

INSTALLATION: TURKEY POINT 3

LOCATION: 10 MI E FLORIDA CITY, FL

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1988
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 3 TYPE: PWR LICENSEE: FLORIDA POWER & LIGHT
DOCKET NO.: 50-250 LICENSED POWER (MWT): 2.20E+03
THERMAL POWER (MWT): 1.14E+07 NET ELECTRIC POWER (MWT): 3.45E+06
COMMERCIAL OPERATION: 12/14/72 INITIAL CRITICALITY: 10/20/72
COOLING WATER SOURCE: CLOSED CYCLE CANAL

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
AR-41	8.44E-01
CR-51	1.24E-05
MN-54	2.62E-06
CO-58	1.99E-05
CO-60	1.70E-05
BR-82	6.22E-04
KR-85	1.38E+00
KR-85M	5.98E-01
KR-87	8.26E-03
KR-88	4.00E-02
SR-89	2.13E-06
I-131	3.90E-03
XE-131M	1.56E+01
I-133	4.23E-03
XE-133	1.20E+03
XE-133M	6.94E+00
CS-134	2.06E-05
I-135	1.97E-03
XE-135	1.87E+01
CS-136	6.06E-06
CS-137	6.13E-05
BA-140	2.93E-05
LA-140	1.90E-06
CE-144	1.20E-05

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
NA-24	2.48E-05
CR-51	7.82E-03
MN-54	1.50E-02
FE-55	4.65E-02
CO-57	3.34E-06
CO-58	2.61E-02
FE-59	5.03E-04
CO-60	1.84E-01
ZN-65	1.70E-05
KR-85	1.04E-02
KR-85M	2.84E-04
SR-89	1.95E-04
SR-90	5.25E-05
NB-95	2.23E-04
ZR-95	6.21E-05
NB-97	3.34E-06

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

9006280086 900619
PDR ADDCK 05000250
PDC

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AIRBORNE AND LIQUID EFFLUENTS

LIQUID EFFLUENTS
NUCLIDES RELEASED

NUCLIDES RELEASED	ACTIVITY (CI)
MO-99	1.89E-04
MO-99-TC-99M	4.88 2.98E-04 } - combined
RU-103	6.96E-05
AG-110M	2.14E-03
SN-117M	3.99E-05
SB-124	2.58E-03
SB-125	1.82E-02
I-131	2.30E-03
XE-131M	5.42E-03
I-133	2.55E-04
XE-133	3.92E-01
XE-133M	3.83E-03
CS-134	4.56E-03
XE-135	5.40E-04
XE-135M	1.61E-05
CS-136	7.29E-03
CS-137	1.04E-02
BA-139	2.84E-04
CE-139	1.11E-06
LA-140	2.15E-03

TOTAL AIRBORNE TRITIUM RELEASE 2.01E+02
TOTAL LIQUID TRITIUM RELEASE 2.99E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION) LITERS 7.73E+06
VOLUME OF DILUTION WATER USED DURING PERIOD LITERS 2.95E+11

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

Mo-99
+
Mo-99-TC-99

are the same

∴ they should
be Mo-99-TC-99M
4.86E-4

INSTALLATION-TURKEY POINT 3

LOCATION 10 MI E FLORIDA CITY, FL

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR 1988
SUPPLEMENTAL INFORMATION

UNIT NUMBER 3 TYPE PWR
DOCKET NO. 50-250
THERMAL POWER (MWT) 1.14E+07
COMMERCIAL OPERATION 12/14/72
COOLING WATER SOURCE CLOSED CYCLE CANAL

LICENSEE FLORIDA POWER & LIGHT
LICENSED POWER (MWT) 2.20E+03
NET ELECTRIC POWER (MWT) 3.45E+06
INITIAL CRITICALITY 10/20/72

MAXIMUM PERMISSIBLE CONCENTRATIONS(MICROCURIES/ML)

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES
GAMMA SPECTRUM ANALYSIS

IODINES

ABSORPTION OF HALOGEN RADIONUCLIDES ON A CHARCOAL FILTER AND SUBSEQUENT GAMMA-SPECTRUM ANALYSIS.

PARTICULATES

REMOVAL OF PARTICULATE MATERIAL BY FILTRATION AND SUBSEQUENT GAMMA-SPECTRUM ANALYSIS, SR-89-90 DETERMINATION, GROSS ALPHA ANALYSIS AND GROSS BETA-GAMMA ANALYSIS.

LIQUID EFFLUENTS

ALIQUOTS OF REPRESENTATIVE PRE-RELEASE SAMPLES WERE EITHER ISOTOPICALLY ANALYZED FOR GAMMA EMITTING ISOTOPES ON A MULTICHANNEL ANALYZER OR EVAPORATED AND ANALYZED FOR GROSS BETA-GAMMA ACTIVITY IN A 2 PI GAS FLOW PROPORTIONAL COUNTER. THE EFFICIENCY OF THE GAS FLOW PROPORTIONAL COUNTER IS ADJUSTED SO THAT THE ACTIVITY DETERMINED BY GROSS BETA-GAMMA ANALYSIS APPROXIMATES THE ISOTOPIC ACTIVITIES DETERMINED BY GAMMA SPECTRUM ANALYSIS AND SELECTED BETA DETERMINATIONS, EXCLUSIVE OF TRITIUM AND DISSOLVED GASES. THE ABOVE PROCEDURE WAS FOLLOWED FOR ALL RELEASES FROM THE WASTE DISPOSAL SYSTEM AND FOR SECONDARY SYSTEM BATCH RELEASES. FREQUENT PERIODIC SAMPLING AND ANALYSIS WERE USED TO CONSERVATIVELY ESTIMATE THE QUANTITY OF RADIOACTIVITY RELEASED VIA THE STEAM GENERATOR BLOWDOWN SYSTEM. COMPOSITES FOR H3, ALPHA, SR-89/90 AND FE-55 ARE ALSO DONE ON LIQUID EFFLUENTS.

33



INSTALLATION-TURKEY POINT 3

LOCATION 10 MI E FLORIDA CITY, FL

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR 1988

SUPPLEMENTAL INFORMATION

AVERAGE ENERGY(MEV/DISINTEGRATION)

BETA
N/A

FIRST SIX
MONTHS

GAMMA
N/A

FIRST SIX
MONTHS

BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-	114
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-	1.09E 4
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	2.25E 2
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	9.56E 1
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	5.70E 1
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-	1.07E 7

B. GASEOUS

1. NUMBER OF BATCH RELEASES-	20
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-	1.10E 3
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	2.40E 2
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	5.66E 1
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	2.00E 1

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES	0
2. TOTAL ACTIVITY RELEASED(CURIES)	0.00E 0

B. GASEOUS

1. NUMBER OF RELEASES	0
2. TOTAL ACTIVITY RELEASES(CURIES)	0.00E 0

N/D=NOT DETECTABLE

N/A=NOT APPLICABLE

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR 1988

SUPPLEMENTAL INFORMATION

AVERAGE ENERGY(MEV/DISINTEGRATION)

BETA
N/A

SECOND SIX
MONTHS

GAMMA
N/A

SECOND SIX
MONTHS

BATCH RELEASES
A. LIQUID

1. NUMBER OF BATCH RELEASES-	206
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-	1.96E 4
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	1.96E 2
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	9.53E 1
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	1.00E 1
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-	4.54E 6

B. GASEOUS

1. NUMBER OF BATCH RELEASES-	9
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-	8.85E 2
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	2.40E 2
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	1.04E 2
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	1.00E 0

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES	0
2. TOTAL ACTIVITY RELEASED(CURIES)	0.00E 0

B. GASEOUS

1. NUMBER OF RELEASES	0
2. TOTAL ACTIVITY RELEASES(CURIES)	0.00E 0

N/D=NOT DETECTABLE

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INSTALLATION-TURKEY POINT 3

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR 1988 GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST TOTAL ERROR %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.02E 2	2.31E 2	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.57E 1	2.93E 1	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
B. IODINES				
1. TOTAL IODINE-131	CI	1.70E- 3	1.17E- 3	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.16E- 4	1.49E- 4	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES >8 DAYS	CI	6.19E- 5	2.54E- 5	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	7.88E- 6	3.23E- 6	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
4. GROSS ALPHA RADIOACTIVITY	CI	1.62E- 7	2.06E- 7	
D. TRITIUM				
1. TOTAL RELEASE	CI	5.15E 1	3.60E 1	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.55E 0	4.58E 0	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

N/D=NOT DETECTABLE

N/A=NOT APPLICABLE

INSTALLATION-TURKEY POINT 3

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR 1988
GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST TOTAL ERROR %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	5.12E 2	3.02E 2	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.44E 1	3.79E 1	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
B. IODINES				
1. TOTAL IODINE-131	CI	1.17E- 3	5.94E- 4	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.47E- 4	7.47E- 5	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES >8 DAYS	CI	5.12E- 5	5.54E- 5	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.44E- 6	6.97E- 6	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
4. GROSS ALPHA RADIOACTIVITY	CI	1.87E- 8	N/D	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.12E 2	1.60E 0	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.41E 1	2.01E- 1	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

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INSTALLATION-TURKEY POINT 3

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR 1988
GASEOUS EFFLUENTS-ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI	1.11E- 1	2.11E- 1		1.45E- 1
KR-85	CI			4.04E- 1	
KR-85M	CI		7.86E- 3	2.48E- 2	1.44E- 2
KR-87	CI		9.65E- 4		4.49E- 5
KR-88	CI		3.15E- 3	6.05E- 3	5.90E- 3
XE-131M	CI	8.96E- 3	2.49E 0	1.28E 0	1.94E- 1
XE-133	CI	1.27E 2	2.06E 2	7.06E 1	1.55E 1
XE-133M	CI	2.20E- 2	8.74E- 2	1.50E 0	3.67E 0
XE-135	CI	1.41E- 2	1.33E- 1	9.72E- 1	1.93E 0
IODINES					
BR-82	CI	1.08E- 4	2.28E- 4		
I-131	CI	1.70E- 3	1.17E- 3		
I-133	CI	2.74E- 3	1.03E- 3		
I-135	CI	7.00E- 4	1.27E- 3		
PARTICULATES					
CO-58	CI		1.01E- 6		
CO-60	CI	2.25E- 6	1.91E- 6		
SR-89	CI	8.90E- 7	1.24E- 6		
I-131	CI	6.52E- 6	1.19E- 6		
CS-134	CI	1.17E- 5	8.45E- 7		
CS-136	CI	2.58E- 6			
CS-137	CI	1.64E- 5	1.18E- 5		
BA-140	CI	7.70E- 6	8.60E- 6		
LA-140	CI	1.90E- 6			
CE-144	CI	1.20E- 5			

INSTALLATION-TURKEY POINT 3

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR 1988
GASEOUS EFFLUENTS-ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	2.66E- 1	1.05E- 1	1.56E- 3	4.62E- 3
KR-85	CI	5.37E- 1	1.50E- 3	3.13E- 1	1.21E- 1
KR-85M	CI	5.69E- 2	4.93E- 1	1.15E- 3	
KR-87	CI	7.25E- 3		1.57E- 6	
KR-88	CI	2.49E- 2			
XE-131M	CI	1.06E 1	9.95E- 3	4.60E- 1	5.97E- 1
XE-133	CI	4.59E 2	2.73E 2	2.89E 1	2.15E 1
XE-133M	CI	1.31E 0	1.65E- 3	1.97E- 1	1.52E- 1
XE-135	CI	1.00E 1	5.43E 0	5.64E- 2	1.79E- 1
IODINES					
BR-82	CI	2.78E- 4	7.80E- 6		
I-131	CI	5.15E- 4	5.10E- 4		
I-133	CI	3.79E- 4	7.65E- 5		
PARTICULATES					
CR-51	CI		1.24E- 5		
MN-54	CI	2.62E- 6			
CO-58	CI	5.00E- 7	1.84E- 5		
CO-60	CI	1.42E- 6	1.14E- 5		
SR-89	CI	6.50E-11			
I-131	CI	1.74E- 6	3.51E- 7		
CS-134	CI	8.10E- 6			
CS-136	CI	3.48E- 6			
CS-137	CI	2.03E- 5	1.28E- 5		
BA-140	CI	1.30E- 5			

INSTALLATION-TURKEY POINT 3

EFFLUENT AND WASTE DISPOSAL REPORT FOR 1988
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST TOTAL ERROR %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	4.23E- 2	4.07E- 2	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.94E-10	7.24E-10	
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI	5.45E 1	5.15E 1	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	8.95E- 7	9.15E- 7	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	9.45E- 2	4.00E- 2	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.55E- 9	7.12E-10	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	N/D	N/D	
E. VOLUME OF WASTE RELEASED(PRIOR TO DILUTION)	LITERS	1.47E 6	1.02E 6	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	6.09E 10	5.62E 10	

N/D=NOT DETECTABLE

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INSTALLATION-TURKEY POINT 3

EFFLUENT AND WASTE DISPOSAL REPORT FOR 1988
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST TOTAL ERROR %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.75E- 1	6.91E- 2	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.29E- 9	1.81E-10	
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI	1.38E 2	5.50E 1	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.80E- 6	5.45E- 7	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	2.09E- 1	6.95E- 2	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.73E- 9	6.88E-10	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	1.12E- 7	N/D	
E. VOLUME OF WASTE RELEASED(PRIOR TO DILUTION)	LITERS	1.69E 6	3.55E 6	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	7.65E 10	1.01E 11	

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INSTALLATION-TURKEY POINT 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR 1988
LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
NA-24	CI			4.31E- 6	4.11E- 6
CR-51	CI			3.94E- 4	4.51E- 3
MN-54	CI			1.80E- 3	
FE-55	CI			5.69E- 3	2.96E- 3
CO-57	CI			1.59E- 6	
CO-58	CI			5.81E- 3	7.69E- 3
FE-59	CI				1.94E- 4
CO-60	CI			1.74E- 2	1.18E- 2
KR-85M	CI				1.53E- 6
NB-95	CI			4.58E- 6	1.48E- 4
ZR-95	CI				2.01E- 5
NB-97	CI				3.34E- 6
MO-99-TC-99M	CI			1.92E- 4	1.04E- 4
RU-103	CI				4.00E- 5
AG-110M	CI			1.15E- 3	6.48E- 4
SN-117M	CI				1.63E- 5
SB-124	CI			5.73E- 5	2.23E- 4
SB-125	CI			3.27E- 3	5.39E- 3
I-131	CI	3.56E- 5	8.14E- 4	3.75E- 4	1.86E- 4
XE-131M	CI			1.67E- 4	4.34E- 4
I-133	CI	1.50E- 5	1.77E- 4		
XE-133	CI			9.17E- 2	3.94E- 2
XE-133M	CI			2.40E- 3	1.20E- 4
CS-134	CI			1.15E- 3	1.98E- 3
XE-135	CI			2.33E- 4	1.40E- 5
CS-136	CI				7.45E- 6
CS-137	CI			3.60E- 3	6.04E- 3
BA-139	CI				2.41E- 5
LA-140	CI			1.34E- 3	7.31E- 4

N/D=NOT DETECTABLE

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INSTALLATION-TURKEY POINT 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR 1988
LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
NA-24	CI			1.49E- 5	1.47E- 6
CR-51	CI			1.19E- 3	1.73E- 3
MN-54	CI			8.15E- 3	5.10E- 3
FE-55	CI			7.69E- 3	3.02E- 2
CO-57	CI			1.75E- 6	
CO-58	CI			2.37E- 3	1.02E- 2
FE-59	CI				3.09E- 4
CO-60	CI			1.48E- 1	7.10E- 3
ZN-65	CI			4.10E- 6	1.29E- 5
KR-85	CI			6.81E- 3	3.63E- 3
KR-85M	CI			2.82E- 4	
SR-89	CI				1.95E- 4
SR-90	CI			5.25E- 5	
NB-95	CI			2.91E- 5	4.17E- 5
ZR-95	CI				4.20E- 5
MO-99 - TC-99m	CI			7.05E- 6	1.82E- 4
RU-103	CI				2.96E- 5
AG-110M	CI			2.39E- 4	1.04E- 4
SN-117M	CI			9.90E- 6	1.37E- 5
SB-124	CI			3.97E- 6	2.30E- 3
SB-125	CI			3.38E- 3	6.15E- 3
I-131	CI			4.28E- 4	4.58E- 4
XE-131M	CI			3.46E- 3	1.36E- 3
I-133	CI			4.00E- 5	2.28E- 5
XE-133	CI			1.97E- 1	6.43E- 2
XE-133M	CI			1.19E- 3	1.24E- 4
CS-134	CI			2.03E- 4	1.23E- 3
XE-135	CI			1.88E- 4	1.05E- 4
XE-135M	CI			2.34E- 6	1.38E- 5
CS-136	CI			2.13E- 3	5.15E- 3
CS-137	CI			7.80E- 4	
BA-139	CI			2.17E- 4	4.33E- 5
CE-139	CI			1.11E- 6	
LA-140	CI			1.72E- 5	5.80E- 5

to Mo-99 - TC-99m

Change Mo-99

N/D=NOT DETECTABLE

N/A=NOT APPLICABLE

INSTALLATION: TURKEY POINT 4

LOCATION: 10 MI E FLORIDA CITY, FL

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1988
AIRBORNE AND LIQUID EFFLUENTS

UNIT NUMBER: 4 TYPE: PWR LICENSEE: FLORIDA POWER & LIGHT
DOCKET NO.: 50-251 LICENSED POWER (MWT): 2.20E+03
THERMAL POWER (MWT): 1.06E+07 NET ELECTRIC POWER (MWT): 3.26E+06
COMMERCIAL OPERATION: 09/07/73 INITIAL CRITICALITY: 06/11/73
COOLING WATER SOURCE: CLOSED CYCLE CANAL

AIRBORNE EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
AR-41	2.91E+01
CR-51	1.24E-05
MN-54	2.62E-06
CO-58	1.99E-05
CO-60	1.68E-05
BR-82	6.22E-04
KR-85	1.51E+00
KR-85M	6.36E-01
KR-87	7.30E-03
KR-88	7.68E-02
SR-89	2.13E-06
I-131	3.85E-03
XE-131M	1.38E+01
I-133	4.22E-03
XE-133	1.23E+03
XE-133M	7.51E+00
CS-134	2.06E-05
I-135	1.97E-03
XE-135	1.94E+01
CS-136	6.06E-06
CS-137	6.11E-05
BA-140	2.93E-05
LA-140	1.90E-06
CE-144	1.20E-05

Air borne

CS-136 should
be 6.06E-6

8.64E-6 - 2.58E-6
= 6.06E-6

LIQUID EFFLUENTS

NUCLIDES RELEASED	ACTIVITY (CI)
NA-24	2.48E-05
CR-51	7.82E-03
MN-54	1.50E-02
FE-55	4.65E-02
CO-57	3.34E-06
CO-58	2.61E-02
FE-59	5.03E-04
CO-60	1.84E-01
ZN-65	1.70E-05
KR-85	1.04E-02
KR-85M	2.84E-04
SR-89	1.95E-04
SR-90	5.25E-05
NB-95	2.23E-04
ZR-95	6.21E-05
NB-97	3.34E-06

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION: TURKEY POINT 4

LOCATION: 10 MI E FLORIDA CITY, FL

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1988
AIRBORNE AND LIQUID EFFLUENTS

LIQUID EFFLUENTS
NUCLIDES RELEASED

ACTIVITY (CI)

MO-99	7.89E-04	} Mo-99-TC-99m combine
MO-99-TC-99M	4.85E-04	
RU-103	6.96E-05	
AG-110M	2.14E-03	
SN-117M	3.99E-05	
SB-124	2.58E-03	
SB-125	1.82E-02	
I-131	1.45E-03	
XE-131M	5.42E-03	
I-133	6.28E-05	
XE-133	3.92E-01	
XE-133M	3.83E-03	
CS-134	4.56E-03	
XE-135	5.40E-04	
XE-135M	1.61E-05	
CS-136	7.29E-03	
CS-137	1.04E-02	
BA-139	2.84E-04	
CE-139	1.11E-06	
LA-140	2.15E-03	

TOTAL AIRBORNE TRITIUM RELEASE 2.01E+02
TOTAL LIQUID TRITIUM RELEASE 2.99E+02

VOLUME OF LIQUID WASTE RELEASED (PRIOR TO DILUTION) LITERS 7.73E+06
VOLUME OF DILUTION WATER USED DURING PERIOD LITERS 2.95E+11

Mo-99 &
Mo-99-TC-99m
are them.
should be added
together
4.85E-4

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

100



100

100

INSTALLATION=TURKEY POINT 4

LOCATION 10 MI E FLORIDA CITY, FL

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR 1988
SUPPLEMENTAL INFORMATION

UNIT NUMBER 4 TYPE PWR
DOCKET NO. 50-251
THERMAL POWER (MWT) 1.06E+07
COMMERCIAL OPERATION 09/07/73
COOLING WATER SOURCE CLOSED CYCLE CANAL

LICENSEE FLORIDA POWER & LIGHT
LICENSED POWER (MWT) 2.20E+03
NET ELECTRIC POWER (MWT) 3.26E+06
INITIAL CRITICALITY 06/11/73

MAXIMUM PERMISSIBLE CONCENTRATIONS(MICROCURI/ML)

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES
GAMMA SPECTRUM ANALYSIS

IODINES
ABSORPTION OF HALOGEN RADIONUCLIDES ON A CHARCOAL FILTER AND SUBSEQUENT GAMMA-SPECTRUM ANALYSIS.

PARTICULATES
REMOVAL OF PARTICULATE MATERIAL BY FILTRATION AND SUBSEQUENT GAMMA-SPECTRUM ANALYSIS, SR-89-90 DETERMINATION, GROSS ALPHA ANALYSIS AND GROSS BETA-GAMMA ANALYSIS.

LIQUID EFFLUENTS
ALIQOTS OF REPRESENTATIVE PRE-RELEASE SAMPLES WERE EITHER ISOTOPICALLY ANALYZED FOR GAMMA EMITTING ISOTOPES ON A MULTICHANNEL ANALYZER OR EVAPORATED AND ANALYZED FOR GROSS BETA-GAMMA ACTIVITY IN A 2 PI GAS FLOW PROPORTIONAL COUNTER. THE EFFICIENCY OF THE GAS FLOW PROPORTIONAL COUNTER IS ADJUSTED SO THAT THE ACTIVITY DETERMINED BY GROSS BETA-GAMMA ANALYSIS APPROXIMATES THE ISOTOPIC ACTIVITIES DETERMINED BY GAMMA SPECTRUM ANALYSIS AND SELECTED BETA DETERMINATIONS, EXCLUSIVE OF TRITIUM AND DISSOLVED GASES. THE ABOVE PROCEDURE WAS FOLLOWED FOR ALL RELEASES FROM THE WASTE DISPOSAL SYSTEM AND FOR SECONDARY SYSTEM BATCH RELEASES. FREQUENT PERIODIC SAMPLING AND ANALYSIS WERE USED TO CONSERVATIVELY ESTIMATE THE QUANTITY OF RADIOACTIVITY RELEASED VIA THE STEAM GENERATOR BLOWDOWN SYSTEM. COMPOSITES FOR H3, ALPHA, AND SR-89/90 AND FE-55 ARE ALSO DONE ON LIQUID EFFLUENTS.

INSTALLATION-TURKEY POINT 4

LOCATION 10 MI E FLORIDA CITY, FL

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR 1988

SUPPLEMENTAL INFORMATION

AVERAGE ENERGY(MEV/DISINTEGRATION)

BETA
N/A

FIRST SIX
MONTHS

GAMMA
N/A

FIRST SIX
MONTHS

BATCH RELEASES

A. LIQUID

1. NUMBER OF BATCH RELEASES-	114
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-	1.09E 4
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	2.25E 2
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	9.56E 1
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	5.70E 1
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-	1.07E 7

B. GASEOUS

1. NUMBER OF BATCH RELEASES-	18
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-	8.63E 2
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	2.40E 2
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	4.66E 1
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	2.00E 1

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES	0
2. TOTAL ACTIVITY RELEASED(CURIES)	0.00E 0

B. GASEOUS

1. NUMBER OF RELEASES	0
2. TOTAL ACTIVITY RELEASES(CURIES)	0.00E 0

N/D=NOT DETECTABLE

N/A=NOT APPLICABLE

INSTALLATION-TURKEY POINT 4

LOCATION 10 MI E FLORIDA CITY, FL

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR 1988

SUPPLEMENTAL INFORMATION

AVERAGE ENERGY(MEV/DISINTEGRATION)

BETA
N/A

SECOND SIX
MONTHS

GAMMA
N/A

SECOND SIX
MONTHS

BATCH RELEASES
A. LIQUID

1. NUMBER OF BATCH RELEASES-	206
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-	1.96E 4
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	1.96E 2
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	9.53E 1
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	1.00E 1
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM(LTS/MIN)-	4.54E 6

B. GASEOUS

1. NUMBER OF BATCH RELEASES-	12
2. TOTAL TIME PERIOD FOR BATCH RELEASES(MIN)-	1.85E 3
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	2.40E 2
4. AVERAGE TIME PERIOD FOR BATCH RELEASES(MIN)-	1.47E 2
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE(MIN)-	1.00E 0

ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES	1
2. TOTAL ACTIVITY RELEASED(CURIES)	2.82E- 1

B. GASEOUS

1. NUMBER OF RELEASES	0
2. TOTAL ACTIVITY RELEASES(CURIES)	0.00E 0

N/D=NOT DETECTABLE

N/A=NOT APPLICABLE

INSTALLATION-TURKEY POINT 4

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR 1988
GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST TOTAL ERROR %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	2.12E 2	2.36E 2	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.69E 1	3.00E 1	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
B. IODINES				
1. TOTAL IODINE-131	CI	1.70E- 3	1.12E- 3	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	2.16E- 4	1.42E- 4	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES >8 DAYS	CI	6.20E- 5	2.49E- 5	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	7.89E- 6	3.17E- 6	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
4. GROSS ALPHA RADIOACTIVITY	CI	1.62E- 7	2.06E- 7	
D. TRITIUM				
1. TOTAL RELEASE	CI	5.15E 1	3.60E 1	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.56E 0	4.58E 0	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

N/D=NOT DETECTABLE

N/A=NOT APPLICABLE

INSTALLATION-TURKEY POINT 4

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR 1988
GASEOUS EFFLUENTS.- SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST TOTAL ERROR %
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CI	5.73E 2	2.84E 2	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	7.21E 1	3.57E 1	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
B. IODINES				
1. TOTAL IODINE-131	CI	1.17E- 3	5.94E- 4	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.47E- 4	7.47E- 5	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
C. PARTICULATES				
1. PARTICULATES WITH HALF-LIVES >8 DAYS	CI	5.12E- 5	5.54E- 5	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	6.44E- 6	6.97E- 6	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			
4. GROSS ALPHA RADIOACTIVITY	CI	1.87E- 8	N/D	
D. TRITIUM				
1. TOTAL RELEASE	CI	1.12E 2	1.60E 0	
2. AVERAGE RELEASE RATE FOR PERIOD	UCI/SEC	1.41E 1	2.01E- 1	
3. PERCENT OF TECHNICAL SPECIFICATION LIMIT	%			

N/D=NOT DETECTABLE

N/A=NOT APPLICABLE

INSTALLATION-TURKEY POINT 4

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR 1988
GASEOUS EFFLUENTS-ELEVATED RELEASE

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
AR-41	CI	2.47E- 1	2.81E 1		
KR-85	CI	1.43E- 1		4.04E- 1	
KR-85M	CI	1.18E- 3	7.28E- 3	2.16E- 2	1.44E- 2
KR-87	CI				4.49E- 5
KR-88	CI		4.59E- 3	6.05E- 3	5.90E- 3
XE-131M	CI	1.76E- 2	1.39E- 1	1.28E 0	1.94E- 1
XE-133	CI	1.32E 2	1.86E 2	7.45E 1	1.55E 1
XE-133M	CI	5.83E- 2	1.12E- 1	1.53E 0	3.67E 0
XE-135	CI	6.78E- 2	1.47E- 1	9.35E- 1	1.81E 0
IODINES					
BR-82	CI	1.08E- 4	2.28E- 4		
I-131	CI	1.70E- 3	1.12E- 3		
I-133	CI	2.74E- 3	1.02E- 3		
I-135	CI	7.00E- 4	1.27E- 3		
PARTICULATES					
CO-58	CI		1.01E- 6		
CO-60	CI	2.25E- 6	1.69E- 6		
SR-89	CI	8.90E- 7	1.24E- 6		
I-131	CI	6.52E- 6	1.19E- 6		
CS-134	CI	1.17E- 5	8.45E- 7		
CS-136	CI	2.58E- 6	2.58E- 6		
CS-137	CI	1.64E- 5	1.16E- 5		
BA-140	CI	7.70E- 6	8.60E- 6		
LA-140	CI	1.90E- 6			
CE-144	CI	1.20E- 5			

← This lesson 0 (blank space)

Correction

*Co-136 shown
only in*

QTB-1

*(see correction for
annual value)*

INSTALLATION-TURKEY POINT 4

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR 1988 GASEOUS EFFLUENTS-ELEVATED RELEASE

		CONTINUOUS MODE		BATCH MODE	
NUCLIDES RELEASED	UNIT	QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CI	2.66E- 1	1.05E- 1	3.96E- 1	
KR-85	CI	5.37E- 1	1.50E- 3	3.13E- 1	1.12E- 1
KR-85M	CI	5.69E- 2	4.93E- 1	4.20E- 2	
KR-87	CI	7.25E- 3		1.57E- 6	
KR-88	CI	2.49E- 2		3.54E- 2	
XE-131M	CI	1.06E 1	9.95E- 3	1.29E 0	2.47E- 1
XE-133	CI	4.59E 2	2.73E 2	8.71E 1	4.19E 0
XE-133M	CI	1.31E 0	1.65E- 3	7.80E- 1	4.87E- 2
XE-135	CI	1.00E 1	5.43E 0	9.37E- 1	6.34E- 2
IODINES					
BR-82	CI	2.78E- 4	7.80E- 6		
I-131	CI	5.15E- 4	5.10E- 4		
I-133	CI	3.79E- 4	7.65E- 5		
PARTICULATES					
CR-51	CI		1.24E- 5		
MN-54	CI	2.62E- 6			
CO-58	CI	5.00E- 7	1.84E- 5		
CO-60	CI	1.42E- 6	1.14E- 5		
SR-89	CI	6.50E-11			
I-131	CI	1.74E- 6	3.51E- 7		
CS-134	CI	8.10E- 6			
CS-136	CI	3.48E- 6			
CS-137	CI	2.03E- 5	1.28E- 5		
BA-140	CI	1.30E- 5			



INSTALLATION-TURKEY POINT 4

EFFLUENT AND WASTE DISPOSAL REPORT FOR 1988
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST TOTAL ERROR %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	4.22E- 2	3.97E- 2	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	6.93E-10	7.06E- 10 ¹⁰	
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI	5.45E 1	5.14E 1	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	8.95E- 7	9.15E- 7	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	9.45E- 2	4.00E- 2	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.55E- 9	7.12E-10	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	N/D	N/D	
E. VOLUME OF WASTE RELEASED(PRIOR TO DILUTION)	LITERS	1.47E 6	1.02E 6	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	6.09E 10	5.62E 10	

Correct

$$\frac{(3.97 \times 10^{-2} \text{ Ci}) (10^{-3} \frac{\text{Ci}}{\text{L}})}{(5.62 \times 10^{10} \text{ Liters}) (1000 \frac{\text{mL}}{\text{Liter}})}$$

= 7.06E-10

N/D=NOT DETECTABLE

N/A=NOT APPLICABLE



INSTALLATION-TURKEY POINT 4

EFFLUENT AND WASTE DISPOSAL REPORT FOR 1988
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST TOTAL ERROR %
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE (NOT INCLUDING TRITIUM, GASES, ALPHA)	CI	1.75E- 1	6.91E- 2	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.29E- 9	1.81E-10	
3. PERCENT OF APPLICABLE LIMIT	%			
B. TRITIUM				
1. TOTAL RELEASE	CI	1.38E 2	5.50E 1	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	1.80E- 6	5.45E- 7	
3. PERCENT OF APPLICABLE LIMIT	%			
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CI	2.09E- 1	6.95E- 2	
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	UCI/ML	2.73E- 9	6.88E-10	
3. PERCENT OF APPLICABLE LIMIT	%			
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CI	1.12E- 7	N/D	
E. VOLUME OF WASTE RELEASED(PRIOR TO DILUTION)	LITERS	1.69E 6	3.55E 6	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	LITERS	7.65E 10	1.01E 11	

N/D=NOT DETECTABLE

N/A=NOT APPLICABLE

INSTALLATION-TURKEY POINT 4

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR 1988
LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
NA-24	CI			4.31E- 6	4.11E- 6
CR-51	CI			3.94E- 4	4.51E- 3
MN-54	CI			1.80E- 3	
FE-55	CI			5.69E- 3	2.96E- 3
CO-57	CI			1.59E- 6	
CO-58	CI			5.81E- 3	7.69E- 3
FE-59	CI				1.94E- 4
CO-60	CI			1.74E- 2	1.18E- 2
KR-85M	CI				1.53E- 6
NB-95	CI			4.58E- 6	1.48E- 4
ZR-95	CI				2.01E- 5
NB-97	CI				3.34E- 6
MO-99-TC-99M	CI			1.92E- 4	1.04E- 4
RU-103	CI				4.00E- 5
AG-110M	CI			1.15E- 3	6.48E- 4
SN-117M	CI				1.63E- 5
SB-124	CI			5.73E- 5	2.23E- 4
SB-125	CI			3.27E- 3	5.39E- 3
I-131	CI			3.75E- 4	1.86E- 4
XE-131M	CI			1.67E- 4	4.34E- 4
XE-133	CI			9.17E- 2	3.94E- 2
XE-133M	CI			2.40E- 3	1.20E- 4
CS-134	CI			1.15E- 3	1.98E- 3
XE-135	CI			2.33E- 4	1.40E- 5
CS-136	CI				7.45E- 6
CS-137	CI			3.60E- 3	6.04E- 3
BA-139	CI				2.41E- 5
LA-140	CI			1.34E- 3	7.31E- 4

N/D=NOT DETECTABLE

N/A=NOT APPLICABLE

INSTALLATION-TURKEY POINT 4

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR 1988
LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
NA-24	CI			1.49E- 5	1.47E- 6
CR-51	CI			1.19E- 3	1.73E- 3
MN-54	CI			8.15E- 3	5.10E- 3
FE-55	CI			7.69E- 3	3.02E- 2
CO-57	CI			1.75E- 6	
CO-58	CI			2.37E- 3	1.02E- 2
FE-59	CI				3.09E- 4
CO-60	CI			1.48E- 1	7.10E- 3
ZN-65	CI			4.10E- 6	1.29E- 5
KR-85	CI			6.81E- 3	3.63E- 3
KR-85M	CI			2.82E- 4	
SR-89	CI				1.95E- 4
SR-90	CI			5.25E- 5	
NB-95	CI			2.91E- 5	4.17E- 5
ZR-95	CI				4.20E- 5
MO-99 - <i>Tc-99m</i>	CI			7.05E- 6	1.82E- 4
RU-103	CI				2.96E- 5
AG-110M	CI			2.39E- 4	1.04E- 4
SN-117M	CI			9.90E- 6	1.37E- 5
SB-124	CI			3.97E- 6	2.30E- 3
SB-125	CI			3.38E- 3	6.15E- 3
I-131	CI			4.28E- 4	4.58E- 4
XE-131M	CI			3.46E- 3	1.36E- 3
I-133	CI			4.00E- 5	2.28E- 5
XE-133	CI			1.97E- 1	6.43E- 2
XE-133M	CI			1.19E- 3	1.24E- 4
CS-134	CI			2.03E- 4	1.23E- 3
XE-135	CI			1.88E- 4	1.05E- 4
XE-135M	CI			2.34E- 6	1.38E- 5
CS-136	CI			2.13E- 3	5.15E- 3
CS-137	CI			7.80E- 4	
BA-139	CI			2.17E- 4	4.33E- 5
CE-139	CI			1.11E- 6	
LA-140	CI			1.72E- 5	5.80E- 5

Change Mo-99 to

Mo-99-Tc-99m

DETECTABLE

N/A=NOT APPLICABLE

INSTALLATION-TURKEY POINT

LOCATION 10 MI E FLORIDA CITY, FL

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR 1988
SUPPLEMENTAL INFORMATION

UNIT NUMBER 3 TYPE PWR
DOCKET NO. 50-250
THERMAL POWER (MWT) 1.14E+07
COMMERCIAL OPERATION 12/14/72
COOLING WATER SOURCE CLOSED CYCLE CANAL

LICENSEE FLORIDA POWER & LIGHT
LICENSED POWER (MWT) 2.20E+03
NET ELECTRIC POWER (MWT) 3.45E+06
INITIAL CRITICALITY 10/20/72

UNIT NUMBER 4 TYPE PWR
DOCKET NO. 50-251
THERMAL POWER (MWT) 1.06E+07
COMMERCIAL OPERATION 09/07/73
COOLING WATER SOURCE CLOSED CYCLE CANAL

LICENSEE FLORIDA POWER & LIGHT
LICENSED POWER (MWT) 2.20E+03
NET ELECTRIC POWER (MWT) 3.26E+06
INITIAL CRITICALITY 06/11/73

MAXIMUM PERMISSIBLE CONCENTRATIONS(MICROCURIES/ML)

MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

FISSION AND ACTIVATION GASES
GAMMA SPECTRUM ANALYSIS

IODINES

ABSORPTION OF HALOGEN RADIONUCLIDES ON A CHARCOAL FILTER AND SUBSEQUENT GAMMA-SPECTRUM ANALYSIS.

PARTICULATES

REMOVAL OF PARTICULATE MATERIAL BY FILTRATION AND SUBSEQUENT GAMMA-SPECTRUM ANALYSIS, SR-89-90 DETERMINATION, GROSS ALPHA ANALYSIS AND GROSS BETA-GAMMA ANALYSIS.

LIQUID EFFLUENTS

ALIQUOTS OF REPRESENTATIVE PRE-RELEASE SAMPLES WERE EITHER ISOTOPICALLY ANALYZED FOR GAMMA EMITTING ISOTOPES ON A MULTICHANNEL ANALYZER OR EVAPORATED AND ANALYZED FOR GROSS BETA-GAMMA ACTIVITY IN A 2 PI GAS FLOW PROPORTIONAL COUNTER. THE EFFICIENCY OF THE GAS FLOW PROPORTIONAL COUNTER IS ADJUSTED SO THAT THE ACTIVITY DETERMINED BY GROSS BETA-GAMMA ANALYSIS APPROXIMATES THE ISOTOPIC ACTIVITIES DETERMINED BY GAMMA SPECTRUM ANALYSIS AND SELECTED BETA DETERMINATIONS, EXCLUSIVE OF TRITIUM AND DISSOLVED GASES. THE ABOVE PROCEDURE WAS FOLLOWED FOR ALL RELEASES FROM THE WASTE DISPOSAL SYSTEM AND FOR SECONDARY SYSTEM BATCH RELEASES. FREQUENT PERIODIC SAMPLING AND ANALYSIS WERE USED TO CONSERVATIVELY ESTIMATE THE QUANTITY OF RADIOACTIVITY RELEASED VIA THE STEAM GENERATOR BLOWDOWN SYSTEM. COMPOSITES FOR H3, ALPHA, SR-89/90 AND FE-55 ARE ALSO DONE ON LIQUID EFFLUENTS.

INSTALLATION: TURKEY POINT

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT FOR YEAR 1988
SOLID EFFLUENTS

SOLID WASTE DISPOSITION		MODE OF TRANSPORTATION	DESTINATION
NUMBER OF SHIPMENTS			
10		SOLE USE TRUCK	BARNWELL SC
+ 12		SOLE USE TRUCK	OAK RIDGE TN
ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)		JAN-JUNE	JULY-DEC
A			
CO-58	%	2.00E+00	2.00E+00
CO-60	%	5.40E+01	5.40E+01
CS-134	%	3.00E+00	3.00E+00
CS-137	%	9.00E+00	9.00E+00
FE-55	%	1.70E+01	1.70E+01
I-131	%	3.00E+00	3.00E+00
MN-54	%	1.00E+00	1.00E+00
NI-63	%	9.00E+00	9.00E+00
SB-125	%	1.00E+00	1.00E+00
B			
C-14	%		1.40E+01
CO-58	%	7.00E+00	
CO-60	%	3.80E+01	5.60E+01
CS-137	%		1.00E+00
FE-55	%	4.10E+01	1.20E+01
H-3	%		3.00E+00
MN-54	%	2.00E+00	1.00E+00
NB-95	%	1.00E+00	
NI-63	%	7.00E+00	1.00E+01
SB-125	%	1.00E+00	1.00E+00
TRU	%	1.00E+00	
D			
AG-110M	%		6.00E+00
CO-60	%		5.10E+01
CS-137	%	1.00E+02	3.10E+01
FE-55	%		8.00E+00
MN-54	%		1.00E+00
NI-63	%		3.00E+00

TYPE OF WASTE	UNIT	YEAR TOTAL
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	3.37E+01
	CI	5.72E+02
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	5.39E+01*
	CI	4.61E-01
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	0.00E+00
	CI	0.00E+00
D. OTHER	M3	1.99E+01*
NON-COMPRESSIBLE METAL WASTE	CI	2.54E-01

* TYPE B & D WASTE IS VOL. BURIED (5.57E2 M3 & 1.09E2 M3 RESPECTIVELY, BEFORE REDUCTION)
+ SHIPPED TO WASTE PROCESSOR FOR VOLUME REDUCTION.

N/A=NOT APPLICABLE
N/D=NOT DETECTED
N/R=NOT REPORTED

INSTALLATION-TURKEY POINT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR 1988 SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

FIRST SIX MONTHS

A.SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL(NOT IRRADIATED

	UNIT	6-MONTH PERIOD	EST. TOTAL ERROR,%
1.TYPE OF WASTE			
A.SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	3.13E 1	
	CI	5.19E2 4.23E-2	2.00E 1
B.DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	1.59E 1*	
	CI	2.67E- 2	2.00E 1
C.IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	0.00E 0	
	CI	0.00E 0	2.00E 1
D.OTHER(DESCRIBE)	M3	1.80E 0*	
NON-COMPRESSIBLE METAL WASTE	CI	2.34E- 2	2.00E 1

2.ESTIMATE OF MAJOR NUCLIDE COMPOSITION(BY TYPE OF WASTE)

A.	CO-58	%	2.00E 0
	CO-60	%	5.40E 1
	CS-134	%	3.00E 0
	CS-137	%	9.00E 0
	FE-55	%	1.70E 1
	I-131	%	3.00E 0
	MN-54	%	1.00E 0
	NI-63	%	9.00E 0
	SB-125	%	1.00E 0
B.	CO-58	%	7.00E 0
	CO-60	%	3.80E 1
	FE-55	%	4.10E 1
	MN-54	%	2.00E 0
	NB-95	%	1.00E 0
	NI-63	%	7.00E 0
	SB-125	%	1.00E 0
	TRU	%	1.00E 0
D.	CS-137	%	1.00E 2

3.SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
9	SOLE USE TRUCK	BARNWELL SC
+ 2	SOLE USE TRUCK	OAK RIDGE TN

* TYPE B & D WASTE IS VOL. BURIED (2.86E2 M3 & 3.62E1 M3 RESPECTIVELY, BEFORE REDUCTION)

+ SHIPPED TO WASTE PROCESSOR FOR VOLUME REDUCTION

N/D=NOT DETECTABLE

N/A=NOT APPLICABLE

INSTALLATION-TURKEY POINT

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT FOR 1988 SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

SECOND SIX MONTHS

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (NOT IRRADIATED)

	UNIT	6-MONTH PERIOD	EST. TOTAL ERROR, %
1. TYPE OF WASTE			
A. SPENT RESINS, FILTER SLUDGES, EVAPORATOR BOTTOMS, ETC.	M3	2.36E 0	
	CI 1.05E2	1.49E-2	2.00E 1
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	M3	3.80E 1*	
	CI	4.34E-1	2.00E 1
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	0.00E 0	
	CI	0.00E 0	2.00E 1
D. OTHER (DESCRIBE)	M3	1.81E 1*	
NON-COMPRESSIBLE METAL WASTE	CI	2.31E-1	2.00E 1

2. ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

A.	CO-58	%	2.00E 0
	CO-60	%	5.40E 1
	CS-134	%	3.00E 0
	CS-137	%	9.00E 0
	FE-55	%	1.70E 1
	I-131	%	3.00E 0
	MN-54	%	1.00E 0
	NI-63	%	9.00E 0
	SB-125	%	1.00E 0
B.	C-14	%	1.40E 1
	CO-60	%	5.60E 1
	CS-137	%	1.00E 0
	FE-55	%	1.20E 1
	H-3	%	3.00E 0
	MN-54	%	1.00E 0
	NI-63	%	1.00E 1
	SB-125	%	1.00E 0
D.	AG-110M	%	6.00E 0
	CO-60	%	5.10E 1
	CS-137	%	3.10E 1
	FE-55	%	8.00E 0
	MN-54	%	1.00E 0
	NI-63	%	3.00E 0

3. SOLID WASTE DISPOSITION

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
1	SOLE USE TRUCK	BARNWELL SC
+ 10	SOLE USE TRUCK	OAK RIDGE TN

* TYPE B & D WASTE IS VOL. BURIED (2.71E2 M3 & 7.25E1 M3 RESPECTIVELY, BEFORE REDUCTION)
+ SHIPPED TO WASTE PROCESSOR FOR VOLUME REDUCTION

N/D=NOT DETECTABLE

N/A=NOT APPLICABLE

