APPENDIX A

HOURLY AVERAGE METEOROLOGY FOR THE WINTER VALIDATION TRACER STUDY

INTRODUCTION

Meteorological data for the Winter Validation Tracer Study were recorded at the 61-m tower located at the Rocky Flats Plant and operated by EG&G Rocky Flats personnel under contract to the U.S. Department of Energy. The tower is located at UTM coordinates 4414963 N, 482064 E. The tracer release point was located 786 m east and 87 m north of the 61-m tower. Wind speed and wind directions were recorded on 15-minute intervals at the 10-m level. These measurements represent averages over the 15-minute recording period and not point estimates recorded every 15 minutes. Meteorological data were also recorded at the 25 m and 61 m level, but only the 10-m data were used in the RATCHET, TRIAD, and INPUFF2 simulations. The data reported in Table A-1 are hourly-average wind speed and direction (the average of four, 15-minute data segments) Stability classes were determined by the methodology in Turner (1964). This method, which requires an estimate of cloud cover, was used in the RATCHET simulations. Cloud cover data were obtained from the Jefferson County Airport where available. The airport was open daily, from 06:00 to 23:00 Mountain Standard Time. Cloud cover data from Denver Stapleton International Airport were used during the time Jefferson County Airport was closed.

Table A-1. Meteorological Data for the Winter Validation Tracer Study Taken at the 10-m level

Test number	Julian day	Time (MST)[a]	Wind speed (m s^{-1})	Wind direction (degrees)	Cloud cover (percent)	Ceiling height (feet)	Stability class
Test 1	34	20:00	2.7	198	0%	unlimited	6
Test 1	34	21:00	2.2	167	0%	unlimited	6
Test 1	34	22:00	1.5	163	0%	unlimited	7
Test 1	34	23:00	2.4	223	0%	unlimited	5
Test 1	35	0:00	4.3	243	70%	24,000	5
Test 1	35	1:00	3.0	266	30%	24,000	6
Test 1	35	2:00	3.5	270	30%	24,000	4
Test 1	35	3:00	3.4	273	70%	24,000	5
Test 1	35	4:00	4.1	302	30%	24,000	5
Test 1	35	5:00	3.4	299	30%	24,000	5
Test 1	35	6:00	2.4	232	0%	unlimited	6
Test 1	35	7:00	1.7	253	30%	21,000	4
Test 2	35	20:00	1.7	258	30%	20,000	6
Test 2	35	21:00	1.7	264	70%	20,000	5
Test 2	35	22:00	1.5	241	70%	20,000	6
Test 2	35	23:00	1.4	276	0%	unlimited	7
Test 2	36	0:00	1.7	289	0%	unlimited	6
Test 2	36	1:00	1.4	253	0%	unlimited	7
Test 2	36	2:00	2.5	218	0%	unlimited	6
Test 2	36	3:00	3.8	224	0%	unlimited	5

Table A-1 (continued)

Test number	Julian day	Time (MST)[a]	Wind speed (m s^{-1})	Wind direction (degrees)	Cloud cover (percent)	Ceiling height (feet)	Stability class
Test 2	36	4:00	3.6	225	0%	unlimited	5
Test 2	36	5:00	3.0	272	0%	unlimited	6
Test 2	36	6:00	1.9	296	0%	unlimited	6
Test 2	36	7:00	1.2	239	0%	unlimited	3
Test 3	37	20:00	3.4	240	0%	unlimited	5
Test 3	37	21:00	3.8	233	0%	unlimited	5
Test 3	37	22:00	4.0	233	0%	unlimited	5
Test 3	37	23:00	3.9	238	0%	unlimited	5
Test 3	38	0:00	3.1	241	0%	unlimited	5
Test 3	38	3:00	1.8	311	0%	unlimited	6
Test 3	38	4:00	2.8	291	0%	unlimited	6
Test 3	38	5:00	2.5	290	0%	unlimited	6
Test 3	38	6:00	1.8	302	0%	unlimited	6
Test 3	38	7:00	2.2	266	70%	25,000	4
Test 4	38	20:00	4.6	223	0%	unlimited	5
Test 4	38	21:00	2.6	265	0%	unlimited	6
Test 4	38	22:00	1.3	290	0%	unlimited	7
Test 4	38	23:00	2.2	275	0%	unlimited	6
Test 4	39	0:00	1.8	257	0%	unlimited	6
Test 4	39	1:00	3.1	324	30%	30,000	6
Test 4	39	2:00	3.1	327	30%	30,000	5
Test 4	39	3:00	3.2	311	30%	30,000	5
Test 4	39	4:00	2.5	298	30%	30,000	6
Test 4	39	5:00	2.1	268	0%	unlimited	6
Test 4	39	6:00	3.9	229	30%	25,000	5
Test 4	39	7:00	3.0	234	30%	25,000	4
Test 5	40	13:00	3.1	51	30%	14,000	3
Test 5	40	14:00	3.3	45	0%	unlimited	3
Test 5	40	15:00	2.5	37	0%	unlimited	3
Test 5	40	16:00	1.9	67	0%	unlimited	4
Test 5	40	17:00	2.1	198	0%	unlimited	6
Test 5	40	18:00	4.6	245	30%	10,000	5
Test 5	40	19:00	5.2	239	30%	10,000	4
Test 5	40	20:00	4.8	239	0%	unlimited	5
Test 5	40	21:00	4.7	239	0%	unlimited	5
Test 5	40	22:00	4.5	237	0%	unlimited	5
Test 5	40	23:00	4.7	242	0%	unlimited	5
Test 5	41	0:00	4.6	243	0%	unlimited	5
Test 6	42	7:00	2.7	235	0%	unlimited	4
Test 6	42	8:00	1.2	131	0%	unlimited	2
Test 6	42	9:00	2.0	116	0%	unlimited	3
Test 6	42	10:00	3.6	141	0%	unlimited	3
Test 6	42	11:00	4.0	142	0%	unlimited	3
Test 6	42	12:00	4.6	144	0%	unlimited	3
Test 6	42	13:00	4.5	150	0%	unlimited	4
Test 6	42	14:00	4.0	150	0%	unlimited	3

Table A-1 (continued)

Test number	Julian day	Time (MST)[a]	Wind speed (m s^{-1})	Wind direction (degrees)	Cloud cover (percent)	Ceiling height (feet)	Stability class
Test 6	42	15:00	3.5	139	0%	unlimited	3
Test 6	42	16:00	2.8	162	0%	unlimited	4
Test 6	42	17:00	3.1	242	0%	unlimited	6
Test 6	42	18:00	3.6	252	0%	unlimited	5
Test 7	43	7:00	1.5	137	30%	24,000	3
Test 7	43	8:00	1.8	112	30%	20,000	3
Test 7	43	9:00	2.9	216	30%	20,000	3
Test 7	43	10:00	8.6	296	70%	22,000	4
Test 7	43	11:00	9.3	295	70%	20,000	4
Test 7	43	12:00	7.3	289	70%	20,000	4
Test 7	43	15:00	9.8	296	70%	20,000	4
Test 7	43	16:00	11.3	300	70%	22,000	4
Test 7	43	17:00	11.3	302	70%	20,000	4
Test 7	43	18:00	14.3	286	70%	18,000	4
Test 8	45	1:00	3.1	265	30%	7,500	5
Test 8	45	2:00	5.4	320	30%	10,000	4
Test 8	45	3:00	9.2	319	0%	unlimited	4
Test 8	45	4:00	8.8	303	0%	unlimited	4
Test 8	45	5:00	9.5	308	0%	unlimited	4
Test 8	45	6:00	9.0	302	30%	20,000	4
Test 8	45	7:00	4.8	328	30%	20,000	4
Test 8	45	8:00	2.9	39	0%	unlimited	3
Test 8	45	9:00	3.9	72	0%	unlimited	3
Test 8	45	10:00	8.6	309	30%	4,000	4
Test 8	45	11:00	7.7	321	30%	4,000	4
Test 8	45	12:00	7.5	311	30%	4,000	4
Test 9	46	7:00	3.3	207	30%	20,000	4
Test 9	46	8:00	2.1	14	30%	20,000	3
Test 9	46	9:00	2.1	336	30%	20,000	3
Test 9	46	10:00	1.9	41	0%	unlimited	3
Test 9	46	11:00	2.5	48	0%	unlimited	2
Test 9	46	12:00	2.8	29	30%	25,000	2
Test 9	46	13:00	2.0	27	30%	25,000	2
Test 9	46	14:00	1.8	60	30%	25,000	3
Test 9	46	15:00	4.0	312	30%	20,000	3
Test 9	46	16:00	5.0	282	30%	22,000	4
Test 9	46	17:00	5.0	261	30%	22,000	4
Test 9	46	18:00	7.0	286	30%	25,000	4
Test 10	47	20:00	6.8	302	30%	22,000	4
Test 10	47	21:00	2.7	236	30%	18,000	6
Test 10	47	22:00	3.0	272	0%	unlimited	6
Test 10	47	23:00	2.5	220	30%	7,000	6
Test 10	48	0:00	3.0	154	70%	12,000	5
Test 10	48	1:00	2.6	218	70%	11,000	5

Table A-1 (continued)

Test number	Julian day	Time (MST)[a]	Wind speed (m s^{-1})	Wind direction (degrees)	Cloud cover (percent)	Ceiling height (feet)	Stability class
Test 10	48	2:00	3.4	210	70%	11,000	4
Test 10	48	3:00	3.1	230	70%	11,000	4
Test 10	48	4:00	2.6	266	70%	11,000	5
Test 10	48	5:00	3.0	299	70%	11,000	5
Test 10	48	6:00	4.4	330	70%	10,000	4
Test 10	48	7:00	4.1	313	70%	14,000	4
Test 11	48	20:00	9.1	293	100%	7,000	4
Test 11	48	21:00	4.9	345	70%	8,000	4
Test 11	48	22:00	3.5	108	70%	10,000	4
Test 11	48	23:00	1.7	206	30%	6,000	6
Test 11	49	0:00	3.9	180	30%	25,000	5
Test 11	49	1:00	4.7	149	30%	12,000	5
Test 11	49	2:00	3.7	156	30%	12,000	5
Test 11	49	5:00	2.7	267	30%	8,000	6
Test 11	49	6:00	1.9	292	100%	8,000	5
Test 11	49	7:00	1.9	251	70%	7,500	4
Test 12	50	7:00	7.8	293	0%	unlimited	4
Test 12	50	8:00	7.6	293	0%	unlimited	4
Test 12	50	9:00	5.8	297	0%	unlimited	4
Test 12	50	10:00	8.2	293	30%	20,000	4
Test 12	50	11:00	10.1	287	30%	20,000	4
Test 12	50	12:00	10.2	285	30%	20,000	4
Test 12	50	13:00	8.2	274	30%	20,000	4
Test 12	50	14:00	6.5	286	30%	20,000	4
Test 12	50	15:00	7.2	295	30%	20,000	4
Test 12	50	16:00	8.0	287	30%	16,000	4
Test 12	50	17:00	8.7	288	30%	16,000	4
Test 12	50	18:00	9.1	294	30%	25,000	4

[a] mountain standard time