RAIO-0818-61582

September 14, 2018

Docket No. 52-048

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

SUBJECT: NuScale Power, LLC Replacement Response to NRC Request for Additional Information No. 276 (eRAI No. 9182) on the NuScale Design Certification Application

REFERENCES:
1. U.S. Nuclear Regulatory Commission, "Request for Additional Information No. 276 (eRAI No. 9182)," dated November 03, 2017
2. NuScale Power, LLC Response to NRC "Request for Additional Information No. 276 (eRAI No.9182)," dated December 21, 2017
3. NuScale Power, LLC Replacement Response to "NRC Request for Additional Information No. 276 (eRAI No. 9182) dated May 29, 2018

The purpose of this letter is to provide the NuScale Power, LLC (NuScale) replacement response to the referenced NRC Request for Additional Information (RAI), as discussed at a teleconference on June 26, 2018.

The Enclosure to this letter contains NuScale's replacement response to the following RAI Question from NRC eRAI No. 9182:

- 02.03.05-1

This replacement response replaces the response provided in Reference 3.

This letter and the enclosed response make no new regulatory commitments and no revisions to any existing regulatory commitments.

If you have any questions on this response, please contact Marty Bryan at 541-452-7172 or at mbryan@nuscalepower.com.

Sincerely,

Zackary W. Rad
Director, Regulatory Affairs
NuScale Power, LLC

Distribution: Gregory Cranston, NRC, OWFN-8G9A
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Enclosure 1: NuScale Replacement Response to NRC Request for Additional Information eRAI No. 9182

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Enclosure 1:

NuScale Replacement Response to NRC Request for Additional Information eRAI No. 9182

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Response to Request for Additional Information
Docket No. 52-048

eRAI No.: 9182
Date of RAI Issue: 11/03/2017

NRC Question No.: 02.03.05-1

Regulatory Background

10 CFR Part 20, "Standards for Protection against Radiation," Subpart D, "Radiation Dose Limits for Individual Members of the Public," Section 20.1301, "Dose limits for individual members of the public," establishes dose limits to members of the public and Appendix B to Part 20, “Annual Limits on Intake and Derived Air Concentrations of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sewerage,” establishes limits on concentrations of radioactive material in effluents to unrestricted areas. Appendix I, "Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion 'As Low As Is Reasonably Achievable' for Radioactive Material in Light Water-Cooled Nuclear Power Reactor Effluents," to 10 CFR Part 50, "Licensing of Production and Utilization Facilities," provides numerical guides for design objectives to meet the requirements that radioactive material in effluents released to unrestricted areas be kept as low as is reasonably achievable.

Pursuant to 10 CFR 52.47(a)(1), a Design Certification (DC) applicant is required to provide site parameters postulated for its design and an evaluation of its design in terms of those site parameters. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition" (SRP), Section 2.3.5, “Long-Term Atmospheric Dispersion Estimates for Routine Releases,” Subsection III (Review Procedures), Item 5(b), in part, calls for the NRC staff to reach a conclusion that “[t]he applicant has provided a basis for each of the site parameters” and that “[t]he postulated site parameters are representative of a reasonable number of sites that have been or may be considered for a COL application.”

RG 1.111, “Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors,” Revision 1, provides guidance for performing atmospheric dispersion and deposition estimates of radioactive materials in gaseous effluents from routine releases. NUREG/CR-2919, “XOQDOQ Computer Program for the Meteorological Evaluation of Routine Releases at Nuclear Power Stations” describes the NRC-sponsored computer code XOQDOQ, which is used to implement the constant mean wind direction methodology outlined in RG 1.111.
Regulatory Position C.2 of RG 1.111 also provides guidance on source configuration

evaluations.

Information Request 1:
In FSAR Tier 2, Table 2.0-1, "Site Design Parameters," the applicant lists routine release atmospheric dispersion factors (χ/Q values) and atmospheric deposition factors (D/Q values) at the site boundary and locations of interest. FSAR Tier 2, Section 2.3.5, "Long-Term Atmospheric Dispersion Estimates for Routine Releases," states that these χ/Q and D/Q values are used to calculate the site boundary release concentrations for comparison to the activity release limits in 10 CFR 20 as discussed in Section 11.3. These are the same χ/Q and D/Q values listed in FSAR Tier 2, Table 11.3-6, "GASPAR Code Input Parameter Values." However, the applicant has neither provided in Section 11.3 nor 2.3.5, any assumptions used in generating these values.

a. Please describe (or provide) the assumptions used to derive each of the χ/Q and D/Q values presented as site parameters in FSAR Tier 2, Table 2.0-1 (i.e., the annual average routine release χ/Q value of 3.64E-04 s/m3 at the security owner controlled area fence, and the routine release χ/Q and D/Q values of 5.43E-05 s/m3 and 5.43E-07 m2, respectively, at the site boundary and locations of interest). If applicable, please also identify the meteorological data set used to generate these χ/Q and D/Q site parameter values. Please revise the FSAR as necessary.

b. Please explain where the annual average routine releases χ/Q site parameter value of 3.64E-04 s/m3 for the security owner controlled area fence is used in any of the dispersion analyses presented in the FSAR.

c. If an atmospheric dispersion model, such as XOQDOQ, was executed to derive these χ/Q and D/Q site parameter values, please identify all the input parameters used, including:
    1. The meteorological data set used to generate the χ/Q and D/Q values
    2. All release points
    3. For each release point, the distances to the security owner controlled fence, site boundary, and locations of interest
    4. For each release point, the assumed vent velocity, vent inside diameter, vent height, adjacent building height, adjacent building minimum cross-sectional area, and vent heat emission rate

Information Request 2:

a. FSAR Tier 2, Section 11.3.3 states the input parameters for the calculation of the maximum individual dose at the exclusion area boundary are tabulated in FSAR Tier 2, Table 11.3-6, “GASPAR Code Input Parameter Values.” This table shows the distance to the bounding offsite dose location as 820 meters, whereas, FSAR Tier 2, Table 2.0-1 lists

the minimum exclusion area boundary as the security owner controlled area fence, which is a distance of 400 feet (122 meters) according to FSAR Tier 2, Section 2.3.4. Please explain this apparent discrepancy in distances.

b. Please correct the units shown in FSAR Tier 2, Table 2.0-1, for the routine release χ/Q values at the site boundary and locations of interest from m/s3 to s/m3.

Information Request 3:
FSAR Tier 2, Table 2.0-1 provides some routine airborne effluent release point characteristics (i.e., source configuration information) for evaluating atmospheric dispersion and deposition for offsite receptors.

a. Table 2.0-1 identifies the release location as "an y point o n Re actor B uild ing o r T urbine Building Wall." The tallest structure is the reactor building roof at approximately 24.69 meters. However, Table 2.0-1 also lists:

    1. A release height of 37.0 meters
    2. An adjacent building height of 0.0 meters
    3. An adjacent building cross-sectional area of 0.01 square meters

    Please explain what "any point on Reactor Building or Turbine Building Wall" means in relation to release location and height, and clarify the apparent discrepancies in the values shown above.

b. Please revise the FSAR, as necessary,with the release point characteristics for each release point for use by COL applicants in developing their own site-specific routine release χ/Q and D/Q site characteristic values. The revised release point characteristics to be provided should include the following:
    1. The assumed vent velocity
    2. Vent inside diameter
    3. Vent height
    4. Adjacent building height
    5. Adjacent building minimum cross-sectional area
    6. Vent heat emission rate

Information Request 4:
FSAR Tier 2, Section 2.3.5, states that the site boundary annual average χ/Q and D/Q values provided in FSAR Tier 2, Table 2.0-1 are used to calculate the site boundary release concentrations for comparison to the activity concentration limits in 10 CFR Part 20, as discussed in FSAR Tier 2, Section 11.3. FSAR Tier 2, Table 11.3-5 lists normal gaseous effluent releases from both the plant exhaust stack and the condenser air removal system.

Please explain why the same set of χ/Q values is used to model the releases from these two pathways, given the difference in release characteristics for these two pathways.

NuScale Response:

Information Request 1:

a. For the NuScale power plant, there are three normal gaseous effluent release points: the plant exhaust stack, which is 420 feet from the site boundary, and the two turbine generator buildings, which are each 400 feet from the site boundary. Approximately 99% of the contribution to gaseous offsite concentrations from normal radioactive effluent discharges from the NuScale power plant are from releases from the plant exhaust stack.

Conservative X/Q and D/Q values are selected for use in the NuScale DCA, which are revised from 5.43E-05 s/m^3 and 5.43E-07 $1/m^2$ to 1.44E-05 s/m^3 and 1.44E-07 $1/m^2$, respectively, in this response. The XOQDOQ computer code was used to confirm the conservatism of the X/Q and D/Q values that are selected using the same National Climatic Data Center 1984 to 1986 Sacramento, California meteorological data used in the NuScale DCA.

The calculated offsite gaseous effluent doses from a NuScale plant are highly site specific due to distinct site features such as terrain, meteorology, and site receptors having an effect on results. These calculations must be performed by the COL applicant per COL Item 11.3-2. The results shown in FSAR Table 11.3-8 are example calculations using assumed inputs to show reasonable assurance that a COL applicant will be able to meet the design objectives of 10 CFR 50 Appendix I. It would be acceptable for a COL applicant to use RG 1.111 and the XOQDOQ computer code to perform these calculations, even for distances as short as 100 meters.

b. The annual average routine release X/Q site parameter value of 3.64E-04 s/m^3 is not used in any analysis presented in the FSAR and as such it has been deleted, per the markup of Table 2.0-1 included in the reply to eRAI 9179 Question 02.03.01-2.

c. See response to "Information Request 1: a." above.

Information Request 2:

a. References to the distance to the bounding offsite dose location have been removed, per the attached markup.

b. The units have been corrected per the markups included in the reply to eRAI 9179 Question 02.03.01-2.

Information Request 3:

a. These parameters are not site parameters. As such, they have been moved from FSAR Table 2.0-1 to FSAR Table 15.0-20 per the markups included in the replies to eRAI 9179 Question 02.03.01-2 and eRAI 9185 Question 02.03.04-1 or deleted per the attached markup showing the removal of FSAR Table 11.3-12 contents.

FSAR Table 15.0-20's entry of "Release location - Any point on Reactor Building or Turbine Generator Building wall" (as relocated from FSAR Table 2.0-1) is meant to describe the release point from the buildings, not from within the building. The release out of a building can occur from anywhere along the building wall. Therefore, to be conservative, the offsite X/Qs from the Reactor Building or Turbine Generator Buildings are calculated assuming the releases occur from the closest part of the building to the dose location.

b. The plant exhaust stack is not a part of the NuScale Standard Design. The plant exhaust stack has several design commitments that it must be built to per FSAR Section 9.4.2.2, however there is a range of plant exhaust stack designs that could be implemented by the COL applicant within those design commitments. Therefore, this information can not be provided by NuScale at this stage and the COL applicant is responsible for properly translating their final plant exhaust stack design into their site-specific analysis. The plant exhaust stack has been added to Table 1.8-1, per the attached markup.

Information Request 4:

See response to "Information Request 1: a." above.

Impact on DCA:

FSAR Sections 1.8, 2.0, and 11.3 have been revised as described in the response above and as shown in the markup provided in this response.

Table 1.8-1: Summary of NuScale Certified Design Interfaces with Remainder of Plant

System, Structure, or Component	Interface Type	FSAR Section
Turbine Generator Buildings	CDI	1.2.2
Annex Building	CDI	1.2.2
Cooling towers, pump houses, and associated structures, systems, and components (e.g., cooling tower basin, circulating water pumps, cooling tower fans, chemical treatment building, etc.)	CDI	1.2.2, 10.4.5
Security Buildings	CDI	1.2.2
Central Utility Building	CDI	1.2.2
Diesel Generator Buildings	CDI	1.2.2
Offsite power transmission system, main switchyard, and transformer area	CDI	8.2
Auxiliary AC power system	CDI	8.3.1
Site cooling water system	CDI	9.2.7
Circulating water system	CDI	10.4.5
Grounding and lightning protection system	CDI	8.3.1
Plant exhaust stack	CDI	9.4.2
Potable and sanitary water systems	COL	9.2.4
Resin tanks for the condensate polishing system	COL	10.4
Site drainage system	COL	N/A
Raw water system	COL	9.2.9
Site-specific design parameters, geographic and demographic characteristics, meteorological characteristics, nearby industrial, transportation, and military facilities, hydrologic characteristics, geology, seismology, and geotechnical characteristics, weather conditions and site topography, flooding	COL	Table 2.0-1, 2.1, 2.2, 2.3, 2.4, 2.5, 3.3, 3.4
Site-specific communications	COL	9.5.2
Turbine generators	COL	3.5-1
Diesel generators	COL	3.5-1
Operational Support Center	COL	13.3

RAI 02.03.01-2, RAI 02.03.01-6, RAI 02.03.01-6S1, RAI 02.03.01-8, RAI 02.03.05-1S1, RAI 02.03.05-1S2, RAI 03.07.02-24S1, RAI 03.08.05-1, RAI 03.08.05-8

Table 2.0-1: Site Design Parameters

Site Characteristic / Parameter	NuScale Design Parameter	References to Parameter
Geography and Demography (Section 2.1)		
Minimum exclusion area boundary	400 feet from the closest release point	Sections 2.1 and 2.3.4
Minimum outer boundary of low population zone	400 feet from the closest release point	Sections 2.1 and 2.3.4
Nearby Industrial, Transportation, and Military Facilities (Section 2.2)		
External hazards on plant systems, structures, and components (SSC) (e.g., explosions, fires, release of toxic chemicals and flammable clouds, pressure effects) on plant SSC	No external hazards	Section 2.2
Aircraft hazards on plant SSC	No design basis aircraft hazards	Sections 2.2 and 3.5.1.6
Meteorology (Section 2.3)		
Maximum precipitation rate	19.4 inches per hour 6.3 inches for a 5 minute period	Sections 3.4.2.2 and 3.8.4.3.10
Normal roof snow load	50 psf	Sections 3.4.2.2, 3.8.4.3.10, 3.8.4.3.11, ~~and 3.8.4.8~~3.8.4.3.16, 3.8.4.4.1, 3.8.4.4.2, 3.8.4.8, and 3.8.5.5.5
Extreme roof snow load	75 psf	Sections 3.4.2.2, 3.8.4.3.10, 3.8.4.3.12, ~~and 3.8.4.8~~3.8.4.3.16, 3.8.4.4.1, 3.8.4.4.2, 3.8.4.8, and 3.8.5.5.5
100-year return period 3-second wind gust speed	145 mph (~~e~~Exposure Category C) with an importance factor of 1.15 for Reactor Building, Control Building, and Radioactive Waste Building	Sections 3.3.1.1, 3.8.4.3.13, and 3.8.4.8
Design basis tornado maximum wind speed translational speed maximum rotational speed radius of maximum rotational speed pressure drop rate of pressure drop	 230 mph 46 mph 184 mph 150 ft 1.2 psi 0.5 psi/sec	Sections 3.1.1.2, 3.3.2.1, 3.3.2.2, 3.3.2.3, 3.8.4.3.14, and 3.8.4.8
Tornado missile spectra	Table 2 of Regulatory Guide 1.76, Revision 1, Region 1	Sections 3.3.2.3, 3.5.1.4, 3.5.2, 3.5.3.1, and 3.5.3.2
Maximum wind speed design basis hurricane	290 mph	Sections 3.1.1.2, 3.3.2.1, 3.3.2.2, 3.3.2.3, 3.8.4.3.14, and 3.8.4.8
Hurricane missile spectra	Tables 1 and 2 of Regulatory Guide 1.221, Revision 0	Section 3.5.1.4, 3.3.2.3, 3.5.2, 3.5.3.1, and 3.5.3.2

Table 2.0-1: Site Design Parameters (Continued)

Site Characteristic / Parameter	NuScale Design Parameter		References to Parameter
Accident release χ/Q values at ~~security owner controlled area fence~~exclusion area boundary and outer boundary of low population zone			
0-2 hr	6.22E-04 s/m^3		Sections 15.0.3.2 and 15.0.3.3.11; Table 15.0-13
2-8 hr	5.27E-04 s/m^3		
8-24 hr	2.41E-04 s/m^3		
24-96 hr	2.51E-04 s/m^3		
96-720 hr	2.46E-04 s/m^3		
Accident release χ/Q values at main control room/technical support center door and HVAC intake ~~(approximately 112 feet from source)~~	Door	HVAC Intake	
0-2 hr	6.50E-03 s/m^3	6.50E-03 s/m^3	Section 15.0.3.3.11; Table 15.0-13
2-8 hr	5.34E-03 s/m^3	5.34E-03 s/m^3	
8-24 hr	2.32E-03 s/m^3	2.32E-03 s/m^3	
1-4 day	2.37E-03 s/m^3	2.37E-03 s/m^3	
4-30 day	2.14E-03 s/m^3	2.14E-03 s/m^3	
Routine release χ/Q and D/Q values ~~associated with the bounding offsite dose location~~at restricted area boundary			
undepleted/no decay	~~5.43~~1.44E-05 s/m^3		Tables 11.3-5 and 11.3-6
undepleted/2.26-day decay	~~5.43~~1.44E-05 s/m^3		
depleted/8.00-day decay	~~5.43~~1.44E-05 s/m^3		
D/Q	~~5.43~~1.44E-07 1/m^2		
Zero percent exceedance values (historical limit excluding peaks <2 hours)			Sections 3.8.4.3.8, 3.8.4.8, 9.4.1.1, 20.1.1.4, and 20.1.1.5; Table 9.4.1-1
Maximum outdoor design dry bulb temperature	115°F		
~~Minimum outdoor design dry bulb temperature~~	~~-40°F~~		
Maximum coincident wet bulb temperature	80°F		
Maximum non-coincident wet bulb temperature	81°F		
Minimum outdoor design dry bulb temperature	-40°F		

isolation device. Design parameters of major components, including safety classification and operating conditions, are provided in Table 11.3-2.

11.3.2.5 Site-Specific Cost-Benefit Analysis

Regulatory Guide 1.110 provides guidance for complying with 10 CFR 50, Appendix I, Section II, Paragraph D, to demonstrate that the addition of items of reasonably demonstrated technology is not favorable or cost-beneficial.

COL Item 11.3-1: A COL applicant that references the NuScale Power Plant design certification will perform a site-specific cost-benefit analysis.

11.3.2.6 Mobile or Temporary Equipment

The GRWS does not employ the use of mobile or temporary equipment in the design.

11.3.2.7 Seismic Design

The gaseous radioactive waste equipment and piping are classified in accordance with RG 1.143. The RWB seismic design is described in Section 3.7.2. The structures, systems, and component classifications for the GRWS components are listed in Table 3.2-1 and Table 11.3-2. The component activity contents are shown in Section 12.2.1.

11.3.3 Radioactive Effluent Releases

The GRWS processes and releases waste gas from normal reactor operations and AOOs to the RWBVS, and the waste gas is monitored and released to the environment through the RBVS exhaust stack. Section 9.4.2 provides additional information on the plant exhaust stack. Other normal gaseous discharge pathways include the condenser air removal system and secondary system steam leaks as illustrated in Figure 11.5-1. The discharge of gaseous effluents is tabulated by isotope, pathway, and annual released activity in Table 11.3-5.

RAI 02.03.04-1, RAI 02.03.05-1S1

As described in Section 11.2.3, an alternate methodology to replace PWR-GALE was developed that uses first principles based calculations, combined with more recent nuclear industry experience. The calculation of gaseous effluent offsite dose consequences is consistent with methodologies presented in RG 1.112 and RG 1.109. A description of the methodology used to develop the primary and secondary coolant source terms is provided in Section 11.1. For normal effluents, the realistic coolant source terms are used and propagated through the plant systems. The major assumptions and inputs for the gaseous release methodology are listed in Table 11.3-4. From the component and airborne source terms, the normal gaseous effluent source term is determined and presented in Table 11.3-5. From the gaseous effluent source term, the offsite consequences are calculated using GASPAR II from the input values presented in Table 11.3-6. ~~The atmospheric dispersion and deposition values presented in Table 11.3-6 were derived using NARCON and the assumptions presented in Table 11.3-12.~~ The released gaseous radioactive effluent meets the concentration limits of 10 CFR 20.1302 and the dose limits of 10 CFR 50 Appendix I. A more thorough description of this PWR-GALE replacement methodology is presented in Reference 11.3-1.

Table 11.3-5: Gaseous Estimated Discharge for Normal Effluents (Continued)

Nuclide	GRWS (Ci/yr)	Pool Evaporation (Ci/yr)	AOO Gas Leakage (Ci/yr)	Primary Coolant Leaks (Ci/yr)	Plant Exhaust Stack Total (Ci/yr)	Secondary Steam Leaks (Ci/yr)	Condenser Air Removal System (Ci/yr)	Total TGB Releases (Ci/yr)	Total Gaseous Effluent Concentration at Site Boundary (µCi/ml)	10 CFR 20 Appendix B Limits (µCi/ml)	Fraction of Limit
Cr51	-	9.63E-05	-	1.55E-07	9.65E-05	5.53E-07	-	5.53E-07	4.43E-17	3.00E-08	1.48E-09
Mn54	-	5.17E-05	-	7.99E-08	5.18E-05	2.84E-07	-	2.84E-07	2.38E-17	1.00E-09	2.38E-08
Fe55	-	3.88E-05	-	5.99E-08	3.89E-05	2.13E-07	-	2.13E-07	1.79E-17	3.00E-09	5.95E-09
Fe59	-	9.46E-06	-	1.50E-08	9.48E-06	5.34E-08	-	5.34E-08	4.35E-18	5.00E-10	8.70E-09
Co58	-	1.47E-03	-	2.30E-07	1.47E-03	8.18E-07	-	8.18E-07	6.70E-16	1.00E-09	6.70E-07
Co60	-	1.72E-05	-	2.64E-08	1.72E-05	9.41E-08	-	9.41E-08	7.89E-18	5.00E-11	1.58E-07
Ni63	-	8.58E-06	-	1.32E-08	8.59E-06	4.70E-08	-	4.70E-08	3.94E-18	2.00E-09	1.97E-09
Zn65	-	1.64E-05	-	2.54E-08	1.65E-05	9.05E-08	-	9.05E-08	7.56E-18	4.00E-10	1.89E-08
Zr95	-	1.24E-05	-	1.95E-08	1.24E-05	6.93E-08	-	6.93E-08	5.70E-18	4.00E-10	1.43E-08
Ag110m	-	4.20E-05	-	6.50E-08	4.21E-05	2.31E-07	-	2.31E-07	1.93E-17	1.00E-10	1.93E-07
W187	-	2.43E-05	-	1.39E-07	2.44E-05	4.94E-07	-	4.94E-07	1.14E-17	1.00E-08	1.14E-09
H3	-	6.96E+02	-	5.93E+00	7.01E+02	6.92E+00	-	6.92E+00	3.23E-10	1.00E-07	3.23E-03
C14	2.63E-01	3.01E-03	-	1.33E-03	2.67E-01	2.37E-07	-	2.37E-07	1.22E-13	3.00E-09	4.06E-05
Ar41	1.19E+01	-	1.61E-02	2.07E+00	1.39E+01	1.46E-04	9.69E-01	9.69E-01	6.81E-12	1.00E-08	6.81E-04
Total	**2.26E+02**	**7.16E+02**	**1.03E-01**	**1.92E+01**	**9.62E+02**	**6.92E+00**	**6.21E+00**	**1.31E+01**	**4.45E-10**	**5.84E-05**	**4.14E-03**

Note: The X/Q that was used to calculate the site boundary concentrations is provided in Table 11.3-6

RAI 02.03.05-1S1, RAI 02.03.05-1S2

Table 11.3-6: GASPAR Code Input Parameter Values

Parameter	Value
Routine release χ/Q (undepleted/no decay) ~~associated with the bounding off site dose location~~	Table 2.0-1~~5.43E-05 s/m^3~~
Routine release D/Q ~~associated with the bounding off site dose location~~	Table 2.0-1~~5.43E-07 m^{-2}~~
~~Distance from plant exhaust stack to bounding off site dose location[1]~~	~~820 meters~~
Milk animal	Goat
Midpoint of plant life	20 yrs
Fraction of year that leafy vegetables are grown	1.0
Fraction of year that milk cows are in pasture	1.0
Fraction of the maximum individual's vegetable intake that is from his own garden	0.76
Fraction of milk-cow feed intake that is from pasture while on pasture	1.0
Average absolute humidity over the growing season	8.0 gram/m^3
Fraction of year that beef cattle are in pasture	1.0
Fraction of beef cattle feed intake that is from pasture while the cattle are on pasture	1.0
Source term	Table 11.3-5

~~Note 1: The elevated release from the plant exhaust stack causes the bounding offsite dose location to occur farther than the site owner-controlled area fence.~~

RAI 02.03.04-1, RAI 02.03.05-1S1

Table 11.3-12: Not Used~~Assumptions for Routine Airborne Effluent Release Point Characteristics for Offsite Receptors~~

~~Parameter~~	~~Value~~
~~Release location~~	~~Plant exhaust stack~~
~~Release height~~	~~37.0 meters~~
~~Intake height~~	~~0.0 meters~~
~~Vent/stack exit velocity~~	~~0.0 meters/second~~
~~Vent/stack inside diameter~~	~~0.0 meters~~
~~Vent/stack exhaust orientation (vertical, horizontal, or other)~~	~~Not applicable~~
~~Restrictions to exhaust Air flow (e.g., rain caps)~~	~~Not applicable~~
~~Adjacent building height~~	~~0.0 meters~~
~~Adjacent building cross-sectional area~~	~~0.01 square meters~~