CONVERSION FACTORS FOR OPERATIONAL QUANTITIES REPORTED BY PACIFIC NORTHWEST NATIONAL LABORATORY (PNNL)[a]

For exposures conducted in accordance with N13.11

ISO Beam Code		Deep Personal Dose Equivalent Conversion Factor ($c_{k,\,d,\,\alpha}$), ($c_{x,\,d,\,\alpha}$) and ARF						Shallow Personal Dose Equivalent Conversion Factor ($c_{k,\,s,\,\alpha}$), ($c_{x,\,s,\,\alpha}$) and ARF					
		α=0°		α=40°		α=60°		α=0°		α=40°		α=60°	
		C_k	C_x	C_k	ARF[c]	C_k	ARF[c]	C_k	C_x	C_k	ARF[c]	C_k	ARF[c]
HK10[b][d]		0.00	0.0	0.00	0.0	0.00	0.0	0.89	0.78	0.86	0.9663	0.80	0.8989
HK20[b][d]		0.14	0.12	0.09	0.6429	0.04	0.2857	0.95	0.83	0.94	0.9895	0.92	0.9684
HK30		0.39	0.34	0.32	0.8205	0.20	0.5128	1.01	0.88	1.00	0.9901	0.99	0.9802
HK60		1.19	1.04	1.07	0.8992	0.86	0.7227	1.29	1.13	1.27	0.9845	1.22	0.9457
HK100		1.68	1.47	1.56	0.9286	1.31	0.7798	1.58	1.38	1.53	0.9684	1.46	0.9241
HK200		1.75	1.53	1.66	0.9486	1.46	0.8343	1.62	1.42	1.59	0.9815	1.54	0.9506
HK250		1.67	1.46	1.59	0.9521	1.43	0.8563	1.56	1.37	1.55	0.9936	1.51	0.9679
HK280		1.60	1.40	1.54	0.9625	1.39	0.8688	1.51	1.32	1.51	1.0000	1.48	0.9801
HK300		1.59	1.39	1.53	0.9623	1.39	0.8742	1.51	1.32	1.50	0.9934	1.48	0.9801
WS60		1.55	1.36	1.42	0.9161	1.18	0.7613	1.49	1.31	1.44	0.9664	1.37	0.9195
WS80		1.77	1.55	1.65	0.9322	1.39	0.7853	1.64	1.44	1.58	0.9634	1.50	0.9146
WS110		1.87	1.64	1.76	0.9412	1.52	0.8128	1.71	1.50	1.67	0.9766	1.59	0.9298
WS150		1.77	1.55	1.68	0.9492	1.49	0.8418	1.64	1.44	1.61	0.9817	1.56	0.9512
WS200		1.65	1.45	1.57	0.9515	1.42	0.8606	1.55	1.36	1.53	0.9871	1.50	0.9677
WS250		1.54	1.35	1.49	0.9675	1.36	0.8831	1.47	1.29	1.47	1.0000	1.45	0.9864
WS300		1.47	1.29	1.44	0.9796	1.33	0.9048	1.42	1.24	1.43	1.0070	1.43	1.0070
NS10[b][d]		0.00	0.0	0.00	0.0	0.00	0.0	0.91	0.80	0.89	0.9780	0.84	0.9231
NS15[b][d]		0.06	0.05	0.03	0.5000	0.01	0.1667	0.96	0.84	0.95	0.9896	0.93	0.9688
NS20[d]		0.27	0.24	0.20	0.7407	0.09	0.3333	0.98	0.86	0.98	1.0000	0.97	0.9898
NS25[b][d]		0.55	0.48	0.44	0.8000	0.28	0.5091	1.03	0.90	1.02	0.9903	1.02	0.9903
NS30[d]		0.79	0.69	0.68	0.8608	0.49	0.6203	1.10	0.96	1.09	0.9909	1.07	0.9727
NS40[d]		1.17	1.02	1.06	0.9060	0.85	0.7265	1.27	1.11	1.24	0.9764	1.19	0.9370
NS60[d]		1.65	1.45	1.52	0.9212	1.27	0.7697	1.55	1.36	1.50	0.9677	1.42	0.9161
NS80[d]		1.88	1.65	1.76	0.9362	1.50	0.7979	1.72	1.51	1.66	0.9651	1.58	0.9186
NS100[d]		1.88	1.65	1.76	0.9362	1.53	0.8138	1.72	1.51	1.68	0.9767	1.60	0.9302
NS120[d]		1.81	1.59	1.71	0.9448	1.51	0.8343	1.67	1.46	1.63	0.9760	1.58	0.9461
NS150[d]		1.73	1.52	1.64	0.9480	1.46	0.8439	1.61	1.41	1.58	0.9814	1.54	0.9565
NS200[d]		1.57	1.38	1.51	0.9618	1.38	0.8790	1.49	1.31	1.49	1.0000	1.46	0.9799
NS250[d]		1.48	1.30	1.44	0.9730	1.33	0.8986	1.42	1.24	1.43	1.0070	1.43	1.0070
NS300[d]		1.42	1.24	1.40	0.9859	1.30	0.9155	1.38	1.21	1.40	1.0145	1.40	1.0145
LK10[b][d]		0.00	0.0	0.00	0.0	0.00	0.0	0.93	0.81	0.91	0.9785	0.87	0.9355
LK20[b][d]		0.37	0.32	0.28	0.7568	0.15	0.4054	1.00	0.88	0.99	0.9900	0.99	0.9900
LK30[d]		0.91	0.80	0.79	0.8681	0.60	0.6593	1.14	1.00	1.13	0.9912	1.10	0.9649
LK35[d]		1.09	0.95	0.98	0.8991	0.77	0.7064	1.22	1.07	1.20	0.9836	1.16	0.9508
LK55[d]		1.67	1.46	1.54	0.9222	1.29	0.7725	1.57	1.38	1.52	0.9682	1.43	0.9108
LK70[d]		1.87	1.64	1.75	0.9358	1.49	0.7968	1.71	1.50	1.65	0.9649	1.56	0.9123
LK100[d]		1.87	1.64	1.76	0.9412	1.53	0.8182	1.71	1.50	1.67	0.9766	1.60	0.9357
LK125[d]		1.77	1.55	1.68	0.9492	1.49	0.8418	1.64	1.44	1.61	0.9817	1.56	0.9512
LK170[d]		1.62	1.42	1.55	0.9568	1.41	0.8704	1.53	1.34	1.52	0.9935	1.49	0.9739
LK210[d]		1.52	1.33	1.47	0.9671	1.36	0.8947	1.45	1.27	1.46	1.0069	1.44	0.9931
LK240[d]		1.47	1.29	1.44	0.9796	1.33	0.9048	1.42	1.24	1.43	1.0070	1.42	1.0000
^{241}Am		1.89	1.66	1.77	0.9365	1.50	0.7937	1.72	1.51	1.66	0.9651	1.57	0.9128

[a] C_k information taken from ANSI standard HPS N13.11, *Personnel Dosimetry Performance – Criteria for Testing*, Table 3a and N13.11-2009 Table 2a. Multiplying kerma by the C_k conversion factor yields the personal dose equivalent. If kerma is in Gy, the personal dose equivalent will be in Sv. If kerma is in rad, the personal dose equivalent will be in rem.

[b] Not used in Performance Testing under N13.11.

[c] To attain shallow and deep dose equivalent at non-normal angles (i.e., 40º, 60º); multiply exposure by C_x and by ARF.

[d] Not used in Performance Testing under N13.11.