

Wolf Creek Generating Station

Docket No: STN 50-482
Facility Operating License No: NPF-42

SEMIANNUAL RADIOLOGICAL EFFLUENT RELEASE REPORT

Report No: 1

Reporting Period: January 1, 1985 through June 30, 1985

Submitted by:
Kansas Gas and Electric Company

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INTRODUCTION

This Semiannual Radiological Effluent Release Report covers the period of January 1, 1985, through June 30, 1985, and satisfies the requirements specified in Technical Specification 6.9.1.7. Facility Operating License NPF-32 was issued to Wolf Creek Generating Station on March 11, 1985, authorizing initial fuel loading and physics testing up to five percent of full power. Initial criticality was achieved on May 22, 1985. Facility Operating License NPF-42 was issued on June 4, 1985, authorizing further physics testing and full-power operation.

Section I provides a summary of the quantities of radioactive liquid and gaseous effluents for this reporting period. The format is similar to that provided in Regulatory Guide 1.21, Revision 4. An elevated release pathway does not exist at Wolf Creek Generating Station. Therefore, all airborne releases are considered to be ground level releases. A conservative error of thirty percent has been estimated in effluent data. There was no shipment of solid waste during this reporting period. An assessment of radiation doses to the likely most exposed member of the public for this reporting period will be provided in the next Semiannual Radiological Effluent Release Report.

Section II provides Supplemental Information as described in Regulatory Guide 1.21, Revision 4.

Section III provides a summary of Meteorological Data for the period of May 1, 1985, through June 30, 1985.

Section IV provides additional information required by Technical Specification 6.9.1.7.

SECTION I

Year 1985

REPORT OF RADIOACTIVE EFFLUENTS: LIQUID

	Unit	Quarter 1	Quarter 2
A. Fission and Activation Products			
1. Total Release (not including tritium, gases, alpha)	Ci	0.00E00	2.82E-04
2. Average diluted concentration during period	uCi/ml	0.00E00	6.09E-11
3. Percent of Applicable Limit	%	0.00E00	5.64E-03
B. Tritium			
1. Total Release	Ci	0.00E00	1.37E-01
2. Average diluted concentration during period	uCi/ml	0.00E00	2.96E-08
3. Percent of Applicable Limit	%	0.00E00	1.05E-05
C. Dissolved and Entrained Gases			
1. Total Release	Ci	0.00E00	2.32E-04
2. Average diluted concentration during period	uCi/ml	0.00E00	5.02E-11
3. Percent of Applicable Limit	%	0.00E00	2.32E-08
D. Gross Alpha Radioactivity			
1. Total Release	Ci	0.00E00	0.00E00
E. Volume of waste released			
	liters	0.00E00	1.294E+06
F. Volume of dilution water used			
	liters	0.00E00	5.22E+09

Year 1985

LIQUID EFFLUENTS

NUCLIDES RELEASED	Unit	Continuous Mode		Batch Mode	
		Quarter 1	Quarter 2	Quarter 1	Quarter 2
H-3	Ci	0.00E00	0.00E00	0.00E00	1.37E-01
Na-24	Ci	0.00E00	0.00E00	0.00E00	3.92E-05
Cr-51	Ci	0.00E00	0.00E00	0.00E00	8.42E-06
Co-58	Ci	0.00E00	0.00E00	0.00E00	1.34E-05
Tc-99M	Ci	0.00E00	0.00E00	0.00E00	4.66E-05
I-131	Ci	0.00E00	0.00E00	0.00E00	3.45E-05
I-132	Ci	0.00E00	0.00E00	0.00E00	1.08E-06
I-133	Ci	0.00E00	0.00E00	0.00E00	7.99E-05
I-135	Ci	0.00E00	0.00E00	0.00E00	9.70E-06
Ba-140	Ci	0.00E00	0.00E00	0.00E00	1.50E-06
La-140	Ci	0.00E00	0.00E00	0.00E00	8.72E-06
Ce-144	Ci	0.00E00	0.00E00	0.00E00	4.42E-06
W-187	Ci	0.00E00	0.00E00	0.00E00	2.72E-05
Xe-133	Ci	0.00E00	0.00E00	0.00E00	1.35E-04
Xe-135	Ci	0.00E00	0.00E00	0.00E00	9.75E-05
Br-82	Ci	0.00E00	0.00E00	0.00E00	7.10E-06
Mn-54	Ci	0.00E00	0.00E00	0.00E00	<1.43E-05
Fe-59	Ci	0.00E00	0.00E00	0.00E00	<1.89E-05
Co-60	Ci	0.00E00	0.00E00	0.00E00	<1.26E-05

Year 1985

LIQUID EFFLUENTS

[illegible]

NOTE: The data for the Nuclides Sr-89 and Sr-90 is not yet available from the off-site laboratory. This data will be reported in the next Semiannual Radioactive Effluent Release Report.

Year 1985

REPORT OF RADIOACTIVE EFFLUENTS: AIRBORNE

	Unit	Quarter 1	Quarter 2
A. Fission & Activation Gases			
1. Total Release	Ci	0.00E00	0.00E00
2. Average release rate for period	uCi/sec	0.00E00	0.00E00
3. Percent of Technical Specification Limits	%	0.00E00	0.00E00
B. Iodines			
1. Total Iodine-131	Ci	0.00E00	0.00E00
2. Average release rate for period	uCi/sec	0.00E00	0.00E00
3. Percent of Technical Specification Limits	%	0.00E00	0.00E00
C. Particulates			
1. Particulates with half-lives > 8 days	Ci	0.00E00	0.00E00
2. Average release rate for period	uCi/sec	0.00E00	0.00E00
3. Percent of Technical Specification Limits	%	0.00E00	0.00E00
4. Gross Alpha radioactivity	Ci	0.00E00	0.00E00
D. Tritium			
1. Total Release	Ci	0.00E00	2.47E-01
2. Average release rate for period	uCi/sec	0.00E00	1.34E-01
3. Percent of Technical Specification Limits	%	0.00E00	1.65E-05

GASEOUS EFFLUENTS

NUCLIDES RELEASED	Unit	Continuous Mode		Batch Mode	
		Quarter 1	Quarter 2	Quarter 1	Quarter 2

1. Fission and Activation Gases

Ar-41	Ci	0.00E00	0.00E00	0.00E00	0.00E00
KR-85	Ci	0.00E00	0.00E00	0.00E00	0.00E00
KR-85m	Ci	0.00E00	0.00E00	0.00E00	0.00E00
KR-87	Ci	0.00E00	<1.08E02	0.00E00	<2.06E-01
KR-88	Ci	0.00E00	<1.13E02	0.00E00	<2.16E-01
Xe-131m	Ci	0.00E00	0.00E00	0.00E00	0.00E00
Xe-133	Ci	0.00E00	<5.82E01	0.00E00	<1.12E-01
Xe-133m	Ci	0.00E00	<2.46E02	0.00E00	<4.73E-01
Xe-135	Ci	0.00E00	<3.07E01	0.00E00	<5.89E-02
Xe-135m	Ci	0.00E00	0.00E00	0.00E00	0.00E00
Xe-138	Ci	0.00E00	<2.19E02	0.00E00	<4.21E-01
Total	Ci	0.00E00	0.00E00	0.00E00	0.00E00

2. Halogens (Gaseous)

I-131	Ci	0.00E00	<3.76E-06	0.00E00	0.00E00
I-133	Ci	0.00E00	<6.17E-05	0.00E00	0.00E00
I-135	Ci	0.00E00	0.00E00	0.00E00	0.00E00
Br-82	Ci	0.00E00	0.00E00	0.00E00	0.00E00
Total	Ci	0.00E00	0.00E00	0.00E00	0.00E00

GASEOUS EFFLUENTS

NUCLIDES RELEASED	Unit	Continuous Mode		Batch Mode	
		Quarter 1	Quarter 2	Quarter 1	Quarter 2

3. Particulates

H-3	C1	0.00E00	2.44E-01	0.00E00	2.66E-03
Mn-54	C1	0.00E00	<8.38E-05	0.00E00	0.00E00
Fe-59	C1	0.00E00	<1.61E-05	0.00E00	0.00E00
Co-58	C1	0.00E00	<4.80E-06	0.00E00	0.00E00
Co-60	C1	0.00E00	<7.21E-06	0.00E00	0.00E00
Zn-65	C1	0.00E00	<1.73E-05	0.00E00	0.00E00
Mo-99	C1	0.00E00	<8.38E-05	0.00E00	0.00E00
Cs-137	C1	0.00E00	<6.39E-06	0.00E00	0.00E00
Cs-134	C1	0.00E00	<1.19E-05	0.00E00	0.00E00
Ce-141	C1	0.00E00	<8.19E-06	0.00E00	0.00E00
Ce-144	C1	0.00E00	<3.25E-05	0.00E00	0.00E00
Gross Alpha	C1	0.00E00	<9.75E-07	0.00E00	0.00E00

NOTE: The data for the Nuclides Sr-89 and Sr-90 is not yet available from the off-site laboratory. This data will be reported in the next Semiannual Radioactive Effluent Release Report.

SECTION II
Supplemental Information

Facility: Wolf Creek Generating Station License Number: NPF-42

1. Regulatory Limits

A. For liquid waste effluents

A.1 The concentration of radioactive material released in liquid effluents to UNRESTRICTED AREAS shall be limited to the concentrations specified in 10 CFR Part 20, Appendix B, Table II, Column 2, for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2×10^{-4} microCurie/ml total activity.

A.2 The dose or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released, from each unit, to UNRESTRICTED AREAS shall be limited:

- a. During any calendar quarter to less than or equal to 1.5 mrem to the whole body and to less than or equal to 5 mrem to any organ, and
- b. During any calendar year to less than or equal to 3 mrem to the whole body and to less than or equal to 10 mrem to any organ.

B. For gaseous waste effluents

B.1 The dose rate due to radioactive materials released in gaseous effluents from the site to areas at and beyond the SITE BOUNDARY shall be limited to the following:

- a. For noble gases: Less than or equal to 500 mrem/yr to the whole body and less than or equal to 3000 mrem/yr to the skin, and
- b. For Iodine-131 and 133, for tritium, and for all radionuclides in particulate form with half-lives greater than 8 days: Less than or equal to 1500 mrem/yr to any organ.

B.2 The air dose due to noble gases released in gaseous effluents, from each unit, to areas at and beyond the SITE BOUNDARY shall be limited to the following:

- a. During any calendar quarter: Less than or equal to 5 mrad for gamma radiation and less than or equal to 10 mrad for beta radiation, and
- b. During any calendar year: Less than or equal to 10 mrad for gamma radiation and less than or equal to 20 mrad for beta radiation.

2. Maximum Permissible Concentrations

WATER - covered in section 1.A.

AIR - covered in section 1.B.

3. Average energy of fission and activation gaseous effluents is not applicable.

4. Measurements and Approximations of Total Radioactivity

A. Liquid Effluents

LIQUID RELEASE TYPE	SAMPLING FREQUENCY	METHOD OF ANALYSIS	TYPE OF ACTIVITY ANALYSIS
1. Batch Waste Release Tanks	P Each Batch	P.H.A.	Principal Gamma Emitters
		P.H.A.	I-131
a. Waste Monitor Tank	P One Batch/M	P.H.A.	Dissolved and Entrained Gases (Gamma Emitters)
b. Secondary Liquid Waste Monitor Tank	P Each Batch	L.S.	H-3
		G.F.P.	Gross Alpha
	P Each Batch	O.S.L.	Sr-89, Sr-90
		O.S.L.	Fe-55

p = prior to each batch

m = monthly

P.H.A. = gamma spectrum pulse height analysis using a High Purity Germanium detector.

L.S. = liquid scintillation

G.F.P. = Gas Flow Proportional counting

O.S.L. = performed by an Offsite Laboratory

There were no continuous radioactive waste effluents for this reporting period.

B. Gaseous Waste Effluents

GASEOUS, RELEASE TYPE	SAMPLING FREQUENCY	METHOD OF ANALYSIS	TYPE OF ACTIVITY ANALYSIS
Waste Gas Decay Tank	P Each Tank Grab Sample	P.H.A.	Principal Gamma Emitters
Containment Purge or Vent	P Each PURGE Grab Sample	P.H.A. Gas Bubbler and L.S.	Principal Gamma Emitters H-3 (oxide)
Unit Vent	M Grab Sample	P.H.A. Gas Bubbler and L.S.	Principal Gamma Emitters H-3 (oxide)
Radwaste Building Vent	M Grab Sample	P.H.A	Principal Gamma Emitters
All Release Types as listed above	Continuous	P.H.A	I-131 I-133
	Continuous	P.H.A. Particulate Sample	Principal Gamma Emitters
	Continuous Composite	G.F.P. Particulate Sample	Gross Alpha
	Continuous	O.S.L. Composite Particulate Sample	Sr-89, Sr-90

C. A conservative error of + 30% has been estimated. This includes volumetric measurement device, flow measurement device and analytical errors.

5. Batch Releases

The Wolf Creek Generating Station did not achieve initial criticality until May 22, 1985 at 7:45 a.m. Therefore there were no radioactive effluent releases for the first quarter of 1985.

There were fourteen (14) gaseous batch releases during the second quarter of 1985. The longest gaseous batch release took 71 hours, the shortest occurred over an eleven (11) minutes interval. The average release took 13 hours with a total gaseous batch release time of 247 hours.

There were sixty-eight (68) liquid batch releases during the second quarter of 1985. The longest liquid batch release took 285 minutes while the shortest took only 32 minutes. The average release time for the liquid batch releases was 59 minutes. Total release time for all sixty-eight (68) liquid batch releases was 68 hours.

6. Abnormal Releases

There were no abnormal liquid or gaseous releases for this report period.

SECTION III
WIND SPEED AND DIRECTION TABLES

All gaseous releases at the Wolf Creek Generating Station are ground level releases. The metrological data supplied in these tables cover the period from May 1, 1985 through June 30, 1985.

STABILITY CLASS: A
ELEVATION: GROUND

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0

STABILITY CLASS: B
ELEVATION: GROUND

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	7	0	0	7
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
TOTAL	0	0	0	7	0	0	7

STABILITY CLASS: C
ELEVATION: GROUND

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	2	0	0	0	2
S	0	0	2	8	1	0	11
SSW	0	0	0	2	0	0	2
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
TOTAL	0	0	4	10	1	0	15

STABILITY CLASS: D
ELEVATION: GROUND

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	3	5	11	13	0	0	32
NNE	0	10	23	10	3	0	46
NE	2	13	10	1	0	0	26
ENE	1	21	21	1	0	0	44
E	2	6	14	3	1	0	26
ESE	1	5	9	4	1	0	20
SE	0	6	15	7	0	0	28
SSE	2	10	18	16	0	0	46
S	1	4	8	54	18	2	87
SSW	0	4	5	37	14	3	63
SW	0	5	1	2	3	1	12
WSW	0	4	0	0	0	0	4
W	3	8	6	7	2	0	26
WNW	2	7	10	7	2	0	28
NW	2	6	15	18	11	0	52
NNW	0	7	16	21	1	0	45
TOTAL	19	121	182	201	56	6	585

STABILITY CLASS: E
ELEVATION: GROUND

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	1	7	5	10	3	0	26
NNE	4	12	12	4	3	0	35
NE	5	19	11	2	0	0	37
ENE	5	15	6	3	1	0	30
E	5	8	21	5	0	0	39
ESE	0	16	18	3	1	0	38
SE	2	12	12	3	0	0	29
SSE	0	18	49	14	5	0	86
S	1	13	47	41	22	2	126
SSW	1	7	11	16	1	0	36
SW	2	8	2	0	0	0	12
WSW	2	9	4	1	0	0	16
W	0	4	4	2	0	0	10
WNW	2	4	3	1	0	0	10
NW	3	10	10	1	0	0	24
NNW	1	6	11	2	0	0	20
TOTAL	34	168	226	108	36	2	574

STABILITY CLASS: F
ELEVATION: GROUND

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	0	10	7	0	0	0	17
NNE	1	13	8	1	0	0	23
NE	0	8	0	0	0	0	8
ENE	1	12	7	0	0	0	20
E	0	10	1	0	0	0	11
ESE	1	13	0	0	1	0	15
SE	0	7	0	0	0	0	7
SSE	0	13	5	2	0	0	20
S	1	1	3	1	3	0	9
SSW	2	2	1	0	2	0	7
SW	0	3	0	0	0	0	3
WSW	0	3	0	0	0	0	3
W	1	4	0	0	0	0	5
WNW	0	2	1	0	0	0	3
NW	3	5	4	0	0	0	12
NNW	0	10	7	0	0	0	17
TOTAL	10	116	44	4	6	0	180

STABILITY CLASS: G
ELEVATION: GROUND

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	0	5	1	0	0	0	6
NNE	0	0	2	0	0	0	2
NE	0	8	0	0	0	0	8
ENE	1	2	0	0	0	0	3
E	0	0	2	1	0	0	3
ESE	0	5	1	0	0	0	6
SE	0	8	0	0	0	0	8
SSE	0	1	1	0	0	0	2
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	4	3	0	0	0	7
NNW	0	3	0	0	0	0	3
TOTAL	1	36	10	1	0	0	48

STABILITY CLASS: ALL
ELEVATION: GROUND

WIND DIRECTION	WIND SPEED (MPH)						TOTAL
	1-3	4-7	8-12	13-18	19-24	>24	
N	4	27	24	23	3	0	81
NNE	5	35	45	15	6	0	106
NE	7	48	21	3	0	0	79
ENE	8	50	34	4	1	0	97
E	7	24	38	9	1	0	79
ESE	2	39	28	7	3	0	79
SE	2	33	27	10	0	0	72
SSE	2	42	75	32	5	0	156
S	3	18	60	104	44	4	233
SSW	3	13	17	62	17	3	115
SW	2	16	3	2	3	1	27
WSW	2	16	4	1	0	0	23
W	4	16	10	9	2	0	41
WNW	4	13	14	8	2	0	41
NW	8	25	32	19	11	0	95
NNW	1	26	34	23	1	0	85
TOTAL	64	441	466	331	99	8	1409

SECTION IV
Additional Information

1. Unplanned Releases

There were no unplanned releases from the site to unrestricted areas of radioactive materials in gaseous or liquid effluents made during the reporting period.

2. Process Control Program

There were no changes to the Process Control Program during this reporting period.

3. Offsite Dose Calculation Manual

There were no changes to the Offsite Dose Calculation Manual made during this reporting period.

4. Major Changes to Liquid, Gaseous, or Solid Radwaste Systems

These changes will be discussed in the next annual update of the Final Safety Analysis Report, as allowed by Technical Specification 6.1.5.

5. Technical Specification Action Statement Information

The liquid and gaseous effluent monitoring instrumentation time limits for inoperability, as listed in Technical Specifications 3.3.3.10 and 3.3.3.11, were not exceeded during this reporting period.

The quantity of radioactive material contained in the liquid holdup tanks or gas storage tanks did not exceed the limits specified in Technical Specifications 3.11.1.4 or 3.11.2.6, respectively, during this reporting period.

6. Land Use Census

There were no new locations for dose calculations identified during this reporting period.



KANSAS GAS AND ELECTRIC COMPANY

GLENN L. KOESTER
VICE PRESIDENT - NUCLEAR

August 30, 1985

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U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

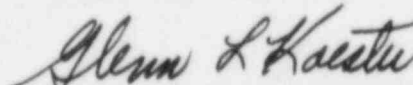
Mr. R.D. Martin, Regional Administrator
U.S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011

KMLNRC 85-212
Re: Docket No. STN 50-482
Subj: Semiannual Radiological Effluent Release Report

Dear Mr. Martin:

Enclosed is the Wolf Creek Generating Station Semiannual Radiological Effluent Release Report covering the period from January 1, 1985 through June 30, 1985. This report is submitted pursuant to section 6.9.1.7 of the Wolf Creek Generating Station Unit 1 Technical Specifications.

Yours very truly,


Glenn L. Koester
Vice President, Nuclear

GLK:see

xc: PO'Connor (2), w/a
JTaylor, w/a
JCummins, w/a

EE25
1/1