Attachment D2

CAP88PC Output

C A P 8 8 - P C

Version 2.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
Jul 17, 2000 02:18 pm

Facility: TSF Area B
Address: INEEL
City:
State: ID Zip:

Source Category: Area
Source Type: Area
Emission Year: 2000

Comments:

Effective Dose Equivalent
(mrem/year)

5.92E-04

At This Location: 150 Meters North Northeast
Dataset Name: TSFAreaB
Dataset Date: Jul 17, 2000 02:17 pm
Wind File: C:\CAP88PC2\WNDFILES\24156.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 150 Meters North Northeast
Lifetime Fatal Cancer Risk: 1.55E-08

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	5.67E-04
BREAST	6.17E-04
R MAR	5.61E-04
LUNGS	5.73E-04
THYROID	6.53E-04
ENDOST	3.93E-04
RMNDR	6.35E-04
EFFEC	5.92E-04

RADIONUCLIDE EMISSIONS DURING THE YEAR 2000

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
CS-137	D	1.00	2.0E-05	2.0E-05
CO-60	Y	1.00	2.5E-08	2.5E-08
BA-137M	D	1.00	2.0E-05	2.0E-05

SITE INFORMATION

Temperature:	6 degrees C
Precipitation:	22 cm/y
Mixing Height:	1000 m

SOURCE INFORMATION

Source Number: 1

Source Height (m): 1.
Area (sq m): 14186.

Plume Rise Pasquill Cat:	A	B	C	D	E	F	G
Zero:	0.	0.	0.	0.	0.	0.	0.

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES (M) USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

150 16100

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G E N E R A L D A T A

Non-Radon Individual Assessment
Jul 17, 2000 02:18 pm

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VALUES FOR RADIONUCLIDE-DEPENDENT PARAMETERS

Nuclide	Clearance Class	Particle Size (microns)	Scavenging Coefficient (per second)	Dry Deposition Velocity (m/s)
CS-137	D	1.0	2.21E-06	1.80E-03
CO-60	Y	1.0	2.21E-06	1.80E-03
BA-137M	D	1.0	2.21E-06	1.80E-03

VALUES FOR RADIONUCLIDE-DEPENDENT PARAMETERS

	DECAY CONSTANT (PER DAY)			TRANSFER COEFFICIENT	
Nuclide	Radio-active (1)	Surface	Water	Milk (2)	Meat (3)
CS-137	0.00E+00	5.48E-05	0.00E+00	7.00E-03	2.00E-02
CO-60	0.00E+00	5.48E-05	0.00E+00	2.00E-03	2.00E-02
BA-137M	3.91E+02	5.48E-05	0.00E+00	3.50E-04	1.50E-04

FOOTNOTES: (1) Effective radioactive decay constant in plume; set to zero if less than 1.0E-2

(2) Fraction of animal's daily intake of nuclide which appears in each L of milk (days/L)

(3) Fraction of animal's daily intake of nuclide which appears in each kg of meat (days/kg)

VALUES FOR RADIONUCLIDE-DEPENDENT PARAMETERS

	CONCENTRATION UPTAKE FACTOR		GI UPTAKE FRACTION	
Nuclide	Forage (1)	Edible (2)	Inhalation	Ingestion
CS-137	8.00E-02	1.28E-02	9.50E-01	9.50E-01
CO-60	2.00E-02	3.00E-03	5.00E-02	3.00E-01
BA-137M	1.50E-01	6.42E-03	1.00E-01	1.00E-01

FOOTNOTES: (1) Concentration factor for uptake of nuclide from soil for pasture and forage (in pCi/kg dry weight per pCi/kg dry soil)

(2) Concentration factor for uptake of nuclide from soil by edible parts of crops (in pCi/kg wet weight per pCi/kg dry soil)

VALUES FOR RADIONUCLIDE-INDEPENDENT PARAMETERS

HUMAN INHALATION RATE	
Cubic centimeters/hr	9.17E+05
SOIL PARAMETERS	
Effective surface density (kg/sq m, dry weight) (Assumes 15 cm plow layer)	2.15E+02
BUILDUP TIMES	
For activity in soil (years)	1.00E+02
For radionuclides deposited on ground/water (days)	3.65E+04
DELAY TIMES	
Ingestion of pasture grass by animals (hr)	0.00E+00
Ingestion of stored feed by animals (hr)	2.16E+03
Ingestion of leafy vegetables by man (hr)	3.36E+02
Ingestion of produce by man (hr)	3.36E+02
Transport time from animal feed-milk-man (day)	2.00E+00
Time from slaughter to consumption (day)	2.00E+01
WEATHERING	
Removal rate constant for physical loss (per hr)	2.90E-03
CROP EXPOSURE DURATION	
Pasture grass (hr)	7.20E+02
Crops/leafy vegetables (hr)	1.44E+03
AGRICULTURAL PRODUCTIVITY	
Grass-cow-milk-man pathway (kg/sq m)	2.80E-01
Produce/leafy veg for human consumption (kg/sq m)	7.16E-01
FALLOUT INTERCEPTION FRACTIONS	
Vegetables	2.00E-01
Pasture	5.70E-01
GRAZING PARAMETERS	
Fraction of year animals graze on pasture	4.00E-01
Fraction of daily feed that is pasture grass when animal grazes on pasture	4.30E-01

VALUES FOR RADIONUCLIDE-INDEPENDENT PARAMETERS

ANIMAL FEED CONSUMPTION FACTORS	
Contaminated feed/forage (kg/day, dry weight)	1.56E+01
DAIRY PRODUCTIVITY	
Milk production of cow (L/day)	1.10E+01
MEAT ANIMAL SLAUGHTER PARAMETERS	
Muscle mass of animal at slaughter (kg)	2.00E+02
Fraction of herd slaughtered (per day)	3.81E-03
DECONTAMINATION	
Fraction of radioactivity retained after washing for leafy vegetables and produce	5.00E-01
FRACTIONS GROWN IN GARDEN OF INTEREST	
Produce ingested	1.00E+00
Leafy vegetables ingested	1.00E+00
INGESTION RATIOS:	
IMMEDIATE SURROUNDING AREA/TOTAL WITHIN AREA	
Vegetables	7.00E-01
Meat	4.42E-01
Milk	3.99E-01
MINIMUM INGESTION FRACTIONS FROM OUTSIDE AREA (Minimum fractions of food types from outside area listed below are actual fixed values.)	
Vegetables	0.00E+00
Meat	0.00E+00
Milk	0.00E+00
HUMAN FOOD UTILIZATION FACTORS	
Produce ingestion (kg/y)	1.76E+02
Milk ingestion (L/y)	1.12E+02
Meat ingestion (kg/y)	8.50E+01
Leafy vegetable ingestion (kg/y)	1.80E+01
SWIMMING PARAMETERS	
Fraction of time spent swimming	0.00E+00
Dilution factor for water (cm)	1.00E+00

C A P 8 8 - P C

Version 2.00

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W E A T H E R D A T A

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Jul 17, 2000 02:18 pm

Facility: TSF Area B
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Wind File: C:\CAP88PC2\WNDFILES\24156.WND

HARMONIC AVERAGE WIND SPEEDS (WIND TOWARDS)

	Pasquill Stability Class							
Dir	A	B	C	D	E	F	G	Wind Freq
N	1.270	1.410	2.670	5.840	3.490	1.400	0.000	0.136
NNW	1.060	1.280	2.370	4.800	3.050	1.190	0.000	0.023
NW	1.190	1.160	1.630	3.360	2.740	1.230	0.000	0.014
WNW	1.190	1.150	1.870	2.770	2.720	1.230	0.000	0.016
W	1.190	1.320	2.040	2.530	2.930	1.290	0.000	0.032
WSW	1.250	1.560	2.300	2.780	2.990	1.280	0.000	0.038
SW	1.300	1.790	2.340	3.050	2.970	1.280	0.000	0.049
SSW	1.250	1.950	2.440	3.130	2.970	1.290	0.000	0.043
S	1.130	1.890	2.350	2.810	3.030	1.300	0.000	0.056
SSE	1.130	2.000	2.660	2.640	3.110	1.240	0.000	0.037
SE	1.280	1.990	2.560	2.350	2.920	1.250	0.000	0.032
ESE	1.270	2.010	3.160	3.160	2.850	1.320	0.000	0.038
E	1.280	2.210	3.600	4.800	3.000	1.230	0.000	0.085
ENE	1.060	2.190	3.940	5.800	3.280	1.350	0.000	0.123
NE	1.270	1.770	3.300	5.470	3.570	1.350	0.000	0.133
NNE	1.190	1.580	2.950	4.820	3.680	1.400	0.000	0.145

ARITHMETIC AVERAGE WIND SPEEDS (WIND TOWARDS)

	Pasquill Stability Class						
Dir	A	B	C	D	E	F	G
N	1.780	2.310	4.100	7.290	3.720	1.930	0.000
NNW	1.460	2.050	3.760	6.750	3.260	1.680	0.000
NW	1.670	1.840	2.400	5.140	2.840	1.720	0.000
WNW	1.670	1.730	2.620	4.060	2.800	1.740	0.000
W	1.670	2.110	2.870	3.670	3.100	1.800	0.000
WSW	1.760	2.440	3.180	3.790	3.180	1.790	0.000
SW	1.820	2.700	3.210	4.360	3.150	1.790	0.000
SSW	1.760	2.850	3.320	4.320	3.150	1.800	0.000
S	1.580	2.840	3.210	4.030	3.230	1.820	0.000
SSE	1.580	2.950	3.490	3.680	3.330	1.740	0.000
SE	1.790	2.940	3.440	3.500	3.090	1.750	0.000
ESE	1.780	2.970	4.080	4.670	3.000	1.840	0.000
E	1.790	3.140	4.730	6.290	3.200	1.730	0.000
ENE	1.460	3.130	5.090	7.080	3.520	1.870	0.000
NE	1.780	2.730	4.460	6.510	3.800	1.880	0.000
NNE	1.670	2.490	4.080	5.870	3.890	1.930	0.000

FREQUENCIES OF STABILITY CLASSES (WIND TOWARDS)

Pasquill Stability Class

Dir	A	B	C	D	E	F	G
N	0.0012	0.0120	0.0290	0.6289	0.1754	0.1534	0.0000
NNW	0.0056	0.0356	0.0434	0.4967	0.1527	0.2659	0.0000
NW	0.0029	0.0581	0.0780	0.2465	0.1611	0.4533	0.0000
WNW	0.0024	0.0774	0.0895	0.2443	0.2025	0.3839	0.0000
W	0.0012	0.0794	0.1236	0.2721	0.1924	0.3313	0.0000
WSW	0.0052	0.0729	0.1637	0.3332	0.2070	0.2180	0.0000
SW	0.0049	0.0818	0.1784	0.3901	0.1536	0.1912	0.0000
SSW	0.0046	0.0908	0.1994	0.4010	0.1285	0.1757	0.0000
S	0.0036	0.1222	0.1937	0.3284	0.1500	0.2022	0.0000
SSE	0.0055	0.1429	0.1781	0.2786	0.1806	0.2144	0.0000
SE	0.0164	0.1697	0.2095	0.2397	0.1253	0.2394	0.0000
ESE	0.0084	0.1775	0.2723	0.2826	0.0826	0.1767	0.0000
E	0.0044	0.0926	0.2341	0.5143	0.0557	0.0991	0.0000
ENE	0.0011	0.0368	0.1268	0.7032	0.0626	0.0696	0.0000
NE	0.0012	0.0194	0.0626	0.6858	0.1379	0.0930	0.0000
NNE	0.0003	0.0158	0.0435	0.5532	0.2290	0.1583	0.0000
TOTAL	0.0030	0.0594	0.1197	0.5104	0.1461	0.1613	0.0000

ADDITIONAL WEATHER INFORMATION

Average Air Temperature: 5.5 degrees C
278.66 K
Precipitation: 22.1 cm/y
Lid Height: 1000 meters
Surface Roughness Length: 0.010 meters
Height Of Wind Measurements: 10.0 meters
Average Wind Speed: 4.562 m/s

Vertical Temperature Gradients:
STABILITY E 0.073 k/m
STABILITY F 0.109 k/m
STABILITY G 0.146 k/m

C A P 8 8 - P C

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D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

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Jul 17, 2000 02:18 pm

Facility: TSF Area B
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Comments:

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ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	5.67E-04
BREAST	6.17E-04
R MAR	5.61E-04
LUNGS	5.73E-04
THYROID	6.53E-04
ENDOST	3.93E-04
RMNDR	6.35E-04
EFFEC	5.92E-04

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	5.68E-04
INHALATION	1.96E-05
AIR IMMERSION	1.74E-07
GROUND SURFACE	4.11E-06
INTERNAL	5.88E-04
EXTERNAL	4.28E-06
TOTAL	5.92E-04

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
CS-137	5.87E-04
CO-60	4.56E-06
BA-137M	1.74E-07
TOTAL	5.92E-04

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
LEUKEMIA	1.77E-09
BONE	6.94E-11
THYROID	2.96E-10
BREAST	2.40E-09
LUNG	2.83E-09
STOMACH	1.48E-09
BOWEL	6.08E-10
LIVER	2.14E-09
PANCREAS	1.38E-09
URINARY	8.09E-10
OTHER	1.69E-09
TOTAL	1.55E-08

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.49E-08
INHALATION	5.21E-10
AIR IMMERSION	4.17E-12
GROUND SURFACE	9.93E-11
INTERNAL	1.54E-08
EXTERNAL	1.03E-10
TOTAL	1.55E-08

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
CS-137	1.54E-08
CO-60	1.14E-10
BA-137M	4.18E-12
TOTAL	1.55E-08

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)	
Direction	150	16100
N	5.2E-04	1.1E-04
NNW	3.3E-04	1.1E-04
NW	2.4E-04	1.1E-04
WNW	2.6E-04	1.1E-04
W	3.0E-04	1.1E-04
WSW	3.3E-04	1.1E-04
SW	3.3E-04	1.1E-04
SSW	3.4E-04	1.1E-04
S	3.5E-04	1.1E-04
SSE	3.2E-04	1.1E-04
SE	2.9E-04	1.1E-04
ESE	3.0E-04	1.1E-04
E	3.4E-04	1.1E-04
ENE	4.0E-04	1.1E-04
NE	5.0E-04	1.1E-04
NNE	5.9E-04	1.1E-04

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)	
Direction	150	16100
N	1.4E-08	2.9E-09
NNW	8.5E-09	2.9E-09
NW	6.1E-09	2.9E-09
WNW	6.8E-09	2.9E-09
W	8.0E-09	2.9E-09
WSW	8.5E-09	2.9E-09
SW	8.6E-09	2.9E-09
SSW	8.8E-09	2.9E-09
S	9.0E-09	2.9E-09
SSE	8.4E-09	2.9E-09
SE	7.5E-09	2.9E-09
ESE	7.8E-09	2.9E-09
E	9.0E-09	2.9E-09
ENE	1.1E-08	2.9E-09
NE	1.3E-08	2.9E-09
NNE	1.5E-08	2.9E-09