

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

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PDR ADDCK 05000250  
PDC

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AIRBORNE AND LIQUID EFFLUENTS

LIQUID EFFLUENTS  
NUCLIDES RELEASED

NUCLIDES RELEASED	ACTIVITY (CI)
<del>MO-99</del>	<del>1.89E-04</del>
MO-99-TC-99M	4.85 } - combined 2.96E-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	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

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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.



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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR 1988

SUPPLEMENTAL INFORMATION

AVERAGE ENERGY(MEV/DISINTEGRATION)	FIRST SIX MONTHS	
	BETA N/A	GAMMA N/A
BATCH RELEASES		FIRST SIX MONTHS
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

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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

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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 %
<b>A. FISSION AND ACTIVATION GASES</b>				
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>B. IODINES</b>				
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	%			
<b>C. PARTICULATES</b>				
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	
<b>D. TRITIUM</b>				
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	%			

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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 %
<b>A. FISSION AND ACTIVATION GASES</b>				
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>B. IODINES</b>				
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	%			
<b>C. PARTICULATES</b>				
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	
<b>D. TRITIUM</b>				
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	QUARTER	QUARTER	QUARTER
		1	2	1	2
<b>FISSION GASES</b>					
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
<b>IODINES</b>					
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		
<b>PARTICULATES</b>					
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
<b>FISSION GASES</b>					
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
<b>IODINES</b>					
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		
<b>PARTICULATES</b>					
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 %
<b>A. FISSION AND ACTIVATION PRODUCTS</b>				
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>B. TRITIUM</b>				
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	%			
<b>C. DISSOLVED AND ENTRAINED GASES</b>				
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	%			
<b>D. GROSS ALPHA RADIOACTIVITY</b>				
1. TOTAL RELEASE	CI	N/D	N/D	
<b>E. VOLUME OF WASTE RELEASED(PRIOR TO DILUTION)</b>				
	LITERS	1.47E 6	1.02E 6	
<b>F. VOLUME OF DILUTION WATER USED DURING PERIOD</b>				
	LITERS	6.09E 10	5.62E 10	

N/D=NOT DETECTABLE

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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

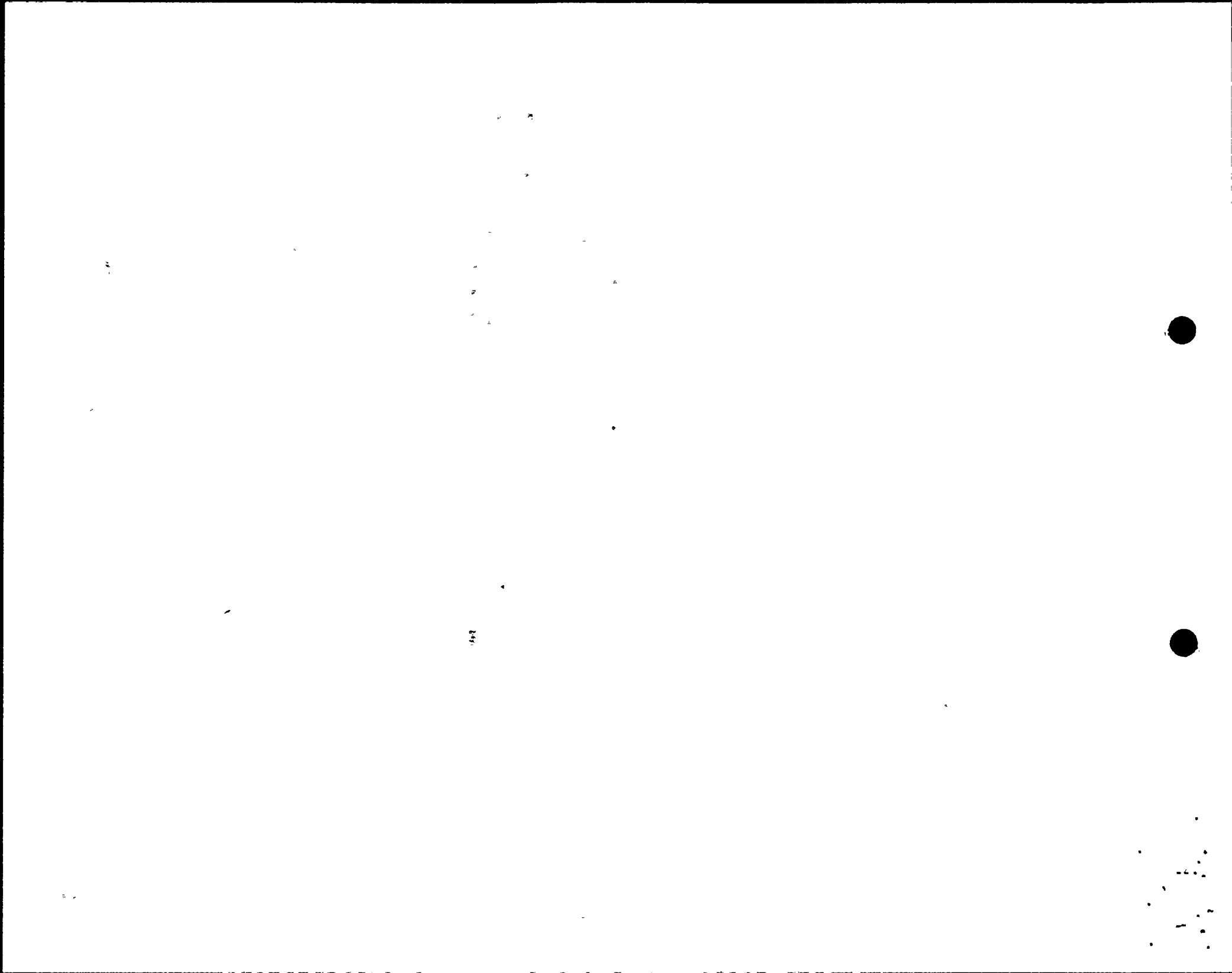
INSTALLATION-TURKEY POINT 3

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

N/A-NOT APPLICABLE



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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR 1988  
LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER	QUARTER	QUARTER	QUARTER
		3	4	3	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	6.57E-06
CS-137	6.11E-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

Air borne

CS-136 should  
be 6.06E-6

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



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)
<del>MO-99</del>	<del>7.89E-04</del>
MO-99-TC-99M	4.85 <del>2.89E-04</del> } <i>Mo-99-TC-99m combine</i>
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

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

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



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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(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, AND SR-89/90 AND FE-55 ARE ALSO DONE ON LIQUID EFFLUENTS.

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
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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



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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 %
<b>A. FISSION AND ACTIVATION GASES</b>				
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>B. IODINES</b>				
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	%			
<b>C. PARTICULATES</b>				
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	
<b>D. TRITIUM</b>				
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 %
<b>A. FISSION AND ACTIVATION GASES</b>				
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>B. IODINES</b>				
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	%			
<b>C. PARTICULATES</b>				
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	
<b>D. TRITIUM</b>				
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
<b>FISSION GASES</b>					
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
<b>IODINES</b>					
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		
<b>PARTICULATES</b>					
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	<del>2.60E- 6</del>		
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*

*QTR. 1*

*(see correction for  
annual value)*

INSTALLATION-TURKEY POINT 4

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
<b>FISSION GASES</b>					
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
<b>IODINES</b>					
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		
<b>PARTICULATES</b>					
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			



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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 %
<b>A. FISSION AND ACTIVATION PRODUCTS</b>				
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- <del>10</del>	
3. PERCENT OF APPLICABLE LIMIT	%			
<b>B. TRITIUM</b>				
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	%			
<b>C. DISSOLVED AND ENTRAINED GASES</b>				
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	%			
<b>D. GROSS ALPHA RADIOACTIVITY</b>				
1. TOTAL RELEASE	CI	N/D	N/D	
<b>E. VOLUME OF WASTE RELEASED(PRIOR TO DILUTION)</b>				
	LITERS	1.47E 6	1.02E 6	
<b>F. VOLUME OF DILUTION WATER USED DURING PERIOD</b>				
	LITERS	6.09E 10	5.62E 10	

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*Correct*

$$\frac{(3.97 \times 10^{-2} \text{ Ci}) (10^6 \frac{\text{L}}{\text{d}})}{(5.62 \times 10^{10} \text{ Liter}) (1000 \frac{\text{mL}}{\text{Liter}})}$$

= 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 %
<b>A. FISSION AND ACTIVATION PRODUCTS</b>				
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>B. TRITIUM</b>				
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	%			
<b>C. DISSOLVED AND ENTRAINED GASES</b>				
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	%			
<b>D. GROSS ALPHA RADIOACTIVITY</b>				
1. TOTAL RELEASE	CI	1.12E- 7	N/D	
<b>E. VOLUME OF WASTE RELEASED(PRIOR TO DILUTION)</b>				
	LITERS	1.69E 6	3.55E 6	
<b>F. VOLUME OF DILUTION WATER USED DURING PERIOD</b>				
	LITERS	7.65E 10	1.01E 11	

N/D=NOT DETECTABLE

N/A=NOT APPLICABLE

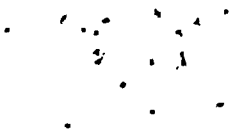
INSTALLATION-TURKEY POINT 4

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT FOR 1988  
LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE	
		QUARTER	QUARTER	QUARTER	QUARTER
		1	2	1	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



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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 - 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

X

Change Mo-99 to  
Mo-99-TC-99m

DETECTABLE

N/A=NOT APPLICABLE



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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			BARNWELL SC	OAK RIDGE TN
10		SOLE USE TRUCK		
+ 12		SOLE USE TRUCK		

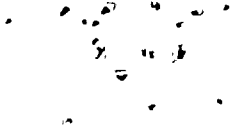
  

ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)		JAN-JUNE	JULY-DEC
<b>A</b>			
CO-58	%	2.00E+00	2.00E+00
CO-60	%	5.40E+01	5.40E+01
CS-134	%	3.00E+00	3.00E+00
CS-137	%	9.00E+00	9.00E+00
FE-55	%	1.70E+01	1.70E+01
I-131	%	3.00E+00	3.00E+00
MN-54	%	1.00E+00	1.00E+00
NI-63	%	9.00E+00	9.00E+00
SB-125	%	1.00E+00	1.00E+00
<b>B</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	
<b>D</b>			
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
B. DRY COMPRESSIBLE WASTE, CONTAMINATED EQUIPMENT, ETC.	CI	<del>5.72E+02</del> 7.04E2
C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.	M3	5.39E+01*
	CI	4.61E-01
D. OTHER NON-COMPRESSIBLE METAL WASTE	M3	0.00E+00
	CI	0.00E+00
	M3	1.99E+01*
	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	<del>5.19E2 4.23E-2</del>	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) NON-COMPRESSIBLE METAL WASTE	M3	1.80E 0*	
	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
D.	TRU	%	1.00E 0
	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 SEMIANNUAL 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	<del>1.49E 2</del>	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



