Appendix J

Summary of Quality Assurance Crosscheck Analyses

Keeping Up With Regulatory Changes

Table J-1

Comparison of Radiological Results with Known Results of Crosscheck Samples from the DOE Environmental Measurements Laboratory (EML) Quality Assessment Program (QAP) 50; EML-604 QAP 9903; June 1999

Analyte	Matrix	Units	Actual	Reported	Ratio	Accept?	Analyzed by:
Am-241	Air filter	Bq/filter	1.34E-01	1.77E-01	1.321	Yes	GEL
Co-60	Air filter	Bq/filter	4.96E+00	4.95E+00	0.998	Yes	GEL
Cs-137	Air filter	Bq/filter	6.05E+00	6.06E+00	1.001	Yes	GEL
Gross Alpha	Air filter	Bq/filter	1.61E+00	1.68E+00	1.043	Yes	GEL
Gross Beta	Air filter	Bq/filter	1.56E+00	1.40E+00	0.897	Yes	GEL
Pu-238	Air filter	Bq/filter	2.72E-01	2.90E-01	1.065	Yes	GEL
Pu-239	Air filter	Bq/filter	1.24E-01	1.37E-01	1.100	Yes	GEL
Sb-125	Air filter	Bq/filter	3.59E+00	3.65E+00	1.017	Yes	GEL
Sr-90	Air filter	Bq/filter	6.44E-01	5.53E-01	0.858	Yes	GEL
U-234	Air filter	Bq/filter	6.00E-02	7.00E-02	1.166	Yes	GEL
U-238	Air filter	Bq/filter	6.10E-02	6.80E-02	1.103	Yes	GEL
U (total)	Air filter	μg/filter	4.95E+00	5.49E+00	1.110	Yes	GEL
Co-57	Air filter	Bq/filter	3.01E+00	2.77E+00	0.920	Yes	EL
Co-60	Air filter	Bq/filter	4.96E+00	4.86E+00	0.980	Yes	EL
Cs-137	Air filter	Bq/filter	6.05E+00	5.80E+00	0.959	Yes	EL
Gross Alpha	Air filter	Bq/filter	1.61E+00	1.45E+00	0.901	Yes	EL
Gross Beta	Air filter	Bq/filter	1.56E+00	1.68E+00	1.077	Yes	EL
Sb-125	Air filter	Bq/filter	3.59E+00	3.09E+00	0.861	Yes	EL
Ac-228	Soil	Bq/kg	4.71E+01	4.99E+01	1.058	Yes	GEL
Am-241	Soil	Bq/kg	4.89E+00	4.50E+00	0.919	Yes	GEL
Bi-214	Soil	Bq/kg	6.99E+01	7.41E+01	1.061	Yes	GEL
Cs-137	Soil	Bq/kg	6.60E+02	6.56E+02	0.994	Yes	GEL
K-40	Soil	Bq/kg	3.63E+02	3.58E+02	0.987	Yes	GEL
Pb-212	Soil	Bq/kg	4.79E+01	4.95E+01	1.034	Yes	GEL
Pb-214	Soil	Bq/kg	7.10E+01	8.20E+01	1.155	Yes	GEL
Pu-239	Soil	Bq/kg	8.11E+00	7.62E+00	0.940	Yes	GEL
Sr-90	Soil	Bq/kg	3.24E+01	3.78E+01	1.166	Yes	GEL
Th-234	Soil	Bq/kg	1.38E+02	1.32E+02	0.957	Yes	GEL
U-234	Soil	Bq/kg	1.41E+02	1.36E+02	0.965	Yes	GEL
U-238	Soil	Bq/kg	1.45E+02	1.39E+02	0.957	Yes	GEL
U (total)	Soil	μg/g	1.18E+01	9.77E+00	0.828	Yes	GEL

Acceptance is based on the reported-to-actual ratio, assigned statistically on a case-by-case basis. ***Yes*** *indicates a ratio within warning limits.* ***Pass*** *indicates a ratio within control limits but outside warning limits.* ***No*** *indicates a ratio outside control limits. Samples were analyzed by either the WVDP Environmental Laboratory (EL) or General Engineering Laboratory (GEL).*

Table J-1 (concluded)

Comparison of Radiological Results with Known Results of Crosscheck Samples from the DOE Environmental Measurements Laboratory (EML) Quality Assessment Program (QAP) 50; EML-604 QAP 9903; June 1999

Analyte	Matrix	Units	Actual	Reported	Ratio	Accept?	Analyzed by:
Am-241	Veg	Bq/kg	3.52E+00	3.68E+00	1.044	Yes	GEL
Cm-244	Veg	Bq/kg	1.67E+00	2.36E+00	1.410	Pass	GEL
Co-60	Veg	Bq/kg	2.15E+01	2.09E+01	0.975	Yes	GEL
Cs-137	Veg	Bq/kg	4.67E+02	4.63E+02	0.991	Yes	GEL
K-40	Veg	Bq/kg	6.57E+02	6.88E+02	1.047	Yes	GEL
Pu-239	Veg	Bq/kg	5.20E+00	5.40E+00	1.038	Yes	GEL
Sr-90	Veg	Bq/kg	7.36E+02	5.76E+02	0.783	Yes	GEL
Am-241	Water	Bq/L	1.15E+00	1.18E+00	1.028	Yes	GEL
Co-60	Water	Bq/L	5.11E+01	5.63E+01	1.102	Yes	GEL
Cs-137	Water	Bq/L	3.94E+01	4.13E+01	1.048	Yes	GEL
Fe-55	Water	Bq/L	9.74E+01	8.93E+01	0.917	Yes	GEL
Gross Alpha	Water	Bq/L	1.09E+03	1.20E+03	1.100	Yes	GEL
Gross Beta	Water	Bq/L	1.10E+03	1.05E+03	0.953	Yes	GEL
H-3	Water	Bq/L	1.21E+02	1.16E+02	0.961	Yes	GEL
Ni-63	Water	Bq/L	1.14E+02	1.19E+02	1.042	Yes	GEL
Pu-238	Water	Bq/L	7.72E-01	7.52E-01	0.975	Yes	GEL
Pu-239	Water	Bq/L	1.01E+00	9.74E-01	0.965	Yes	GEL
Sr-90	Water	Bq/L	4.10E+00	3.45E+00	0.840	Pass	GEL
U-234	Water	Bq/L	2.69E-01	3.15E-01	1.174	Yes	GEL
U-238	Water	Bq/L	2.62E-01	3.06E-01	1.167	Yes	GEL
U (total)	Water	μg/mL	2.10E-02	2.33E+01	1099	No	GEL
Co-60	Water	Bq/L	5.11E+01	5.39E+01	1.055	Yes	EL
Cs-137	Water	Bq/L	3.94E+01	4.10E+01	1.041	Yes	EL
Gross Alpha	Water	Bq/L	1.09E+03	8.29E+02	0.761	Pass	EL
Gross Beta	Water	Bq/L	1.10E+03	1.03E+03	0.941	Yes	EL
H-3	Water	Bq/L	1.21E+02	1.26E+02	1.041	Yes	EL
Sr-90	Water	Bq/L	4.10E+00	3.81E+00	0.928	Yes	EL

Acceptance is based on the reported-to-actual ratio, assigned statistically on a case-by-case basis. ***Yes*** *indicates a ratio within warning limits.* ***Pass*** *indicates a ratio within control limits but outside warning limits.* ***No*** *indicates a ratio outside control limits. Samples were analyzed by either the WVDP Environmental Laboratory (EL) or General Engineering Laboratory (GEL).*

Table J-2

Comparison of Radiological Results with Known Results of Crosscheck Samples from the DOE Environmental Measurements Laboratory (EML) Quality Assessment Program (QAP) 51; EML-605 QAP 9909; December 1999

Analyte	Matrix	Units	Actual	Reported	Ratio	Accept?	Analyzed by:
Am-241	Air filter	Bq/filter	1.27E-01	1.05E-01	0.827	Pass	GEL
Co-57	Air filter	Bq/filter	7.73E+00	7.79E+00	1.008	Yes	GEL
Co-60	Air filter	Bq/filter	6.35E+00	6.81E+00	1.072	Yes	GEL
Cs-137	Air filter	Bq/filter	6.43E+00	7.06E+00	1.098	Yes	GEL
Gross Alpha	Air filter	Bq/filter	2.77E+00	2.72E+00	0.982	Yes	GEL
Gross Beta	Air filter	Bq/filter	2.66E+00	2.71E+00	1.019	Yes	GEL
Mn-54	Air filter	Bq/filter	7.91E+00	8.81E+00	1.114	Yes	GEL
Pu-238	Air filter	Bq/filter	9.70E-02	8.20E-02	0.847	Pass	GEL
Pu-239	Air filter	Bq/filter	1.36E-01	1.45E-01	1.066	Yes	GEL
Ru-106	Air filter	Bq/filter	5.50E+00	7.01E+00	1.275	Pass	GEL
Sr-90	Air filter	Bq/filter	3.36E-01	3.38E-01	1.006	Yes	GEL
U-234	Air filter	Bq/filter	6.60E-02	6.90E-02	1.049	Yes	GEL
U-238	Air filter	Bq/filter	6.50E-02	7.50E-02	1.161	Yes	GEL
U (total)	Air filter	μg/filter	5.23E+00	5.84E+00	1.117	Yes	GEL
Co-57	Air filter	Bq/filter	7.73E+00	7.25E+00	0.938	Yes	EL
Co-60	Air filter	Bq/filter	6.35E+00	6.51E+00	1.025	Yes	EL
Cs-137	Air filter	Bq/filter	6.43E+00	6.16E+00	0.958	Yes	EL
Gross Alpha	Air filter	Bq/filter	2.77E+00	2.45E+00	0.884	Yes	EL
Gross Beta	Air filter	Bq/filter	2.66E+00	3.10E+00	1.165	Yes	EL
Mn-54	Air filter	Bq/filter	7.91E+00	8.91E+00	1.126	Yes	EL
Ru-106	Air filter	Bq/filter	5.50E+00	5.30E+00	0.964	Yes	EL
Ac-228	Soil	Bq/kg	1.24E+02	1.31E+02	1.056	Yes	GEL
Am-241	Soil	Bq/kg	1.44E+00	1.69E+00	1.174	Yes	GEL
Bi-212	Soil	Bq/kg	1.40E+02	8.29E+01	0.592	Yes	GEL
Bi-214	Soil	Bq/kg	6.95E+01	8.85E+01	1.273	Pass	GEL
Cs-137	Soil	Bq/kg	2.04E+02	2.17E+02	1.064	Yes	GEL
K-40	Soil	Bq/kg	7.80E+02	9.14E+02	1.172	Yes	GEL
Pb-212	Soil	Bq/kg	1.27E+02	1.42E+02	1.118	Yes	GEL
Pb-214	Soil	Bq/kg	7.20E+01	1.02E+02	1.417	Pass	GEL
Pu-239	Soil	Bq/kg	3.20E+00	2.75E+00	0.859	Pass	GEL
Sr-90	Soil	Bq/kg	1.30E+01	9.80E+00	0.754	Pass	GEL
Th-234	Soil	Bq/kg	1.98E+02	1.88E+02	0.949	Yes	GEL
U-234	Soil	Bq/kg	1.90E+02	1.83E+02	0.963	Yes	GEL
U-238	Soil	Bq/kg	2.02E+02	1.97E+02	0.975	Yes	GEL
U (total)	Soil	μg/g	1.63E+01	1.51E+01	0.926	Yes	GEL

Acceptance is based on the reported-to-actual ratio, assigned statistically on a case-by-case basis. ***Yes*** *indicates a ratio within warning limits.* ***Pass*** *indicates a ratio within control limits but outside warning limits.* ***No*** *indicates a ratio outside control limits. Samples were analyzed by either the WVDP Environmental Laboratory (EL) or General Engineering Laboratory (GEL).*

Table J-2 (concluded)

Comparison of Radiological Results with Known Results of Crosscheck Samples from the DOE Environmental Measurements Laboratory (EML) Quality Assessment Program (QAP) 51; EML-605 QAP 9909; December 1999

Analyte	Matrix	Units	Actual	Reported	Ratio	Accept?	Analyzed by:
Am-241	Veg	Bq/kg	2.88E+00	3.13E+00	1.087	Yes	GEL
Cm-244	Veg	Bq/kg	1.61E+00	1.85E+00	1.149	Yes	GEL
Co-60	Veg	Bq/kg	1.76E+01	1.84E+01	1.045	Yes	GEL
Cs-137	Veg	Bq/kg	4.40E+02	4.59E+02	1.043	Yes	GEL
K-40	Veg	Bq/kg	5.13E+02	5.79E+02	1.129	Yes	GEL
Pu-239	Veg	Bq/kg	4.30E+00	4.48E+00	1.042	Yes	GEL
Sr-90	Veg	Bq/kg	5.95E+02	5.86E+02	0.985	Yes	GEL
Am-241	Water	Bq/L	8.50E-01	9.84E-01	1.158	Yes	GEL
Co-60	Water	Bq/L	5.24E+01	5.48E+01	1.046	Yes	GEL
Cs-137	Water	Bq/L	7.60E+01	7.76E+01	1.021	Yes	GEL
Fe-55	Water	Bq/L	5.30E+01	4.58E+01	0.864	Yes	GEL
Gross Alpha	Water	Bq/L	1.58E+03	1.79E+03	1.133	Yes	GEL
Gross Beta	Water	Bq/L	7.40E+02	9.69E+02	1.309	Yes	GEL
H-3	Water	Bq/L	8.07E+01	8.42E+01	1.043	Yes	GEL
Ni-63	Water	Bq/L	1.14E+02	1.15E+02	1.009	Yes	GEL
Pu-238	Water	Bq/L	7.90E-01	8.57E-01	1.085	Yes	GEL
Pu-239	Water	Bq/L	8.70E-01	9.34E-01	1.074	Yes	GEL
Sr-90	Water	Bq/L	1.72E+00	1.77E+00	1.029	Yes	GEL
U-234	Water	Bq/L	3.70E-01	3.86E-01	1.043	Yes	GEL
U-238	Water	Bq/L	3.60E-01	3.90E-01	1.083	Yes	GEL
U (total)	Water	μg/mL	3.00E-02	3.20E-02	1.067	Yes	GEL
Co-60	Water	Bq/L	5.24E+01	5.36E+01	1.023	Yes	EL
Cs-137	Water	Bq/L	7.60E+01	7.66E+01	1.008	Yes	EL
Gross Alpha	Water	Bq/L	1.58E+03	1.53E+03	0.969	Yes	EL
Gross Beta	Water	Bq/L	7.40E+02	1.01E+03	1.365	Pass	EL
H-3	Water	Bq/L	8.07E+01	8.33E+01	1.032	Yes	EL
Sr-90	Water	Bq/L	1.72E+00	1.48E+00	0.860	Pass	EL

Acceptance is based on the reported-to-actual ratio, assigned statistically on a case-by-case basis. ***Yes*** *indicates a ratio within warning limits.* ***Pass*** *indicates a ratio within control limits but outside warning limits.* ***No*** *indicates a ratio outside control limits. Samples were analyzed by either the WVDP Environmental Laboratory (EL) or General Engineering Laboratory (GEL).*