



October 24, 2022
Docket No. 50-443
SBK-L-22105

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

Seabrook Station
Supplement to 2021 Annual Radioactive Effluent Release Report

Reference: NextEra Energy Seabrook, LLC letter SBK-L-22044, 2021 Annual Radioactive Effluent Release Report, dated April 29, 2022, (ML22119A266).

Pursuant to 10CFR 50.36a (a).2 and Technical Specification 6.8.1.4, NextEra Energy Seabrook, LLC, in the above reference, submitted the Annual Radioactive Effluent Release Report for 2021 on April 29, 2022. It was determined that the following Tables were inadvertently omitted from Enclosure 1 of that submittal:

Table 1A, Gaseous Effluents – Summation of all Releases
Table 1B, Gaseous Effluents – Elevated Releases – Batch
Table 1B, Gaseous Effluents – Elevated Releases – Continuous
Table 1C, Gaseous Effluents - Ground Level Releases – Batch
Table 1C, Gaseous Effluents - Ground Level Releases – Continuous
Table 2A, Liquid Effluents – Summation of all Releases
Table 2B, Liquid Effluents – Batch Mode
Table 2B, Liquid Effluents – Continuous Mode

Please insert the Attachment to this letter that contains the Tables listed above in Enclosure 1 of NextEra Energy Seabrook, LLC letter SBK-L-22044, 2021 Annual Radioactive Effluent Release Report for completeness.

Should you have any questions regarding this letter, please contact David Robinson, Chemistry Department Manager, at (603) 773-7496.

Sincerely,
NextEra Energy Seabrook, LLC

A handwritten signature in black ink, appearing to read "Matthew Levander".

Matthew Levander
Regulatory Affairs Manager

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cc: NRC Region I Administrator
NRC Project Manager, Project Directorate I-2
NRC Senior Resident Inspector
Stephen Wessels, American Nuclear Insurers

Attachment

Effluent Release Data
as Required by Regulatory Guide 1.21

TABLE 1A
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT 2021
GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Est. Total Error, %
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A. Fission and activation gases

1. Total releases	Ci	1.29E-02	2.48E-02	3.08E-02	8.96E-01	1.70E+01
2. Average release rate for period	uCi/sec	1.65E-03	3.16E-03	3.88E-03	1.13E-01	
3. Percent of applicable Technical Specification limit	%	1.14E-04	4.48E-04	3.40E-04	1.73E-02	

B. Iodines

1. Total release	Ci	ND	ND	2.52E-07	3.92E-06	1.50E+01
2. Average release rate for period	uCi/sec	N/A	N/A	3.17E-08	4.93E-07	
3. Percent of applicable Technical Specification limit	%	N/A	N/A	1.47E-01	3.64E-01	

C. Particulates

1. Total release	Ci	2.05E+00	5.02E+00	3.13E+00	1.86E+00	1.80E+01
2. Average release rate for period	uCi/sec	2.64E-01	6.38E-01	3.94E-01	2.34E-01	
3. Percent of applicable Technical Specification limit	%	2.44E-01	4.64E-01	1.47E-01	3.64E-01	
4. Total alpha radioactivity	Ci	ND	ND	ND	ND	

D. Tritium

1. Total release	Ci	1.75E+01	3.44E+01	1.03E+01	2.34E+01	1.60E+01
2. Average release rate for period	uCi/sec	2.25E+00	4.38E+00	1.29E+00	2.95E+00	
3. Percent of applicable Technical Specification limit	%	2.44E-01	4.64E-01	1.47E-01	3.64E-01	

TABLE 1B
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT 2021
GASEOUS EFFLUENTS-ELEVATED RELEASES
BATCH

Nuclides Released	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4
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1. Fission and activation gases

argon-41	Ci	1.15E-02	2.40E-02	2.95E-02	8.07E-01
krypton-85	Ci	ND	ND	ND	ND
krypton-85m	Ci	ND	ND	ND	ND
krypton-87	Ci	ND	ND	ND	ND
krypton-88	Ci	ND	ND	ND	ND
xenon-131m	Ci	ND	ND	ND	ND
xenon-133	Ci	ND	5.24E-05	ND	ND
xenon-133m	Ci	6.55E-04	ND	ND	8.80E-02
xenon-135	Ci	6.77E-04	7.54E-04	1.30E-03	3.85E-04
xenon-135m	Ci	ND	ND	ND	ND
xenon-138	Ci	ND	ND	ND	ND
unidentified	Ci	ND	ND	ND	ND
Total for period	Ci	1.29E-02	2.48E-02	3.08E-02	8.96E-01

2. Iodines

iodine-131	Ci	ND	ND	ND	ND
iodine-132	Ci	ND	ND	ND	ND
iodine-133	Ci	ND	ND	ND	ND
iodine-135	Ci	ND	ND	ND	ND
Total for period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

3. Particulates

strontium-89	Ci	ND	ND	ND	ND
strontium-90	Ci	ND	ND	ND	ND
cesium-134	Ci	ND	ND	ND	ND
cesium-137	Ci	ND	ND	ND	ND
barium-lanthanum-140	Ci	ND	ND	ND	ND
unidentified	Ci	ND	ND	ND	ND
Total for period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE 1B
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT 2021
GASEOUS EFFLUENTS-ELEVATED RELEASES
CONTINUOUS

Nuclides Released	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4
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1. Fission and activation gases

argon-41	Ci	ND	ND	ND	ND
krypton-85	Ci	ND	ND	ND	ND
krypton-85m	Ci	ND	ND	ND	ND
krypton-87	Ci	ND	ND	ND	ND
krypton-88	Ci	ND	ND	ND	ND
xenon-131m	Ci	ND	ND	ND	ND
xenon-133	Ci	ND	ND	ND	ND
xenon-133m	Ci	ND	ND	ND	ND
xenon-135	Ci	ND	ND	ND	ND
xenon-135m	Ci	ND	ND	ND	ND
xenon-138	Ci	ND	ND	ND	ND
unidentified	Ci	ND	ND	ND	ND
Total for period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

2. Iodines

iodine-131	Ci	ND	ND	ND	3.92E-06
iodine-132	Ci	ND	ND	ND	ND
iodine-133	Ci	ND	ND	ND	ND
iodine-135	Ci	ND	ND	ND	ND
Total for period	Ci	0.00E+00	0.00E+00	0.00E+00	3.92E-06

3. Particulates

strontium-89	Ci	ND	ND	ND	ND
strontium-90	Ci	ND	ND	ND	ND
cesium-134	Ci	ND	ND	ND	ND
cesium-137	Ci	ND	ND	ND	ND
barium-lanthanum-140	Ci	ND	ND	ND	ND
cobalt-58	Ci	ND	ND	ND	4.18E-07
cobalt-60	Ci	ND	ND	ND	ND
chromium-51	Ci	ND	ND	ND	ND
manganese-54	Ci	ND	ND	ND	ND
niobium-95	Ci	ND	ND	ND	ND
iron-59	Ci	ND	ND	ND	ND
carbon-14	Ci	2.05E+00	5.02E+00	3.13E+00	1.86E+00
unidentified	Ci	ND	ND	ND	ND
Total for period	Ci	2.05E+00	5.02E+00	3.13E+00	1.86E+00

TABLE 1C
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT 2021
GASEOUS EFFLUENTS-GROUND LEVEL RELEASES

BATCH

Nuclides Released	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4
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1. Fission and activation gases

argon-41	Ci	ND	ND	ND	ND
krypton-85	Ci	ND	ND	ND	ND
krypton-85m	Ci	ND	ND	ND	ND
krypton-87	Ci	ND	ND	ND	ND
krypton-88	Ci	ND	ND	ND	ND
xenon-131m	Ci	ND	ND	ND	ND
xenon-133m	Ci	ND	ND	ND	ND
xenon-133	Ci	ND	ND	ND	ND
xenon-135	Ci	ND	ND	ND	ND
xenon-135m	Ci	ND	ND	ND	ND
xenon-138	Ci	ND	ND	ND	ND
unidentified	Ci	ND	ND	ND	ND
Total for period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

2. Iodines

iodine-131	Ci	ND	ND	ND	ND
iodine-132	Ci	ND	ND	ND	ND
iodine-133	Ci	ND	ND	2.52E-07	ND
iodine-135	Ci	ND	ND	ND	ND
Total for period	Ci	0.00E+00	0.00E+00	2.52E-07	0.00E+00

3. Particulates

strontium-89	Ci	ND	ND	ND	ND
strontium-90	Ci	ND	ND	ND	ND
cesium-134	Ci	ND	ND	ND	ND
cesium-136	Ci	ND	ND	ND	ND
cesium-137	Ci	ND	ND	ND	ND
barium-lanthanum-140	Ci	ND	ND	ND	ND
cobalt-57	Ci	ND	ND	ND	ND
cobalt-58	Ci	ND	ND	ND	ND
cobalt-60	Ci	ND	ND	ND	ND
manganese-54	Ci	ND	ND	ND	ND
iron-59	Ci	ND	ND	ND	ND
niobium/zirconium-95	Ci	ND	ND	ND	ND
chromium-51	Ci	ND	ND	ND	ND
technetium-99m	Ci	ND	ND	ND	ND
bromine-82	Ci	ND	ND	ND	ND
unidentified	Ci	ND	ND	ND	ND
Total for period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE 1C
 EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT 2021
 GASEOUS EFFLUENTS-GROUND LEVEL RELEASES
 CONTINUOUS

Nuclides Released	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4
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1. Fission and activation gases

argon-41	Ci	ND	ND	ND	ND
krypton-85	Ci	ND	ND	ND	ND
krypton-85m	Ci	ND	ND	ND	ND
krypton-87	Ci	ND	ND	ND	ND
krypton-88	Ci	ND	ND	ND	ND
xenon-133	Ci	ND	ND	ND	ND
xenon-135	Ci	ND	ND	ND	ND
xenon-135m	Ci	ND	ND	ND	ND
xenon-138	Ci	ND	ND	ND	ND
unidentified	Ci	ND	ND	ND	ND
Total for period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

2. Iodines

iodine-131	Ci	ND	ND	ND	ND
iodine-133	Ci	ND	ND	ND	ND
	Ci				
Total for period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

3. Particulates

strontium-89	Ci	ND	ND	ND	ND
strontium-90	Ci	ND	ND	ND	ND
cesium-134	Ci	ND	ND	ND	ND
cesium-136	Ci	ND	ND	ND	ND
cesium-137	Ci	ND	ND	ND	ND
barium-lanthanum-140	Ci	ND	ND	ND	ND
cobalt-58	Ci	ND	ND	ND	ND
cobalt-60	Ci	ND	ND	ND	ND
chromium-51	Ci	ND	ND	ND	ND
unidentified	Ci	ND	ND	ND	ND
Total for period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE 2A
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT 2021
LIQUID EFFLUENTS--SUMMATION OF ALL RELEASES

Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Est. Total Error, %
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A. Fission and activation products

1. Total releases	Ci	4.73E-03	7.19E-03	6.00E-04	7.98E-03	7.00E+00
2. Average diluted concentration during period	uCi/ml	2.25E-11	2.98E-11	2.49E-12	4.84E-11	
3. Percent of applicable limit	%	4.95E-03	1.24E-02	1.49E-02	3.11E-02	

B. Tritium

1. Total release	Ci	1.44E+02	5.35E+02	8.13E+02	2.46E+01	9.00E+00
2. Average diluted concentration during period	uCi/ml	6.85E-07	2.21E-06	3.37E-06	1.49E-07	
3. Percent of applicable limit	%	1.83E-03	4.16E-03	4.64E-03	3.28E-02	

C. Dissolved and entrained gases

1. Total release	Ci	ND	ND	ND	ND	1.90E+01
2. Average diluted concentration during period	uCi/ml	N/A	N/A	N/A	N/A	
3. Percent of applicable limit	%	N/A	N/A	N/A	N/A	

D. Gross alpha radioactivity

1. Total release	Ci	ND	ND	ND	ND	1.00E+01
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E. Volume of waste released (prior to dilution)	liters	2.17E+07	2.55E+07	2.69E+07	4.12E+07	1.30E+00
F. Volume of dilution water used during period	liters	2.10E+11	2.42E+11	2.41E+11	1.65E+11	9.00E+00

TABLE 2B
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT 2021
LIQUID EFFLUENTS
BATCH MODE

Nuclides Released	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4
strontium-89	Ci	ND	ND	ND	ND
strontium-90	Ci	ND	ND	ND	ND
cesium-134	Ci	ND	ND	ND	ND
cesium-137	Ci	3.70E-05	1.79E-06	2.43E-05	4.07E-06
iodine-131	Ci	ND	ND	ND	ND
iodine-133	Ci	ND	ND	ND	ND
cobalt-57	Ci	ND	ND	ND	7.77E-06
cobalt-58	Ci	3.99E-04	2.90E-04	1.85E-04	4.98E-03
cobalt-60	Ci	2.02E-04	3.06E-04	2.47E-04	9.43E-05
chromium-51	Ci	ND	1.37E-04	ND	9.02E-05
iron-55	Ci	ND	ND	ND	1.25E-03
iron-59	Ci	ND	ND	ND	ND
zinc-65	Ci	ND	ND	ND	ND
manganese-54	Ci	1.07E-06	3.12E-06	5.24E-06	3.78E-06
zirconium-niobium-95	Ci	ND	ND	ND	2.09E-05
molybdenum-99	Ci	ND	ND	ND	ND
technetium-99m	Ci	ND	ND	ND	ND
silver-110m	Ci	ND	ND	ND	ND
barium-lanthanum-140	Ci	ND	ND	ND	ND
cerium-141	Ci	ND	ND	ND	ND
antimony-122	Ci	ND	ND	ND	ND
antimony-124	Ci	ND	ND	ND	ND
antimony-125	Ci	4.09E-03	6.46E-03	1.39E-04	1.33E-04
antimony-126	Ci	ND	ND	ND	ND
niobium-97	Ci	ND	ND	ND	ND
tin-117m	Ci	ND	ND	ND	ND
sodium-24	Ci	ND	ND	ND	ND
Tellurium-129m	Ci	ND	ND	ND	ND
Tellurium-132	Ci	ND	ND	ND	ND
unidentified	Ci	ND	ND	ND	ND
Total for period(above)	Ci	4.73E-03	7.20E-03	6.01E-04	6.58E-03
xenon-133	Ci	ND	ND	ND	ND
xenon-135	Ci	ND	ND	ND	ND

TABLE 2B
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT 2021
LIQUID EFFLUENTS
CONTINUOUS MODE

Nuclides Released	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4
strontium-89	Ci	ND	ND	ND	ND
strontium-90	Ci	ND	ND	ND	ND
cesium-134	Ci	ND	ND	ND	ND
cesium-137	Ci	ND	ND	ND	ND
iodine-131	Ci	ND	ND	ND	ND
iodine-133	Ci	ND	ND	ND	ND
cobalt-57	Ci	ND	ND	ND	ND
cobalt-58	Ci	ND	ND	ND	1.39E-03
cobalt-60	Ci	ND	ND	ND	8.45E-07
iron-55	Ci	ND	ND	ND	ND
iron-59	Ci	ND	ND	ND	ND
zinc-65	Ci	ND	ND	ND	ND
manganese-54	Ci	ND	ND	ND	3.87E-06
chromium-51	Ci	ND	ND	ND	ND
zirconium-niobium-95	Ci	ND	ND	ND	ND
molybdenum-99	Ci	ND	ND	ND	ND
technetium-99m	Ci	ND	ND	ND	ND
barium-lanthanum-140	Ci	ND	ND	ND	ND
cerium-141	Ci	ND	ND	ND	ND
unidentified	Ci	ND	ND	ND	ND
Total for period(above)	Ci	0.00E+00	0.00E+00	0.00E+00	1.39E-03
xenon-131m	Ci	ND	ND	ND	ND
xenon-133m	Ci	ND	ND	ND	ND
xenon-133	Ci	ND	ND	ND	ND
xenon-135	Ci	ND	ND	ND	ND