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PSEG
Power LLC

ND-2011-0018
April 12, 2011

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Subject: **PSEG Early Site Permit Application**
Docket No. 52-043
Response to Request for Additional Information, RAI No. 18, Gaseous Waste Management System

References: 1) PSEG Power, LLC letter to USNRC, Application for Early Site Permit for the PSEG Site, dated May 25, 2010

2) RAI No. 18, SRP Section: 11.03 - Gaseous Waste Management System, dated March 14, 2011 (eRAI 5466)

The purpose of this letter is to respond to the request for additional information (RAI) identified in Reference 2 above. This RAI addresses Gaseous Waste Management System, as described in Subsection 11.3.3 of the Site Safety Analysis Report (SSAR), as submitted in Part 2 of the PSEG Site Early Site Permit Application, Revision 0.

Enclosure 1 provides our response for RAI No. 18, Question No. 11.03-3. Our response to RAI No. 18, Question No. 11.03-3 will result in a revision to the SSAR. Enclosure 2 includes the proposed revisions to the SSAR. Enclosure 3 includes the new regulatory commitment established in this submittal.

If any additional information is needed, please contact David Robillard, PSEG Nuclear Development Licensing Engineer, at (856) 339-7914.

D079
NRO

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 12th day of April, 2011.

Sincerely,

James Mallon
Nuclear Development
Early Site Permit Manager
PSEG Power, LLC

Enclosure 1: Response to NRC Request for Additional Information, RAI No. 18, Question No. 11.03-3, SRP Section: 11.03 - Gaseous Waste Management System
Enclosure 2: Proposed Revisions Part 2 - Site Safety Analysis Report (SSAR) Subsection 11.3.3 Gaseous Waste Management System
Enclosure 3: Summary of Regulatory Commitments

cc: USNRC Project Manager, Division of New Reactor Licensing, PSEG Site (w/enclosures)
USNRC, Environmental Project Manager, Division of Site and Environmental Reviews (w/enclosures)
USNRC Region I, Regional Administrator (w/enclosures)

PSEG Letter ND-2011-0018, dated April 12, 2011

ENCLOSURE 1

RESPONSE to RAI No. 18

QUESTION No. 11.03-3

Response to RAI No. 18, Question 11.03-3:

In Reference 2, the NRC staff asked PSEG for information regarding Gaseous Waste Management System, as described in Subsection 11.3.3 of the Site Safety Analysis Report. The specific request was:

> *Table 11.3-8 of the PSEG ESP Application provides a comparison of the Maximally Exposed Individual (MEI) doses with 10 CFR 50 Appendix I Criteria. The table states that the annual doses are based on the member of the public that works on-site 2000 hr/yr. However, several of the assumptions used in this table are not appropriate for demonstrating compliance with 10 CFR 50 Appendix I.*
>
> *10 CFR 50 Appendix I Section II B.1 states that the calculated annual total quantity of all radioactive material above background to be released from each light-water-cooled nuclear power reactor to the atmosphere will not result in an estimated annual air dose from gaseous effluents at any location near ground level which could be occupied by individuals in unrestricted areas in excess of 10 millirads for gamma radiation or 20 millirads for beta radiation. Therefore, the assumptions that the MEI will be working on site and applying a 2000 hr/yr reduction factor are both inappropriate for meeting 10 CFR 50 Appendix I.*
>
> *Please explain the assumptions being made for 10 CFR 50 Appendix I compliance.*

PSEG Response to NRC RAI:

The doses were determined based on a member of the public at the site boundary. The land adjacent to the site includes federal land that is controlled by the U.S. Army Corps of Engineers (USACE). The USACE does not permit recreational use of this land; however, there are no physical barriers to prevent access. PSEG conservatively assumed the land is accessible to the public for recreational use such as hunting and fishing. There are no preestablished features (e.g. roads, trails or boat docks) to enable access to this undeveloped land. For this reason, it was considered reasonable and conservative to assume a member of the public would spend no more than 2000 hours in the vicinity of the site. The use of the term unmonitored worker on site was intended to provide a description of an individual that could conceivably meet the conservative assignment of 2000 hours of occupancy.

In order to resolve the question presented in this RAI in the most conservative manner, the calculation of the Maximally Exposed Individual (MEI) doses for the 10 CFR 50 Appendix I criteria will be changed to remove the assumption of partial occupancy of 2000 hr/yr for the member of the public at the nearest site boundary. The calculation of the MEI doses for the 10 CFR Appendix I criteria will be based on a member of the public located at the nearest site boundary for the full duration of the year. As identified in SSAR Table 11.3-1, the nearest site boundary is 0.24 miles from the gaseous effluent release location in the ENE direction.

Since the ESP Application was submitted, new information became available that affects the doses for the 10 CFR 50 Appendix I criteria because of an update of the gaseous effluent source term. The gaseous effluent source term is based on the bounding release rates of the gaseous radionuclides for each of the four reactor technologies considered by PSEG in the ESP Application (ABWR, AP1000, US-APWR, and U.S. EPR). Since the submittal of the PSEG SSAR, an updated source term for the U.S. EPR was established in the Bell Bend Nuclear Power Plant (BBNPP) Final Safety Analysis Report (FSAR), Rev. 2. This updated source term for the U.S. EPR is listed in the BBNPP FSAR, in Table 11.2-3 and Subsection 11.2.3.2. The BBNPP gaseous source term is also provided in Column 5 of Table RAI 18-1 in this document. Columns 2, 3, 4, and 6 of Table RAI 18-1 contain gaseous release rates for the reactor technologies that were used to construct the bounding source term for the existing SSAR analyses. Column 7 shows the gaseous release source term originally submitted in the ESPA. The updated bounding source term is shown in Column 8 of Table RAI 18-1. The new gaseous release source term is the composite of the highest release rates for each radionuclide listed in Columns 2, 3, 5, and 6 of Table RAI 18-1. The refinement in the Kr-85 release results in a reduction in the Beta – Air and skin dose. Appendix I compliance is now demonstrated assuming that the MEI is in the area adjacent to the site for 8760 hrs/yr.

The BBNPP U.S. EPR release rates that are different from the existing SSAR U.S. EPR release rates are underlined and in bold font in Table RAI 18-1. Similarly, the bounding release rates in Column 8 of Table RAI 18-1 that differ from those in Column 7 of Table RAI 18-1 are underlined and in bold font. The existing gaseous effluent source term in the SSAR will be changed to adjust the release rates for C-14 (1.89E+01 Ci/yr), Kr-85 (4.10E+03 Ci/yr), Xe-131m (2.70E+03 Ci/yr), Xe-133 (7.20E+03 Ci/yr), and Xe-133m (1.70E+02 Ci/yr).

Table RAI 18-1 (Sheet 1 of 3)
Gaseous Effluent Radionuclides Release Rates

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8
Radionuclide	**ABWR Release (Ci/yr)**	**AP1000 Release (Ci/yr)**	**U.S. EPR Release (Ci/yr)**	**BBNPP U.S. EPR Release (Ci/yr)**	**US-APWR Release (Ci/yr)**	**Bounding Value Release (Ci/yr) (Columns 2, 3, 4, and 6)**	**Bounding Value Release (Ci/yr) (Columns 2, 3, 5, and 6)**
H-3	7.30E+01	3.50E+02	1.80E+02	1.80E+02	1.80E+02	3.50E+02	3.50E+02
C-14	9.19E+00	7.30E+00	**7.30E+00**	**1.89E+01**	7.30E+00	9.19E+00	**1.89E+01**
Na-24	4.05E-03					4.05E-03	4.05E-03
P-32	9.19E-04					9.19E-04	9.19E-04
Ar-41	6.76E+00	3.40E+01	3.40E+01	3.40E+01	3.40E+01	3.40E+01	3.40E+01
Cr-51	3.51E-02	6.10E-04	9.70E-05	9.70E-05	6.10E-04	3.51E-02	3.51E-02
Mn-54	5.41E-03	4.30E-04	5.70E-05	5.70E-05	4.30E-04	5.41E-03	5.41E-03
Fe-55	6.49E-03					6.49E-03	6.49E-03
Mn-56	3.51E-03					3.51E-03	3.51E-03
Co-57		8.20E-06	8.20E-06	8.20E-06	8.20E-06	8.20E-06	8.20E-06
Co-58	2.41E-03	2.30E-02	4.80E-04	4.80E-04	2.30E-02	2.30E-02	2.30E-02
Fe-59	8.11E-04	7.90E-05	2.80E-05	2.80E-05	7.90E-05	8.11E-04	8.11E-04
Co-60	1.30E-02	8.70E-03	1.10E-04	1.10E-04	8.80E-03	1.30E-02	1.30E-02
Ni-63	6.49E-06					6.49E-06	6.49E-06
Cu-64	1.00E-02					1.00E-02	1.00E-02
Zn-65	1.11E-02					1.11E-02	1.11E-02
Kr-83m	8.38E-04					8.38E-04	8.38E-04
Kr-85	5.68E+02	4.10E+03	**3.40E+04**	**2.80E+03**	1.40E+03	3.40E+04	**4.10E+03**
Kr-85m	2.11E+01	3.60E+01	1.50E+02	1.50E+02	0.00E+00	1.50E+02	1.50E+02
Kr-87	2.51E+01	1.50E+01	5.30E+01	5.30E+01	0.00E+00	5.30E+01	5.30E+01
Kr-88	3.78E+01	4.60E+01	1.80E+02	1.80E+02	0.00E+00	1.80E+02	1.80E+02
Kr-89	2.41E+02					2.41E+02	2.41E+02
Rb-89	4.32E-05					4.32E-05	4.32E-05
Sr-89	5.68E-03	3.00E-03	1.60E-04	1.60E-04	3.00E-03	5.68E-03	5.68E-03
Kr-90	3.24E-04					3.24E-04	3.24E-04
Sr-90	7.03E-05	1.20E-03	6.30E-05	6.30E-05	1.20E-03	1.20E-03	1.20E-03
Y-90	4.59E-05					4.59E-05	4.59E-05

Table RAI 18-1 (Sheet 2 of 3)
Gaseous Effluent Radionuclides Release Rates

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8
Radionuclide	**ABWR Release (Ci/yr)**	**AP1000 Release (Ci/yr)**	**U.S. EPR Release (Ci/yr)**	**BBNPP U.S. EPR Release (Ci/yr)**	**US-APWR Release (Ci/yr)**	**Bounding Value Release (Ci/yr) (Columns 2, 3, 4, and 6)**	**Bounding Value Release (Ci/yr) (Columns 2, 3, 5, and 6)**
Sr-91	1.00E-03					1.00E-03	1.00E-03
Y-91	2.41E-04					2.41E-04	2.41E-04
Sr-92	7.84E-04					7.84E-04	7.84E-04
Y-92	6.22E-04					6.22E-04	6.22E-04
Y-93	1.11E-03					1.11E-03	1.11E-03
Nb-95	8.38E-03	2.50E-03	4.20E-05	4.20E-05	2.50E-03	8.38E-03	8.38E-03
Zr-95	1.59E-03	1.00E-03	1.00E-05	1.00E-05	1.00E-03	1.59E-03	1.59E-03
Mo-99	5.95E-02					5.95E-02	5.95E-02
Tc-99m	2.97E-04					2.97E-04	2.97E-04
Ru-103	3.51E-03	8.00E-05	1.70E-05	1.70E-05	8.00E-05	3.51E-03	3.51E-03
Rh-103m	1.11E-04					1.11E-04	1.11E-04
Rh-106	1.89E-05					1.89E-05	1.89E-05
Ru-106	1.89E-05	7.80E-05	7.80E-07	7.80E-07	7.80E-05	7.80E-05	7.80E-05
Ag-110m	2.00E-06					2.00E-06	2.00E-06
Sb-124	1.81E-04					1.81E-04	1.81E-04
Sb-125		6.10E-05	6.10E-07	6.10E-07	6.10E-05	6.10E-05	6.10E-05
Te-129m	2.19E-04					2.19E-04	2.19E-04
I-131	2.59E-01	1.20E-01	8.80E-03	8.80E-03	4.20E-03	2.59E-01	2.59E-01
Te-131m	7.57E-05					7.57E-05	7.57E-05
Xe-131m	5.14E+01	1.80E+03	**3.50E+03**	**2.70E+03**	2.60E+02	3.50E+03	**2.70E+03**
I-132	2.19E+00	4.00E-01				2.19E+00	2.19E+00
Te-132	1.89E-05					1.89E-05	1.89E-05
I-133	1.70E+00		3.20E-02	3.20E-02	6.40E-02	1.70E+00	1.70E+00
Xe-133	2.41E+03	4.60E+03	**8.60E+03**	**7.20E+03**	0.00E+00	8.60E+03	**7.20E+03**
Xe-133m	8.65E-02	8.70E+01	**1.80E+02**	**1.70E+02**	2.00E+00	1.80E+02	**1.70E+02**
Cs-134	6.22E-03	2.30E-03	4.80E-05	4.80E-05	2.30E-03	6.22E-03	6.22E-03
I-134	3.78E+00					3.78E+00	3.78E+00
I-135	2.41E+00					2.41E+00	2.41E+00
Xe-135	4.59E+02	3.30E+02	1.20E+03	1.20E+03	2.00E+00	1.20E+03	1.20E+03
Xe-135m	4.05E+02	7.00E+00	1.40E+01	1.40E+01	4.00E+00	4.05E+02	4.05E+02
Cs-136	5.95E-04	8.50E-05	3.30E-05	3.30E-05	8.50E-05	5.95E-04	5.95E-04
Cs-137	9.46E-03	3.60E-03	9.00E-05	9.00E-05	3.60E-03	9.46E-03	9.46E-03
Xe-137	5.14E+02		0.00E+00		4.00E+00	5.14E+02	5.14E+02
Ba-137m					3.60E-03	3.60E-03	3.60E-03

Table RAI 18-1 (Sheet 3 of 3)
Gaseous Effluent Radionuclides Release Rates

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8
Radionuclide	**ABWR Release (Ci/yr)**	**AP1000 Release (Ci/yr)**	**U.S. EPR Release (Ci/yr)**	**BBNPP U.S. EPR Release (Ci/yr)**	**US-APWR Release (Ci/yr)**	**Bounding Value Release (Ci/yr) (Columns 2, 3, 4, and 6)**	**Bounding Value Release (Ci/yr) (Columns 2, 3, 5, and 6)**
Cs-138	1.70E-04					1.70E-04	1.70E-04
Xe-138	4.32E+02	6.00E+00	1.20E+01	1.20E+01	1.00E+00	4.32E+02	4.32E+02
Xe-139	4.05E-04					4.05E-04	4.05E-04
Ba-140	2.70E-02	4.20E-04	4.20E-06	4.20E-06	4.20E-04	2.70E-02	2.70E-02
La-140	1.81E-03					1.81E-03	1.81E-03
Ce-141	9.19E-03	4.20E-05	1.30E-05	1.30E-05	4.20E-05	9.19E-03	9.19E-03
Ce-144	1.89E-05					1.89E-05	1.89E-05
Pr-144	1.89E-05					1.89E-05	1.89E-05
W-187	1.89E-04					1.89E-04	1.89E-04
Np-239	1.19E-02					1.19E-02	1.19E-02

The adjustment to the gaseous effluent source term will result in changes to annual doses due to gaseous releases. The updated doses are summarized in Tables RAI 18-2 through RAI 18-6. These changes will have an impact on several tables in the SSAR. The tables in the SSAR that will be amended as a result of the update to the gaseous radionuclides source term are listed below:

- SSAR Table 1.3-7, *Single Unit Composite Average Annual Normal Gaseous Release,*
- SSAR Table 11.3-5, *Gaseous Release Source Terms,*
- SSAR Table 11.3-7, *Doses to Maximally Exposed Individual from Gaseous Effluent Releases,*
- SSAR Table 11.3-8, *Comparison of Maximally Exposed Individual Doses with 10 CFR 50, Appendix I Criteria,*
- SSAR Table 11.3-9, *Comparison of Maximally Exposed Individual Doses with 40 CFR 190 Criteria,*
- SSAR Table 11.3-10, *Collective Annual Doses from a New Unit to Population within 50 Miles, by Pathway,* and
- SSAR Table 11.3-11, *Collective Annual Total Body Doses from New Units to Population within 50 Miles, by Group.*

Information provided in Table RAI 18-1 will be used to update SSAR Tables 1.3-7 and 11.3-5. Information provided in Tables RAI 18-2, RAI 18-3, RAI 18-4, RAI 18-5, and RAI 18-6 will be used to update SSAR Tables 11.3-7, 11.3-8, 11.3-9, 11.3-10, and 11.3-11 respectively.

Note that there are also tables in the Environmental Report (ER), as submitted in Part 3 of the PSEG Site ESP Application, Revision 0, that will be changed as a result of the resolution to this RAI. The affected tables in the ER are:

- ER Table 5.4-1, *Gaseous Release Source Terms,*
- ER Table 5.4-8, *Doses to MEIs from Gaseous Effluent Releases,*
- ER Table 5.4-9, *Comparison of Annual Maximally Exposed Individual Doses with 10 CFR 50, Appendix I Criteria,*
- ER Table 5.4-10, *Comparison of Maximally Exposed Individual Doses with 40 CFR 190 Criteria,*
- ER Table 5.4-12,*Collective Doses from a New Unit to Population within 50 Miles, Gaseous Pathway, and*
- ER Table 5.4-13, *Doses to Biota from Liquid and Gaseous Effluents (per New Unit).*

The revised ER tables will be submitted in a future revision to the ER.

Table RAI 18-2 (Sheet 1 of 2)
Doses to Maximally Exposed Individual from Gaseous Effluent Releases

MEI Location	Pathway	MEI	Dose per Unit (mrem/yr)			
			T. Body	GI-Tract	Bone	Liver
Nearest Meat Animal	Meat	Adult	4.90E-03	6.26E-03	2.26E-02	5.03E-03
		Teen	4.03E-03	4.78E-03	1.90E-02	4.17E-03
		Child	7.36E-03	7.69E-03	3.57E-02	7.56E-03
Nearest Milk-Producing animals (Goat)	Milk	Adult	9.93E-03	6.41E-03	2.92E-02	1.16E-02
		Teen	1.45E-02	1.10E-02	5.32E-02	2.02E-02
		Child	2.83E-02	2.47E-02	1.30E-01	4.08E-02
		Infant	5.44E-02	4.99E-02	2.47E-01	8.24E-02
Nearest Residence	Ground Plane		1.53E-02	1.53E-02	1.53E-02	1.53E-02
	Plume		9.52E-02	9.52E-02	9.52E-02	9.52E-02
	Inhalation	Adult	2.14E-03	2.35E-03	5.03E-04	2.44E-03
		Teen	2.20E-03	2.43E-03	6.52E-04	2.64E-03
		Child	2.00E-03	2.03E-03	8.35E-04	2.38E-03
		Infant	1.18E-03	1.15E-03	5.33E-04	1.58E-03
Nearest Vegetable Garden	Vegetable	Adult	1.55E-02	1.56E-02	7.30E-02	1.61E-02
		Teen	2.32E-02	2.35E-02	1.15E-01	2.50E-02
		Child	5.21E-02	5.11E-02	2.72E-01	5.56E-02
Nearest Site Boundary	Ground Plane		6.55E-01	6.55E-01	6.55E-01	6.55E-01
	Plume		3.97E+00	3.97E+00	3.97E+00	3.97E+00
	Inhalation	Adult	9.03E-02	1.01E-01	2.41E-02	1.04E-01
		Teen	9.31E-02	1.04E-01	3.11E-02	1.13E-01
		Child	8.44E-02	8.62E-02	3.97E-02	1.02E-01
		Infant	4.97E-02	4.85E-02	2.51E-02	6.83E-02

Table RAI 18-2 (Sheet 2 of 2)
Doses to Maximally Exposed Individual from Gaseous Effluent Releases

MEI Location	Pathway	MEI	Dose per Unit (mrem/yr)			
			Kidney	Thyroid	Lung	Skin
Nearest Meat Animal	Meat	Adult	4.87E-03	1.17E-02	4.69E-03	4.66E-03
		Teen	4.04E-03	9.04E-03	3.91E-03	3.88E-03
		Child	7.39E-03	1.50E-02	7.24E-03	7.20E-03
Nearest Milk-Producing animals (Goat)	Milk	Adult	8.93E-03	2.53E-01	6.45E-03	5.92E-03
		Teen	1.56E-02	4.02E-01	1.14E-02	1.03E-02
		Child	3.29E-02	8.05E-01	2.58E-02	2.42E-02
		Infant	6.35E-02	1.94E+00	5.21E-02	4.92E-02
Nearest Residence	Ground Plane		1.53E-02	1.53E-02	1.53E-02	1.80E-02
	Plume		9.52E-02	9.52E-02	9.79E-02	2.92E-01
	Inhalation	Adult	2.68E-03	5.78E-02	3.08E-03	1.91E-03
		Teen	2.98E-03	7.51E-02	3.71E-03	1.93E-03
		Child	2.67E-03	9.23E-02	3.19E-03	1.70E-03
		Infant	1.60E-03	8.36E-02	2.10E-03	9.80E-04
Nearest Vegetable Garden	Vegetable	Adult	1.51E-02	1.77E-01	1.37E-02	1.35E-02
		Teen	2.35E-02	2.25E-01	2.15E-02	2.11E-02
		Child	5.31E-02	4.29E-01	4.99E-02	4.94E-02
Nearest Site Boundary	Ground Plane		6.55E-01	6.55E-01	6.55E-01	7.69E-01
	Plume		3.97E+00	3.97E+00	4.08E+00	1.22E+01
	Inhalation	Adult	1.15E-01	2.61E+00	1.38E-01	7.97E-02
		Teen	1.28E-01	3.40E+00	1.69E-01	8.04E-02
		Child	1.15E-01	4.18E+00	1.45E-01	7.10E-02
		Infant	6.93E-02	3.79E+00	9.68E-02	4.09E-02

Table RAI 18-3
Comparison of Maximally Exposed Individual Doses with 10 CFR 50, Appendix I Criteria

10 CFR Part 50, Appendix I, Section	Type of Dose	Limiting Value	Calculated Value
II.B.1	Gamma-Air (mrad/yr)[1]	10	6.10
	Beta-Air (mrad/yr)[1]	20	11.0
II.B.2	External Total Body[1,2] (mrem/yr)	5	4.62
	External Skin[1] (mrem/yr)	15	12.2
II.C	Limiting Organ[3] - Child Thyroid (mrem/yr)	15	7.22

Notes:
1. Doses at site boundary.
2. Exposure from plume and ground plane pathways at site boundary (3.97E+00+6.55E-01 =4.62E+00 mrem/yr).
3. Exposure from ground plane (6.55E-01 mrem/yr) and inhalation (4.18E+00 mrem/yr) pathways at site boundary. To obtain conservative results, the limiting organ dose also includes maxima contributions from ingestion pathways (any age group) at the locations of nearest vegetable garden (vegetables, 4.29E-01 mrem/yr), nearest meat animal (meat, 1.50E-02 mrem/yr), and nearest milk animal (goat milk, 1.94E-00 mrem/yr).

Table RAI 18-4
Comparison of Maximally Exposed Individual Doses with 40 CFR 190 Criteria

	One Unit (New Plant)		Two Units (New Plant)			SGS and HCGS[4]	PSEG Site (New Plant (two units), SGS, HCGS)	40 CFR Part 190/ Limiting Value	Fraction of Limiting Value
	Gaseous	Liquid	Gaseous	Liquid	Total	Total	Total		
	(mrem/year)	(mrem/year)	(mrem/year)	(mrem/year)	(mrem/year)	(mrem/year)	(mrem/year)	(mrem/year)	
Total Body[1]	2.00E-01	1.57E-02	4.00E-01	3.14E-02	4.31E-01	5.36E-03	4.36E-01	25	1.75E-02
Thyroid[2]	2.13E+00	4.15E-02	4.26E+00	8.30E-02	4.34E+00	2.04E-02	4.36E+00	75	5.81E-02
Other Organ - Bone[3]	5.49E-01	1.77E-01	1.10E+00	3.54E-01	1.45E+00	2.04E-02	1.47E+00	25	5.88E-02

Notes:

1. The gaseous effluent MEI for the total body dose is a child and the liquid effluent MEI for the total body dose is an adult. To remain conservative, these two are added to obtain the overall MEI total body dose.
2. The gaseous effluent MEI for the thyroid dose is an infant and the liquid effluent MEI for the thyroid dose is an adult. To remain conservative, these two are added to obtain the overall MEI thyroid dose.
3. The limiting other organ for the gaseous effluent is the bone (child) and for the liquid effluent it is the GI-LLI (adult). To remain conservative, the doses for these two are added to obtain the overall limiting dose for the bone (child).
4. The thyroid dose (2.04E-02 mrem/year) is greater than the total body or any other organ dose (5.36E-03 mrem/year). To remain conservative 2.04E-02 mrem/year is used for the limiting other organ dose (bone).

Table RAI 18-5
Collective Annual Doses from a New Unit to Population within 50 Miles, by Pathway

Pathway	Dose (person-rem)	
	Total Body	Thyroid
Meat	3.61E+00	6.86E+00
Milk (cow)	3.62E+00	6.06E+01
Ground Plane	1.04E+00	1.04E+00
Plume	3.89E+00	3.89E+00
Inhalation	4.57E-01	1.04E+01
Vegetable	7.76E+00	8.12E+00
Total	2.04E+01	9.10E+01

Table RAI 18-6
Collective Annual Total Body Doses from New Units to Population within 50 Miles, by Group

Group	Dose (person-rem)	
	Single Unit	Dual Unit
Noble Gases	3.89E+00	7.78E+00
Iodines & Particulates	2.01E+00	4.02E+00
C-14 & H-3	1.44E+01	2.88E+01
Total	2.03E+01	4.06E+01

Associated PSEG Site ESP Application Revisions:

SSAR Subsection 11.3.3.2 and SSAR Tables 1.3-7, 11.3-5, 11.3-7, 11.3-8, 11.3-9, 11.3-10, and 11.3-11 will be updated as specified in Enclosure 2 of this document.

ER Tables 5.4-1, 5.4-8, 5.4-9, 5.4-10, 5.4-12, and 5.4-13 will be revised in a future revision to the ER.

PSEG Letter ND-2011-0018, dated April 12, 2011

ENCLOSURE 2

Proposed Revisions

Proposed Revisions Part 2 – Site Safety Analysis Report (SSAR) Subsection 11.3.3
Gaseous Waste Management System

Marked-up Pages

Table 1.3-7 (2 pages)
11.3-2
Table 11.3-5 (3 pages)
Table 11.3-7 (2 pages)
Table 11.3-8 (1 page)
Table 11.3-9 (1 page)
Table 11.3-10 (1 page)
Table 11.3-11 (1 page)

Table 1.3-7 (Sheet 1 of 2)
Single Unit Composite Average Annual Normal Gaseous Release

Isotope	ABWR Release (Ci/yr)	AP1000 Release (Ci/yr)	U.S. EPR Release (Ci/yr)	US-APWR Release (Ci/yr)	Bounding Value Release (Ci/yr)
H-3	7.30E+01	3.50E+02	1.80E+02	1.80E+02	3.50E+02
C-14	9.19E+00	7.30E+00	~~7.30E+00~~	7.30E+00	~~9.19E+00~~
Na-24	4.05E-03				4.05E-03
P-32	9.19E-04				9.19E-04
Ar-41	6.76E+00	3.40E+01	3.40E+01	3.40E+01	1.89E+01
Cr-51	3.51E-02	6.10E-04	9.70E-05	6.10E-04	
Mn-54	5.41E-03	4.30E-04	5.70E-05	4.30E-04	5.41E-03
Fe-55	6.49E-03				6.49E-03
Mn-56	3.51E-03				3.51E-03
Co-57		8.20E-06	8.20E-06		8.20E-06
Co-58	2.41E-03	2.30E-02	4.80E-04	2.30E-02	2.30E-02
Fe-59	8.11E-04	7.90E-05	2.80E-05	7.90E-05	8.11E-04
Co-60	1.30E-02	8.70E-03	1.10E-04	8.80E-03	1.30E-02
Ni-63	6.49E-06				[illegible]
Cu-64	1.00E-02		2.80E+03		4.10E+03
Zn-65	1.11E-02				1.11E-02
Kr-83m	8.38E-04				8.38E-04
Kr-85	5.68E+02	4.10E+03	~~3.40E+04~~	1.40E+03	~~3.40E+04~~
Kr-85m	2.11E+01	3.60E+01	1.50E+02	0.00E+00	1.50E+02
Kr-87	2.51E+01	1.50E+01	5.30E+01	0.00E+00	5.30E+01
Kr-88	3.78E+01	4.60E+01	1.80E+02	0.00E+00	1.80E+02
Kr-89	2.41E+02				2.41E+02
Rb-89	4.32E-05				4.32E-05
Sr-89	5.68E-03	3.00E-03	1.60E-04	3.00E-03	5.68E-03
Kr-90	3.24E-04				3.24E-04
Sr-90	7.03E-05	1.20E-03	6.30E-05	1.20E-03	1.20E-03
Y-90	4.59E-05				4.59E-05
Sr-91	1.00E-03				1.00E-03
Y-91	2.41E-04				2.41E-04
Sr-92	7.84E-04				7.84E-04
Y-92	6.22E-04				6.22E-04
Y-93	1.11E-03				1.11E-03
Nb-95	8.38E-03	2.50E-03	4.20E-05	2.50E-03	8.38E-03
Zr-95	1.59E-03	1.00E-03	1.00E-05	1.00E-03	1.59E-03
Mo-99	5.95E-02				5.95E-02
Tc-99m	2.97E-04				2.97E-04

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Table 1.3-7 (Sheet 2 of 2)
Single Unit Composite Average Annual Normal Gaseous Release

Isotope	ABWR Release (Ci/yr)	AP1000 Release (Ci/yr)	U.S. EPR Release (Ci/yr)	US-APWR Release (Ci/yr)	Bounding Value Release (Ci/yr)
Ru-103	3.51E-03	8.00E-05	1.70E-05	8.00E-05	3.51E-03
Rh-103m	1.11E-04				1.11E-04
Rh-106	1.89E-05				1.89E-05
Ru-106	1.89E-05	7.80E-05	7.80E-07	7.80E-05	7.80E-05
Ag-110m	2.00E-06				2.00E-06
Sb-124	1.81E-04				1.81E-04
Sb-125		6.10E-05	6.10E-07	2.70E+03	6.10E-05
Te-129m	2.19E-04				2.19E-04
I-131	2.59E-01	1.20E-01	6.80E-03	4.20E-03	2.59E-01
Te-131m	7.57E-05				7.57E-05
Xe-131m	5.14E+01	1.80E+03	~~3.50E+03~~	2.60E+02	~~3.50E+03~~
I-132	2.19E+00	4.00E-01			2.19E+00
RAI No. 18, Question 11.03-3	1.89E-05				1.89E-05
	1.70E+00		3.20E-02	6.40E-02	1.70E+00
Xe-133	2.41E+03	4.60E+03	~~8.60E+03~~	0.00E+00	~~8.60E+03~~
Xe-133m	8.65E-02	8.70E+01	~~1.80E+02~~	2.00E+00	~~1.80E+02~~
Cs-134	6.22E-03	2.30E-03	4.80E-05	2.30E-03	6.22E-03
I-134	3.78E+00				3.78E+00
I-135	2.41E+00			7.20E+03	2.41E+00
Xe-135	4.59E+02	3.30E+02	1.20E+03	1.70E+02	1.20E+03
Xe-135m	4.05E+02	7.00E+00	1.40E+01		4.05E+02
Cs-136	5.95E-04	8.50E-05	3.30E-05	8.50E-05	5.95E-04
Cs-137	9.46E-03	3.60E-03	9.00E-05	3.60E-03	9.46E-03
Xe-137	5.14E+02		0.00E+00	4.00E+00	5.14E+02
Ba-137m				3.60E-03	3.60E-03
Cs-138	1.70E-04				1.70E-04
Xe-138	4.32E+02	6.00E+00	1.20E+01	1.00E+00	4.32E+02
Xe-139	4.05E-04				4.05E-04
Ba-140	2.70E-02	4.20E-04	4.20E-06	4.20E-04	2.70E-02
La-140	1.81E-03				1.81E-03
Ce-141	9.19E-03	4.20E-05	1.45E+04	4.20E-05	1.74E+04
Ce-144	1.89E-05		1.47E+04		1.78E+04
Pr-144	1.89E-05				1.89E-05
W-187	1.89E-04				1.89E-04
Np-239	1.19E-02				1.19E-02
Total w/o H-3	5.19E+03	1.11E+04	~~4.79E+04~~	1.71E+03	~~4.95E+04~~
Total w/ H-3	**5.26E+03**	**1.14E+04**	~~**4.81E+04**~~	**1.89E+03**	~~**4.99E+04**~~

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CFR 20, Appendix B, Table 2, Column 1, they must be converted to concentrations. To do this, the release rates are multiplied by the maximum χ/Q value at the site boundary (as found in Table 11.3-1), and then converted to units of µCi/ml. The effluent concentrations are well below the limits specified in 10 CFR 20, Appendix B, Table 2, Column 1, as shown in Table 11.3-6. Furthermore, the sum of the concentration fractions of the ECLs is less than one. Site concentrations given in Table 11.3-6 include releases from SGS, HCGS, and a new dual unit plant.

11.3.3.2 Gaseous Pathway Doses

The GASPAR II code is used to calculate doses to the MEI for each pathway at various locations. The results of this calculation are shown in Table 11.3-7. These results are based on the inputs found in Tables 11.3-1 to 11.3-5. Compliance with 10 CFR 50, Appendix I is shown in ~~Table 11.3-8 on a per unit basis~~. ~~The SGS ODCM defines a member of the public as someone who works on site 2000 hr/yr (Reference 11.3-3-2).~~ Gaseous effluent doses are calculated at the site-boundary~~, and the 2000 hr/yr occupancy (a factor of 0.228) is applied.~~ Compliance with 40 CFR 190 (including both liquid and gaseous dose contributions) is shown in Table 11.3-9. Comparison to 40 CFR 190 is on a site-wide basis, including all SGS, HCGS, and all potential units at the new plant. Doses from inhalation, ground plane, and plume exposure are considered at the nearest residence. Since 40 CFR 190 is more conservative than 10 CFR 20.1301, compliance with 40 CFR 190 demonstrates compliance with 10 CFR 20.1301. The doses from the new units are much higher than from the existing units because doses from the existing units are based on actual measurements, compared to the conservatively calculated, bounding PPE theoretical doses from the new units. Collective doses from new units to the population within 50 mi. of the PSEG Site are shown in Table 11.3-10 and Table 11.3-11.

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References

assuming continuous occupancy for the duration of a year

11.3.3-1 PSEG Nuclear LLC, "2008 Annual Radioactive Effluent Release Report for the Salem and Hope Creek Generating Stations," 2009.

~~11.3.3-2 "Offsite Dose Calculation Manual for PSEG Nuclear LLC – Salem Generating Station," Revision 21, 2008.~~

Table 11.3-5 (Sheet 1 of 3)
Gaseous Release Source Terms

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Isotope	New Unit(s) Single Unit[a] (Ci/yr)	New Unit(s) Dual Unit (Ci/yr)	Existing Site[b] (Ci/yr)	Total (Ci/yr)
Ag-110m	2.00E-06	4.00E-06	-	4.00E-06
Ar-41	3.40E+01	6.80E+01	5.39E-01	6.85E+01
Ba-139	1.89E+01	3.78E+01	3.44E+00	3.44E+00
Ba-140	2.70E-02	5.41E-02	2.56E-03	5.66E-02
Br-82	-	-	5.27E-06	5.27E-06
C-14	~~9.19E+00~~	~~1.84E+01~~	-	~~1.84E+01~~
Ce-141	9.19E-03	1.84E-02	7.11E-05	1.84E-02
Ce-144	1.89E-05	3.78E-05	-	3.78E-05
Co-57	8.20E-06	1.64E-05	-	1.64E-05
Co-58	2.30E-02	4.60E-02	1.76E-04	4.62E-02
Co-60	1.30E-02	2.59E-02	8.30E-05	2.60E-02
Cr-51	3.51E-02	7.03E-02	-	7.03E-02
Cs-134	6.22E-03	1.24E-02	-	1.24E-02
Cs-136	5.95E-04	1.19E-03	-	1.19E-03
Cs-137	9.46E-03	1.89E-02	-	1.89E-02
Cs-138	1.70E-04	3.41E-04	-	3.41E-04
Cu-64	1.00E-02	2.00E-02	-	2.00E-02
Fe-55	6.49E-03	1.30E-02	-	1.30E-02
Fe-59	8.11E-04	1.62E-03	-	1.62E-03
H-3	3.5E+02	7.0E+02	2.79E+02	9.79E+02
I-131	2.60E-01	5.19E-01	7.26E-03	5.26E-01
I-132	2.19E+00	4.38E+00	-	4.38E+00
I-133	1.70E+00	3.41E+00	7.53E-02	3.48E+00
I-134	3.78E+00	7.57E+00	-	7.57E+00

Table 11.3-5 (Sheet 2 of 3)
Gaseous Release Source Terms

Isotope	New Unit(s) Single Unit[a] (Ci/yr)	New Unit(s) Dual Unit (Ci/yr)	Existing Site[b] (Ci/yr)	Total (Ci/yr)
I-135	2.41E+00	4.81E+00	-	4.81E+00
Kr-83m	8.38E-04	1.68E-03	-	1.68E-03
Kr-85	~~3.40E+04~~	~~6.80E+04~~	-	~~6.80E+04~~
Kr-85m	1.50E+02	3.00E+02	1.14E-03	3.00E+02
Kr-87	5.30E+01	1.06E+02	-	1.06E+02
Kr-88	4.10E+03	8.20E+03	-	3.60E+02
Kr-89	2.41E+02	4.81E+02	-	4.81E+02
La-140	1.81E-03	3.62E-03	1.01E-03	4.64E-03
Mn-54	5.41E-03	1.08E-02	-	1.08E-02
[illegible]	3.51E-03	7.03E-03	-	7.03E-03
Mo-99	5.95E-02	1.19E-01	1.08E-05	1.19E-01
Na-24	4.05E-03	8.11E-03	-	8.11E-03
Nb-95	8.38E-03	1.68E-02	-	1.68E-02
Ni-63	6.49E-06	1.30E-05	-	1.30E-05
Np-239	1.19E-02	2.38E-02	-	2.38E-02
P-32	9.19E-04	1.84E-03	-	1.84E-03
Pr-144	1.89E-05	3.78E-05	-	3.78E-05
Rb-89	4.32E-05	8.65E-05	-	8.65E-05
Ru-103	3.51E-03	7.03E-03	-	7.03E-03
Ru-106	7.80E-05	1.56E-04	-	1.56E-04
Sb-124	1.81E-04	3.62E-04	-	3.62E-04
Sb-125	6.10E-05	1.22E-04	-	1.22E-04
Sr-89	5.68E-03	1.14E-02	-	1.14E-02
Sr-90	1.20E-03	2.40E-03	-	2.40E-03

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Table 11.3-5 (Sheet 3 of 3)
Gaseous Release Source Terms

Isotope	New Unit(s) Single Unit[a] (Ci/yr)	New Unit(s) Dual Unit (Ci/yr)	Existing Site[b] (Ci/yr)	Total (Ci/yr)
Sr-91	1.00E-03	2.00E-03	1.72E-02	1.92E-02
Sr-92	7.84E-04	1.57E-03	4.10E-02	4.26E-02
Tc-99m	2.97E-04	5.95E-04	1.09E-05	6.06E-04
Te-129m	2.19E-04	4.38E-04	-	4.38E-04
Te-131m	7.57E-05	1.51E-04	1.86E-05	1.70E-04
Te-132	1.89E-05	3.78E-05	-	3.78E-05
W-187	1.89E-04	3.78E-04	-	3.78E-04
Xe-131m	~~3.50E+03~~	~~7.00E+03~~	2.68E-04	~~7.00E+03~~
Xe-133	~~8.60E+03~~	~~1.72E+04~~	9.99E-01	~~1.72E+04~~
Xe-133m	~~1.80E+02~~	~~3.60E+02~~	1.19E-02	~~3.60E+02~~
Xe-135	1.20E+03	2.40E+03	1.15E+00	2.40E+03
Xe-135m	4.05E+02	8.11E+02	-	8.11E+02
Xe-137	5.14E+02	1.03E+03	-	1.03E+03
Xe-138	2.70E+03	5.40E+03	-	5.40E+03
Y-90	7.20E+03	1.44E+04	-	1.44E+04
Y-91	1.70E+02	3.40E+02	-	3.40E+02
	2.41E-04	4.81E-04	-	4.81E-04
	-	-	2.40E+00	2.40E+00
	6.22E-04	1.24E-03	-	1.24E-03
Y-93	1.11E-03	2.22E-03	-	2.22E-03
Zn-65	[illegible]	[illegible]	-	[illegible]
Zr-95	1.78E+04	3.56E+04	-	3.59E+04
Total	~~4.99E+04~~	~~9.97E+04~~	2.87E+02	~~1.00E+05~~

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a) Single unit is the PPE value from SSAR Table 1.3-7, and is included for single unit analysis throughout the section.
b) Existing site consists of one BWR (HCGS) and two PWRs (SGS).

Table 11.3-7 (Sheet 1 of 2)
Doses to Maximally Exposed Individual from Gaseous Effluent Releases

MEI Location	Pathway	MEI	Dose per Unit (mrem/yr)			
			T. Body	GI-Tract	Bone	Liver
Nearest Meat Animal	Meat	Adult	~~2.63E-03~~	~~3.99E-03~~	~~1.12E-02~~	~~2.75E-03~~
		Teen	~~2.10E-03~~	~~2.86E-03~~	~~9.42E-03~~	~~2.25E-03~~
		Child	~~3.75E-03~~	~~4.07E-03~~	~~1.76E-02~~	~~3.95E-03~~
Nearest Milk-Producing animals (Goat)	Milk	Adult	~~7.45E-03~~	~~3.92E-03~~	~~1.68E-02~~	~~9.11E-03~~
		Teen	~~9.96E-03~~	~~6.40E-03~~	~~3.03E-02~~	~~1.56E-02~~
		Child	~~1.70E-02~~	~~1.34E-02~~	~~7.34E-02~~	~~2.96E-02~~
		Infant	~~3.08E-02~~	~~2.64E-02~~	~~1.37E-01~~	~~5.88E-02~~
Nearest Residence	Ground Plane		~~1.53E-02~~	~~1.53E-02~~	~~1.53E-02~~	~~1.53E-02~~
	Plume		~~1.00E-01~~	~~1.00E-01~~	~~1.00E-01~~	~~1.00E-01~~
	Inhalation	Adult	~~2.14E-03~~	~~2.35E-03~~	~~5.03E-04~~	~~2.44E-03~~
		Teen	~~2.20E-03~~	~~2.43E-03~~	~~6.52E-04~~	~~2.64E-03~~
		Child	~~2.00E-03~~	~~2.03E-03~~	~~8.35E-04~~	~~2.38E-03~~
		Infant	~~1.18E-03~~	~~1.15E-03~~	~~5.33E-04~~	~~1.58E-03~~
Nearest Vegetable Garden	Vegetable	Adult	~~9.37E-03~~	~~9.48E-03~~	~~4.23E-02~~	~~9.92E-03~~
		Teen	~~1.33E-02~~	~~1.35E-02~~	~~6.54E-02~~	~~1.50E-02~~
		Child	~~2.82E-02~~	~~2.71E-02~~	~~1.52E-01~~	~~3.16E-02~~
Nearest Site Boundary	Ground Plane		~~6.55E-01~~	~~6.55E-01~~	~~6.55E-01~~	~~6.55E-01~~
	Plume		~~4.18E+00~~	~~4.18E+00~~	~~4.18E+00~~	~~4.18E+00~~
	Inhalation	Adult	~~9.03E-02~~	~~1.01E-01~~	~~2.41E-02~~	~~1.04E-01~~
		Teen	~~9.31E-02~~	~~1.04E-01~~	~~3.11E-02~~	~~1.13E-01~~
		Child	~~8.44E-02~~	~~8.62E-02~~	~~3.97E-02~~	~~1.02E-01~~
		Infant	~~4.97E-02~~	~~4.85E-02~~	~~2.51E-02~~	~~6.83E-02~~

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Table 11.3-7 (Sheet 2 of 2)
Doses to Maximally Exposed Individual from Gaseous Effluent Releases

MEI Location	Pathway	MEI	Dose per Unit (mrem/yr)			
			Kidney	Thyroid	Lung	Skin
Nearest Meat Animal	Meat	Adult	~~2.59E-03~~	~~9.50E-03~~	~~2.41E-03~~	~~2.38E-03~~
		Teen	~~2.12E-03~~	~~7.12E-03~~	~~1.99E-03~~	~~1.96E-03~~
		Child	~~3.78E-03~~	~~1.14E-02~~	~~3.62E-03~~	~~3.59E-03~~
Nearest Milk-Producing animals (Goat)	Milk	Adult	~~6.45E-03~~	~~2.50E-01~~	~~3.97E-03~~	~~3.44E-03~~
		Teen	~~1.10E-02~~	~~3.97E-01~~	~~6.82E-03~~	~~5.75E-03~~
		Child	~~2.16E-02~~	~~7.93E-01~~	~~1.46E-02~~	~~1.30E-02~~
		Infant	~~3.99E-02~~	~~1.92E+00~~	~~2.85E-02~~	~~2.57E-02~~
Nearest Residence	Ground Plane		~~1.53E-02~~	~~1.53E-02~~	~~1.53E-02~~	~~1.80E-02~~
	Plume		~~1.00E-01~~	~~1.00E-01~~	~~1.07E-01~~	~~6.10E-01~~
	Inhalation	Adult	~~2.68E-03~~	~~5.78E-02~~	~~3.08E-03~~	~~1.91E-03~~
		Teen	~~2.98E-03~~	~~7.51E-02~~	~~3.71E-03~~	~~1.93E-03~~
		Child	~~2.67E-03~~	~~9.23E-02~~	~~3.19E-03~~	~~1.70E-03~~
		Infant	~~1.60E-03~~	~~8.36E-02~~	~~2.10E-03~~	~~9.80E-04~~
Nearest Vegetable Garden	Vegetable	Adult	~~9.00E-03~~	~~1.71E-01~~	~~7.59E-03~~	~~7.39E-03~~
		Teen	~~1.35E-02~~	~~2.15E-01~~	~~1.16E-02~~	~~1.12E-02~~
		Child	~~2.91E-02~~	~~4.06E-01~~	~~2.60E-02~~	~~2.55E-02~~
Nearest Site Boundary	Ground Plane		~~6.55E-01~~	~~6.55E-01~~	~~6.55E-01~~	~~7.69E-01~~
	Plume		~~4.18E+00~~	~~4.18E+00~~	~~4.47E+00~~	~~2.54E+01~~
	Inhalation	Adult	~~1.15E-01~~	~~2.61E+00~~	~~1.38E-01~~	~~7.97E-02~~
		Teen	~~1.28E-01~~	~~3.40E+00~~	~~1.69E-01~~	~~8.04E-02~~
		Child	~~1.15E-01~~	~~4.18E+00~~	~~1.45E-01~~	~~7.10E-02~~
		Infant	~~6.93E-02~~	~~3.79E+00~~	~~9.68E-02~~	~~4.09E-02~~

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MEI Location	Pathway	MEI	Dose per Unit (mrem/yr)			
			T. Body	GI-Tract	Bone	Liver
Nearest Meat Animal	Meat	Adult	4.90E-03	6.26E-03	2.26E-02	5.03E-03
		Teen	4.03E-03	4.78E-03	1.90E-02	4.17E-03
		Child	7.36E-03	7.69E-03	3.57E-02	7.56E-03
Nearest Milk-Producing animals (Goat)	Milk	Adult	9.93E-03	6.41E-03	2.92E-02	1.16E-02
		Teen	1.45E-02	1.10E-02	5.32E-02	2.02E-02
		Child	2.83E-02	2.47E-02	1.30E-01	4.08E-02
		Infant	5.44E-02	4.99E-02	2.47E-01	8.24E-02
Nearest Residence	Ground Plane		1.53E-02	1.53E-02	1.53E-02	1.53E-02
	Plume		9.52E-02	9.52E-02	9.52E-02	9.52E-02
	Inhalation	Adult	2.14E-03	2.35E-03	5.03E-04	2.44E-03
		Teen	2.20E-03	2.43E-03	6.52E-04	2.64E-03
		Child	2.00E-03	2.03E-03	8.35E-04	2.38E-03
		Infant	1.18E-03	1.15E-03	5.33E-04	1.58E-03
Nearest Vegetable Garden	Vegetable	Adult	1.55E-02	1.56E-02	7.30E-02	1.61E-02
		Teen	2.32E-02	2.35E-02	1.15E-01	2.50E-02
		Child	5.21E-02	5.11E-02	2.72E-01	5.56E-02
Nearest Site Boundary	Ground Plane		6.55E-01	6.55E-01	6.55E-01	6.55E-01
	Plume		3.97E+00	3.97E+00	3.97E+00	3.97E+00
	Inhalation	Adult	9.03E-02	1.01E-01	2.41E-02	1.04E-01
		Teen	9.31E-02	1.04E-01	3.11E-02	1.13E-01
		Child	8.44E-02	8.62E-02	3.97E-02	1.02E-01
		Infant	4.97E-02	4.85E-02	2.51E-02	6.83E-02

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MEI Location	Pathway	MEI	Dose per Unit (mrem/yr)			
			Kidney	Thyroid	Lung	Skin
Nearest Meat Animal	Meat	Adult	4.87E-03	1.17E-02	4.69E-03	4.66E-03
		Teen	4.04E-03	9.04E-03	3.91E-03	3.88E-03
		Child	7.39E-03	1.50E-02	7.24E-03	7.20E-03
Nearest Milk-Producing animals (Goat)	Milk	Adult	8.93E-03	2.53E-01	6.45E-03	5.92E-03
		Teen	1.56E-02	4.02E-01	1.14E-02	1.03E-02
		Child	3.29E-02	8.05E-01	2.58E-02	2.42E-02
		Infant	6.35E-02	1.94E+00	5.21E-02	4.92E-02
Nearest Residence	Ground Plane		1.53E-02	1.53E-02	1.53E-02	1.80E-02
	Plume		9.52E-02	9.52E-02	9.79E-02	2.92E-01
	Inhalation	Adult	2.68E-03	5.78E-02	3.08E-03	1.91E-03
		Teen	2.98E-03	7.51E-02	3.71E-03	1.93E-03
		Child	2.67E-03	9.23E-02	3.19E-03	1.70E-03
		Infant	1.60E-03	8.36E-02	2.10E-03	9.80E-04
Nearest Vegetable Garden	Vegetable	Adult	1.51E-02	1.77E-01	1.37E-02	1.35E-02
		Teen	2.35E-02	2.25E-01	2.15E-02	2.11E-02
		Child	5.31E-02	4.29E-01	4.99E-02	4.94E-02
Nearest Site Boundary	Ground Plane		6.55E-01	6.55E-01	6.55E-01	7.69E-01
	Plume		3.97E+00	3.97E+00	4.08E+00	1.22E+01
	Inhalation	Adult	1.15E-01	2.61E+00	1.38E-01	7.97E-02
		Teen	1.28E-01	3.40E+00	1.69E-01	8.04E-02
		Child	1.15E-01	4.18E+00	1.45E-01	7.10E-02
		Infant	6.93E-02	3.79E+00	9.68E-02	4.09E-02

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Table 11.3-8
Comparison of Maximally Exposed Individual Doses with 10 CFR 50, Appendix I Criteria

Dose Type	Annual Dose[a]	Limit
Gamma Air (mrad/yr)	~~1.47~~ 6.10	10
Beta Air (mrad/yr)	~~6.89~~ 11.0	20
Total Body (mrem/yr)	~~1.10~~ 4.62	5
Skin (mrem/yr)	~~5.79~~ 12.2	15
Limiting Organ – Child Thyroid (mrem/yr)	~~1.64~~ 7.22	15

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a) ~~Annual doses are based on the member of the public that works on site 2000 hr/yr. This approach is taken by the SGS and HCGS ODCMs.~~

Annual doses are based on the member of the public that is situated on the nearest site boundary for the entire duration of a year.

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Table 11.3-9
Comparison of Maximally Exposed Individual Doses with 40 CFR 190 Criteria

Dose Type	New Unit(s)[g] Gaseous Single Unit	New Unit(s)[g] Gaseous Dual Unit	New Unit(s)[g] Liquid Dual Unit[e]	Existing Units[g]	Total[f]	Limit
Total Body (mrem/yr)	~~1.66E-01~~[a]	~~3.32E-01~~	~~2.10E-02~~	5.36E-03	~~3.58E-01~~	25
	2.00E-01[a]	4.00E-01	3.14E-02		4.36E-01	
Thyroid (mrem/yr)	~~2.12E+00~~[b]	~~4.24E+00~~	~~4.02E-02~~	2.04E-02	~~4.30E+00~~	75
	2.13E+00[b]	4.26E+00	8.30E-02		4.36E+00	
Other Organ – Bone (mrem/yr)	~~3.59E-01~~[c]	~~7.18E-01~~	~~2.38E-01~~	2.04E-02[d]	~~9.76E-01~~	25
	5.49E-01[c]	1.10E+00	3.54E-01		1.47E+00	

a) Gaseous MEI for this case is a child. Value is the sum of child total body doses from meat, milk, vegetable, and inhalation exposure plus the ground plane and plume exposure from Table 11.3-7.
b) Gaseous MEI for this case is an infant. Value is the sum of infant thyroid doses from milk and inhalation exposure plus the ground plane and plume exposure from Table 11.3-7.
c) Gaseous MEI for this case is a child. Value is the sum of child bone doses from meat, milk, vegetable, and inhalation exposure plus the ground plane and plume exposure from Table 11.3-7.
d) Doses to other organs are less than the dose to the thyroid, so the thyroid dose is used.
e) Liquid dose contributions are obtained from Table 11.2-7.
f) Total doses are the sum of the values from the gaseous dual unit, liquid dual unit, and existing units.
g) The doses from the new units are much higher than from the existing units because doses from the existing units are based on actual measurements, compared to the conservatively calculated, bounding PPE theoretical doses from the new unit(s).

Table 11.3-10
Collective Annual Doses from a New Unit to Population within 50 Miles, by Pathway

Pathway	Dose (person-rem) Total Body		Dose (person-rem) Thyroid (Worst Case Organ)	
Meat	~~1.89E+00~~	3.61E+00	~~5.13E+00~~	6.86E+00
Milk (cow)	~~2.10E+00~~	3.62E+00	~~5.91E+01~~	6.06E+01
Ground Plane	1.04E+00		1.04E+00	
Plume	~~4.71E+00~~	3.89E+00	~~4.71E+00~~	3.89E+00
Inhalation	4.57E-01		1.04E+01	
Vegetable	~~4.30E+00~~	7.76E+00	~~4.67E+00~~	8.12E+00
Total	~~1.45E+01~~	2.04E+01	~~8.51E+01~~	9.10E+01

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Table 11.3-11
Collective Annual Total Body Doses from New Units to Population within 50 Miles, by Group

	Total Body Dose (person-rem)	
Group	**Single Unit**	**Dual Unit**
Noble Gases	~~4.71E+00~~ 3.89E+00	~~9.42E+00~~ 7.78E+00
Iodines & Particulates	~~2.00E+00~~ 2.01E+00	~~4.00E+00~~ 4.02E+00
C-14 & H-3	~~7.76E+00~~ 1.44E+01	~~1.55E+01~~ 2.88E+01
Total	~~1.45E+01~~ 2.03E+01	~~2.90E+01~~ 4.06E+01

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ENCLOSURE 3

Summary of Regulatory Commitments

ENCLOSURE 3

SUMMARY OF REGULATORY COMMITMENTS

The following table identifies commitments made in this document. (Any other actions discussed in the submittal represent intended or planned actions. They are described to the NRC for the NRC's information and are not regulatory commitments.)

COMMITMENT	COMMITTED DATE	COMMITMENT TYPE	
		ONE-TIME ACTION (Yes/No)	Programmatic (Yes/No)
PSEG will revise SSAR Subsection 11.3.3.2 and SSAR Tables 1.3-7, 11.3-5, 11.3-7, 11.3-8, 11.3-9, 11.3-10, and 11.3-11 to incorporate the changes in Enclosure 2 in response to NRC RAI #18, Question 11.03-3.	This revision will be included in the next update of the PSEG Site ESP application SSAR.	Yes	No
PSEG will revise ER Subsections 5.4.3 and 7.2.3, and ER Tables 5.4-1, 5.4-8, 5.4-9, 5.4-10, 5.4-12, and 5.4-13 to incorporate resolution to NRC RAI #18, Question 11.03-3.	This revision will be included in the next update of the PSEG Site ESP application ER.	Yes	No