APPENDIX 1. ESTIMATES OF THE AVERAGE PLUTONIUM CONTENT IN US NUCLEAR WEAPONS

In the 1990s, data were published [1, 19, 20] on the variation of the number of nuclear weapons in the US nuclear stockpile and the quantity of produced weapon-grade plutonium, which made it possible to estimate the average plutonium consumption per US nuclear weapon. These data are shown in Table 74.

Table 74. Production of weapon-grade plutonium and nuclear weapons in the USA

Year	Annual plutonium production, kg	Production of weapon-grade plutonium, t	Number of nuclear weapons in the stockpile	Average plutonium content per nuclear weapon, kg
1947	493	0.49	13	
1948	183	0.68	56	12.14-8.75
1949	270	0.95	169	6.62-4.02
1950	392	1.34	298	4.5-3.19
1951	288	1.63	438	3.72-3.05
1952	662	2.29	832	2.75-1.96
1953	838	3.13	1161	2.7-1.97
1954	1113	4.24	1630	2.6-1.92
1955	1966	6.2	2280	2.72-1.86
1956	3225	9.43	3620	2.6-1.71
1957	3907	13.34	5828	2.29-1.62
1958	3975	17.31	7402	2.34-1.8
1959	5040	22.35	12305	1.81-1.41
1960	6000	28.35	18638	1.52-1.2
1961	6001	34.35	22229	1.54-1.28
1962	5747	40.1	27100	1.48-1.27
1963	6229	46.33	29800	1.55-1.35
1964	6370	52.7	31600	1.67-1.47
1965	5117	57.81	32400	1.78-1.63
1966	4432	62.25	32450	1.92-1.78
1967	3693	65.94	32500	2.03-1.91
1968	2747	68.69	30700	2.24-2.15
1969	1812	70.5	28200	2.5-2.44

Table 74 (continued)

Year	Annual plutonium production, kg	Production of weapon-grade plutonium, t	Number of nuclear weapons in the stockpile	Average plutonium content per nuclear weapon, kg
1970	1849	72.35	26600	2.72-2.65
1971	1106	73.46	26500	2.77-2.73
1972	1028	74.48	27000	2.76-2.72
1973	1128	75.61	28400	2.66-2.62
1974	1226	76.84	29100	2.64-2.6
1975	753	77.59	28100	2.76-2.73
1976	1400	78.99	26700	2.96-2.9
1977	844	79.84	25800	3.1-3.06
1978	835	80.67	24600	3.28-3.24
1979	829	81.5	24300	3.35-3.32
1980	1010	82.51	24300	3.4-3.35
1981	748	83.26	23400	3.56-3.53
1982	793	84.05	23000	3.65-3.62
1983	1088	85.14	23400	3.64-3.59
1984	1103	86.24	23600	3.65-3.61
1985	1508	87.75	23500	3.73-3.67
1986	1869	89.62	23400	3.83-3.75
1987	784	90.4	23700	3.81-3.78
1988	131	90.53	23400	3.87-3.81
1989	10	90.54	22500	4.02-3.87

The values of average plutonium content per nuclear weapon were determined in two ways. The first value is the ratio of the total quantity of plutonium as of the given year to the number of nuclear weapons in the stockpile in the given year; it therefore provides for the possibility of using plutonium produced in the same year. The second value is the ratio of the total quantity of plutonium as of the previous year to the number of nuclear weapons in the stockpile in the given year; so it provides for a one-year time delay between plutonium production and its use in nuclear weapons. Although the second value seems more realistic, we provide both values.

According to the second estimate, the average quantity of plutonium per US nuclear weapon did not exceed 2 kg in 1952-1967 and 1.5 kg in 1959-1964.