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Department of Energy

Ohio Field Office
Fernald Area Office
P. O. Box 538705
Cincinnati, Ohio 45253-8705
(513) 648-3155

MAY 29 1998

DOE-0821-98

Mr. David A. Kee, Director
c/o Mike Murphy
Air & Radiation Division
U.S. Environmental Protection Agency
Region 5 - A - 18J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Dear Mr. Kee:

1997 NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS ANNUAL REPORT FOR THE FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

Enclosed is the Calendar Year 1997 National Emissions Standards For Hazardous Air Pollutants (NESHAP) Annual Report for the Department of Energy, Fernald Environmental Management Project (DOE-FEMP) as required by 40 CFR 61.94(a). As committed in the Integrated Environmental Monitoring Plan, this report has been included as Appendix E in the Integrated Site Environmental Report. Enclosed with the report are the CAP88-PC files used to assess individual dose.

This report estimates an Effective Dose Equivalent (EDE) to the Maximally Exposed Individual (MEI), using 1997 site meteorological data, of 1.4 millirem (mrem), which is considerably lower than the NESHAP Subpart H standard of 10 mrem.

If you have any questions, please contact Ed Skintik at (513) 648-3151.

Sincerely,

Glenn Griffiths

for Jack R. Craig
Director

FEMP:Skintik

Enclosure: As stated

Recycled and Recyclable

cc w/encl:

AR Coordinator, FDF, 78

cc w/enc (summary only):

P. J. Sturdevant, HC-DOES
T. Tucker, OEPA-Columbus
T. Schneider, OFFO

cc w/o enc:

L. C. Goidell, FDF, 65-2

ATTACHMENT E.1

NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP) ANNUAL REPORT

U.S. Department of Energy
Radionuclide Air Emissions Annual Report
(under Subpart H of 40 CFR Part 61)
Calendar Year 1997

Site Name: Fernald Environmental Management Project (FEMP), Fernald, Ohio

Field Office Information:

Office: Fernald Area Office (FN), U. S. Department of Energy
Address: Post Office Box 538705
Mail Stop 45
Cincinnati, Ohio 45253-8705

Contact: Mr. Ed Skintik Phone: (513) 648-3151

Site Information

Operating Contractor: Fluor Daniel Fernald

Address: 7400 Willey Road
Fernald, Ohio 45030 (Site location)

Post Office Box 538704
Cincinnati, Ohio 45253-8704 (mailing address)

Contact: Kip Klee Phone: (513) 648-5289

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SUMMARY

For CY-1997 twenty-one radionuclide emission sources were identified as being subject to the reporting requirements of 40 CFR 61, Subpart H. The overall dose to the maximally exposed individual (MEI) is estimated to be 1.4 mrem (1.4E-02 mSv) which is in compliance with the Subpart H standard of 10 mrem. Of this dose, 1.7E-03 mrem (1.7E-05 mSv) came from point sources and 1.4 mrem (1.4E-02 mSv) came from diffuse sources.

SECTION I: FACILITY INFORMATION

A. Site Description

The Fernald Environmental Management Project (FEMP) is located on a 425 hectare (1050 acre) area approximately 27 km (17 miles) northwest of Cincinnati, Ohio. The Production area covers approximately 136 acres (55 hectares) in the center of the FEMP. The facility is sited just north of the small farming community of Fernald, Ohio.

The area immediately surrounding the FEMP is primarily rural in nature, characterized by the predominance of agriculture, with some light industry and private residences. The FEMP is located on a relatively level plain, outside of the 500-year flood plain of the Great Miami River, in an ancestral river valley known as the New Haven Trough.

The climate is characterized as continental, with average temperatures ranging from approximately 29°F (-1.7°C) in January, to 76°F (24.4°C) in July. Average annual precipitation is approximately 40 inches (102 cm) per year. Prevailing wind flow is from the south-southwest.

For 37 years, the former Feed Materials Production Center (Fernald site) produced uranium metals for the United States Department of Energy (DOE) and its predecessors. On July 10, 1989, uranium metals production was suspended. Management responsibilities of the Fernald site were transferred from the Defense Programs organization to the DOE's Office of Environmental Restoration and Waste Management.

Currently, most activities at the FEMP are conducted under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). These activities include sample analysis, waste characterization, the management, treatment, storage, and disposal of hazardous, mixed, low-level and solid wastes, and the decontamination and cleanup of radioactively contaminated buildings, equipment, soils, and waters. The site also manages thorium wastes, and K-65 silo waste material which contains radium and produces radon gas.

B. Source Descriptions

The majority of the radioactive contamination at the FEMP is due to uranium, uranium compounds, and thorium. Additional contamination comes from the daughter products of uranium and thorium.

Calendar year 1997 (CY-1997) radionuclide emission sources at the FEMP include:

- Plant 1: Fugitive emissions generated from the implosion and cleanup activities of the Plant 1 building;
- Plant 6: Emissions from repackaging operations;
- Plant 8: Radionuclide releases via entrainment in mists generated during vacuum filtration operations;
- Building 11: Emissions from the laundry facilities resulting from the processing of contaminated clothing used at the FEMP, and from the Respirator Washing Facility located in the building;
- Building 15: Emissions from laboratory operations;
- Building 20: Emissions resulting from laboratory operations, and emissions from the Cooling Water Tower via mist loss (due to dissolved radionuclides in the cooling water);
- Building 51: Emissions from the Advanced Waste Water Treatment facility;
- Building 53: Emissions from laboratory operations;
- Building 65: Emissions from thorium repackaging operations;
- Building 71: Emissions from material sorting and repackaging operations;
- Building 78: Emissions from repackaging operations;
- Other sources: Fugitive emissions from the Waste Pit Remedial Action Project (WPRAP), Waste Pit 5, and various stockpiles around the FEMP site, generated via wind erosion, earth moving equipment and material handling operations;

SECTION II: AIR EMISSIONS DATA

Tables 1 and 2 list the monitoring status, control equipment information, and the distance and direction to the nearest receptor for the point and grouped point sources at the FEMP. Table 3 lists the annual quantities (in Curies) of Point Source radionuclides likely to contribute to more than 10% of the effective dose equivalent (EDE) from the specific source.

Table 4 identifies the FEMPs non-point sources and lists the annual quantities of radionuclides likely to contribute to more than 10% of the EDE from those sources.

Particulate samples were collected from monitored stacks via isokinetic samplers. Due to the high efficiency of the HEPA filters, the amount of particulate sample collected from each stack was small. Composite samples were generated from these filters for each stack and analyzed for those radionuclides likely to contribute to more than 10% of the EDE.

For unmonitored sources, engineering calculations were used to develop estimates of total uranium emissions. The total uranium emission estimates were used to calculate radionuclide-specific emission rates, using radionuclide-specific activity to mass total uranium values (Ci/kg U) developed from past source sampling activities at the FEMP.

SECTION III: DOSE ASSESSMENT

A. Description of Dose Model

1. Dose Model

The radionuclide dose calculations were performed using the CAP88-PC Version 1.0 computer code. This package contains the AIRDOS-EPA (Mo79) computer code, which implements a steady-state, Gaussian plume, atmospheric dispersion model to calculate environmental concentrations of released radionuclides, and U. S. Nuclear Regulatory Commission Regulatory Guide 1.109 food chain models to calculate human exposures, both internal and external, to radionuclides deposited in the environment. The human exposure values are then used by the DARTAB computer code to calculate radiation doses to man from radionuclides released during the year. The dose calculations use dose conversion factors found in the RADRISK data file provided with the CAP88-PC package.

2. Maximally Exposed Individual

Estimates of the EDE from each FEMP source were made at the locations of forty (40) off-site receptors surrounding the FEMP. The maximally exposed individual (MEI) was determined to be an individual at the receptor location with the highest collective EDE.

B. Summary of Input Parameters

Unless otherwise discussed, the input parameter values used were the default values provided with the CAP88-PC computer codes and databases by the EPA.

1. Source Data

Source information was gathered from site records, and is provided in the attached CAP88-PC Synopsis files. All point source emissions occur at or near ambient temperatures; plume rise is momentum dominated. Source to receptor distances were calculated using information from site maps using Ohio State Planar Coordinate System coordinates.

2. Meteorological Data

Meteorological data was obtained from the on-site FEMP meteorological station. The CY-1997 data recovery rate was 98.5%, considered acceptable for running the CAP88-PC code. Wind speed and direction data were compiled in a Statistical Array (STAR) format and converted using the GETWIND utility provided with the CAP88-PC package. The STAR formatted data is provided in Table 5. Additional site station data includes:

Annual Average Temperature: 51.1°F (10.61°C)
Annual Rainfall: 40.26 in. (102.3 cm)

An estimate for the average mixing height for the FEMP site was obtained from the book *Potential for Urban Air Pollution Throughout the Contiguous United States*, by George Holzworth. This estimate was:

Annual Average Mixing Height: 950 meters

3. Other Input Parameters

The CAP88-PC code provides dose estimates from radionuclides ingested. Beef, milk, and food crop production were assumed to be the maximum possible for the available ground area, an assumption that overstates these activities in the area. It was further assumed that 100% of the foodstuffs consumed by the local population were grown within the 80km/50mi radius, which also provides a conservative estimate for the impact. The default values used were:

Fraction of foodstuffs	Local Area	50-mile radius	Beyond 50 miles
Vegetables &	0.700	0.300	0.00
Meat:	0.442	0.558	0.00
Milk:	0.399	0.601	0.00

C. Compliance Assessment

The results of the CAP88-PC modeling are summarized in Table 6. For CY-1997, the dose from point sources to the MEI is estimated to have been 1.7E-03 mrem (1.7E-05 mSv). The total estimated dose received by the MEI for CY-1997 is 1.4 mrem (1.4E-02 mSv). This individual is located 1011 meters east-southeast of the center of the FEMP.

These results indicate that, during CY-1997, the FEMP was in compliance with the 10 mrem dose limitation of 40 CFR 61, Subpart H.

SECTION IV: ADDITIONAL INFORMATION

A. Construction/Modifications at the FEMP

No projects were completed in CY-1997 for which the requirements to apply to the EPA for approval to construct or modify were waived due to the provisions of 40 CFR 61.96.

B. Unplanned Releases of Radionuclides

For CY-1997, no unplanned releases of radionuclides were identified in a review of the 379 notifications received by the site's release evaluators.

C. Diffuse Sources - Dose assessment

In CY-1997 there were eight (8) diffuse emission sources at the FEMP. These sources are listed in Table 4. Engineering calculations were used to develop estimates of total uranium emissions. The total uranium emission estimates were used to calculate radionuclide-specific emission rates, using radionuclide-specific activity to mass total uranium values (Ci/kg U) developed from past source sampling activities at the FEMP. These emission rates were used to estimate EDEs to offsite receptors and are listed in Table 6. Descriptions of the diffuse sources are provided below.

(1) PLANT 1 - Emissions generated from the implosion and cleanup activities related to the Plant 1 building. Data from four ambient air monitoring stations were used to determine the average airborne radionuclide activity due to Plant 1 cleanup operations. This activity, along with the average annual wind speed, duration of the cleanup operations, and an estimated plane of dispersion were used to estimate the amount of Uranium released. It was assumed that all of the activity in the Plant 1 monitors was due only to Uranium.

(2) COOLING WATER TOWER - Due to the large diameter of the cell fans, emissions from the cooling water tower are assumed to be fugitive in nature. Estimates of cooling water loss were made using emission factors found in AP-42, Section 13.4-4, Table 13.4-1. It was assumed that the uranium loss was proportional to the uranium concentration in the water.

(3) BUILDING 51 - Fugitive emissions were estimated from a group of tanks outside the Advanced Waste Water Treatment facility building;

(4) WASTE PIT 5 - An estimate of Uranium emissions from Waste Pit 5, was made by summing the calculated daily releases of Uranium from the waste pit. Equation 25 from A METHOD FOR ESTIMATING FUGITIVE PARTICULATE EMISSIONS FROM HAZARDOUS WASTE SITES, by James H. Turner, et. al. (EPA/600/2-87/066), was modified to calculate a daily release rate. Emissions were assumed to be zero for days with greater than or equal to 0.01 inches of precipitation. Emissions were also assumed to occur only when wind speeds were greater than 12 mph.

(5) WASTE PIT REMEDIATION ACTION PROJECT (WPRAP) - Railyard - This project involves grading, scraping, and bulldozing of several acres of land. This work also created soil storage piles. Fugitive emissions were generated via wind erosion of barren areas, vehicle traffic, and material handling activities. Estimates of fugitive dust emissions were made using equations available in AP-42 and the State of Ohio's Reasonably Available Control Measures for Fugitive Dust Sources (RACM) manual. Soil concentrations of uranium were used to estimate the amount of uranium released in the dust emissions.

(6) STOCKPILE AREA #1 - Estimates of fugitive dust emissions were made using equations available in the State of Ohio's Reasonably Available Control Measures for Fugitive Dust Sources (RACM) manual. Average surface uranium concentrations were calculated using uranium analyses made on the materials deposited into the stockpile. This concentration was used to estimate the amount of uranium released in the dust emissions.

(7) STOCKPILE AREA #2 - Estimates of radionuclide emissions for Stockpile Area #2 were made in a manner similar to that of Stockpile Area #1. However, specific data for stockpiles in this area was not available. Therefore, estimates of surface area radionuclide concentrations were based on data used in the Stockpile Area #1 calculations. However, since it is known that soils deposited in this area did not exceed the Waste Acceptance Criteria of 1030 ppm of uranium, data above this value was not included in the determination of average surface area concentration for this area.

(8) STOCKPILE AREA #3 - Estimates of radionuclide emissions for Stockpile Area #3 were made in a manner similar to that of Stockpile Area #2.

The estimated dose received by the MEI from the eight sources described above was 1.4 mrem (1.4E-02 mSv). The location of this individual was 1011 meters east-southeast of the center of the FEMP.

SECTION V: CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. (see 18 U.S.C. 1001).

Name: GLENN GRIFFITHS
DEPUTY DIRECTOR - FEMP

Signature: Glenn Griffiths Date: 5-28-98

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Table 3: POINT SOURCE RADIONUCLIDES

Table 4: NON-POINT SOURCE RADIONUCLIDES

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Table 6: SUMMARY OF CY-1997 CAP88-PC DOSE CALCULATIONS

TABLE 1: POINT SOURCES

POINT SOURCE	MONITORED STACK ? (YES/NO)	TYPE CONTROL	CONTROL EFFICIENCY	DISTANCE & DIRECTION FROM SOURCE TO NEAREST RECEPTOR
PLANT 8:				
Oliver Filter	NO	NONE	N/A	969m WSW
BUILDING 11:				
Laundry Dryer Exhaust	YES	HEPA	99.97%	1016m WSW
Respirator Wash. Facility	NO	HEPA	99.97%	1017m WSW
BUILDING 71:				
Process vent	YES	HEPA	99.97%	944m N
BUILDING 78:				
Process vent	NO	HEPA	99.97%	833m N

TABLE 2: GROUPED SOURCES

GROUPED SOURCES	MONITORED STACK ? (YES/NO)	TYPE OF CONTROL	CONTROL EFFICIENCY	DISTANCE & DIRECTION FROM SOURCE TO NEAREST RECEPTOR
PLANT 6:				
Process vents (2)	NO	HEPA	99.97%	854m ESE
PLANT 8:				
Eimco Filters(2)	NO	NONE	N/A	947m WSW
BUILDING 15:				
Perchloric Stacks (12 hoods)	NO	NONE	N/A	921m WSW
HEPA Exhaust (32 hoods)	YES	HEPA	99.97%	921m WSW
General Exhaust (101 hoods)	NO	NONE	N/A	921m WSW
BUILDING 20:				
Water Plant Lab (2 hoods)	NO	NONE	N/A	858m N
BUILDING 53:				
Bio-Assay/Low-Level Lab (6 hoods)	NO	NONE	N/A	939m ESE

TABLE 3: POINT SOURCE RADIONUCLIDES

POINT SOURCE	U-234 (Ci)	U-235 (Ci)	U-236 (Ci)	U-238 (Ci)	Ra-226 (Ci)	Ra-228 (Ci)	Th-228 (Ci)	Th-230 (Ci)	Th-232 (Ci)	Th-234 (Ci)
'LANT 6:										
Process vents (2)	3.610E-07	1.910E-08	1.402E-08	4.033E-07	2.563E-10	1.028E-09	1.084E-08	3.192E-08	1.705E-09	1.595E-06
'LANT 8:										
Oliver Filter	1.44E-07	7.73E-09	5.28E-09	1.91E-07	1.29E-10	5.18E-10	5.47E-09	3.84E-10	8.59E-10	8.04E-07
Eimco Filters (2 filters)	1.76E-06	9.41E-08	6.43E-08	2.32E-06	1.57E-09	6.30E-09	6.65E-08	4.67E-09	1.05E-08	9.78E-06
IUILDING 11:										
Laundry Dryer Exhaust	9.85E-08	1.50E-08	1.50E-08	7.03E-08	3.16E-11	1.27E-10	1.66E-08	6.65E-08	2.36E-08	1.97E-07
Respirator Wash. Facility	6.95E-07	3.68E-08	2.70E-08	7.77E-07	4.94E-10	1.98E-09	2.09E-08	6.15E-08	3.28E-09	3.07E-06
IUILDING 15:										
Perchloric Stacks (12 hoods)	8.66E-05	4.58E-06	3.36E-06	9.67E-05	6.15E-08	2.47E-07	2.60E-06	7.66E-06	4.09E-07	3.83E-04
HEPA Exhaust (32 hoods)	7.48E-08	1.90E-08	1.90E-08	8.64E-08	3.63E-11	1.45E-10	1.10E-08	5.47E-08	1.22E-08	2.26E-07
General Exhaust (101 hoods)	5.91E-06	3.13E-07	2.30E-07	6.61E-06	4.20E-09	1.68E-08	1.78E-07	5.23E-07	2.79E-08	2.61E-05
IUILDING 20:										
Water Plant Lab (2 hoods)	4.65E-10	2.49E-11	1.70E-11	6.15E-10	4.17E-13	1.67E-12	1.76E-11	1.24E-12	2.77E-12	2.59E-09
IUILDING 53:										
Ilo-Assay/Low-Level Lab (6 hoods)	1.64E-08	8.69E-10	6.38E-10	1.83E-08	1.17E-11	4.68E-11	4.93E-10	1.45E-09	7.76E-11	7.25E-08
IUILDING 71:										
Process vent	5.26E-06	2.78E-07	2.04E-07	5.87E-06	3.73E-09	1.50E-08	1.58E-07	4.65E-07	2.48E-08	2.32E-05
IUILDING 78:										
Process vent	2.64E-06	1.40E-07	1.03E-07	2.95E-06	1.88E-09	7.52E-09	7.93E-08	2.34E-07	1.25E-08	1.17E-05
TOTALS	1.04E-04	5.51E-06	4.05E-06	1.16E-04	7.40E-08	2.97E-07	3.15E-06	9.12E-06	5.27E-07	4.61E-04

NOTE: To convert from Curies to Becquerels, use 1 Ci = 3.7×10^{10} Bq.

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TABLE 4: NON-POINT SOURCE RADIONUCLIDE

NON-POINT SOURCE	U-234 (Ci)	U-235 (Ci)	U-236 (Ci)	U-238 (Ci)	Ra-226 (Ci)	Ra-228 (Ci)	Th-228 (Ci)	Th-230 (Ci)	Th-232 (Ci)	Th-234 (Ci)
ART 1: Demolition	2.210E-05	1.170E-06	8.600E-07	2.470E-05	1.570E-08	6.300E-08	6.650E-07	1.960E-06	1.040E-07	9.770E-05
ILDING 20: Cooling Water Tower	6.764E-08	3.627E-09	2.478E-09	8.943E-08	6.059E-11	2.429E-10	2.564E-09	1.800E-10	4.030E-10	3.770E-07
ILDING 51: Advanced Wastewater Treatment Facility	1.260E-08	6.760E-10	4.620E-10	1.670E-08	1.130E-11	4.530E-11	4.780E-10	3.350E-11	7.510E-11	7.020E-08
ILDING 65: Fugitive Emissions	----	----	----	----	----	1.062E-07	1.053E-07	----	1.077E-07	----
STE PITS: Waste Pit 5	4.180E-07	1.720E-8	4.310E-08	3.130E-07	2.720E-07	3.350E-08	4.32E-08	4.860E-06	3.350E-08	3.160E-07
RAP: Railyard	5.670E-04	3.000E-05	2.200E-05	6.340E-04	4.030E-07	1.620E-06	1.700E-05	5.020E-05	2.680E-06	2.510E-03
OCKPILES: Stockpile #1	8.330E-04	4.410E-05	3.240E-05	9.310E-04	5.920E-07	2.370E-06	2.500E-05	7.370E-05	3.940E-06	3.680E-03
Stockpile #2	5.950E-04	3.150E-05	2.310E-05	6.650E-04	4.230E-07	1.690E-06	1.790E-05	5.260E-05	2.810E-06	2.630E-03
Stockpile #3	5.150E-04	2.730E-05	2.000E-05	5.760E-04	3.660E-07	1.470E-06	1.550E-05	4.560E-05	2.430E-06	2.280E-03
TOTALS	2.53E-03	1.34E-04	9.84E-05	2.83E-03	2.07E-06	7.35E-06	7.62E-05	2.29E-04	1.21E-05	1.12E-02
DITIONAL RADIONUCLIDES	Ac-228 (Ci)	Bi-212 (Ci)	Pb-212 (Ci)	Po-212 (Ci)	Po-216 (Ci)	Ra-224 (Ci)	Tl-208 (Ci)			
ILDING 65: Fugitive Emissions	1.062E-07	1.053E-07	1.053E-07	6.734E-08	1.053E-07	1.053E-07	3.792E-08			
TOTALS	1.062E-07	1.053E-07	1.053E-07	6.734E-08	1.053E-07	1.053E-07	3.792E-08			

NOTE: To convert from Curies to Becquerels, use 1 Ci = 3.7 x 10^{10} Bq.

TABLE 5: CY-1997 STAR FORMAT METEOROLOGICAL FILE

N	A	0.000000	0.000120	0.001170	0.000230	0.000000	0.00000
NNE	A	0.000000	0.001410	0.001990	0.000350	0.000000	0.00000
NE	A	0.000230	0.001050	0.001990	0.000700	0.000000	0.00000
ENE	A	0.000470	0.001870	0.001760	0.000470	0.000000	0.00000
E	A	0.000230	0.000000	0.000120	0.000000	0.000000	0.00000
ESE	A	0.000120	0.000120	0.000000	0.000000	0.000000	0.00000
SE	A	0.000120	0.000000	0.000120	0.000000	0.000000	0.00000
SSE	A	0.000120	0.000000	0.000000	0.000000	0.000000	0.00000
S	A	0.000350	0.000230	0.000120	0.000230	0.000000	0.00000
SSW	A	0.000120	0.000470	0.001990	0.000000	0.000000	0.00000
SW	A	0.000350	0.000820	0.003630	0.000120	0.000000	0.00000
WSW	A	0.000230	0.000230	0.002580	0.000590	0.000000	0.00000
W	A	0.000470	0.001290	0.004680	0.000590	0.000000	0.00000
WNW	A	0.000120	0.000230	0.000590	0.000230	0.000000	0.00000
NW	A	0.000000	0.000120	0.001170	0.000350	0.000000	0.00000
NNW	A	0.000000	0.000120	0.000940	0.000590	0.000000	0.00000
N	B	0.000000	0.000120	0.001410	0.000000	0.000000	0.00000
NNE	B	0.000000	0.000820	0.001290	0.000700	0.000000	0.00000
NE	B	0.000120	0.001050	0.001990	0.000120	0.000000	0.00000
ENE	B	0.000230	0.001760	0.003040	0.000350	0.000000	0.00000
E	B	0.000120	0.000590	0.000700	0.000230	0.000000	0.00000
ESE	B	0.000000	0.000470	0.000350	0.000000	0.000000	0.00000
SE	B	0.000000	0.000000	0.000000	0.000000	0.000000	0.00000
SSE	B	0.000000	0.000120	0.000000	0.000000	0.000000	0.00000
S	B	0.000000	0.000230	0.000700	0.000230	0.000000	0.00000
SSW	B	0.000000	0.001640	0.003630	0.000590	0.000000	0.00000
SW	B	0.000230	0.004330	0.002580	0.000230	0.000000	0.00000
WSW	B	0.000230	0.002460	0.001990	0.000470	0.000000	0.00000
W	B	0.000230	0.001410	0.003160	0.000700	0.000000	0.00000
WNW	B	0.000000	0.000700	0.002460	0.000350	0.000000	0.00000
NW	B	0.000120	0.000470	0.003160	0.000350	0.000000	0.00000
NNW	B	0.000000	0.000350	0.001290	0.000590	0.000000	0.00000
N	C	0.000230	0.001990	0.001990	0.000000	0.000000	0.00000
NNE	C	0.000590	0.002230	0.002230	0.000000	0.000000	0.00000
NE	C	0.000350	0.002930	0.002580	0.000000	0.000000	0.00000
ENE	C	0.000820	0.004220	0.003400	0.000700	0.000000	0.00000
E	C	0.000940	0.002810	0.000700	0.000120	0.000000	0.00000
ESE	C	0.000470	0.002110	0.000350	0.000000	0.000000	0.00000
SE	C	0.000350	0.001290	0.000350	0.000000	0.000000	0.00000
SSE	C	0.000590	0.001410	0.000000	0.000000	0.000000	0.00000
S	C	0.000230	0.002110	0.001520	0.000230	0.000000	0.00000
SSW	C	0.000230	0.002690	0.003280	0.000470	0.000000	0.00000
SW	C	0.000000	0.004680	0.002580	0.000700	0.000000	0.00000
WSW	C	0.000470	0.004450	0.001640	0.000000	0.000000	0.00000
W	C	0.000000	0.004570	0.002690	0.001170	0.000000	0.00000
WNW	C	0.000000	0.001760	0.003750	0.000230	0.000000	0.00000
NW	C	0.000230	0.002690	0.003630	0.000590	0.000000	0.00000
NNW	C	0.000350	0.002340	0.002110	0.000000	0.000000	0.00000
N	D	0.001170	0.009250	0.006680	0.000350	0.000000	0.00000
NNE	D	0.001050	0.009130	0.005860	0.000590	0.000000	0.00000
NE	D	0.003860	0.009600	0.008080	0.000820	0.000000	0.00000
ENE	D	0.006210	0.016510	0.012300	0.000470	0.000000	0.00000
E	D	0.004330	0.008900	0.002930	0.000120	0.000000	0.00000
ESE	D	0.002930	0.004680	0.000470	0.000000	0.000000	0.00000
SE	D	0.002690	0.003160	0.000590	0.000000	0.000000	0.00000
SSE	D	0.002930	0.004100	0.001050	0.000230	0.000000	0.00000
S	D	0.003040	0.006910	0.004680	0.002340	0.000120	0.00000
SSW	D	0.005860	0.013470	0.010770	0.001760	0.000000	0.00000
SW	D	0.005620	0.017920	0.012300	0.002340	0.000000	0.00000
WSW	D	0.007730	0.015810	0.011950	0.003160	0.000000	0.00000
W	D	0.005970	0.017220	0.018500	0.004920	0.000000	0.00000
WNW	D	0.004800	0.014640	0.011710	0.002110	0.000000	0.00012
NW	D	0.004450	0.010310	0.007730	0.000820	0.000000	0.00000
NNW	D	0.001520	0.007850	0.005040	0.001050	0.000000	0.00000
N	E	0.003040	0.002230	0.000230	0.000000	0.000000	0.00000
NNE	E	0.002230	0.002690	0.000230	0.000000	0.000000	0.00000
NE	E	0.002930	0.003630	0.001170	0.000000	0.000000	0.00000
ENE	E	0.004680	0.007960	0.001410	0.000000	0.000000	0.00000
E	E	0.005970	0.003400	0.000700	0.000000	0.000000	0.00000
ESE	E	0.003280	0.001640	0.000000	0.000000	0.000000	0.00000
SE	E	0.003980	0.001990	0.000000	0.000000	0.000000	0.00000
SSE	E	0.003160	0.003510	0.000700	0.000120	0.000000	0.00000
S	E	0.003510	0.006320	0.003040	0.000120	0.000000	0.00000
SSW	E	0.005390	0.011590	0.003510	0.001050	0.000000	0.00000
SW	E	0.010540	0.009950	0.006910	0.000230	0.000000	0.00000
WSW	E	0.011950	0.007610	0.002110	0.000350	0.000000	0.00000
W	E	0.009840	0.007500	0.001520	0.000470	0.000000	0.00000
WNW	E	0.006680	0.005270	0.002930	0.000000	0.000000	0.00000
NW	E	0.005040	0.004570	0.001170	0.000120	0.000000	0.00000
NNW	E	0.005270	0.002690	0.000120	0.000000	0.000000	0.00000
N	F	0.002230	0.000470	0.000000	0.000000	0.000000	0.00000
NNE	F	0.001870	0.000230	0.000470	0.000120	0.000000	0.00000
NE	F	0.001050	0.001050	0.001290	0.000120	0.000000	0.00000
ENE	F	0.003750	0.002930	0.000940	0.000000	0.000000	0.00000
E	F	0.003750	0.000940	0.000230	0.000000	0.000000	0.00000
ESE	F	0.003160	0.000000	0.000000	0.000000	0.000000	0.00000
SE	F	0.003400	0.000120	0.000000	0.000000	0.000000	0.00000
SSE	F	0.002930	0.000350	0.000000	0.000000	0.000000	0.00000
S	F	0.004680	0.000590	0.000000	0.000000	0.000000	0.00000
SSW	F	0.005620	0.001050	0.000230	0.000000	0.000000	0.00000
SW	F	0.011360	0.001990	0.000000	0.000000	0.000000	0.00000
WSW	F	0.014520	0.002340	0.000000	0.000000	0.000000	0.00000
W	F	0.011590	0.000820	0.000000	0.000000	0.000000	0.00000
WNW	F	0.006560	0.000350	0.000000	0.000000	0.000000	0.00000
NW	F	0.007260	0.000700	0.000230	0.000000	0.000000	0.00000
NNW	F	0.004920	0.000940	0.000000	0.000000	0.000000	0.00000
N	G	0.004100	0.000000	0.000000	0.000000	0.000000	0.00000
NNE	G	0.002690	0.000120	0.000000	0.000000	0.000000	0.00000
NE	G	0.002460	0.000120	0.000000	0.000000	0.000000	0.00000
ENE	G	0.003400	0.000230	0.000000	0.000000	0.000000	0.00000
E	G	0.007140	0.000120	0.000000	0.000000	0.000000	0.00000
ESE	G	0.004570	0.000000	0.000000	0.000000	0.000000	0.00000
SE	G	0.003400	0.000000	0.000000	0.000000	0.000000	0.00000
SSE	G	0.003280	0.000000	0.000000	0.000000	0.000000	0.00000
S	G	0.005390	0.000000	0.000000	0.000000	0.000000	0.00000
SSW	G	0.006910	0.000230	0.000000	0.000000	0.000000	0.00000
SW	G	0.012530	0.000000	0.000000	0.000000	0.000000	0.00000
WSW	G	0.014990	0.000120	0.000000	0.000000	0.000000	0.00000
W	G	0.019560	0.000000	0.000000	0.000000	0.000000	0.00000
WNW	G	0.020490	0.000000	0.000000	0.000000	0.000000	0.00000
NW	G	0.019440	0.000120	0.000000	0.000000	0.000000	0.00000
NNW	G	0.010770	0.000120	0.000000	0.000000	0.000000	0.00000

TABLE 6: SUMMARY OF CAP88-PC RESULTS

SOURCES > RECEPTORS	PLANT 1 (Demo)	PLANT 6 (Vents)	PLANT 8 Oliver	PLANT 8 Elmcos	BLDG. 11 Laundry	BLDG. 11 RWF	BLDG. 15 Perc	BLDG. 15 HEPA	BLDG. 15 Gen.	BLDG 20 Wtr Plt	BLDG 20 CWT	BLDG 51 AWWT	BLDG 53 Bio labs	BLDG 65 Fugitive	BLDG 71 Vent	BLDG 78 Vent	PIT 5 Fugitive	WPRAP (Rallyard)	PILE1 Fugitive	PILE2 Fugitive	PILE3 Fugitive	CUMULATIVE DOSE POINT SOURCES	DIFFUSE SOURCES	ALL SOURCES
R1	8.9E-03	1.4E-04	1.3E-05	1.5E-04	1.9E-05	1.0E-04	1.1E-02	9.1E-06	2.6E-04	7.8E-08	2.1E-06	2.1E-06	1.5E-06	7.2E-05	8.8E-04	3.6E-04	3.2E-03	2.9E-01	1.6E-01	3.6E-01	4.3E-02	1.4E-03	8.7E-01	8.8E-01
R2	6.9E-03	9.2E-05	1.3E-05	1.6E-04	2.0E-05	1.1E-04	1.1E-02	9.5E-06	2.7E-04	8.1E-08	2.1E-06	1.5E-06	1.5E-06	4.6E-05	9.4E-04	3.5E-04	4.3E-03	2.4E-01	1.4E-01	4.6E-01	4.5E-02	1.4E-03	9.0E-01	9.1E-01
R3	1.9E-03	4.6E-05	5.2E-06	6.4E-05	7.5E-06	4.2E-05	4.5E-03	4.0E-06	1.1E-04	2.4E-08	5.3E-07	6.9E-07	6.3E-07	1.2E-05	2.8E-04	1.3E-04	5.3E-04	4.3E-02	4.0E-02	5.8E-02	2.2E-02	4.6E-04	1.7E-01	1.7E-01
R4	3.0E-03	6.2E-05	6.6E-06	8.2E-05	9.5E-06	5.3E-05	6.0E-03	4.4E-06	1.2E-04	2.8E-08	6.6E-07	9.6E-07	7.6E-07	1.7E-05	3.9E-04	1.4E-04	1.2E-03	7.6E-02	4.9E-02	9.5E-02	3.0E-02	6.0E-04	2.5E-01	2.6E-01
R5	4.2E-03	7.5E-05	8.1E-06	1.0E-04	1.2E-05	6.4E-05	7.9E-03	5.6E-06	1.5E-04	3.4E-08	7.2E-07	1.3E-06	9.1E-07	3.6E-05	5.1E-04	3.1E-04	3.3E-03	9.0E-02	9.2E-02	2.2E-01	4.2E-02	9.0E-04	4.5E-01	4.6E-01
R6	3.7E-03	1.5E-04	2.7E-05	3.4E-04	4.5E-05	2.3E-04	2.3E-02	2.6E-05	6.8E-04	7.3E-08	3.1E-06	3.8E-06	2.0E-06	3.5E-05	1.1E-03	4.6E-04	6.6E-04	4.3E-02	9.3E-02	8.6E-02	1.4E-01	1.9E-03	3.7E-01	3.9E-01
R7	2.5E-03	8.2E-05	1.3E-05	1.6E-04	2.3E-05	1.2E-04	1.1E-02	1.5E-05	4.0E-04	3.3E-08	1.8E-06	2.4E-06	1.4E-06	1.7E-05	5.0E-04	2.2E-04	4.4E-04	3.5E-02	5.0E-02	4.9E-02	5.6E-01	8.8E-04	7.0E-01	7.1E-01
R8	2.2E-03	8.0E-05	9.0E-06	1.1E-04	2.1E-05	1.1E-04	1.1E-02	1.4E-05	3.8E-04	2.5E-08	1.1E-06	1.6E-06	1.4E-06	1.6E-05	7.5E-04	2.1E-04	3.6E-04	2.8E-02	4.8E-02	4.2E-02	6.5E-01	1.1E-03	7.7E-01	7.8E-01
R9	2.1E-03	7.8E-05	8.7E-06	1.1E-04	2.0E-05	1.1E-04	8.4E-03	8.8E-06	2.4E-04	2.4E-08	1.1E-06	1.5E-06	1.3E-06	1.5E-05	7.2E-04	2.0E-04	3.4E-04	2.8E-02	4.7E-02	4.0E-02	6.2E-01	1.1E-03	7.4E-01	7.5E-01
R10	1.8E-03	7.1E-05	7.5E-06	9.2E-05	1.3E-05	7.1E-05	7.3E-03	7.7E-06	2.1E-04	2.2E-08	1.0E-06	1.3E-06	9.5E-07	1.2E-05	6.2E-04	1.4E-04	2.7E-04	2.5E-02	4.3E-02	4.0E-02	2.8E-01	8.5E-04	3.9E-01	4.0E-01
R11	1.8E-03	6.3E-05	7.5E-06	9.3E-05	1.4E-05	7.1E-05	7.3E-03	7.7E-06	2.1E-04	2.2E-08	1.0E-06	1.4E-06	9.6E-07	1.2E-05	6.2E-04	1.4E-04	2.7E-04	2.5E-02	3.8E-02	4.0E-02	2.7E-01	8.5E-04	3.8E-01	3.8E-01
R12	2.1E-03	6.6E-05	7.9E-06	9.7E-05	1.4E-05	7.6E-05	8.2E-03	7.4E-06	2.0E-04	2.4E-08	9.7E-07	1.3E-06	1.0E-06	1.2E-05	9.5E-04	1.5E-04	2.4E-04	2.5E-02	4.1E-02	3.8E-02	3.2E-01	1.2E-03	4.3E-01	4.4E-01
R13	2.3E-03	9.2E-05	8.5E-06	1.0E-04	1.6E-05	8.5E-05	8.7E-03	7.9E-06	2.2E-04	2.6E-08	1.0E-06	2.4E-06	1.3E-06	1.8E-05	1.0E-03	1.7E-04	4.7E-04	3.4E-02	4.9E-02	7.8E-02	9.6E-01	1.3E-03	1.1E+00	1.1E+00
R14	4.7E-03	9.4E-05	1.3E-05	1.5E-04	1.6E-05	8.5E-05	1.6E-02	9.4E-06	2.4E-04	2.6E-08	1.0E-06	2.3E-06	1.3E-06	1.8E-05	1.1E-03	1.8E-04	4.7E-04	3.5E-02	5.1E-02	7.8E-02	8.3E-01	1.4E-03	1.0E+00	1.0E+00
R15	2.7E-03	1.2E-04	8.1E-06	1.0E-04	1.5E-05	8.3E-05	1.1E-02	6.0E-06	1.6E-04	3.4E-08	8.0E-07	2.5E-06	1.4E-06	2.2E-05	4.0E-04	1.2E-04	2.7E-04	4.4E-02	4.2E-02	4.5E-02	1.9E-01	6.3E-04	3.2E-01	3.4E-01
R16	6.8E-03	1.9E-04	1.5E-05	1.9E-04	2.9E-05	1.6E-04	2.1E-02	1.2E-05	3.3E-04	4.3E-08	1.0E-06	3.0E-06	2.7E-06	4.0E-05	9.3E-04	2.9E-04	6.3E-04	7.4E-02	7.7E-02	1.1E-01	2.8E-01	1.4E-03	5.5E-01	5.7E-01
R17	9.7E-03	4.0E-04	2.0E-05	2.4E-04	3.8E-05	2.0E-04	2.5E-02	1.7E-05	4.7E-04	7.8E-08	2.8E-06	4.1E-06	3.6E-06	1.2E-04	1.3E-03	6.6E-04	8.8E-04	2.3E-01	3.9E-01	1.7E-01	2.1E-01	2.2E-03	1.0E+00	1.0E+00
R18	9.9E-03	4.1E-04	2.0E-05	2.5E-04	5.6E-05	3.0E-04	3.2E-02	2.3E-05	6.2E-04	8.6E-08	2.9E-06	4.0E-06	5.3E-06	1.3E-04	1.3E-03	7.0E-04	9.0E-04	2.4E-01	7.4E-01	1.7E-01	2.0E-01	2.4E-03	1.4E+00	1.4E+00
R19	7.5E-03	2.7E-04	2.0E-05	2.7E-04	3.3E-05	1.8E-04	1.8E-02	1.5E-05	4.1E-04	1.1E-07	3.1E-06	2.3E-06	2.9E-06	1.0E-04	1.2E-03	1.0E-03	8.8E-04	3.3E-01	5.8E-01	1.7E-01	7.1E-02	2.4E-03	1.2E+00	1.2E+00
R20	7.4E-03	1.6E-04	2.0E-05	2.5E-04	2.2E-05	1.2E-04	1.8E-02	1.5E-05	4.2E-04	1.1E-07	3.6E-06	2.3E-06	1.8E-06	5.8E-05	1.2E-03	6.9E-04	1.2E-03	3.9E-01	3.2E-01	1.9E-01	4.5E-02	2.1E-03	9.5E-01	9.7E-01
R21	8.2E-03	1.5E-04	2.0E-05	2.4E-04	3.1E-05	1.7E-04	1.6E-02	1.6E-05	4.4E-04	1.2E-07	3.6E-06	2.0E-06	1.5E-06	8.2E-05	1.3E-03	6.2E-04	2.3E-03	5.6E-01	2.2E-01	4.6E-01	5.3E-02	2.1E-03	1.3E+00	1.3E+00
R22	4.4E-03	6.6E-05	9.7E-06	1.2E-04	1.5E-05	8.0E-05	8.5E-03	7.2E-06	2.0E-04	3.5E-08	9.0E-07	1.2E-06	7.9E-07	2.4E-05	6.3E-04	2.3E-04	1.7E-03	9.6E-02	7.9E-02	1.6E-01	3.0E-02	9.6E-04	3.7E-01	3.8E-01
R23	2.7E-03	4.4E-05	4.7E-06	5.9E-05	7.0E-06	4.0E-05	4.8E-03	3.3E-06	9.3E-05	3.2E-08	1.0E-06	8.2E-07	6.1E-07	1.5E-05	4.1E-04	1.7E-04	6.5E-04	4.0E-02	4.6E-02	6.7E-02	2.2E-02	6.3E-04	1.8E-01	1.8E-01
R24	5.8E-03	2.9E-04	1.7E-05	2.1E-04	3.0E-05	1.7E-04	1.9E-02	1.3E-05	3.5E-04	6.3E-08	2.0E-06	2.5E-06	2.9E-06	5.9E-05	8.9E-04	4.1E-04	5.1E-04	1.4E-01	3.3E-01	9.2E-02	8.6E-02	1.5E-03	6.5E-01	6.8E-01
R25	3.8E-03	1.7E-04	1.4E-05	1.7E-04	2.3E-05	1.3E-04	1.2E-02	1.0E-05	2.7E-04	6.3E-08	2.0E-06	1.6E-06	2.1E-06	3.9E-05	6.0E-04	4.0E-04	4.2E-04	1.0E-01	2.0E-01	7.2E-02	4.8E-02	1.2E-03	4.2E-01	4.4E-01
R26	1.8E-03	5.9E-05	6.7E-06	8.3E-05	1.1E-05	5.9E-05	6.7E-03	5.8E-06	1.6E-04	2.9E-08	1.6E-06	1.1E-06	8.7E-07	1.1E-05	3.4E-04	1.8E-04	3.7E-04	2.9E-01	3.7E-02	4.4E-02	2.4E-02	6.0E-04	4.0E-01	4.0E-01
R27	3.3E-03	1.6E-04	9.6E-06	1.2E-04	1.7E-05	1.0E-04	1.3E-02	6.6E-06	1.8E-04	4.7E-08	1.2E-06	1.8E-06	1.8E-06	2.8E-05	4.8E-04	1.6E-04	3.2E-04	3.7E-02	7.0E-02	5.4E-02	8.8E-02	7.7E-04	2.5E-01	2.7E-01
R28	4.0E-03	6.0E-05	6.1E-06	1.1E-04	9.1E-06	5.0E-05	8.0E-03	6.8E-06	1.9E-04	3.2E-08	8.8E-07	1.1E-06	7.4E-07	2.1E-05	3.8E-04	2.0E-04	1.0E-03	7.9E-02	6.8E-02	1.4E-01	2.9E-02	6.5E-04	3.2E-01	3.3E-01
R29	6.3E-03	2.9E-04	1.4E-05	1.7E-04	2.7E-05	1.5E-04	2.0E-02	1.1E-05	3.0E-04	6.3E-08	1.7E-06	3.0E-06	2.5E-06	3.8E-05	8.6E-04	2.8E-04	5.9E-04	7.1E-02	1.5E-01	1.0E-01	2.5E-01	1.3E-03	5.8E-01	6.0E-01
R30	4.4E-03	2.2E-04	1.4E-05	1.7E-04	2.7E-05	1.5E-04	1.5E-02	1.2E-05	3.1E-04	6.9E-08	2.3E-06	1.9E-06	2.5E-06	4.8E-05	7.0E-04	4.7E-04	4.8E-04	1.2E-01	2.6E-01	8.5E-02	5.8E-02	1.4E-03	5.3E-01	5.5E-01
R31	4.3E-03	2.0E-04	1.5E-05	1.9E-04	2.6E-05	1.4E-04	1.4E-02	1.1E-05	3.0E-04	6.8E-08	2.2E-06	1.8E-06	2.4E-06	4.5E-05	6.7E-04	4.5E-04	4.7E-04	1.2E-01	2.4E-01	8.2E-02	5.6E-02	1.3E-03	5.0E-01	5.2E-01
R32	2.4E-03	5.7E-05	5.8E-06	7.2E-05	8.7E-06	4.8E-05	5.0E-03	4.4E-06	1.2E-04	3.0E-08	8.6E-07	1.1E-06	7.0E-07	1.9E-05	3.6E-04	1.9E-04	9.6E-04	7.0E-02	6.2E-02	1.2E-01	2.7E-02	6.1E-04	2.8E-01	2.9E-01
R-A	1.8E-03	5.7E-05	6.5E-06	8.1E-05	1.0E-05	5.8E-05	6.5E-03	5.6E-06	1.6E-04	2.8E-08	9.0E-07	1.1E-06	8.5E-07	1.1E-05	3.3E-04	1.8E-04	3.6E-04	2.8E-02	3.6E-02	4.2E-02	2.3E-02	5.8E-04	1.3E-01	1.4E-01
R-B	2.9E-03	6.0E-05	6.2E-06	7.8E-05	9.1E-06	5.0E-05	5.7E-03	4.2E-06	1.1E-04	2.8E-08	6.4E-07	9.1E-07	7.3E-07	1.7E-05	3.8E-04	1.3E-04	1.1E-03	4.7E-02	4.7E-02	9.1E-02	2.4E-02	5.8E-04	2.1E-01	2.2E-01
R-C	1.9E-03	4.6E-05	5.0E-06	6.3E-05	7.4E-06	4.1E-05	4.4E-03	3.9E-06	1.1E-04	2.4E-08	5.1E-07	6.8E-07	6.2E-07	1.2E-05	2.8E-04	1.3E-04	5.4E-04	4.2E-02	4.2E-02	5.8E-02	1.7E-02	4.6E-04	1.6E-01	1.7E-01
R-D	1.8E-03	4.3E-05	4.8E-06	5.9E-05	7.0E-06	3.9E-05	4.3E-03	3.3E-06	9.0E-05	2.2E-08	5.0E-07	6.4E-07	5.9E-07	1.1E-05	2.6E-04	1.2E-04	4.8E-04	3.8E-02	3.9E-02	5.1E-02	1.6E-02	4.3E-04	1.5E-01	1.5E-01
R-E	1.8E-03	4.4E-05	4.9E-06	6.1E-05	7.2E-06	4.0E-05	4.4E-03	3.4E-06	9.2E-05	2.3E-08	5.1E-07	6.6E-07	6.0E-07	1.2E-05	2.7E-04	1.2E-04	5.1E-04	4.0E-02	4.0E-02	5.4E-02	1.7E-02	4.4E-04	1.5E-01	1.6E-01
R-F	1.4E-03	7.2E-05	1.1E-05	1.4E-04	1.8E-05	9.6E-05	9.2E-03	1.2E-05	3.3E-04	1.9E-08	1.2E-06	1.6E-06	1.2E-06	8.3E-06	2.5E-04	1.2E-04	2.3E-04	2.0E-02	4.6E-02	3.0E-02	8.8E-02	5.0E-04	1.9E-01	2.0E-01
R-G	1.3E-03	7.1E-05	1.1E-05	1.3E-04	1.8E-05	9.3E-05	8.9E-03	1.2E-05	3.2E-04	1.9E-08	1.2E-06	1.6E-06	1.2E-06	8.1E-06	2.4E-04	2.2E-04	2.3E-04	2.0E-02	4.5E-02	2.9E-02	8.4E-02	5.8E-04	1.8E-01	1.9E-01
R-H	6.7E-03	1.4E-04	1.2E-05	1.5E-04	2.0E-05	1.1E-04	1.0E-02	1.0E-05	2.9E-04	9.9E-08	3.4E-06	2.1E-06	1.6E-06	4.9E-05	1.1E-03	5.9E-04	9.6E-04	3.2E-01	2.5E-01	1.7E-01	3.6E-02	1.8E-03	7.8E-01	8.0E-01
Totals =	1.6E-01	5.0E-03	4.5E-04	5.6E-03	7.7E-04	4.2E-03	4.6E-01	3.9E-04	1.1E-02	1.9E-06	6.1E-05	7.2E-05	6.1E-05	1.4E-03	2.7E-02	1.2E-02	3.5E-02	4.6E+00	5.4E+00	4.5E+00	6.9E+00			
Maximum =	9.9E-03	4.1E-04	2.7E-05	3.4E-04	5.6E-05	3.0E-04	3.2E-02	2.6E-05	6.8E-04	1.2E-07	3.6E-06	4.1E-06	5.3E-06	1.3E-04	1.3E-03	1.0E-03	4.3E-03	5.6E-01	7.4E-01	4.6E-01	9.6E-01	2.4E-03	1.4E+00	1.4E+00