



LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

P.O. BOX 618, NORTH COUNTRY ROAD • WADING RIVER, N.Y. 11792

Direct Dial Number

November 26, 1982

SNRC-801

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20535

Safety Evaluation Report, Item No. 9
Environmental Qualification
GE Series 200 Penetrations - Radiation Calculation
Shoreham Nuclear Power Station - Unit 1
Docket No. 50-322

Dear Mr. Denton:

As a result of a meeting held in the NRC offices in Bethesda on 11/5/82 with Mr. J. Kennedy of your staff, LILCO agreed to provide a location-specific radiation dose calculation for certain GE Series 200 electrical penetrations at Shoreham.

In fulfillment thereof, please find forty (40) copies of Stone & Webster Engineering Corporation Calculation No. SNPS-1-URB-25-A, Rev. 1.

Additional information regarding the qualification of the GE Series 200 penetrations is anticipated to be submitted shortly.

Should you have any questions, please contact this office.

Very truly yours,

J. L. Smith
Manager, Special Projects

RWG/law

Attachments

cc: J. Higgins
All Parties

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CALCULATION TITLE PAGE

*SEE INSTRUCTIONS ON REVERSE SIDE

▲ 5010-64 (FRONT)

CLIENT & PROJECT LILCO - Shoreham I				PAGE 1 OF 19 Attachments I thru VI			
CALCULATION TITLE (Indicative of the Objective): Total Gamma dose to Electrical penetrations in the Reactor Bldg at EL 81' to 90' (LOCA + NORMAL OPERATION)				QA CATEGORY (✓) <input checked="" type="checkbox"/> I - NUCLEAR SAFETY RELATED <input type="checkbox"/> II <input type="checkbox"/> III <input type="checkbox"/> OTHER			
CALCULATION IDENTIFICATION NUMBER							
J.O. OR W.O. NO.	DIVISION & GROUP	CURRENT CALC. NO.	OPTIONAL TASK CODE	OPTIONAL WORK PACKAGE NO.			
11600.02	48/88	SNPS-HRR-25-A	-REV-1				
* APPROVALS - SIGNATURE & DATE			REV. NO. OR NEW CALC NO.	SUPERSEDES * CALC. NO. OR REV. NO.	CONFIRMATION * REQUIRED (✓)		
PREPARER(S)/DATE(S)	REVIEWER(S)/DATE(S)	INDEPENDENT REVIEWER(S)/DATE(S)			YES	NO	
Kirk Ferguson (11/18/82)	A. Amelio (11-19-82)	A. Amelio (11-19-82)				✓	
DISTRIBUTION *							
GROUP	NAME & LOCATION	COPY SENT (✓)	GROUP	NAME & LOCATION	COPY SENT (✓)		
RECORDS MGT. FILES (OR FIRE FILE IF NONE)							
Fire File	245/9						

CALCULATION SHEET

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CALCULATION IDENTIFICATION NUMBER				PAGE <u>2</u>
J.O. OR W.O. NO.	DIVISION & GROUP	CALCULATION NO.	OPTIONAL TASK CODE	
11600.02	48/88	SNPS-TURB-25-A	rev-1	

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2 Total integrated dose Loca + Normal operation 10

3 Dose rate conversion factors per source
and total conversion factor to each detector 11Total dose rates and integrated dose
to each penetration 12-19

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II Primary Containment elevation
and 'QADMOD' ref. location

III 'QADMOD' mock up of primary

IVa, IVb 'QADMOD' code input
IVc

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VI Drywell Activity

STONE & WEBSTER ENGINEERING CORPORATION
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CALCULATION IDENTIFICATION NUMBER				PAGE <u>3</u>
J.O. OR W.O. NO.	DIVISION & GROUP	CALCULATION NO.	OPTIONAL TASK CODE	
11600-02	48/88	SNPS-HURB-25-A	-rcv-1	

REFERENCES :

[1] Calculation SNPS-1-URB-23-0
pages 6, 12, 13 and 14

[2] Shoreham I Drawing 11600-02-FE-35A-3 (Attachment II)

[3] Calculation SNPS-1-URB-21-G

[4] Shoreham I FSAR table 3.11.2-1 page 1 of 3 (original issue)

[5] 'QADMOD' computer code NU-137, VS-0, Level-3
QA cat. I (11/30/81)

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CALCULATION IDENTIFICATION NUMBER				PAGE <u>4</u>
J.O. OR W.O. NO.	DIVISION & GROUP	CALCULATION NO.	OPTIONAL TASK CODE	
11600.02	4B / 8B	SNPS-1-URB-25	A-REV 1	

Object: To determine the 180 day LOCA, Gamma dose to Electrical penetrations in the Reactor Bldg. at elevations 81, 84, 87 and 90 Feet, and to determine the total integrated gamma dose to penetrations from 40 year normal operation and a LOCA.

BASIS: (1).... The integrated gamma dose to each penetration from Airborne γ 's in the reactor bldg. post LOCA, will be calculated using a point Kernal code 'QADMOD'

(2).... The 40 year normal operation integrated dose will be taken directly from Shoreham FSAR table 3.11.2-1 (pg. 1 of 3, original issue)

(3).... The dose from any lines containing suppression pool liquid near the penetrations will be represented by a contact dose from the top of the suppression pool*

* includes .28" FE plate to represent average pipe wall thickness

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CALCULATION IDENTIFICATION NUMBER				PAGE <u>5</u>
J.O. OR W.O. NO.	DIVISION & GROUP	CALCULATION NO.	OPTIONAL TASK CODE	
11600102	48/BB	SNPS-1-URB-25-A-Rev1		

METHODOLOGY:

To determine the 6-month
Accident gamma Integrated dose from Airborne Activity
in the primary containment.

Computer code 'QADMOD' was used to model the
primary containment and determine γ doses inside
the primary containment from Airborne γ s
present in the drywell.

Attachment I - shows the Reactor Bldg and
portion mocked into 'QADMOD'

Attachment II - shows the various elevations and
'QADMOD's source and geometry
reference point.

Attachment III - shows the boundaries and regions
which make up the 'QADMOD' model
for determining dose rates in (mR/hr)
in any location of the drywell.

Attachments IV_A , IV_B and IV_C are the input to 'QADMOD'
model on attachment III

Attachment IV_A - distributes a source from el 123' to 167'

Attachment IV_B - distributes a source from el 91.35' to 123'

Attachment IV_C - distributes a source from el 59' to 91.35'

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CALCULATION IDENTIFICATION NUMBER				PAGE <u>6</u>
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11600.02	48/88	SNPS-1-URB-25-A-Rev 1		

1
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3 The detectors listed in Attachment IV_c were
4 measured from Attachment IV, which is an
5 arrangement drawing of the Electrical penetrations.
6
7 A detector was placed ~~at the~~ ^{at the} the -
8 four elevations the penetrations are located at,
9 (see detector placement on Attachment IV.) to
10 determine which series of penetrations will yield
11 the highest gamma dose rate.
12
13 The detectors listed on Attachment IV_c were
14 input for each source region I II and III on
15 attachments IV_A, IV_B and IV_c, to determine the
16 contribution from each source region to the four
17 detector points 1A, 2A, 3A and 4A.
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19 The following 'QADMOD' runs list the dose
20 rate at unit source strength from each source region
21 to each detector:
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36 ROBO1700, Job # 2930, 11/19/82 - Source I
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38 ROBO1700, Job # 2960, 11/19/82 - Source II
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40 ROBO1700, Job # 3018, 11/19/82 - Source III
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CALCULATION IDENTIFICATION NUMBER				PAGE <u>7</u>
J.O. OR W.O. NO. 11600.02	DIVISION & GROUP 48188	CALCULATION NO. SNPS-1-URB-25-A-Rev1	OPTIONAL TASK CODE	

The results of the above runs are tabulated on page 11 and are dose rate conversion factors per energy group (mRem/hr/Mev/cc-sec) for each detector per source region.

Next, the conversion factors per source regions were added to determine the total dose rate conversion factors per energy group from the three source regions, and are tabulated on page 11.

These dose rate conversion factors were then multiplied by the primary containment Airborne Activity per energy group tabulated on attachment II in (Mev/cc-sec) to determine the dose rate received by each detector, per energy group.

The total dose rate is the sum of each specific dose rate per energy group

$$\text{Total Dose Rate} = \sum_{i=1}^{i=3.5} Dr_i$$

at a specific time post LOCA

The results of the above equation follow on pages 12 thru 15.

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CALCULATION SHEET

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CALCULATION IDENTIFICATION NUMBER				PAGE <u>8</u>
J.O. OR W.O. NO. <u>11600.02</u>	DIVISION & GROUP <u>4B/BB</u>	CALCULATION NO. <u>SNPS-1-URB-25-A-Rev1</u>	OPTIONAL TASK CODE	

The total dose rate per time post LOCA was then integrated using the following Exponential fit technique:

knowing $Dr(t_1)$ and $Dr(t_2)$

$$Dr(t_1) = \alpha e^{-\beta t_1} \Rightarrow \alpha = Dr(t_1) e^{\beta t_1}$$

$$\frac{Dr(t_1)}{Dr(t_2)} = \frac{\alpha e^{-\beta t_1}}{\alpha e^{-\beta t_2}}$$

$$\frac{Dr(t_1)}{Dr(t_2)} = e^{\beta(t_2 - t_1)}$$

$$\ln \frac{Dr(t_1)}{Dr(t_2)} = \beta(t_2 - t_1) \Rightarrow \beta = \frac{\ln \frac{Dr(t_1)}{Dr(t_2)}}{t_2 - t_1}$$

$$\Delta I_D = \int_{t_1}^{t_2} Dr(t) dt = \frac{\alpha}{\beta} [e^{-\beta t_1} - e^{-\beta t_2}]$$

$$\text{Cumulative Integrated Dose} = \sum_{i=1}^{i=N} (\Delta I_D)_i \text{ ie } n = \text{# of intervals}$$

The results of the algorithms above follow on pages 16 thru 19.

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CALCULATION IDENTIFICATION NUMBER			
J.O. OR W.O. NO. 11600.02	DIVISION & GROUP 48/88	CALCULATION NO. SNPS-1-URB-25-A-Rev1	OPTIONAL TASK CODE PAGE <u>9</u>

A table of the six month post LOCA Integrated gamma dose for each detector is shown below from pages 16 thru 19.

TABLE : Integrated dose to each detector from Airborne γ source in drywell.

TABLE 1

Detector	Elevation (Ft)	Dose (RAD)
1A	81	3.32+7
2A	84	3.38+7
3A	87	3.41+7
4A	90	3.44+7

By inspection of table 1 above the integrated six month post LOCA doses, it is seen that the 90' elevation series receive the highest integrated accident dose. (See Attachment V for detector location)

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CALCULATION IDENTIFICATION NUMBER

J.O. OR W.O. NO.

11600.02

DIVISION & GROUP

48/88

CALCULATION NO.

SNPS-URG-25-A-Rev 1

OPTIONAL TASK CODE

PAGE 10

RESULTS:

The total max Integrated gamma dose to
Electrical penetrations in the Primary
Containment E1 B1 to 90'

TABLE 2

Source Contribution	Obtained from	Dose (RAD)
40 year Operation	REF. [4]	1.80×10^7
Six month post LOCA dose from primary containment Airborne gammas	Page (9)	3.44×10^7
Six month post LOCA gamma Dose from any lines containing Suppression pool water in the area of the penetrations	REF. [3]	4.32×10^6

Total Gamma Dose 5.67×10^7 RAD //

CALCULATION SHEET

CALCULATION IDENTIFICATION NUMBER

J.O. OR W.O. NO.
11600-02

DIVISION & GROUP
48/88

CALCULATION NO.
SNPS-1-URB-25-A-1

OPTIONAL TASK CODE
Feu-1

PAGE 11

TABLE 3 Dose Rate Conversion Factors in (mr/hr/MeV/cc-sec) to Penetrations

Detector	Source Region	Energy (MeV)						
		.4	.8	1.3	1.7	2.2	2.5	3.5
1A	I	1.57-2	1.48-2	1.27-2	1.17-2	1.09-2	1.02-2	9.44-3
	II	1.41-1	1.33-1	1.16-1	1.08-1	1.01-1	9.50-2	8.80-2
	III	8.03-1	7.63-1	6.75-1	6.33-1	5.94-1	5.57-1	5.18-1
	total	9.60-1	9.11-1	8.04-1	7.53-1	7.06-1	6.62-1	6.15-1
2A	I	1.73-2	1.63-2	1.40-2	1.30-2	1.21-2	1.13-2	1.04-2
	II	1.67-1	1.58-1	1.38-1	1.29-1	1.20-1	1.13-1	1.05-1
	III	7.93-1	7.53-1	6.66-1	6.25-1	5.86-1	5.50-1	5.11-1
	Total	9.77-1	9.27-1	8.18-1	7.67-1	7.18-1	6.74-1	6.26-1
3A	I	1.90-2	1.79-2	1.54-2	1.43-2	1.33-2	1.25-2	1.15-2
	II	2.00-1	1.90-1	1.66-1	1.56-1	1.45-1	1.36-1	1.27-1
	III	7.65-1	7.27-1	6.43-1	6.03-1	5.65-1	5.30-1	4.93-1
	Total	9.84-1	9.35-1	8.24-1	7.73-1	7.23-1	6.79-1	6.32-1
4A	I	2.11-2	2.00-2	1.72-2	1.59-2	1.48-2	1.39-2	1.29-2
	II	2.49-1	2.36-1	2.07-1	1.94-1	1.82-1	1.70-1	1.58-1
	III	7.24-1	6.88-1	6.08-1	5.70-1	5.35-1	5.01-1	4.66-1
	Total	9.94-1	9.44-1	8.32-1	7.80-1	7.32-1	6.85-1	6.37-1

DOSE RATE TO DETECTOR -
(R/HR) -1A

TIME (HOUR)	ENERGY (MEV)							TOTAL
	0.4	0.6	1.3	1.7	2.2	2.5	3.5	
0.0	2.43E+08	1.32E+09	5.09E+08	8.96E+08	5.56E+08	3.69E+08	2.85E+08	4.18E+09
0.1	2.32E+08	1.21E+09	3.92E+08	4.64E+08	4.53E+08	3.28E+08	5.20E+07	3.13E+09
0.5	2.20E+08	9.47E+08	3.32E+08	2.39E+08	2.50E+08	2.80E+08	5.20E+06	2.28E+09
1.0	2.23E+08	7.53E+08	2.81E+08	2.02E+08	1.66E+08	2.32E+08	2.59E+06	1.86E+09
2.0	2.14E+08	5.24E+08	2.15E+08	1.56E+08	1.14E+08	1.62E+08	7.01E+05	1.38E+09
4.0	1.97E+08	3.15E+08	1.46E+08	1.05E+08	6.92E+07	8.34E+07	5.15E+04	9.16E+08
5.0	1.90E+08	2.63E+08	1.25E+08	8.96E+07	5.97E+07	6.16E+07	1.39E+04	7.85E+08
8.0	1.71E+08	1.79E+08	8.60E+07	5.89E+07	2.81E+07	2.64E+07	2.75E+02	5.50E+08
10.0	1.59E+08	1.50E+08	6.80E+07	4.59E+07	1.84E+07	1.55E+07	2.02E+01	4.57E+08
24.0	1.02E+08	7.27E+07	1.52E+07	1.02E+07	1.77E+06	4.57E+05	2.28E-07	2.02E+08
50.0	5.86E+07	3.12E+07	1.01E+06	1.05E+06	9.46E+04	7.22E+02	3.98E-22	9.20E+07
70.0	4.83E+07	1.90E+07	1.27E+05	3.03E+05	1.17E+04	5.04E+00	1.76E-33	6.70E+07
96.0	4.18E+07	1.10E+07	8.52E+03	9.79E+04	7.84E+02	8.01E-03	3.08E-48	5.36E+07
200.0	2.66E+07	5.00E+06	1.71E-01	2.61E+03	1.59E-02	5.06E-14	5.00E-70	3.16E+07
300.0	1.74E+07	3.33E+06	5.26E-06	8.36E+01	4.86E-07	8.61E-25	5.00E-70	2.07E+07
500.0	7.57E+06	1.55E+06	4.92E-15	8.58E-02	4.55E-16	2.51E-46	5.00E-70	9.12E+06
720.0	3.08E+06	6.67E+05	5.76E-25	4.45E-05	5.33E-26	5.14E-70	5.00E-70	3.75E+06
2160.0	1.10E+04	8.84E+03	5.00E-70	1.39E-26	5.00E-70	5.00E-70	5.00E-70	1.99E+04
4380.0	2.35E+00	3.43E+03	5.00E-70	9.64E-60	5.00E-70	5.00E-70	5.00E-70	3.44E+03
8760.0	1.95E-06	1.05E+03	5.00E-70	5.00E-70	5.00E-70	5.00E-70	5.00E-70	1.05E+03

11600.02

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SNPS-1-URB-257A-RIV-1

P. 12

DOSE RATE TO DETECTOR - -2A
(P/HR)

TIME (HOUR)	0.4	0.6	1.3	1.7	2.2	2.5	3.5	TOTAL
0.0	2.47E+08	1.34E+09	5.18E+08	9.13E+08	5.65E+08	3.75E+08	2.90E+08	4.25E+09
0.1	2.36E+08	1.23E+09	3.98E+08	4.72E+08	4.61E+08	3.34E+08	5.29E+07	3.19E+09
0.5	2.32E+08	9.64E+08	3.38E+08	2.43E+08	2.54E+08	2.85E+07	5.30E+06	2.32E+09
1.0	2.27E+08	7.67E+08	2.86E+08	2.06E+08	1.69E+08	2.36E+08	2.64E+06	1.09E+09
2.0	2.18E+08	5.33E+08	2.18E+08	1.59E+08	1.16E+08	1.64E+08	7.14E+05	1.41E+09
4.0	2.00E+08	3.21E+08	1.49E+08	1.07E+08	7.04E+07	8.49E+07	5.24E+04	9.33E+08
5.0	1.93E+08	2.68E+08	1.26E+08	9.13E+07	5.56E+07	6.27E+07	1.41E+04	7.99E+08
8.0	1.74E+08	1.63E+08	8.75E+07	6.00E+07	2.86E+07	2.69E+07	2.80E+02	5.59E+08
10.0	1.62E+08	1.53E+08	6.92E+07	4.67E+07	1.87E+07	1.58E+07	2.06E+01	4.66E+08
24.0	1.04E+08	7.40E+07	1.55E+07	1.04E+07	1.80E+06	4.67E+05	2.32E-07	2.06E+08
50.0	5.96E+07	3.18E+07	1.03E+06	1.07E+06	9.62E+04	7.35E+02	4.05E-22	9.36E+07
70.0	4.91E+07	1.94E+07	1.29E+05	3.08E+05	1.19E+04	5.13E+00	1.79E-33	6.90E+07
96.0	4.25E+07	1.20E+07	8.67E+03	9.97E+04	7.97E+02	8.16E-03	3.13E-48	5.46E+07
200.0	2.71E+07	5.09E+06	1.74E-01	2.65E+03	1.62E-02	5.15E-14	5.00E-70	3.22E+07
300.0	1.77E+07	3.30E+06	5.35E-06	8.51E+01	4.94E-07	8.76E-25	5.00E-70	2.11E+07
500.0	7.71E+06	1.50E+06	5.01E-15	3.74E-02	4.62E-16	2.55E-46	5.00E-70	9.20E+06
720.0	3.14E+06	6.79E+05	5.87E-25	9.53E-05	5.42E-26	5.23E-70	5.00E-70	3.61E+06
2160.0	1.12E+04	8.99E+03	5.00E-70	1.41E-26	5.00E-70	5.00E-70	5.00E-70	2.02E+04
4380.0	2.39E+00	3.49E+03	5.00E-70	9.62E-60	5.00E-70	5.00E-70	5.00E-70	3.50E+03
8760.0	1.98E-06	1.07E+03	5.00E-70	5.00E-70	5.00E-70	5.00E-70	5.00E-70	1.07E+03

11600.02

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SWPS-1-URB-25A-RIV-1

P.13

DOSE RATE TO DETECTOR - -3A
(R/HR)

TIME (HOUR)	ENERGY (MEV)							TOTAL
	0.4	0.8	1.3	1.7	2.2	2.5	3.5	
0.0	2.49E+08	1.36E+09	5.22E+08	9.20E+08	5.69E+08	3.78E+08	2.93E+08	4.29E+09
0.1	2.38E+08	1.24E+09	4.01E+08	4.76E+08	4.64E+08	3.37E+08	5.34E+07	3.21E+09
0.5	2.33E+08	9.72E+08	3.40E+08	2.45E+08	2.56E+08	2.07E+08	5.35E+06	2.34E+09
1.0	2.26E+08	7.73E+08	2.88E+08	2.07E+08	1.70E+08	2.30E+08	2.66E+06	1.91E+09
2.0	2.19E+08	5.38E+08	2.20E+08	1.60E+08	1.16E+08	1.66E+08	7.20E+05	1.42E+09
4.0	2.02E+08	3.24E+08	1.50E+08	1.08E+08	7.09E+07	8.56E+07	5.29E+04	9.40E+08
5.0	1.95E+08	2.70E+08	1.29E+08	9.20E+07	5.60E+07	6.32E+07	1.43E+04	8.05E+08
8.0	1.75E+08	1.84E+08	8.02E+07	6.04E+07	2.88E+07	2.71E+07	2.83E+02	5.64E+08
10.0	1.63E+08	1.54E+08	6.97E+07	4.71E+07	1.89E+07	1.59E+07	2.08E+01	4.69E+08
24.0	1.04E+08	7.46E+07	1.56E+07	1.05E+07	1.81E+06	4.69E+05	2.34E-07	2.07E+08
50.0	6.00E+07	3.21E+07	1.04E+06	1.08E+06	7.69E+04	7.40E+02	4.09E-22	9.43E+07
70.0	4.95E+07	1.95E+07	1.30E+05	3.11E+05	1.20E+04	5.17E+00	1.81E-33	6.95E+07
96.0	4.28E+07	1.21E+07	8.73E+03	1.00E+05	8.03E+02	8.22E-03	3.16E-48	5.50E+07
200.0	2.73E+07	5.13E+06	1.76E-01	2.67E+03	1.63E-02	5.19E-14	5.00E-70	3.24E+07
300.0	1.78E+07	3.41E+06	5.39E-06	8.58E+01	4.97E-07	8.83E-25	5.00E-70	2.12E+07
500.0	7.76E+06	1.59E+06	5.04E-15	8.81E-02	4.66E-16	2.57E-46	5.00E-70	9.35E+06
720.0	3.16E+06	6.84E+05	5.91E-25	4.57E-05	5.46E-26	5.27E-70	5.00E-70	3.84E+06
2160.0	1.13E+04	9.07E+03	5.00E-70	1.42E-26	5.00E-70	5.00E-70	5.00E-70	2.04E+04
4380.0	2.41E+00	3.52E+03	5.00E-70	9.89E-60	5.00E-70	5.00E-70	5.00E-70	3.53E+03
8760.0	2.00E-06	1.08E+03	5.00E-70	5.00E-70	5.00E-70	5.00E-70	5.00E-70	1.08E+03

11600.02

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SWS-1-URB-QSA-Riv-1

P.14

DOSE RATE TO DETECTOR - -4A
(R/HR)

TIME (HOUR)	ENERGY (MEV)							TOTAL
	0.4	0.8	1.3	1.7	2.2	2.5	3.5	
0.0	2.51E+08	1.37E+09	5.27E+08	9.28E+08	5.76E+08	3.82E+08	2.95E+08	4.33E+09
0.1	2.41E+08	1.26E+09	4.05E+08	4.80E+08	4.70E+08	3.40E+08	5.38E+07	3.25E+09
0.5	2.36E+08	9.82E+08	3.44E+08	2.47E+08	2.59E+08	2.90E+08	5.39E+06	2.36E+09
1.0	2.31E+08	7.81E+08	2.91E+08	2.09E+08	1.72E+08	2.40E+08	2.68E+06	1.93E+09
2.0	2.22E+08	5.43E+08	2.22E+08	1.61E+08	1.10E+08	1.67E+08	7.26E+05	1.43E+09
4.0	2.04E+08	3.27E+08	1.51E+08	1.09E+08	7.17E+07	8.63E+07	5.33E+04	9.49E+08
5.0	1.97E+08	2.73E+08	1.30E+08	9.28E+07	5.67E+07	6.38E+07	1.44E+04	8.13E+08
8.0	1.77E+08	1.86E+08	8.90E+07	6.10E+07	2.91E+07	2.73E+07	2.85E+02	5.69E+08
10.0	1.65E+08	1.56E+08	7.04E+07	4.75E+07	1.91E+07	1.60E+07	2.10E+01	4.74E+08
24.0	1.05E+08	7.53E+07	1.57E+07	1.06E+07	1.84E+06	4.73E+05	2.36E-07	2.09E+08
50.0	6.06E+07	3.24E+07	1.05E+06	1.09E+06	9.81E+04	7.47E+02	4.12E-22	9.53E+07
70.0	5.00E+07	1.97E+07	1.31E+05	3.14E+05	1.22E+04	5.21E+00	1.82E-33	7.02E+07
96.0	4.32E+07	1.22E+07	8.82E+03	1.01E+05	8.13E+02	8.29E-03	3.18E-48	5.55E+07
200.0	2.75E+07	5.18E+06	1.77E-01	2.70E+03	1.65E-02	5.23E-14	5.00E-70	3.27E+07
300.0	1.80E+07	3.45E+06	5.44E-06	8.66E+01	5.04E-07	8.91E-25	5.00E-70	2.14E+07
500.0	7.84E+06	1.60E+06	5.09E-15	8.89E-02	4.71E-16	2.60E-46	5.00E-70	9.45E+06
720.0	3.19E+06	6.91E+05	5.97E-25	4.61E-05	5.53E-26	5.32E-70	5.00E-70	3.88E+06
2160.0	1.14E+04	9.16E+03	5.00E-70	1.44E-26	5.00E-70	5.00E-70	5.00E-70	2.06E+04
4380.0	2.44E+00	3.56E+03	5.00E-70	9.98E-60	5.00E-70	5.00E-70	5.00E-70	3.56E+03
8760.0	2.02E-06	1.09E+03	5.00E-70	5.00E-70	5.00E-70	5.00E-70	5.00E-70	1.09E+03

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WP5-1-4RB-25M-Riv-1

P. 15

INTEGRATED DOSE TO DETECTOR - -1A
(RADS)

TIME (HOUR)	ENERGY (MEV)							TOTAL
	0.4	0.8	1.3	1.7	2.2	2.5	3.5	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.1	2.38E+04	1.27E+05	4.48E+04	6.56E+04	5.03E+04	3.48E+04	1.37E+04	3.59E+05
0.5	1.16E+05	5.56E+05	1.89E+05	2.01E+05	1.87E+05	1.56E+05	2.18E+04	1.43E+06
1.0	2.28E+05	9.80E+05	3.42E+05	3.11E+05	2.89E+05	2.84E+05	2.37E+04	2.46E+06
2.0	4.47E+05	1.61E+06	5.89E+05	4.69E+05	4.28E+05	4.78E+05	2.51E+04	4.07E+06
4.0	8.57E+05	2.43E+06	9.45E+05	7.47E+05	6.07E+05	7.15E+05	2.56E+04	6.33E+06
5.0	1.05E+06	2.72E+06	1.08E+06	8.44E+05	6.68E+05	7.87E+05	2.57E+04	7.18E+06
8.0	1.59E+06	3.38E+06	1.39E+06	1.06E+06	7.88E+05	9.11E+05	2.57E+04	9.15E+06
10.0	1.92E+06	3.71E+06	1.55E+06	1.17E+06	8.34E+05	9.52E+05	2.57E+04	1.02E+07
24.0	3.72E+06	5.20E+06	2.04E+06	1.50E+06	9.34E+05	1.01E+06	2.57E+04	1.44E+07
50.0	5.75E+06	6.48E+06	2.18E+06	1.61E+06	9.49E+05	1.01E+06	2.57E+04	1.80E+07
70.0	6.82E+06	6.97E+06	2.19E+06	1.62E+06	9.49E+05	1.01E+06	2.57E+04	1.96E+07
96.0	7.99E+06	7.36E+06	2.19E+06	1.62E+06	9.49E+05	1.01E+06	2.57E+04	2.11E+07
200.0	1.15E+07	8.19E+06	2.19E+06	1.63E+06	9.49E+05	1.01E+06	2.57E+04	2.55E+07
300.0	1.36E+07	8.60E+06	2.19E+06	1.63E+06	9.49E+05	1.01E+06	2.57E+04	2.80E+07
500.0	1.60E+07	9.06E+06	2.19E+06	1.63E+06	9.49E+05	1.01E+06	2.57E+04	3.09E+07
720.0	1.71E+07	9.29E+06	2.19E+06	1.63E+06	9.49E+05	1.01E+06	2.57E+04	3.22E+07
2160.0	1.79E+07	9.51E+06	2.19E+06	1.63E+06	9.49E+05	1.01E+06	2.57E+04	3.32E+07
4380.0	1.79E+07	9.52E+06	2.19E+06	1.63E+06	9.49E+05	1.01E+06	2.57E+04	3.32E+07
8760.0	1.79E+07	9.53E+06	2.19E+06	1.63E+06	9.49E+05	1.01E+06	2.57E+04	3.32E+07

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SWP-1-URB-25A-Riv-1

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INTEGRATED DOSE TO DETECTOR - -2A
(RADS)

TIME (HOUR)	ENERGY (MEV)						TOTAL	
	0.4	0.8	1.3	1.7	2.2	2.5	3.5	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.1	2.42E+04	1.29E+05	4.55E+04	6.69E+04	5.11E+04	3.54E+04	1.39E+04	3.66E+05
0.5	1.18E+05	5.66E+05	1.92E+05	2.05E+05	1.90E+05	1.59E+05	2.22E+04	1.45E+06
1.0	2.32E+05	9.97E+05	3.40E+05	3.17E+05	2.94E+05	2.09E+05	2.41E+04	2.50E+06
2.0	4.55E+05	1.64E+06	5.99E+05	4.90E+05	4.35E+05	4.87E+05	2.56E+04	4.14E+06
4.0	8.72E+05	2.48E+06	9.62E+05	7.61E+05	6.17E+05	7.28E+05	2.61E+04	6.44E+06
5.0	1.07E+06	2.77E+06	1.10E+06	8.60E+05	6.80E+05	8.01E+05	2.61E+04	7.30E+06
8.0	1.62E+06	3.44E+06	1.42E+06	1.08E+06	8.02E+05	9.20E+05	2.61E+04	9.31E+06
10.0	1.96E+06	3.77E+06	1.57E+06	1.19E+06	8.48E+05	9.70E+05	2.61E+04	1.03E+07
24.0	3.79E+06	5.29E+06	2.08E+06	1.53E+06	9.50E+05	1.03E+06	2.61E+04	1.47E+07
50.0	5.35E+06	6.59E+06	2.22E+06	1.64E+06	9.65E+05	1.03E+06	2.61E+04	1.83E+07
70.0	6.94E+06	7.09E+06	2.22E+06	1.65E+06	9.65E+05	1.03E+06	2.61E+04	1.99E+07
96.0	8.13E+06	7.49E+06	2.23E+06	1.65E+06	9.66E+05	1.03E+06	2.61E+04	2.15E+07
200.0	1.17E+07	8.33E+06	2.23E+06	1.66E+06	9.66E+05	1.03E+06	2.61E+04	2.59E+07
300.0	1.39E+07	8.75E+06	2.23E+06	1.66E+06	9.66E+05	1.03E+06	2.61E+04	2.85E+07
500.0	1.63E+07	9.22E+06	2.23E+06	1.66E+06	9.66E+05	1.03E+06	2.61E+04	3.14E+07
720.0	1.74E+07	9.45E+06	2.23E+06	1.66E+06	9.66E+05	1.03E+06	2.61E+04	3.28E+07
2160.0	1.82E+07	9.68E+06	2.23E+06	1.66E+06	9.66E+05	1.03E+06	2.61E+04	3.38E+07
4320.0	1.82E+07	9.69E+06	2.23E+06	1.66E+06	9.66E+05	1.03E+06	2.61E+04	3.38E+07
8760.0	1.82E+07	9.70E+06	2.23E+06	1.66E+06	9.66E+05	1.03E+06	2.61E+04	3.38E+07

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MPS-1-URB-25A-Riv-1
p 17

INTEGRATED DOSE TO DETECTOR - -3A
(RADS)

TIME (HOUR)	ENERGY (MEV)							TOTAL
	0.4	0.8	1.3	1.7	2.2	2.5	3.5	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.1	2.44E+04	1.30E+05	4.59E+04	6.74E+04	5.15E+04	3.57E+04	1.41E+04	3.69E+05
0.5	1.19E+05	5.71E+05	1.94E+05	2.07E+05	1.91E+05	1.60E+05	2.24E+04	1.46E+06
1.0	2.34E+05	1.01E+06	3.51E+05	3.19E+05	2.96E+05	2.91E+05	2.43E+04	2.52E+06
2.0	4.58E+05	1.65E+06	6.03E+05	5.02E+05	4.38E+05	4.91E+05	2.58E+04	4.17E+06
4.0	8.79E+05	2.50E+06	9.69E+05	7.67E+05	6.21E+05	7.33E+05	2.63E+04	6.49E+06
5.0	1.00E+06	2.79E+06	1.11E+06	8.67E+05	6.85E+05	8.07E+05	2.64E+04	7.36E+06
8.0	1.63E+06	3.47E+06	1.43E+06	1.09E+06	8.07E+05	9.35E+05	2.64E+04	9.39E+06
10.0	1.97E+06	3.80E+06	1.59E+06	1.20E+06	8.54E+05	9.77E+05	2.64E+04	1.04E+07
24.0	3.81E+06	5.34E+06	2.09E+06	1.54E+06	9.56E+05	1.04E+06	2.64E+04	1.48E+07
50.0	5.90E+06	6.65E+06	2.23E+06	1.65E+06	9.71E+05	1.04E+06	2.64E+04	1.85E+07
70.0	6.99E+06	7.15E+06	2.24E+06	1.66E+06	9.72E+05	1.04E+06	2.64E+04	2.01E+07
96.0	8.19E+06	7.56E+06	2.24E+06	1.67E+06	9.72E+05	1.04E+06	2.64E+04	2.17E+07
200.0	1.18E+07	8.40E+06	2.24E+06	1.67E+06	9.72E+05	1.04E+06	2.64E+04	2.61E+07
300.0	1.40E+07	8.82E+06	2.24E+06	1.67E+06	9.72E+05	1.04E+06	2.64E+04	2.88E+07
500.0	1.64E+07	9.30E+06	2.24E+06	1.67E+06	9.72E+05	1.04E+06	2.64E+04	3.17E+07
720.0	1.75E+07	9.54E+06	2.24E+06	1.67E+06	9.72E+05	1.04E+06	2.64E+04	3.30E+07
2160.0	1.83E+07	9.74E+06	2.24E+06	1.67E+06	9.72E+05	1.04E+06	2.64E+04	3.40E+07
4380.0	1.83E+07	9.77E+06	2.24E+06	1.67E+06	9.72E+05	1.04E+06	2.64E+04	3.41E+07
8760.0	1.83E+07	9.78E+06	2.24E+06	1.67E+06	9.72E+05	1.04E+06	2.64E+04	3.41E+07

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SNPS-1-URB-25M-Riv-1

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SNPS-1-URB-25A-REV-1

p. 19

INTEGRATED DOSE TO DETECTOR - -9A
(RADS)

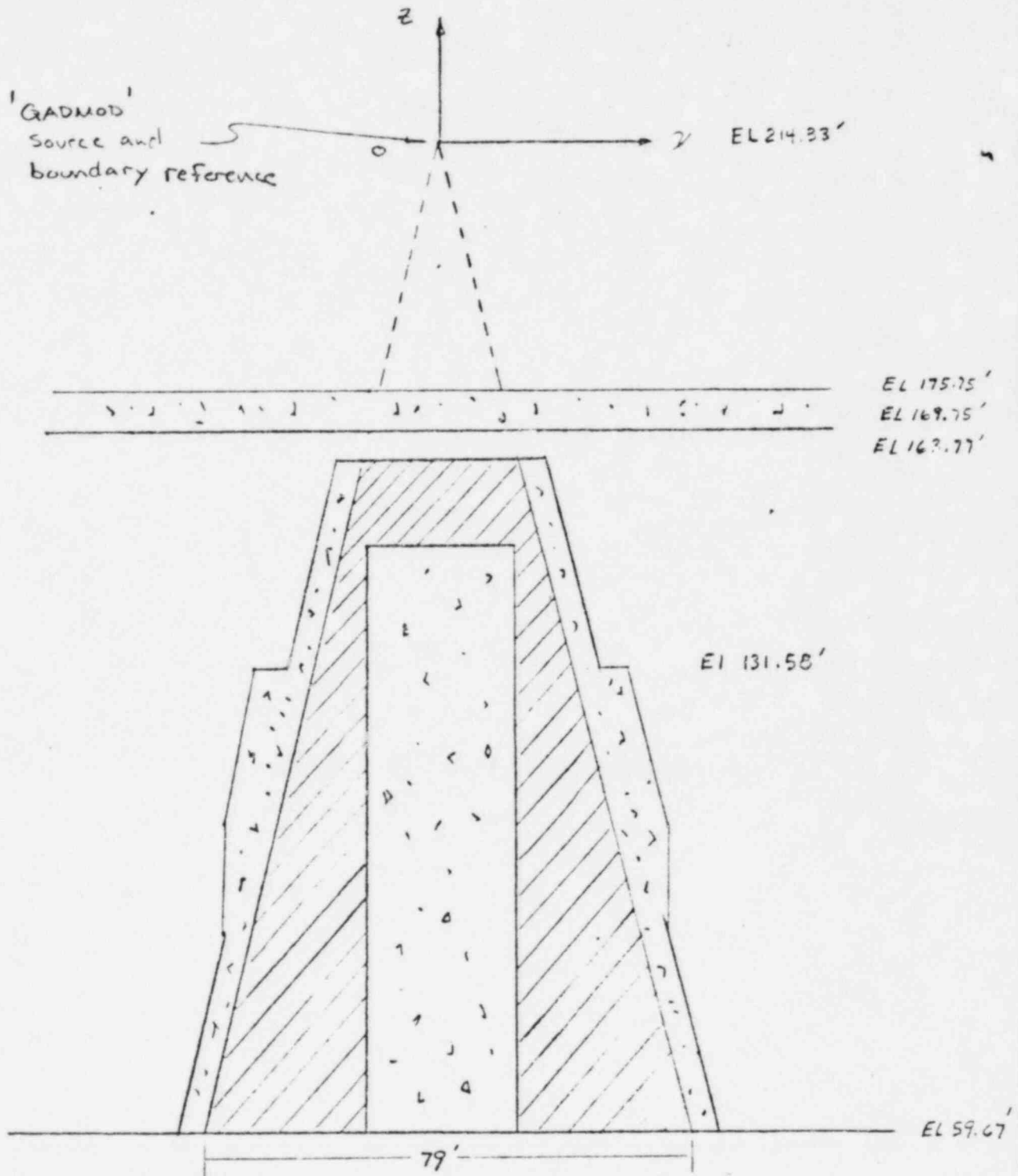
TIME (HOUR)	ENERGY (MEV)							TOTAL
	0.4	0.6	1.3	1.7	2.2	2.5	3.5	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.1	2.44E+04	1.31E+05	4.63E+04	6.40E+04	5.21E+04	3.40E+04	1.42E+04	3.72E+05
0.5	1.20E+05	5.76E+05	1.96E+05	2.08E+05	1.94E+05	1.82E+05	2.26E+04	1.48E+06
1.0	2.36E+05	1.02E+06	3.54E+05	3.22E+05	3.00E+05	2.94E+05	2.45E+04	2.55E+06
2.0	4.63E+05	1.67E+06	6.09E+05	5.06E+05	4.43E+05	4.35E+05	2.60E+04	4.21E+06
4.0	8.88E+05	2.52E+06	9.78E+05	7.74E+05	6.29E+05	7.40E+05	2.65E+04	6.56E+06
5.0	1.09E+06	2.82E+06	1.12E+06	8.75E+05	6.93E+05	8.14E+05	2.66E+04	7.43E+06
8.0	1.65E+06	3.50E+06	1.44E+06	1.10E+06	8.17E+05	9.43E+05	2.66E+04	9.40E+06
10.0	1.99E+06	3.84E+06	1.60E+06	1.21E+06	8.65E+05	9.85E+05	2.66E+04	1.05E+07
24.0	3.85E+06	5.39E+06	2.11E+06	1.55E+06	9.68E+05	1.05E+06	2.66E+04	1.50E+07
50.0	5.96E+06	6.71E+06	2.25E+06	1.66E+06	9.83E+05	1.05E+06	2.66E+04	1.86E+07
70.0	7.06E+06	7.22E+06	2.26E+06	1.68E+06	9.84E+05	1.05E+06	2.66E+04	2.03E+07
96.0	8.27E+06	7.63E+06	2.26E+06	1.68E+06	9.84E+05	1.05E+06	2.66E+04	2.19E+07
200.0	1.19E+07	8.48E+06	2.26E+06	1.68E+06	9.84E+05	1.05E+06	2.66E+04	2.64E+07
300.0	1.41E+07	8.91E+06	2.26E+06	1.68E+06	9.84E+05	1.05E+06	2.66E+04	2.90E+07
500.0	1.66E+07	9.39E+06	2.26E+06	1.68E+06	9.84E+05	1.05E+06	2.66E+04	3.20E+07
720.0	1.77E+07	9.63E+06	2.26E+06	1.68E+06	9.84E+05	1.05E+06	2.66E+04	3.33E+07
2160.0	1.85E+07	9.86E+06	2.26E+06	1.68E+06	9.84E+05	1.05E+06	2.66E+04	3.44E+07
4380.0	1.85E+07	9.87E+06	2.26E+06	1.68E+06	9.84E+05	1.05E+06	2.66E+04	3.44E+07
8760.0	1.85E+07	9.88E+06	2.26E+06	1.68E+06	9.84E+05	1.05E+06	2.66E+04	3.44E+07

CALCULATION SHEET

Attachment =

▲ 5010 65

CALCULATION IDENTIFICATION NUMBER				PAGE ____
J.O. OR W.O. NO.	DIVISION & GROUP	CALCULATION NO.	OPTIONAL TASK CODE	
11620 02	NTD / RP	SNPS-1-URB-25-A	REV-1	



SNPS-1 Upper Drywell Model

Source Region
concrete

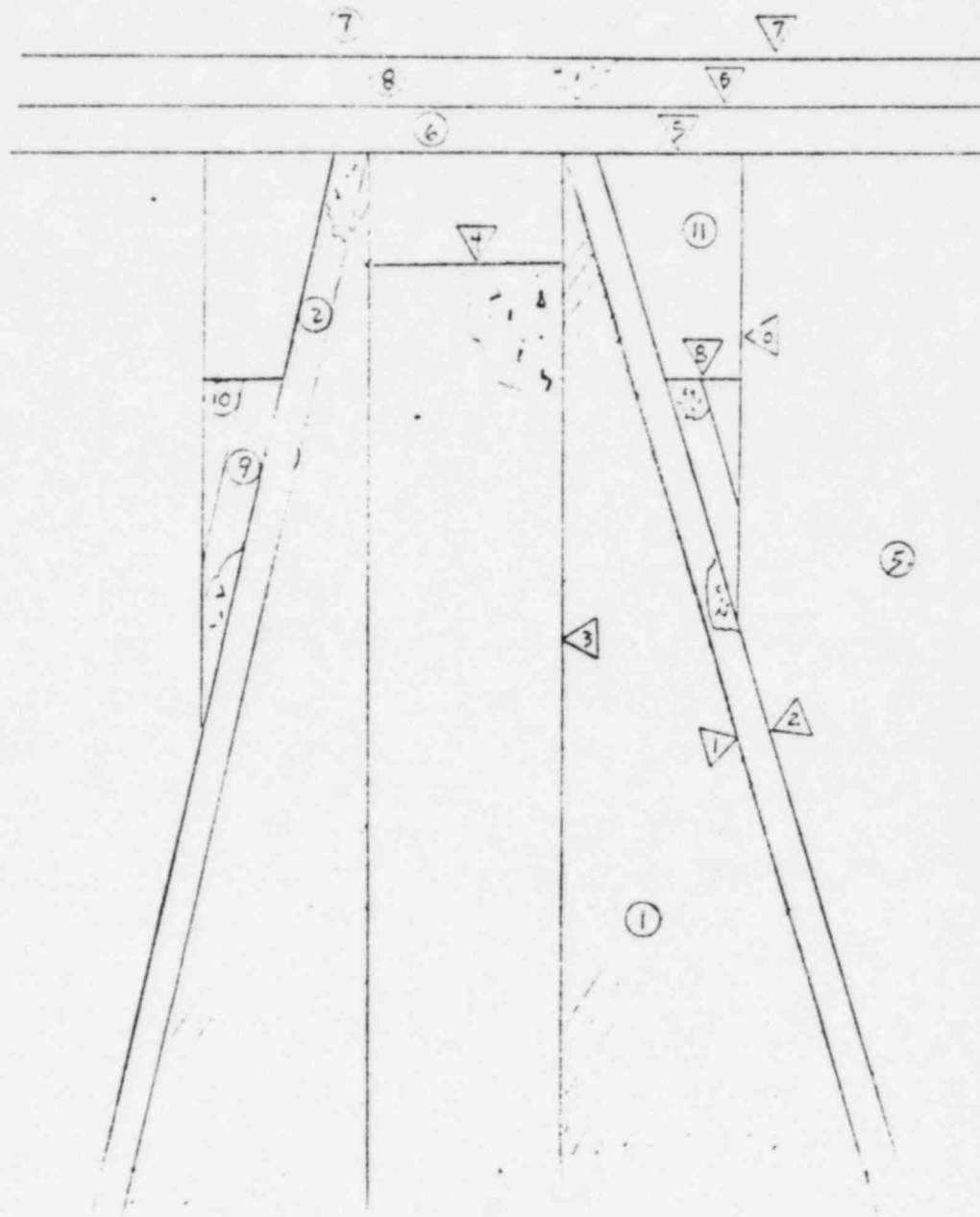
CALCULATION SHEET

Attachment III

▲ 5010.55

CALCULATION IDENTIFICATION NUMBER				PAGE ____
J.O. OR W.O. NO.	DIVISION & GROUP	CALCULATION NO.	OPTIONAL TASK CODE	
11600.02	HTD / RP	SNPS-1-URB-25-A-Riv-1		

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○ - region input to 'QADMØD'
 △ boundary input to 'QADMØD'

2:0' concrete
 Source

'QADMØD' Model of Upper Drywell

QADMOD Input to Run R0801700. Job # 2930. 11-19-82

***** CARD IMAGE OF INPUT SUBMITTED TO QADMOD *****

CARD COLUMNS

CARD NO.

41
42

1	2	3	4	5	6	7	8
1234567890123456789012345678901234567890123456789012345678901234567890							
965.00	0.00	-3789.58	1				
			-1			EL90	
1234567890123456789012345678901234567890123456789012345678901234567890							

CARD COLUMNS

Input to R0801700 #2930 (11-19-82)

1160002

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SNPS-1-01E-25-A-Rev1 Attachment IV A

pg 2 of 2

***** CARD IMAGE OF INPUT SUBMITTED TO QADMOD *****

CARD COLUMNS

1 2 3 4 5 6 7 8
 1234567890123456789012345678901234567890123456789012345678901234567890

CARD COLUMNS

CARD NO.

1 SNPS-1 DRYWELL SHINE
 2 8 2 0 2 10 11 1 -2 2 30 20 15 0 0
 3 1 2 0
 4 3.393+09 0.0 0.0 0.0
 5 3748.60 3780.78 3812.97 3845.15 3877.34 3909.52 3941.71 3973.89
 6 4006.08 4038.26 4070.45 4102.64 4134.82 4167.01 4199.19 4231.38
 7 4263.56 4295.75 4327.93 4360.12 4392.31 4424.49 4456.68 4488.86
 8 4521.05 4553.23 4585.42 4617.60 4649.79 4681.97 4714.16
 9 2.8916 2.8946 2.8976 2.9006 2.9036 2.9066 2.9096 2.9141
 10 2.9186 2.9231 2.9276 2.9326 2.9376 2.9426 2.9476 2.9526
 11 3.0176 3.0444 3.0713 3.1064 3.1416
 12 0.01.5708-013.1416-014.7124-016.2832-017.8540-019.4248-011.0996-00
 13 1.2566+001.4137+001.5708+001.8850+002.1991+002.5133+002.8274+003.1416+00
 14 1 9 0.0 0.0 542.29 -2123.36 1203.96 -4714.16
 15 2 9 0.0 0.0 603.27 -2123.36 1344.94 -4714.16
 16 3 12 0.0 403.86 0.0 403.86 0.0
 17 4 3 -1938.04
 18 5 3 -1541.19
 19 6 3 -1358.92
 20 7 3 -1176.04
 21 8 3 -2522.24
 22 9 9 0.0 0.0 762.50 -2123.36 1424.17 -4714.16
 23 10 12 0.0 1075.21 0.0 1075.21
 24 1 1 1 3 5 410.00 0.0 -2000.
 25 2 2 1 2 5 600.00 0.0 -2123.36
 26 3 2 3 4 0.00 0.0 -3000.
 27 4 1 3 4 5 0.00 0.0 -1600.
 28 5 1 2 5 10 1500.00 0.0 -2000.
 29 6 1 5 6 0.0 0.0 -1400.
 30 7 1 7 0.0 0.0 0.0
 31 8 2 6 7 0.0 0.0 -1200.
 32 9 2 2 8 9 10 1050.0 0.0 -3439.18
 33 10 1 8 9 10 1050.0 0.0 -2600.00
 34 11 1 2 5 8 10 1000.0 0.0 -2000.00
 35 1.20-03
 36 0.0 2.16
 37 23 25
 38 1.00+00 1.00+00 1.00+00 1.00+00 1.00+00 1.00+00 1.00+00 1.00+00
 39 MEV PER SQ CH-SEC HREM PER HR
 40 1035.00 0.00 -4063.99 1 EL81'

Source distribution for
 EL 59.67' to EL 91.35'

1234567890123456789012345678901234567890123456789012345678901234567890

QADMOD Input to R0801700 #3018 11-19-82

11/600.02
 48/88
 SNPS-1-UKB-25-A-Rev1
 Attachment IV
 Pg 1 of 2

***** CARD IMAGE OF INPUT SUBMITTED TO QADMOD *****

CARD COLUMNS	1	2	3	4	5	6	7	8	CARD COLUMNS
CARD NO.	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	
41	1012.00	0.00	-3972.46	1			EL04'		
42	990.00	0.00	-3081.02	1			EL07'		
43	965.00	0.00	-3789.58	1			EL90'		
44				-1					
	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	

Input to R0801700 .# 3018 .(11-19-82)

11600.02
48/88
SNPS-1-URE-25-A-Rev1
Attachment II B
Pg 2 of 2

***** CARD IMAGE OF INPUT SUBMITTED TO QADMOD *****

CARD COLUMNS 1 2 3 4 5 6 7 8 CARD COLUMNS

CARD NO.

1	SNPS-1 DRYWELL DOSE INSIDE							
2	8	2	0	2	10	11	1	-2
3							2	30
4	2.027+09	0.0	0.0				15	15
5	2783.03	2015.22	2047.40	2079.59	2911.77	2943.96	2976.14	3008.33
6	3040.51	3072.70	3104.89	3137.07	3169.26	3201.44	3233.63	3265.81
7	3298.00	3330.18	3362.37	3394.55	3426.74	3458.93	3491.11	3523.30
8	3555.48	3587.67	3619.85	3652.04	3684.22	3716.41	3748.60	
9	2.8916	2.8946	2.8976	2.9006	2.9036	2.9066	2.9096	2.9141
10	2.9106	2.9231	2.9276	2.9516	2.9816	3.0176	3.0713	3.1416
11	0.01.5708-013.1416-014.7124-016.2832-017.8540-019.4248-011.0996-00							
12	1.2566+001.4137+001.5708+001.8050+002.1991+002.5133+002.6274+003.1416+00							
13	1	9	0.0	0.0	542.29	-2123.36	1203.96	-4714.16
14	2	9	0.0	0.0	603.27	-2123.36	1344.94	-4714.16
15	3	12	0.0	403.86	0.0	403.86	0.0	
16	4	3	-1938.04					
17	5	3	-1541.19					
18	6	3	-1358.92					
19	7	3	-1174.04					
20	8	3	-2522.24					
21	9	9	0.0	0.0	762.50	-2123.36	1424.17	-4714.16
22	10	12	0.0	1075.21	0.0	1075.21		
23	1	1	1	3	5	410.00	0.0	-2000.
24	2	2	1	2	5	600.00	0.0	-2123.36
25	3	2	3	4		0.00	0.0	-3000.
26	4	1	3	4	5	0.00	0.0	-1600.
27	5	1	2	5	10	1500.00	0.0	-2000.
28	6	1	5	6		0.0	0.0	-1400.
29	7	1	7			0.0	0.0	0.0
30	8	2	6	7		0.0	0.0	-1200.
31	9	2	2	8	9	1050.0	0.0	-3439.18
32	10	1	8	9	10	1050.0	0.0	-2600.00
33	11	1	2	5	8	1000.0	0.0	-2000.00
34	1.20-03							
35	0.0 2.16							
36	23 25							
37	1.00+00 1.00+00 1.00+00 1.00+00 1.00+00 1.00+00 1.00+00 1.00+00							
38	MEV PER SQ CH-SEC HREM PER HR							
39	1035.00 0.00 -4063.99 1 EL01'							
40	1012.00 0.00 -3972.46 1 EL04'							

Source distribution for
EL 91.35' to EL 123.03'

1234567890123456789012345678901234567890123456789012345678901234567890

QADMOD Input to R0801700. Job# 2960. 11-19-82

11600.02

4418

SNPS-1-DRY-25-A-Rev1

Attachment IV

pg 1 of 2

***** CARD IMAGE OF INPUT SUBMITTED TO QADMOD *****

CARD COLUMNS	1	2	3	4	5	6	7	8	CARD COLUMNS
CARD NO.	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	
41	990.00	0.00	-3881.02	1				EL 87'	
42	965.00	0.00	-3789.58	1				EL 90'	
43				-1					

1234567890123456789012345678901234567890123456789012345678901234567890

Input to R0801700, #2960 (11-19-82)

11600.02

48/88

SNPS-1-URG-25-A-Rev 1

Attachment IV c

pg 2 of 2

* Primary Containment Airborne Source Spectrum At Various Times
Post LOCA (MeV/cc-sec)

TIME (HOUR)	GAMMA			ENERGY (MEV)			TOTAL	
	0.4	0.8	1.3	1.7	2.2	2.5	3.5	
0.0	2.53E+08	1.45E+09	6.33E+08	1.19E+09	7.87E+08	5.57E+08	4.63E+08	5.33E+09
0.1	2.42E+08	1.33E+09	4.87E+08	6.16E+08	6.42E+08	4.96E+08	8.45E+07	3.90E+09
0.5	2.37E+08	1.04E+09	4.13E+08	3.17E+08	3.54E+08	4.23E+08	8.46E+06	2.79E+09
1.0	2.32E+08	8.27E+08	3.50E+08	2.68E+08	2.35E+08	3.50E+08	4.21E+06	2.27E+09
2.0	2.23E+08	5.75E+08	2.67E+08	2.07E+08	1.61E+08	2.44E+08	1.14E+06	1.68E+09
4.0	2.05E+08	3.46E+08	1.82E+08	1.40E+08	9.80E+07	1.26E+08	8.37E+04	1.10E+09
5.0	1.98E+08	2.89E+08	1.56E+08	1.19E+08	7.75E+07	9.31E+07	2.26E+04	9.33E+08
8.0	1.78E+08	1.97E+08	1.07E+08	7.82E+07	3.98E+07	3.99E+07	4.47E+02	6.40E+08
10.0	1.66E+08	1.65E+08	8.46E+07	6.09E+07	2.61E+07	2.34E+07	3.29E+01	5.26E+08
24.0	1.06E+08	7.98E+07	1.89E+07	1.36E+07	2.51E+06	6.91E+05	3.70E-07	2.22E+08
50.0	6.10E+07	3.43E+07	1.26E+06	1.40E+06	1.34E+05	1.09E+03	6.47E-22	9.81E+07
70.0	5.03E+07	2.09E+07	1.58E+05	4.02E+05	1.66E+04	7.61E+00	2.86E-33	7.18E+07
96.0	4.35E+07	1.29E+07	1.06E+04	1.30E+05	1.11E+03	1.21E-02	5.00E-48	5.65E+07
200.0	2.77E+07	5.49E+06	2.17E-01	3.46E+03	2.25E-02	7.64E-14	0.0	3.32E+07
300.0	1.81E+07	3.65E+06	6.54E-06	1.11E+02	6.88E-07	1.30E-24	0.0	2.18E+07
500.0	7.89E+06	1.70E+06	6.12E-15	1.14E-01	6.44E-16	3.79E-46	0.0	9.59E+06
720.0	3.21E+06	7.32E+05	7.17E-25	5.91E-05	7.55E-26	7.76E-70	0.0	3.94E+06
2160.0	1.15E+04	9.70E+03	0.0	1.84E-26	0.0	0.0	0.0	2.12E+04
4380.0	2.45E+00	3.77E+03	0.0	1.28E-59	0.0	0.0	0.0	3.77E+03
8760.0	2.03E-06	1.15E+03	0.0	0.0	0.0	0.0	0.0	1.15E+03

Airborne Activity in (Drywell + Suppression Pool Air Space)
Assuming 100% of Noble Gas Core Inventory and 50% of Halogen
Core Inventory is homogeneously mixed in the Drywell and
Suppression Pool Air Space ($3.26 \times 10^5 \text{ Ft}^3$)

* From Ref. [1]

NTD/RP

SNPS-1-URB-25A-Rev-1

Attachment III