.43E+00	4.18E-09	8.32E-17	0.241	1.90203E-11	4.58388E-12
	2.00E+01	4.72E-09	2.97E-17	0.2129	7.67424E-12	1.63384E-12
				Total AD (rad/s)=	5.62687E-09	2.81838E-09
				Total AD (mrad/hr) =	0.020256715	0.010146178

Page 2

[illegible]

Detector Response for the X-710 Building.						
The source is located on the 2nd floor in the NE corner of the building near room 282.						
	Upper Energy Boundary (MeV)	Henderson Free in Air Tissue Kerma Factor (rads/(n/cm ²))	Detector 1-1st floor/NE corner		Absorbed Dose Rate (rads/s)	Error
			Neutron Fluence/sp	Relative Error		
Source Rate (n/s)	1.00E-11	6.03E-17		0		
5.47E+13	1.00E-08	6.03E-17		0	0	0
100% U-235	3.00E-08	2.46E-16		0	0	0
P = 1281 W	5.00E-08	3.69E-16		0	0	0
	1.00E-07	6.52E-16		0	0	0
	2.25E-07	1.40E-15		0	0	0
	3.25E-07	2.54E-15		0	0	0
	4.00E-07	3.37E-15		0	0	0
	8.00E-07	5.39E-15		0	0	0
	1.00E-06	8.37E-15		0	0	0
	1.13E-06	9.93E-15		0	0	0
	1.30E-06	1.13E-14		0	0	0
	1.77E-06	1.42E-14		0	0	0
	3.05E-06	2.20E-14		0	0	0
	1.00E-05	5.46E-14		0	0	0
	3.00E-05	1.70E-13		0	0	0
	1.00E-04	5.43E-13		0	0	0
	5.50E-04	2.46E-12		0	0	0
	3.00E-03	1.35E-11		0	0	0
	1.70E-02	7.20E-11		0	0	0
	1.00E-01	3.12E-10	1.10E-12	0.5798	1.87198E-08	1.08537E-08
	4.00E-01	1.08E-09	5.27E-13	0.4662	3.11186E-08	1.45075E-08
	9.00E-01	1.79E-09	5.02E-12	0.9404	4.915E-07	4.62206E-07
	1.40E+00	2.44E-09	1.88E-13	0.3809	2.51522E-08	9.58046E-09
	1.85E+00	2.79E-09	4.22E-13	0.6792	6.4455E-08	4.37779E-08
	3.00E+00	3.22E-09	1.33E-12	0.6182	2.35037E-07	1.453E-07
	6.43E+00	4.18E-09	6.27E-14	0.3143	1.43423E-08	4.50779E-09
	2.00E+01	4.72E-09	6.84E-15	0.1819	1.76557E-09	3.21157E-10
				Total AD (rad/s)=	8.8209E-07	4.86933E-07
				Total AD (mrad/hr) =	3.1755241	1.752958699

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Detector Response for the X-710 Building.						
The source is located in the SW part of the building by the SW elevator.						
	Upper Energy Boundary (MeV)	Henderson Free in Air Tissue Kerma Factor (rads/(n/cm ²))	Detector 1-1st floor/NE corner		Absorbed Dose Rate (rads/s)	Error
			Neutron Fluence/sp	Relative Error		
Source Rate (n/s)	1.00E-11	6.03E-17		0		
5.47E+13	1.00E-08	6.03E-17		0	0	0
100% U-235	3.00E-08	2.46E-16		0	0	0
P = 1281 W	5.00E-08	3.69E-16		0	0	0
	1.00E-07	6.52E-16		0	0	0
	2.25E-07	1.40E-15		0	0	0
	3.25E-07	2.54E-15		0	0	0
	4.00E-07	3.37E-15		0	0	0
	8.00E-07	5.39E-15		0	0	0
	1.00E-06	8.37E-15		0	0	0
	1.13E-06	9.93E-15		0	0	0
	1.30E-06	1.13E-14		0	0	0
	1.77E-06	1.42E-14		0	0	0
	3.05E-06	2.20E-14		0	0	0
	1.00E-05	5.46E-14		0	0	0
	3.00E-05	1.70E-13		0	0	0
	1.00E-04	5.43E-13		0	0	0
	5.50E-04	2.46E-12		0	0	0
	3.00E-03	1.35E-11		0	0	0
	1.70E-02	7.20E-11		0	0	0
	1.00E-01	3.12E-10	1.20E-14	0.826	2.05365E-10	1.69632E-10
	4.00E-01	1.08E-09	6.60E-14	0.8541	3.89842E-09	3.32964E-09
	9.00E-01	1.79E-09	1.07E-14	0.4688	1.04987E-09	4.9218E-10
	1.40E+00	2.44E-09	1.62E-13	0.9751	2.16039E-08	2.1066E-08
	1.85E+00	2.79E-09	1.47E-13	0.7865	2.24883E-08	1.7687E-08
	3.00E+00	3.22E-09	1.37E-13	0.6581	2.41934E-08	1.59217E-08
	6.43E+00	4.18E-09	7.14E-15	0.0822	1.63347E-09	1.34271E-10
	2.00E+01	4.72E-09	2.12E-15	0.165	5.48638E-10	9.05253E-11
				Total AD (rad/s)=	7.56214E-08	3.19608E-08
				Total AD (mrad/hr) =	0.272237027	0.115058796

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Detector Response for the X-710 Building.					
The source is located on centerline 50 north of the building. .					
	Upper Energy Boundary (MeV)	Henderson Free in Air Tissue Kerma Factor (rads/(n/cm^2))	Detector 1-1st floor/NE corner		
			Neutron Fluence/sp	Relative Error	Absorbed Dose Rate (rads/s)
					Error
Source Rate (n/s)	1.00E-11	6.03E-17		0	
5.47E+13	1.00E-08	6.03E-17		0	0
100% U-235	3.00E-08	2.46E-16		0	0
P = 1281 W	5.00E-08	3.69E-16		0	0
	1.00E-07	6.52E-16		0	0
	2.25E-07	1.40E-15		0	0
	3.25E-07	2.54E-15		0	0
	4.00E-07	3.37E-15		0	0
	8.00E-07	5.39E-15		0	0
	1.00E-06	8.37E-15		0	0
	1.13E-06	9.93E-15		0	0
	1.30E-06	1.13E-14		0	0
	1.77E-06	1.42E-14		0	0
	3.05E-06	2.20E-14		0	0
	1.00E-05	5.46E-14		0	0
	3.00E-05	1.70E-13		0	0
	1.00E-04	5.43E-13		0	0
	5.50E-04	2.46E-12		0	0
	3.00E-03	1.35E-11		0	0
	1.70E-02	7.20E-11		0	0
	1.00E-01	3.12E-10	1.34E-13	0.828	2.28243E-09
	4.00E-01	1.08E-09	1.09E-13	0.4409	6.42127E-09
	9.00E-01	1.79E-09	2.25E-13	0.8393	2.19899E-08
	1.40E+00	2.44E-09	2.19E-14	0.5561	2.92637E-09
	1.85E+00	2.79E-09	2.06E-14	0.507	3.14352E-09
	3.00E+00	3.22E-09	7.32E-14	0.3083	1.28964E-08
	6.43E+00	4.18E-09	4.81E-15	0.2513	1.10018E-09
	2.00E+01	4.72E-09	6.58E-16	0.0562	1.69963E-10
			Total AD (rad/s)=		5.093E-08
			Total AD (mrad/hr) =		0.18334813
					1.93207E-08
					0.069554405

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Detector Response for the X-710 Building.						
The source is located on centerline 50 north of the building.						
	Upper Energy Boundary (MeV)	Henderson Free in Air Tissue Kerma Factor (rads/(n/cm^2))	Detector 1-1st floor/NE corner		Absorbed Dose Rate (rads/s)	Error
			Neutron Fluence/sp	Relative Error		
Source Rate (n/s)	1.00E-11	6.03E-17		0		
5.47E+13	1.00E-08	6.03E-17		0	0	0
100% U-235	3.00E-08	2.46E-16		0	0	0
P = 1281 W	5.00E-08	3.69E-16		0	0	0
	1.00E-07	6.52E-16		0	0	0
	2.25E-07	1.40E-15		0	0	0
	3.25E-07	2.54E-15		0	0	0
	4.00E-07	3.37E-15		0	0	0
	8.00E-07	5.39E-15		0	0	0
	1.00E-06	8.37E-15		0	0	0
	1.13E-06	9.93E-15		0	0	0
	1.30E-06	1.13E-14		0	0	0
	1.77E-06	1.42E-14		0	0	0
	3.05E-06	2.20E-14		0	0	0
	1.00E-05	5.46E-14		0	0	0
	3.00E-05	1.70E-13		0	0	0
	1.00E-04	5.43E-13		0	0	0
	5.50E-04	2.46E-12		0	0	0
	3.00E-03	1.35E-11		0	0	0
	1.70E-02	7.20E-11		0	0	0
	1.00E-01	3.12E-10	5.32E-13	0.7002	9.08453E-09	6.36099E-09
	4.00E-01	1.08E-09	5.17E-13	0.5247	3.0553E-08	1.60312E-08
	9.00E-01	1.79E-09	1.91E-13	0.3401	1.87301E-08	6.3701E-09
	1.40E+00	2.44E-09	2.62E-13	0.5186	3.50337E-08	1.81685E-08
	1.85E+00	2.79E-09	6.98E-14	0.2656	1.06459E-08	2.82756E-09
	3.00E+00	3.22E-09	4.48E-13	0.4283	7.89362E-08	3.38084E-08
	6.43E+00	4.18E-09	2.58E-13	0.3842	5.89719E-08	2.2657E-08
	2.00E+01	4.72E-09	8.05E-14	0.3592	2.07843E-08	7.46571E-09
				Total AD (rad/s)=	2.6274E-07	4.88693E-08
				Total AD (mrad/hr) =	0.945863045	0.175929619

Page 2

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Detector Response for the X-760 Process Building						
The source is located in the Northeast Corner Cold Toilet First Floor (S1)						
	Upper Energy Boundary (MeV)	Henderson Free in Air Tissue Kerma Factor (rads/(n/cm^2))	Tally 5 Detector on Col 5-A Neutron Fluence/sp	Relative Error	Absorbed Dose Rate (rads/s)	Error
Source Rate (n/s)	1.00E-11		0.00E+00	0		
5.47E+13	1.00E-08	6.03E-17	0.00E+00	0	0	0
100% U-235	3.00E-08	2.46E-16	0.00E+00	0	0	0
P = 1281 W	5.00E-08	3.69E-16	0.00E+00	0	0	0
	1.00E-07	6.52E-16	0.00E+00	0	0	0
	2.25E-07	1.40E-15	0.00E+00	0	0	0
	3.25E-07	2.54E-15	0.00E+00	0	0	0
	4.00E-07	3.37E-15	0.00E+00	0	0	0
	8.00E-07	5.39E-15	0.00E+00	0	0	0
	1.00E-06	8.37E-15	0.00E+00	0	0	0
	1.13E-06	9.93E-15	0.00E+00	0	0	0
	1.30E-06	1.13E-14	0.00E+00	0	0	0
	1.77E-06	1.42E-14	0.00E+00	0	0	0
	3.05E-06	2.20E-14	0.00E+00	0	0	0
	1.00E-05	5.46E-14	0.00E+00	0	0	0
	3.00E-05	1.70E-13	0.00E+00	0	0	0
	1.00E-04	5.43E-13	0.00E+00	0	0	0
	5.50E-04	2.46E-12	0.00E+00	0	0	0
	3.00E-03	1.35E-11	0.00E+00	0	0	0
	1.70E-02	7.20E-11	0.00E+00	0	0	0
	1.00E-01	3.12E-10	9.29E-12	0.1127	1.58434E-07	1.79E-08
	4.00E-01	1.08E-09	9.81E-12	0.0966	5.79225E-07	5.6E-08
	9.00E-01	1.79E-09	1.06E-11	0.1695	1.03636E-06	1.76E-07
	1.40E+00	2.44E-09	6.63E-12	0.1725	8.83927E-07	1.52E-07
	1.85E+00	2.79E-09	5.36E-12	0.2095	8.17014E-07	1.71E-07
	3.00E+00	3.22E-09	9.53E-12	0.0963	1.67817E-06	1.62E-07
	6.43E+00	4.18E-09	6.00E-12	0.1559	1.3714E-06	2.14E-07
	2.00E+01	4.72E-09	7.53E-13	0.198	1.94323E-07	3.85E-08
				Total AD (rad/s)=	6.71886E-06	4E-07
				Total AD (mrad/hr) =	24.18787855	1.44073

Detector Response for the X-760 Process Building						
The source is located in the Northeast Corner of Building Second Floor (S2)						
	Upper Energy Boundary (MeV)	Henderson Free in Air Tissue Kerma Factor (rads/(n/cm ²))	Tally 5 Detector on Col 2-C Neutron Fluence/sp	Relative Error	Absorbed Dose Rate (rads/s)	Error
Source Rate (n/s) 5.47E+13 100% U-235 P = 1281 W	1.00E-11		0.00E+00	0		
	1.00E-08	6.03E-17	0.00E+00	0	0	0
	3.00E-08	2.46E-16	0.00E+00	0	0	0
	5.00E-08	3.69E-16	0.00E+00	0	0	0
	1.00E-07	6.52E-16	0.00E+00	0	0	0
	2.25E-07	1.40E-15	0.00E+00	0	0	0
	3.25E-07	2.54E-15	0.00E+00	0	0	0
	4.00E-07	3.37E-15	0.00E+00	0	0	0
	8.00E-07	5.39E-15	0.00E+00	0	0	0
	1.00E-06	8.37E-15	0.00E+00	0	0	0
	1.13E-06	9.93E-15	0.00E+00	0	0	0
	1.30E-06	1.13E-14	0.00E+00	0	0	0
	1.77E-06	1.42E-14	0.00E+00	0	0	0
	3.05E-06	2.20E-14	0.00E+00	0	0	0
	1.00E-05	5.46E-14	0.00E+00	0	0	0
	3.00E-05	1.70E-13	0.00E+00	0	0	0
	1.00E-04	5.43E-13	0.00E+00	0	0	0
	5.50E-04	2.46E-12	0.00E+00	0	0	0
	3.00E-03	1.35E-11	0.00E+00	0	0	0
	1.70E-02	7.20E-11	0.00E+00	0	0	0
	1.00E-01	3.12E-10	1.34E-10	0.0835	2.28778E-06	1.91E-07
	4.00E-01	1.08E-09	1.42E-10	0.0814	8.36051E-06	6.81E-07
	9.00E-01	1.79E-09	1.15E-10	0.0818	1.12636E-05	9.21E-07
	1.40E+00	2.44E-09	6.45E-11	0.1686	8.61033E-06	1.45E-06
	1.85E+00	2.79E-09	4.38E-11	0.171	6.6772E-06	1.14E-06
	3.00E+00	3.22E-09	6.76E-11	0.1452	1.18953E-05	1.73E-06
	6.43E+00	4.18E-09	2.97E-11	0.1312	6.78144E-06	8.9E-07
	2.00E+01	4.72E-09	2.81E-12	0.3662	7.25156E-07	2.66E-07
				Total AD (rad/s)=	5.66013E-05	2.93E-06
				Total AD (mrad/hr) =	203.7648262	10.56037

Detector Response for the X-760 Process Building						
The source is located in the Southeast Corner of Dry Chemical Storage room First Floor (S3)						
	Upper Energy Boundary (MeV)	Henderson Free in Air Tissue Kerma Factor (rads/(n/cm ²))	Tally 5 Detector on Col 2-C Neutron Fluence/sp	Relative Error	Absorbed Dose Rate (rads/s)	Error
Source Rate (n/s) 5.47E+13 100% U-235 P = 1281 W	1.00E-11		0.00E+00	0		
	1.00E-08	6.03E-17	0.00E+00	0	0	0
	3.00E-08	2.46E-16	0.00E+00	0	0	0
	5.00E-08	3.69E-16	0.00E+00	0	0	0
	1.00E-07	6.52E-16	0.00E+00	0	0	0
	2.25E-07	1.40E-15	0.00E+00	0	0	0
	3.25E-07	2.54E-15	0.00E+00	0	0	0
	4.00E-07	3.37E-15	0.00E+00	0	0	0
	8.00E-07	5.39E-15	0.00E+00	0	0	0
	1.00E-06	8.37E-15	0.00E+00	0	0	0
	1.13E-06	9.93E-15	0.00E+00	0	0	0
	1.30E-06	1.13E-14	0.00E+00	0	0	0
	1.77E-06	1.42E-14	0.00E+00	0	0	0
	3.05E-06	2.20E-14	0.00E+00	0	0	0
	1.00E-05	5.46E-14	0.00E+00	0	0	0
	3.00E-05	1.70E-13	0.00E+00	0	0	0
	1.00E-04	5.43E-13	0.00E+00	0	0	0
	5.50E-04	2.46E-12	0.00E+00	0	0	0
	3.00E-03	1.35E-11	0.00E+00	0	0	0
	1.70E-02	7.20E-11	0.00E+00	0	0	0
	1.00E-01	3.12E-10	2.25E-09	0.0294	3.84237E-05	1.13E-06
	4.00E-01	1.08E-09	2.44E-09	0.0247	0.000143908	3.55E-06
	9.00E-01	1.79E-09	2.31E-09	0.0214	0.000225936	4.84E-06
	1.40E+00	2.44E-09	1.17E-09	0.0283	0.000156369	4.43E-06
	1.85E+00	2.79E-09	1.09E-09	0.0223	0.000165532	3.69E-06
	3.00E+00	3.22E-09	2.22E-09	0.012	0.000391373	4.7E-06
	6.43E+00	4.18E-09	1.62E-09	0.0239	0.00037085	8.86E-06
	2.00E+01	4.72E-09	2.28E-10	0.0258	5.87508E-05	1.52E-06
				Total AD (rad/s)=	0.001551144	1.32E-05
				Total AD (mrad/hr) =	5584.116862	47.40672

Detector Response for the X-760 Process Building The source is located East of Building Outside building (S4)						
	Upper Energy Boundary (MeV)	Henderson Free in Air Tissue Kerma Factor (rads/(n/cm ²))	Tally 5 Detector on Col 2-C Neutron Fluence/sp	Relative Error	Absorbed Dose Rate (rads/s)	Error
Source Rate (n/s) 5.47E+13 100% U-235 P = 1281 W	1.00E-11		0.00E+00	0		
	1.00E-08	6.03E-17	0.00E+00	0	0	0
	3.00E-08	2.46E-16	0.00E+00	0	0	0
	5.00E-08	3.69E-16	0.00E+00	0	0	0
	1.00E-07	6.52E-16	0.00E+00	0	0	0
	2.25E-07	1.40E-15	0.00E+00	0	0	0
	3.25E-07	2.54E-15	0.00E+00	0	0	0
	4.00E-07	3.37E-15	0.00E+00	0	0	0
	8.00E-07	5.39E-15	0.00E+00	0	0	0
	1.00E-06	8.37E-15	0.00E+00	0	0	0
	1.13E-06	9.93E-15	0.00E+00	0	0	0
	1.30E-06	1.13E-14	0.00E+00	0	0	0
	1.77E-06	1.42E-14	0.00E+00	0	0	0
	3.05E-06	2.20E-14	0.00E+00	0	0	0
	1.00E-05	5.46E-14	0.00E+00	0	0	0
	3.00E-05	1.70E-13	0.00E+00	0	0	0
	1.00E-04	5.43E-13	0.00E+00	0	0	0
	5.50E-04	2.46E-12	0.00E+00	0	0	0
	3.00E-03	1.35E-11	0.00E+00	0	0	0
	1.70E-02	7.20E-11	0.00E+00	0	0	0
	1.00E-01	3.12E-10	6.07E-11	0.1433	1.03589E-06	1.48E-07
	4.00E-01	1.08E-09	6.56E-11	0.0968	3.87136E-06	3.75E-07
	9.00E-01	1.79E-09	4.42E-11	0.0659	4.32391E-06	2.85E-07
	1.40E+00	2.44E-09	1.94E-11	0.0877	2.59428E-06	2.28E-07
	1.85E+00	2.79E-09	1.14E-11	0.08	1.73902E-06	1.39E-07
	3.00E+00	3.22E-09	1.95E-11	0.1365	3.42481E-06	4.67E-07
	6.43E+00	4.18E-09	8.23E-12	0.0492	1.88086E-06	9.25E-08
	2.00E+01	4.72E-09	1.36E-12	0.3324	3.5005E-07	1.16E-07
				Total AD (rad/s)=	1.92202E-05	7.45E-07
				Total AD (mrad/hr) =	69.19262444	2.682979

Detector Response for the RA Building						
The source is located in the Northeast corner of the east storage lot (S1)						
	Upper Energy Boundary (MeV)	Henderson Free in Air Tissue Kerma Factor (rads/(n/cm ²))	Tally 5 Detector on Col 9A- Neutron Fluence/sp	Relative Error	Absorbed Dose Rate (rads/s)	Error
Source Rate (n/s)	1.00E-11		0.00E+00	0		
5.47E+13	1.00E-08	6.03E-17	0.00E+00	0	0	0
100% U-235	3.00E-08	2.46E-16	0.00E+00	0	0	0
P = 1281 W	5.00E-08	3.69E-16	0.00E+00	0	0	0
	1.00E-07	6.52E-16	0.00E+00	0	0	0
	2.25E-07	1.40E-15	0.00E+00	0	0	0
	3.25E-07	2.54E-15	0.00E+00	0	0	0
	4.00E-07	3.37E-15	0.00E+00	0	0	0
	8.00E-07	5.39E-15	0.00E+00	0	0	0
	1.00E-06	8.37E-15	0.00E+00	0	0	0
	1.13E-06	9.93E-15	0.00E+00	0	0	0
	1.30E-06	1.13E-14	0.00E+00	0	0	0
	1.77E-06	1.42E-14	0.00E+00	0	0	0
	3.05E-06	2.20E-14	0.00E+00	0	0	0
	1.00E-05	5.46E-14	0.00E+00	0	0	0
	3.00E-05	1.70E-13	0.00E+00	0	0	0
	1.00E-04	5.43E-13	0.00E+00	0	0	0
	5.50E-04	2.46E-12	0.00E+00	0	0	0
	3.00E-03	1.35E-11	0.00E+00	0	0	0
	1.70E-02	7.20E-11	0.00E+00	0	0	0
	1.00E-01	3.12E-10	5.34E-12	0.0972	9.11119E-08	8.86E-09
	4.00E-01	1.08E-09	7.34E-12	0.0886	4.33199E-07	3.84E-08
	9.00E-01	1.79E-09	6.09E-12	0.0568	5.95647E-07	3.38E-08
	1.40E+00	2.44E-09	3.16E-12	0.0645	4.21007E-07	2.72E-08
	1.85E+00	2.79E-09	1.52E-12	0.0536	2.31295E-07	1.24E-08
	3.00E+00	3.22E-09	2.41E-12	0.0566	4.24988E-07	2.41E-08
	6.43E+00	4.18E-09	1.14E-12	0.038	2.61112E-07	9.92E-09
	2.00E+01	4.72E-09	7.37E-14	0.0468	1.90178E-08	8.9E-10
				Total AD (rad/s)=	2.47738E-06	6.53E-08
				Total AD (mrad/hr) =	8.918561414	0.235109

Detector Response for the 7725 Building.						
This source is located in the center of the storage lot.						
	Upper Energy	Henderson Free in Air				
	Boundary (MeV)	Tissue Kerma Factor	9A-A5 Detector			
		(rads/(n/cm ²))	Neutron Fluence/sp	Relative Error	Absorbed Dose	Error
					Rate (rads/s)	
Source Rate (n/s)	1.00E-11			0		
5.47E+13	1.00E-08	6.03E-17		0	0	0
100% U-235	3.00E-08	2.46E-16		0	0	0
P = 1281 W	5.00E-08	3.69E-16		0	0	0
	1.00E-07	6.52E-16		0	0	0
	2.25E-07	1.40E-15		0	0	0
	3.25E-07	2.54E-15		0	0	0
	4.00E-07	3.37E-15		0	0	0
	8.00E-07	5.39E-15		0	0	0
	1.00E-06	8.37E-15		0	0	0
	1.13E-06	9.93E-15		0	0	0
	1.30E-06	1.13E-14		0	0	0
	1.77E-06	1.42E-14		0	0	0
	3.05E-06	2.20E-14		0	0	0
	1.00E-05	5.46E-14		0	0	0
	3.00E-05	1.70E-13		0	0	0
	1.00E-04	5.43E-13		0	0	0
	5.50E-04	2.46E-12		0	0	0
	3.00E-03	1.35E-11		0	0	0
	1.70E-02	7.20E-11		0	0	0
	1.00E-01	3.12E-10	9.50E-12	0.0957	1.62214E-07	1.55239E-08
	4.00E-01	1.08E-09	1.21E-11	0.0722	7.13419E-07	5.15089E-08
	9.00E-01	1.79E-09	9.56E-12	0.0568	9.35912E-07	5.31598E-08
	1.40E+00	2.44E-09	4.99E-12	0.0691	6.66136E-07	4.603E-08
	1.85E+00	2.79E-09	3.00E-12	0.0772	4.57598E-07	3.53266E-08
	3.00E+00	3.22E-09	4.51E-12	0.0913	7.94551E-07	7.25425E-08
	6.43E+00	4.18E-09	2.58E-12	0.0943	5.89109E-07	5.5553E-08
	2.00E+01	4.72E-09	2.05E-13	0.1306	5.2896E-08	6.90821E-09
				Total AD (rad/s)=	4.37184E-06	1.32224E-07
				Total AD (mrad/hr) =	15.73860829	0.476005489