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US - USSR  
Strategic Offensive Nuclear Forces  
1946 - 1987  
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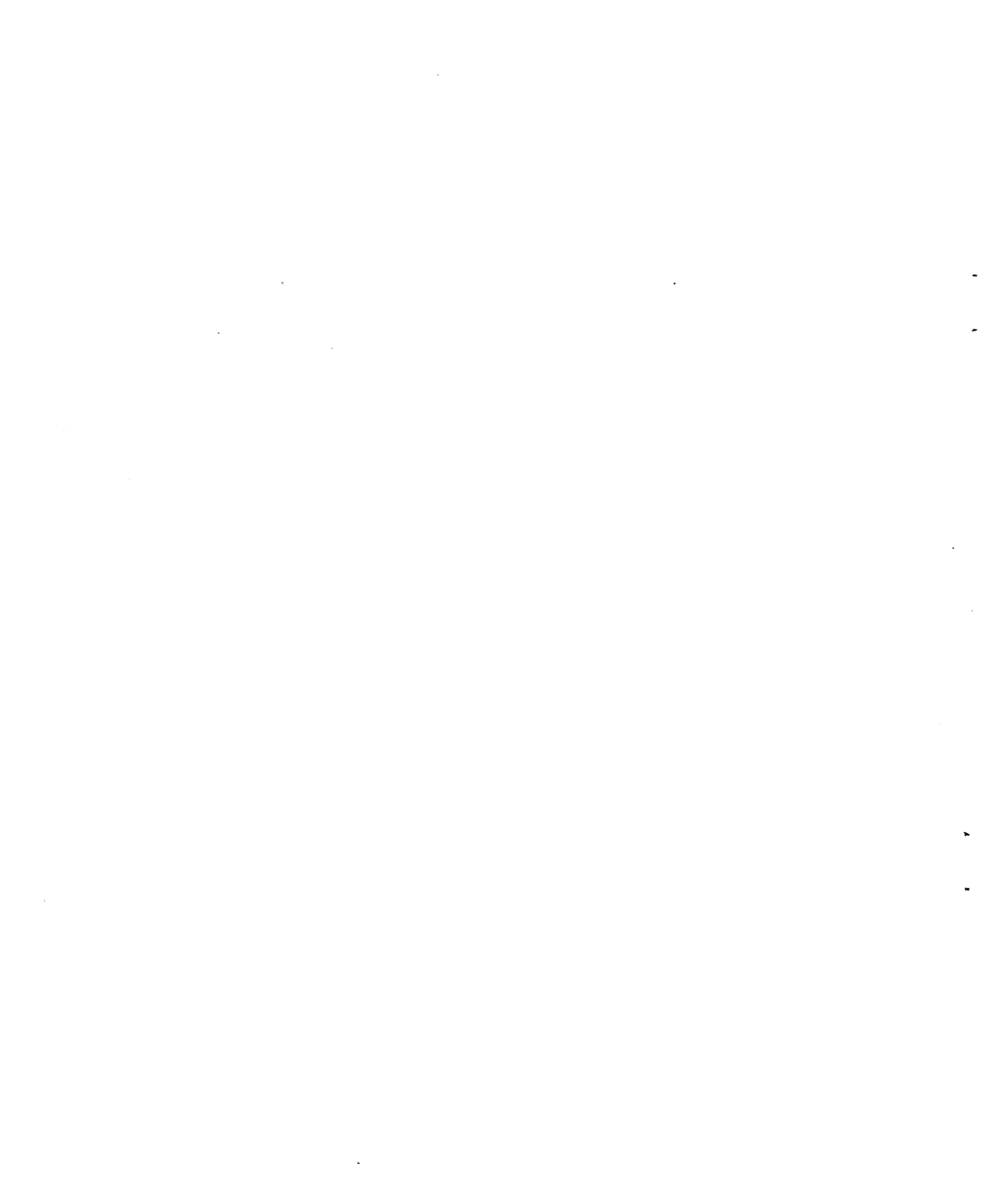
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## INTRODUCTION

A regular element of the debate about nuclear weapons and arms control is the presentation of data on the relative levels of US and USSR strategic forces, often in the form of tables or charts. Frequently, the data presented is unclear in terms of where it came from or what assumptions were used to construct it. Some tables present current "total" forces, others "on-line" forces, "alert" forces, "generated alert" forces, or "SALT accountable" forces. Each is important and more usable if detail about the sources and assumptions is provided. Historical tables compound the difficulties by not always being explicit about the time of the year (i.e. beginning Fiscal Year, beginning calendar year, or some other time).

There has long been a need for an accurate, comprehensive and consistent accounting of the growth and composition of U.S. and Soviet strategic nuclear forces. Such an accounting can provide a context for policy decisions, allow for better assessments of current force levels and trends, and enrich historical accounts of the nuclear age.

This Working Paper reflects a preliminary attempt to assemble accurate numbers through the eight tables and seven figures presented below.<sup>1</sup> The Tables depict US and USSR bomber forces, intercontinental ballistic missile forces, and submarine-launched ballistic missile forces and the weapons they carry

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<sup>1</sup> The material in this Working Paper is excerpted from sections of the Nuclear Weapons Databook, Volume I, U.S. Forces and Capabilities, 2nd edition (forthcoming) and Volume IV, Soviet Nuclear Weapons, (forthcoming). Reader's additions and corrections are appreciated.

year-by-year from 1946 to 1987. In order to avoid any confusion in the presentation of the information Tables 3 through 8 have extensive footnotes which identify and clarify the assumptions which have been made. In addition, we have prepared seven Figures which present the data in a visual and comparative way.

The Tables and Figures in this Working Paper depict strategic offensive "force levels," that is, "on-line" missile launchers as well as those in overhaul, repair, conversion, and modernization. They do not include non-operational test missiles or test launchers, or spare missiles (either maintenance spares or reloads). Bomber figures include U.S. FB-111A medium bombers which are accountable under the SALT treaties. Soviet Backfire bombers are not included, both because they are considered to have theater roles and they are not included as strategic forces under the SALT treaties. U.S. bomber figures do not include the several hundred SALT-accountable B-52 bombers which are not operational and in storage at Davis-Monthan Air Force Base, Arizona. The Tables do not depict strategic defensive forces, which are anti-ballistic missile systems, surface-to-air missiles, interceptor aircraft and air-to-air missiles. The Tables do not depict those weapons capable of striking the homelands of the US or USSR but are not included in strategic war plans or were the subject of SALT negotiations. These would include such weapons as sea-launched and ground launched cruise missiles, IRBMs, and aircraft weapons aboard aircraft carriers

which were a part of strategic nuclear war plans in the 1950s and of several Single Integrated Operational Plans (SIOP).

It is important to distinguish between force levels and alert forces. Alert forces are those missiles that could, under normal conditions, be fired within a matter of minutes or in the case of bombers could be airborne within approximately fifteen minutes. In peacetime the US keeps its strategic forces at much higher states of alert than the Soviet Union. For the US, alert forces comprise approximately two-thirds of on-line forces. These include virtually all on-line ICBMs, 60 percent of on-line strategic submarines and SLBMs, and 30 percent of the Primary Authorized Aircraft (PAA) bomber force. Currently US bomber weapons on alert constitute about 36 percent of the total weapons on alert, with 33 percent on strategic submarines and 31 percent on ICBMs. In the case of strategic submarines it is also important to distinguish between alert forces and modified alert forces. In the case of the 60-65 percent of the submarines that are at sea, about one-half of those constitute the alert force and could launch in a few minutes. The other half at sea are in a modified alert status, going to or coming from their designated areas, but still capable of launching missiles in a matter of hours.<sup>2</sup>

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<sup>2</sup> SASC, FY 1984 DOD, Part 5, p. 2504; Donald R. Cotter, "Peacetime Operations: Safety and Security," in Ashton Carter, John D. Steinbruner, Charles A. Zraket, eds., Managing Nuclear Operations (Washington, D.C.: The Brookings Institution, 1987), p. 25.

The Soviet strategic bomber force is not kept on alert. Instead the Soviets rely on the "generated alert" since they believe that there will be time to launch or disperse bombers. More than 80 percent of Soviet ICBMs are on alert,<sup>3</sup> and could be fired within minutes.<sup>4</sup> The Soviet Union keeps only about 15 to 20 percent of its strategic submarines and SLBM force at sea at any given time. Another 15 to 20 percent of the alert SSBN force are dockside with missiles capable of reaching targets in the U.S. from the Northern and Pacific Fleet bases. If time permitted a larger number of SSBNs could be flushed from their homeports.

As more strategic weapons have been deployed, the corresponding number on alert also has gone up. It is estimated that in 1987 approximately 7,250 U.S. strategic weapons were on alert, an increase of over 2,100 since 1981. In recent years the number of US ICBM warheads has remained fairly constant but has been a decreasing percentage of the total forces on alert. The most significant increases have come in bomber weapons with over 1,600 air-launched cruise missiles (ALCMs) deployed on B-52G/H bombers. Soviet strategic forces have also increased significantly as ICBMs and SLBMs have been MIRVed.

#### SOURCES OF INFORMATION

US government documents provide most of the data in this Working Paper, both for the US and the USSR. It should be noted

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<sup>3</sup> Stephen M. Meyer, "Soviet Nuclear Operations," in Carter, et. al., Managing Nuclear Operations, p. 494.

<sup>4</sup> Ibid., p. 495.

that different US departments and agencies often disagree and, therefore, variations in their estimates occur. The reasons for this has to do with security classification, different counting standards, and inter agency politics.

The data on the USSR is, obviously, more tentative. The Soviet Union provides virtually no information about its own military forces, a situation that has so far remained unchanged with the new openness (glasnost) of the Gorbachev era. During the infrequent times that Soviet authors do divulge empirical information about their military forces, it is virtually always based on western sources.

Within the US government, there is not an empirical "truth" about the composition and characteristics of Soviet forces. The information divulged by the Department of Defense or the agencies of the intelligence community -- the intelligence components of each of the military services, the National Security Agency, the CIA, the Department of Energy -- reflect estimates of Soviet forces, and as such often reflect different biases or quality of information. By necessity we have had to make judgments about what appears to us to be the most accurate information.

The Department of Defense's Annual Report to Congress between 1967 and 1981 provided a continuing source of information comparing US and Soviet strategic forces. The Reagan Administration has not included the tables in its 1982 to 1987 Annual Reports. The earlier volumes included estimates of nuclear



warheads in the bomber and missile forces of the two countries (see below).

It is worth noting that the Department of Defense's estimates and those included here are often at variance. Without exception, DOD's estimates for both the US and the USSR are lower than those presented here. There are several reasons for this.

The Department of Defense estimates of US and Soviet strategic forces are unclassified estimates. Classified estimates, most likely, have higher figures for both sides but are not divulged for the purported reason that they would compromise "sources and methods" of intelligence collection about

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US-Soviet Strategic Force Warheads

<u>DATE</u>	<u>US</u>	<u>USSR</u>
1 Oct 1967	4500	1000
1 Sep 1968	4200	1100
1 Sep 1969	4200	1350
30 Dec 1970	4000	1800
1 Nov 1971	4700	2100
mid - 1972	5700	2500
mid - 1973	6784	2200
mid - 1974	7650	2500
mid - 1975	8500	2500
mid - 1976	8900	3500
30 Sep 1977	8400	3300
1 Jan 1978	9000	4000+
1 Jan 1979	9200	5000
1 Jan 1980	9200	6000
1 Jan 1981	9000	7000

Based upon Annual Reports of the Department of Defense for Fiscal Years 1969 through Fiscal Year 1982.

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the USSR or reveal features of US nuclear war plans that should not be made public.

For example, the Annual Report's numbers for the US do not reflect the true total of strategic nuclear forces available to the national command authorities. The Department of Defense estimate of the number of US bomber weapons is less than our estimate. In fact the true number of bomber weapons in the inventory exceeds our estimate. Bomber weapons, of many types, with different weights, sizes, and explosive yields, have been assigned in great numbers to the bomber force since the mid-1950s. Individual bombers can and do carry a great variety of

different kinds and numbers of weapons. Their exact loadings are determined by their role in executing the war plan. The loading of the entire force is extraordinarily complex. To reveal the true number of weapons available to the bomber force, thus, would in the Department of Defense's opinion, reveal too much about the war plans.

The US bomber force is broken into two categories: the approximately thirty percent on alert and the rest non-alert. Each alert bomber is estimated to be loaded with an average of approximately 22 nuclear weapons. The logic is to put as many weapons in the air as fast as possible so they would not be destroyed on the ground. Another reason why our estimates are larger than the unclassified Department of Defense estimates has to do with the design characteristics of nuclear bombs/warheads. The design of early nuclear and thermonuclear bombs was such that they could only be exploded at one yield. (Beginning in the 1960s bombs were developed that provided "selectable" or variable yields.) Because there were many different targeting options in the war plans there was a "need" for many bombs per bomber. The normal military practice of planning for every contingency resulted in a large bomb stockpile requiring many different types of single yield bombs. The introduction of variable yield bombs allowed for targeting flexibility with fewer numbers of bombs.

Another reason why our estimates are larger than unclassified Department of Defense estimates has to do with "reserve" weapons, for bombers and possibly missiles. Reserve

weapons would be for restrike operations. Bombers would return to recovery bases after dropping their initial loads, and theoretically would be loaded for another sortie. The US may even have contingency plans for strategic submarines to rendezvous with submarine tenders at prearranged places to reload missiles and warheads.

While the true number of weapons that exist to cover every contingency is larger than most estimates the true number available at any given time is usually smaller. For example in the early 1960s, the US introduced a communications system, called the Emergency Rocket Communications System (ERCS), which placed a radio transmitter, rather than a nuclear warhead atop ten Minuteman II missiles. These missiles could be fired and used as emergency broadcast systems during a nuclear war to transmit launch orders to US forces. The ten ERCS missiles remain deployed today at Whiteman Air Force Base, Missouri. Our Table reflects ten fewer Minuteman II warheads than missiles.

On the other hand we have not reduced the numbers to reflect the true operational status of the forces. At any given time some percentage of US and Soviet ICBMs are undergoing maintenance, modifications or conversion and are not operational, i.e. off-line. The number may range from less than a dozen to several dozen at any one time. The real number available to launch is constantly changing and is less than the numbers reflected in the tables below. Similarly at any given time some number of US and Soviet strategic submarines are in overhaul or

undergoing modifications or retrofitting which take them out of service for some period of time. For the U.S. this number is normally about four or five submarines on average, for the Soviets the number is approximately eight to ten submarines.

Other unknown operational factors would give lesser warhead totals. Because we are not certain, (nor is the US intelligence community), of exactly how many warheads are carried on the Soviet MIRVed ICBM force we assume the number of warheads the missile could carry or use the SALT limit. It is unlikely that every Soviet ICBM carries the maximum number of reentry vehicles for which it is capable.

Soviet reserve warheads are another area of uncertainty. Some unknown number of reserve warheads and bombs undoubtedly exist for Soviet forces, as they do for US forces. The Soviet Union has apparently practiced and has some capability to reload ICBMs into cold launched silos,<sup>5</sup> though the possibility of it doing so in the midst of a nuclear war seems low. The Department of Defense also says that Soviet "Resupply systems are available to reload SSBNs [strategic missile launching submarines] in

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<sup>5</sup> "For their ICBM, LRINF, SRINF, SNF, SLBM, and air defense forces, the Soviets have stocked extra missiles, propellants and warheads throughout the USSR. Some ICBM silo launchers could be reloaded, and provision has been made for the decontamination of those launchers. Plans for the survival of necessary equipment and personnel have been developed and practiced;" Soviet Military Power, 1987, p. 28. Similar statements can be found in earlier editions: Soviet Military Power, 1984, p. 21; Soviet Military Power, 1985, p. 28; and Soviet Military Power, 1986, p. 24.

protected waters."<sup>6</sup> It is unknown whether the Soviet Union has any reload or restrike bombs for its strategic bombers.

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<sup>6</sup> SMP, 1987, p. 28. Missile Transport and Submarine Support Ships would probably be used. See Norman Polmar, Guide to the Soviet Navy, fourth edition (Annapolis, Maryland: Naval Institute Press, 1986) pp. 273-77, 293-97.

## DEFINITIONS

Alert Forces: "On-line" strategic weapons which have a day-to-day readiness to launch within a short period of time (see also Generated Alert).

Bomber: Strategic airplane capable of long-range, intercontinental missions (designed for a tactical operating radius of over 2,500 nautical miles at design gross weight and design bomb load).

Force loadings: Those independently targetable weapons associated with the total operational ICBMs, SLBMs, and long-range bombers.

Generated Alert: Strategic weapons brought to a higher level of readiness than day-to-day alert forces.

Intercontinental Ballistic Missile (ICBM): Strategic missile with a range capability from about 3,000 to 8,000 nautical miles.

On-line: Those nuclear weapons which are operational, that is, not undergoing maintenance, modifications or conversions which remove them from the operational force for any period of time.

Strategic Nuclear Powered Ballistic Missile Submarine (SSBN): Fleet ballistic missile submarine capable of launching long-range missiles from either a submerged or surfaced conditions.

Strategic Offensive Forces: Bombers, Intercontinental Ballistic Missiles, and Submarine Launched Ballistic Missiles accountable under the SALT Agreements.

Submarine-launched Ballistic Missile (SLBM): Ballistic missile capable of being launched from fleet ballistic missile submarines.

Table 1  
U.S. Strategic Offensive Force Loadings, 1946-1987

End Year	ICBMs		SLBMs		Bombers		Totals	
	<u>Lncher</u>	<u>Warhead</u>	<u>Lncher</u>	<u>Warhead</u>	<u>Lncher</u>	<u>Warhead</u>	<u>Lncher</u>	<u>Warhead</u>
1946					125	9	125	9
1947					270	13	270	13
1948					473	50	473	50
1949					447	200	447	200
1950					462	400	462	400
1951					569	569	569	569
1952					660	660	660	660
1953					720	878	720	878
1954					1035	1418	1035	1418
1955					1260	1755	1260	1755
1956					1470	2123	1470	2123
1957					1605	2460	1605	2460
1958					1620	2610	1620	2610
1959	6	6			1545	2490	1551	2496
1960	12	12	32	32	1515	3083	1559	3127
1961	57	57	80	80	1395	2973	1532	3110
1962	203	203	144	144	1306	2920	1653	3267
1963	597	597	160	160	1055	2855	1812	3612
1964	907	907	320	320	785	2953	2012	4180
1965	854	854	384	384	650	3013	1888	4251
1966	1004	1004	560	560	575	3043	2139	4607
1967	1054	1044	656	656	558	3192	2268	4892
1968	1054	1044	656	656	481	3139	2191	4839
1969	1054	1044	656	656	399	3036	2109	4736
1970	1054	1244	656	656	390	3060	2100	4960
1971	1054	1444	656	1664	377	2956	2087	6064
1972	1054	1644	656	2384	457	3573	2167	7601
1973	1054	1844	656	3536	423	3505	2133	8885
1974	1054	1944	656	3824	396	3556	2106	9324
1975	1054	2144	656	3968	396	3716	2106	9828
1976	1054	2144	656	4688	382	3604	2092	10436
1977	1054	2144	656	4832	382	3604	2092	10580
1978	1054	2144	656	5120	376	3568	2086	10832
1979	1054	2144	656	5088	376	3568	2086	10800
1980	1054	2144	592	4896	376	3568	2022	10608
1981	1054	2144	536	4976	376	3568	1966	10688
1982	1049	2139	544	4992	328	3384	1921	10515
1983	1040	2130	568	5152	297	3520	1905	10802
1984	1030	2120	616	5536	297	3844	1943	11500
1985	1020	2110	648	5760	297	4104	1965	11974
1986	1005	2165	640	5632	312	4589	1957	12386
1987	1000	2300	640	5632	361	5070	2001	13002



Table 2  
USSR Strategic Offensive Force Loadings, 1956-1987

End Year	ICBMs		SLBMs		Bombers		Totals	
	<u>Lncher</u>	<u>Warhead</u>	<u>Lncher</u>	<u>Warhead</u>	<u>Lncher</u>	<u>Warhead</u>	<u>Lncher</u>	<u>Warhead</u>
1956					22	84	22	84
1957					28	102	28	102
1958			6	6	50	180	56	186
1959			33	33	75	250	108	283
1960	4	4	30	30	104	320	138	354
1961	10	10	57	57	120	356	187	423
1962	30	30	72	69	133	382	235	481
1963	80	80	72	69	150	440	302	589
1964	180	180	72	69	173	522	425	771
1965	225	225	75	72	163	532	463	829
1966	333	333	78	75	159	546	570	954
1967	701	701	97	72	159	576	947	1349
1968	909	909	138	120	159	576	1206	1605
1969	1053	1053	221	194	157	568	1431	1815
1970	1361	1361	317	287	157	568	1835	2216
1971	1511	1511	407	362	157	568	2075	2441
1972	1547	1547	503	458	157	568	2207	2573
1973	1587	1587	595	556	157	568	2339	2711
1974	1587	1587	679	640	157	568	2423	2795
1975	1587	1917	771	732	157	568	2515	3217
1976	1539	2099	849	810	157	568	2545	3477
1977	1433	2363	972	1311	157	568	2562	4242
1978	1398	3218	1002	1730	157	568	2557	5516
1979	1398	4186	993	1817	157	568	2548	6571
1980	1398	5002	990	1910	157	568	2545	7480
1981	1398	5302	1038	2426	157	568	2593	8296
1982	1398	5862	990	2474	157	568	2545	8904
1983	1398	6270	978	2462	167	568	2543	9300
1984	1398	6420	982	2646	160	560	2540	9626
1985	1398	6420	980	2872	160	720	2538	10012
1986	1398	6420	948	2888	160	300	2506	10108
1987	1418	8452	962	3130	155	860	2535	10442

Table 3

U.S. ICBM Launchers and Warheads/RVs, 1956-1987

	End-1959	1960	1961	1962	1963	1964	1966	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987			
<b>United States ICBM Launchers</b>																																
ATLAS D [1]	6	12	30	30	30	0																										
ATLAS E [2]			27	27	27	27	0																									
ATLAS F [3]				72	72	72	0																									
TITAN I [4]				64	64	64	0																									
TITAN II [5]					64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	
MINUTEMAN I [6]				20	360	700	800	800	800	800	800	500	400	300	200	100	50	0														
MINUTEMAN II [7]							150	200	200	500	500	500	500	500	500	500	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	
MINUTEMAN III [8]												100	200	300	400	450	550	550	550	550	550	550	550	550	550	550	550	550	550	550		
MX (PEACEKEEPER) [9]																													10	30		
<b>TOTAL</b>	<b>6</b>	<b>12</b>	<b>67</b>	<b>203</b>	<b>697</b>	<b>907</b>	<b>854</b>	<b>1004</b>	<b>1054</b>	<b>1054</b>	<b>1054</b>	<b>1054</b>	<b>1054</b>	<b>1054</b>	<b>1054</b>	<b>1054</b>	<b>1054</b>	<b>1054</b>	<b>1054</b>	<b>1054</b>	<b>1054</b>	<b>1054</b>	<b>1054</b>	<b>1049</b>	<b>1040</b>	<b>1030</b>	<b>1020</b>	<b>1005</b>	<b>1000</b>			
<b>United States ICBM Warheads</b>																																
W49 (ATLAS D) [10]	6	12	30	30	30	0																										
W38 (ATLAS E) [11]			27	27	27	27	0																									
W38 (ATLAS F)				72	72	72	0																									
W38 (TITAN I)				64	64	64	0																									
W53 (TITAN II) [12]					64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	
W59 (MM I) [13]				20	150	150	150	150	150	150	150	150	150	150	100	50	0															
W56 (MM I) [14]					210	650	650	650	650	650	350	250	150	50																		
W56 (MM II) [15]							150	190	190	490	490	490	490	490	490	490	440	440	440	440	440	440	440	440	440	440	440	440	440	440	440	
W62 (MM III) [16]												300	600	900	1200	1350	1650	1650	1650	1650	1650	1410	1080	795	750	750	750	720	650			
W78 (MM III) [17]																						240	570	865	900	900	900	900	900	900		
W87 (MX) [18]																													100	300		
<b>TOTAL</b>	<b>6</b>	<b>12</b>	<b>67</b>	<b>203</b>	<b>697</b>	<b>907</b>	<b>854</b>	<b>1004</b>	<b>1044</b>	<b>1044</b>	<b>1044</b>	<b>1244</b>	<b>1444</b>	<b>1644</b>	<b>1844</b>	<b>1944</b>	<b>2144</b>	<b>2144</b>	<b>2144</b>	<b>2144</b>	<b>2144</b>	<b>2144</b>	<b>2144</b>	<b>2139</b>	<b>2130</b>	<b>2120</b>	<b>2110</b>	<b>2165</b>	<b>2300</b>			

TABLE 3: US ICBM Launchers and Warheads/RVs, 1959-1987

1. The first Atlas D ICBM was placed on alert at Vandenberg Air Force Base (AFB), California on 31 October 1959. The first Atlas Ds were taken off alert at Vandenberg beginning on 1 May 1964, the last was removed from alert on 1 October 1964. At full strength there were six ATLAS D ICBMs at Vandenberg, 15 at F.E. Warren AFB, Wyoming and nine at Offutt AFB, Nebraska.
2. Three nine missile squadrons of ATLAS E ICBMs were accepted by SAC in 1961 at Fairchild AFB, Washington (operational 3 October 1961); Forbes AFB, Kansas; and F.E. Warren AFB, Wyoming (operational 7 March 1961). The first ATLAS E was taken off alert on 4 January 1965 and the last was removed from alert on 31 March 1965.
3. Six 12 missile ATLAS F ICBM squadrons became operational between 9 September and 20 December 1962 at Schilling AFB, Kansas; Lincoln AFB, Nebraska; Altus AFB, Oklahoma; Dyess AFB, Texas; Walker AFB, New Mexico; Plattsburgh AFB, New York. The first ATLAS F was removed from alert on 1 December 1964 and the last on 12 April 1965.
4. On 20 April and 10 May 1962 the first two TITAN I ICBM squadrons (9 missiles each, both at Lowry AFB, Colorado) became operational. Four more nine missile squadrons became operational at Ellsworth AFB, South Dakota; Beale AFB, California; Mountain Home AFB, Idaho; and lastly on 28 September 1962 at Larson AFB, Washington. The first TITAN I was taken off alert on 4 January 1965 and the last on 1 April 1965.
5. Six nine missile squadrons of TITAN II ICBMs were deployed equally at Davis-Monthan AFB, Arizona; McConnell AFB, Kansas; and Little Rock AFB, Arkansas between 8 June and 31 December 1963.
6. The first MINUTEMAN missile went on alert on 27 October 1962 during the Cuban Missile Crisis. A total of nine were on alert on 30 October and the first two flights of MINUTEMAN I ICBMs (20 missiles) were operational on 11 December 1962 at Malmstrom AFB, Montana. Eventually there were 150 MINUTEMAN IA ICBMs at Malmstrom and 650 MINUTEMAN IB ICBMs at Ellsworth AFB, South Dakota; Minot AFB, North Dakota; Whiteman AFB, Missouri; and F.E. Warren AFB, Wyoming. The last MINUTEMAN IA was removed from alert on 15 January 1969 at Malmstrom.
7. The first MINUTEMAN II ICBMs went on alert in January 1966. The first three MINUTEMAN II ICBM squadrons became operational between 2 April and 22 November 1966. On 21 April 1967 SAC reached the level of 1000 operational MINUTEMAN I and II ICBMs.
8. The first MINUTEMAN IIIs went on alert 19 August 1970 at Minot AFB. On 29 December 1970 the first squadron of MINUTEMAN III ICBMs became operational at Minot AFB, North Dakota. By 12 July 1975 the MINUTEMAN ICBM force consisted of 450 MINUTEMAN IIs and 550 Minuteman IIIs.
9. On 22 December 1986 the first ten MX missiles became operational at F.E. Warren AFB, Wyoming, replacing MINUTEMAN III ICBMs.
10. Single Mk-1 reentry vehicle. The nuclear warhead entered Phase 5 (First Production Unit) in September 1958, the date the first warhead was produced by the Atomic Energy Commission.
11. Single Mk-2 reentry vehicle (also used on the ATLAS F and TITAN I ICBMs). The nuclear warhead entered Phase 5 (First Production Unit) in May 1961, the date the first warhead was produced by the Atomic Energy Commission.
12. Single Mk-6 reentry vehicle. The nuclear warhead entered Phase 5 (First Production Unit) in December 1962, the date the first warhead was produced by the Atomic Energy Commission.
13. Single Mk-5 reentry vehicle on the MINUTEMAN IA. The nuclear warhead entered Phase 5 (First Production Unit) in June 1962, the date the first warhead was produced by the Atomic Energy Commission.
14. The MINUTEMAN IB used a single warhead Mk-11 reentry vehicle. The nuclear warhead entered Phase 5 (First Production Unit) in March 1963, the date the first warhead was produced by the Atomic Energy Commission.
15. Single Mk-11C reentry vehicle. On 10 October 1967 the first Emergency Rocket Communications System (ERCS) was installed on ten Minuteman II ICBMs at Whiteman AFB, Missouri. ERCS, an emergency communications transmitter placed on the missile instead of a nuclear warhead, is still deployed on ten MINUTEMAN II ICBMs at Whiteman.

16. Up to three warheads on the MK-12 MIRV. The nuclear warhead entered Phase 5 (First Production Unit) in March 1970, the date the first warhead was produced by the Atomic Energy Commission.

17. Up to three warheads on the MK-12A MIRV. The nuclear warhead entered Phase 5 (First Production Unit) in August 1979, the date the first warhead was produced by the Department of Energy. Between December 1979 and February 1983 300 MINUTEMAN III ICBMs were retrofitted with MK-12A reentry vehicles with the W78 warhead.

18. Up to ten warheads on the MK-21 MIRV. The nuclear warhead entered Phase 5 (First Production Unit) in April 1986, the date the first warhead was produced by the Department of Energy.

Sources for Table 3: Authors estimates based on J.C. Hopkins and Sheldon A. Goldberg, The Development of Strategic Air Command 1946-1986 (Offutt Air Force Base, Nebraska: Office of the Historian, Strategic Air Command, 1986); E. Michael Del Papa, "From Snark to SRAM: A Pictorial History of Strategic Air Command Missiles," Office of the Historian, Headquarters Strategic Air Command, Offutt AFB, Nebraska, 21 March 1976; Department of Defense, OSD, "Appendix I to the Memorandum for the President, Recommended Long Range Nuclear Delivery Forces 1963-1967," 23 September 1961 (partially declassified); Department of Defense, OSD, "Memorandum for the President, Recommended FY 1964-FY 1968 Strategic Retaliatory Forces," 21 November 1962 (partially declassified); Department of Defense, OSD, "Memorandum for the President, Recommended FY 1965-FY 1969 Strategic Retaliatory Forces," 6 December 1963 (partially declassified); Department of Defense, OSD, "Memorandum for the President, Recommended FY 1966-1970 Programs for Strategic Offensive Forces, Continental Air and Missile Defense Forces, Civil Defense," 3 December 1964 (partially declassified); Department of Defense "Memo [Deputy Secretary of Defense Cyrus R.] Vance to President, Military Strength Increases since FY 61, 3 October 1964, Annex G, SIOP" (partially declassified) (located at Lyndon Baines Johnson Library); USAF Historical Division Liaison Office, The Air Force Response to the Cuban Crisis, mid-December 1962; Thomas B. Cochran, William M. Arkin, Robert S. Norris, Nuclear Weapons Databook: U.S. Nuclear Forces and Capabilities: Volume I, 2nd ed. (Cambridge, MA: Ballinger Publishing Company, forthcoming); Warhead first production unit (FPU) dates from Thomas B. Cochran, William M. Arkin, Robert S. Norris, Milton M. Hoenig, Nuclear Weapons Databook: U.S. Nuclear Warhead Production: Volume II (Cambridge, MA: Ballinger Publishing Company, 1987), pp. 10-11.

Table 4  
USSR ICBM Launchers and Warheads/RVs, 1960-1987

End-	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	
<u>Soviet Union ICBM Launchers (1)</u>																													
SS-6 Sapwood	4	4	4	4	4	4	4	4	4	0																			
SS-7 Saddler		6	26	64	153	186	186	186	186	186	186	186	186	186	186	138	78	0											
SS-8 Sasin				12	23	23	23	23	23	23	23	23	23	23	23	23	9	0											
SS-9 Scarp M1,M2,M3						12	30	108	156	204	252	257	238	188	188	178	152	90	82	43	0								
SS-9 M4											0	25	50	100	100	100	100	100	50	25	0								
SS-11 Segoe M1							90	380	540	600	840	960	990	955	830	610	490	430	330	230	220	160	130	130	100	55	28	0	
SS-11 M2 & M3													0	75	200	350	420	420	420	420	420	420	420	420	420	420	420	420	420
SS-13 Savage									40	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
SS-17 Spanker M1																10	20	50	80	120	130	130	30	0					
SS-17 M2																			20	20	20	20	10	0					
SS-17 M3																								110	150	150	150	150	139
SS-18 Satan M1 & M3																10	36	36	36	36	26	26	16	0					
SS-18 M2																	40	140	154	162	162	92	0						
SS-18 M4																				50	120	120	200	308	308	308	308	308	
SS-19 Stiletto M1																60	100	100	120	180	180	180	80	0					
SS-19 M2																		20	60	60	40	40	10	0					
SS-19 M3																					20	80	240	330	360	360	360	360	
SS-24 Scalpel																													5
SS-25 Sickle																											45	72	126
TOTAL	4	10	30	80	180	225	333	701	909	1053	1361	1511	1547	1587	1587	1539	1433	1398	1398	1398	1398	1398	1398	1398	1398	1398	1398	1398	1418

<u>Soviet Union ICBM Warheads</u>																													
SS-6	4	4	4	4	4	4	4	4	4	0																			
SS-7		6	26	64	153	186	186	186	186	186	186	186	186	186	186	138	78	0											
SS-8				12	23	23	23	23	23	23	23	23	23	23	23	23	9	0											
SS-9 M1,M2,M3 (2)						12	30	108	156	204	252	257	238	188	188	178	152	90	82	43	0								
SS-9 M4 (3)											0	25	50	100	100	100	100	100	50	25	0								
SS-11 M1 (4)							90	380	540	600	840	960	990	955	830	610	490	430	330	230	220	160	130	130	100	55	28	0	
SS-11 M2 & M3 (5)													0	75	200	350	420	420	420	420	420	420	420	420	420	420	420	420	420
SS-13									40	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
SS-17 M1 (6)																40	80	200	320	480	520	520	120	0					
SS-17 M2 (7)																				20	20	20	20	10	0				
SS-17 M3 (8)																								440	600	600	600	600	556
SS-18 M1 & M3 (9)																10	36	36	36	36	26	26	16	0					
SS-18 M2 (10)																		320	1120	1232	1296	1296	736	0					
SS-18 M4 (11)																					500	1200	1200	2000	3080	3080	3080	3080	3080
SS-19 M1 (12)																360	600	600	720	1080	1080	1080	480	0					
SS-19 M2 (13)																		20	60	60	40	40	10	0					
SS-19 M3 (14)																						120	480	1440	1980	2160	2160	2160	2160
SS-24 (15)																													50
SS-25 (16)																											45	72	126
TOTAL (MRV=1)	4	10	30	80	180	225	333	701	909	1053	1361	1511	1547	1587	1587	1517	2099	2363	3218	4186	5002	5302	5862	6270	6420	6420	6420	6452	
TOTAL (MRV=3)	4	10	30	80	180	225	333	701	909	1053	1361	1561	1647	1862	1987	2467	2719	2983	3738	4656	5422	5722	6282	6690	6840	6840	6840	6872	

TABLE 4: USSR ICBM Launchers and Warheads/RVs, 1960-1987

1. The initial operational capability (IOC) dates vary in different U.S. government sources. Initial deployment dates are from Soviet Military Power 1985, p. 41.
2. Single reentry vehicle. Mod 3 is the Fractional orbital bombardment system (FOBS).
3. Up to three warheads on multiple reentry vehicle (MRV). The MRV was a precursor to the MIRV, where the warheads could not be independently targetable. Because the area in which the warheads can be targeted is limited many tables count the multiple RVs as one warhead. For purposes of estimating warhead production they should be counted separately.
4. Single reentry vehicle. Mod 1 retired first to compensate for SS-25. All retired by end of 1987. Mod 2 uses penetration aids.
5. Up to three warheads on multiple reentry vehicle (MRV). Assumes 210 Mod 2 and 210 Mod 3 at peak deployment. Mod 2 is next to be after the Mod 1 to compensate for SS-25.
6. Up to four warheads on multiple independently targetable reentry vehicle (MIRV).
7. Single reentry vehicle.
8. Up to four warheads on multiple independently targetable reentry vehicle (MIRV).
9. Single reentry vehicle.
10. Up to eight warheads on multiple independently targetable reentry vehicle (MIRV).
11. Up to ten warheads on multiple independently targetable reentry vehicle (MIRV).
12. Up to six warheads on multiple independently targetable reentry vehicle (MIRV).
13. Single reentry vehicle.
14. Up to six warheads on multiple independently targetable reentry vehicle (MIRV).
15. Up to ten warheads on multiple independently targetable reentry vehicle (MIRV).

Sources for Table 4: Authors estimates based on Defense Intelligence Agency, "Intercontinental Strategic Forces Summary - USSR," DDB-2680-253-85, August 1985; Department of Defense, Soviet Military Power, editions 1981, 1983, 1984, 1985, 1986, 1987; Department of the Air Force, ACS1, "Trends in U.S. & Soviet Military Forces," June 1976 (declassified 17 October 1984); Department of the Air Force, ACS1, "Summary Review of Selected U.S. & Soviet Military Forces," 15 April 1975, (declassified 17 October 1984); Committee on Armed Services and Committee on Appropriations, United States Senate, Soviet Strategic Force Developments, Joint Hearing, S. Hrg. 99-335, 26 June 1985; Robert P. Berman and John C. Baker, Soviet Strategic Forces: Requirements and Responses (Washington, DC: The Brookings Institution, 1982); Michael McCgwire, Military Objectives in Soviet Foreign Policy (Washington, DC: The Brookings Institution, 1987); Lawrence Freedman, U.S. Intelligence and the Soviet Strategic Threat, 2nd edition (Princeton, NJ: Princeton University Press, 1986); John Prados, The Soviet Estimate: U.S. Intelligence Analysis & Russian Military Strength (New York: The Dial Press, 1982); Raymond L. Garthoff, "The Meaning of the Missiles," Washington Quarterly (Autumn 1982), pp. 76-82; Desmond Ball, Politics and Force Levels: The Strategic Missile Program of the Kennedy Administration (Berkeley, CA: University of California Press, 1980); Richard K. Betts, Nuclear Blackmail and Nuclear Balance (Washington, D.C.: The Brookings Institution, 1987), esp. pp. 144-172. pp. 3-32.



Table 6. USSR SLBM Launchers and Warheads/RVs, 1958-1987

	End-1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987				
<b>Soviet Union Submarines</b>																																		
Golf I SSB	2	4	10	19	22	22	22	22	22	18	16	15	14	7	7	7	7	7	5	4	3	1	0											
Golf II					1	1	1	1	1	5	6	7	8	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
Golf III																				1	1	1	1	1	1	1	1	1	1	1	1	1	0	
Golf IV																			1	1	1	1	1	0										
Golf V																					1	1	1	1	1	1	1	1	1	1	1	1	1	
Hotel I/II SSBM		7	0	0	1	1	1	2	3	6	8	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	2	2	0					
Hotel III												1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Yankee I SSAN											3	8	14	20	26	30	32	33	34	33	31	30	29	28	24	24	23	21	18	17				
Yankee II																				1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Delta I SSBM														1	4	9	13	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	
Delta II														1	2	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
Delta III																				4	8	9	10	13	14	14	14	14	14	14	14	14	14	
Delta IV																														1	2	3		
Typhoon																								1	1	1	2	3	3	4				
TOTAL	2	11	10	19	24	24	24	25	26	29	33	38	44	48	54	60	66	73	78	87	89	86	85	87	84	80	80	78	76	76				
<b>Soviet Union SLBM Launchers [1]</b>																																		
Golf I [2]	6	12	30	57	66	66	66	66	66	54	48	45	42	21	21	21	21	21	15	12	9	3	0											
Golf II [3]					3	3	3	3	3	15	18	21	24	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	
Golf III [4]																				6	6	6	6	6	6	6	6	6	6	6	6	6	6	0
Golf IV [5]																			4	4	4	4	4	0										
Golf V [6]																					1	1	1	1	1	1	1	1	1	1	1	1	1	
Hotel I/II [7]		21	0	0	3	3	3	6	9	18	24	21	21	21	21	21	21	21	21	21	21	18	18	18	18	6	6	0						
Hotel III [8]												6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Yankee I [9]											48	128	224	320	416	480	512	528	544	528	496	480	464	448	384	384	368	336	288	272				
Yankee II [10]																				12	12	12	12	12	12	12	12	12	12	12	12	12	12	
Delta I [11]														12	48	108	156	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	
Delta II [12]														16	32	48	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	
Delta III [13]																				64	128	144	160	208	224	224	224	224	224	224	224	224	224	
Delta IV [14]																													16	32	48			
Typhoon [15]																								20	20	20	40	60	60	80				
TOTAL	6	33	30	57	72	72	72	75	78	87	138	221	317	407	503	595	679	771	849	972	1002	993	990	1038	990	978	982	980	948	948	962			
<b>Soviet Union SLBM Warheads</b>																																		
SS-N-4	6	33	30	57	66	66	66	66	66	54	48	45	42	21	21	21	21	21	15	12	9	3	0											
SS-N-5 Sark					6	6	6	9	12	33	42	42	45	60	60	60	60	60	60	60	60	60	57	57	57	57	45	45	39	39	39	39	39	
SS-N-6 Serb [16]											48	128	224	320	416	480	512	528	548	532	500	484	468	448	384	384	368	336	288	272				
SS-N-8 Sawfly														34	86	162	276	286	292	286	292	292	292	292	292	292	292	292	292	292	292	292	286	
SS-N-17 Snipe																				12	12	12	12	12	12	12	12	12	12	12	12	12	12	
SS-N-18 Stingray [17]																				448	896	1008	1120	1456	1568	1568	1568	1568	1568	1568	1568	1568	1568	
SS-N-20 Sturgeon [18]																							200	200	200	400	600	600	800					
SS-N-23 Skiff [19]																													64	128	192			
TOTAL (MRV=1)	6	33	30	57	69	69	69	72	75	72	120	194	287	362	458	556	640	732	810	1311	1730	1817	1910	2426	2474	2462	2646	2672	2688	3130				
TOTAL (MRV=2) [20]																	688	828	954	1503	1970	2105	2198	2714	2762	2750	2934	3160	3176	3402				



Table 7  
U.S. Strategic Bombers and Bomber Weapons, 1946-1987

	End-1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
<u>United States Bombers (Total Inventory) [1]</u>																					
B-29 Superfortress	148	319	486	390	288	340	417	110	0												
B-36 Peacemaker			35	36	38	98	154	185	209	338	247	127	22	0							
B-50 Superfortress			35	99	196	219	224	138	90	0											
B-47 Stratojet						12	62	329	795	1086	1306	1285	1367	1366	1178	889	880	613	391	114	0
B-58 Hustler														19	66	76	86	94	93	83	
B-52 Stratofortress										18	97	243	380	488	538	571	639	636	626	600	591
FB-111A																					
B-1B																					
TOTAL	148	319	558	525	520	669	857	762	1094	1442	1650	1655	1769	1854	1735	1528	1595	1335	1111	807	674

<u>United States Bombers (PAA) [2]</u>																					
B-29 [3]	125	270	420	330	230	290	360	90	0	[*]											
B-36 [4]			18	18	36	60	100	180	180	270	210	120	0								
B-50 [6]			35	99	196	219	200	135	90	0											
B-47						0	315	765	990	1215	1260	1260	1200	1065	855	675	450	180	45	0	
B-58														0	40	76	80	80	80	80	80
B-52									0	45	225	360	345	450	500	555	525	525	525	525	495
FB-111A																					
B-1B																					
TOTAL	125	270	473	447	462	569	660	720	1035	1260	1470	1605	1620	1545	1515	1395	1306	1055	785	650	575

<u>United States Bomber Weapons (Force Loadings)</u>																					
Bombs [8]	9	13	50	200	400	569	660	878	1418	1755	2123	2460	2610	2490	3083	2973	2920	2855	2953	3013	3043
Hounddog [9]															43	184	438	474	453	434	438
SRAM [10]																					
ALCM [11]																					
TOTAL	9	13	50	200	400	569	660	878	1418	1755	2123	2460	2610	2490	3126	3157	3358	3329	3405	3446	3481

	End-1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
<u>United States Bombers (Total Inventory) [1]</u>																					
B-29 Superfortress																					
B-36 Peacemaker																					
B-50 Superfortress																					
B-47 Stratojet																					
B-58 Hustler	81	76	41	0																	
B-52 Stratofortress	588	579	505	459	412	402	422	422	420	419	417	344	343	343	344	300	263	263	263	263	263
FB-111A			3	42	30	60	71	72	69	68	66	66	65	63	62	62	61	60	60	60	60
B-1B																					18
TOTAL	669	655	549	501	442	462	493	494	489	487	483	410	408	406	406	362	324	323	323	341	399

<u>United States Bombers (PAA) [2]</u>																					
B-29 [3]																					
B-36 [4]																					
B-50 [6]																					
B-47																					
B-58	78	76	39	0																	
B-52	480	405	360	360	347	397	357	330	330	316	316	316	316	316	316	272	241	241	241	241	241
FB-111A			0	30	30	60	66	66	66	66	66	60	60	60	60	56	56	56	56	56	56
B-1B																					15
TOTAL	558	481	399	390	377	457	423	396	396	382	382	376	376	376	376	328	297	297	297	312	361

<u>United States Bomber Weapons (Force Loadings)</u>																					
Bombs [8]	3192	3139	3036	3060	2956	3398	3005	2656	2576	2464	2464	2428	2428	2428	2428	2052	1804	1804	1804	1924	2316
Hounddog [9]	*N/A	382	250	279	276	272	270	263	262	246	230	199									
SRAM [10]						175	500	900	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
ALCM [11]															0	192	576	900	1160	1525	1614
TOTAL	3192	3521	3286	3339	3232	3845	3776	3819	3978	3850	3834	3767	3568	3568	3384	3520	3844	4104	4589	5070	

TABLE 7: US Strategic Bombers and Bomber Weapons, 1946-1987

1. Includes the total number of bombers in the Strategic Air Command active inventory ("assigned resources," not bombers in inactive storage) as of the end of the year (December).
2. Primary Authorized Aircraft (PAA). Previously, the term Unit Equipment (UE) was used. Both terms specify the number of aircraft assigned to operational units in combat ready condition.
3. Not all B-29 bombers were modified to carry nuclear weapons. On 31 December 1946 there were 23 nuclear modified B-29 bombers; on 1 March 1947 there were 35; on 1 December 1948 there were 38; in mid-January 1949 there were 66; and on 1 January 1950 there were 95. See David Alan Rosenberg, "U.S. Nuclear Stockpile, 1945 to 1950," Bulletin of the Atomic Scientists, May 1982, p. 30.
4. Not all B-36 bombers were modified to carry nuclear weapons. On 1 December 1948 there were four nuclear modified B-36 bombers; by mid-January 1949 there were 17; and by 1 January 1950 there were 34. Ibid.
5. Effective 1 October 1955, SAC's four heavy Strategic Reconnaissance Wings were redesignated heavy Bombardment Wings in recognition of the conversion of the RB-36 from a reconnaissance airplane to a bomber.
6. Not all B-50 bombers were modified to carry nuclear weapons. On 1 December 1948 there were 18 nuclear modified B-50 bombers; by mid-January 1949 there were 38; and by 1 January 1950 there were 96. Ibid.
7. On 1 July 1950 there were a total of 264 nuclear modified B-29, B-36 and B-50 bombers.
8. There is no easy or accurate method for estimating the actual number of weapons the bomber forces carry. How each bomber is loaded is determined by its Single Integrated Operational Plan (SIOP) mission. The SIOP is the central nuclear war plan of the U.S. It is developed by the Joint Strategic Target Planning Staff at the Strategic Air Command in Omaha, Nebraska. It is incredibly complex matching over 10,000 nuclear warheads with their targets taking into account factors of reliability, timing, target hardness, collateral damage, etc. The U.S. bomber's role in the overall plan must be integrated with ballistic missile salvos from SSBNs and land based forces in the U.S. and Europe. Bombers are on alert at each SAC base but those in the northern parts of the U.S. have the least distance to fly over the north pole and would be the first to reach the Soviet Union. Therefore it is likely that those bombers have a full complement of SRAMs intended for defense suppression and making corridors through which following bombers would fly. The counting assumptions for bomber loadings of nuclear weapons are as follows:

- \* 1) 1946-48: Actual number of bombs in the stockpile as of June 30; Rosenberg, op. cit.
- \* 2) 1949-50: Rosenberg, op. cit. reports 240 mechanical assemblies as of June 30, 1949 and "at least 292" nuclear components and 688 mechanical assemblies as of 30 June 1950. We assume that there were 200 bombs by the end of 1949 and 400 by the end of 1950.
- \* 3) 1951-52: Prior to the deployment of the B-47 bomber, the assumption is that there is a sufficient number of bombs for each PAA aircraft.
- \* 4) 1953-55: B-29, B-36 and B-50 bombers continue to carry one bomb per aircraft. The assumption for the B-47 bomber from 1953 to 1965 is that there were an average of 1.5 bombs per aircraft; based on Department of Defense, OSD, "Memorandum for the President, Recommended FY 1965-FY 1969 Strategic Retaliatory Forces," 6 December 1963, p. 1-2 (partially declassified).
- \* 5) 1956-59: B-36 and B-47 bombers carry one and 1.5 bombs, respectively (see above). B-52 average loading is two bombs per bomber.
- \* 6) 1960: With the introduction of the versatile B28 bomb in quantity the B-52 bomber force loading goes up to 3.3 bombs per plane; see Department of Defense, OSD, "Memorandum for the President, Recommended FY 1965-FY 1969 Strategic Retaliatory Forces," 6 December 1963, p.1-2 (partially declassified).
- \* 7) 1961-62: The B-58 bomber carries one bomb until 1964. B-47 and B-52 bomber force loadings continue as above.

- \* 8) 1963: The average bomb force loading per B-52 bomber increases to four.
- \* 9) 1964-69: The B-58 is modified to carry four bombs. B-52 bomber force loadings gradually increase from 4.5 to 8 bombs per plane. The average bomb loadings are assumed to be: 4.5 in 1964, 5 in 1965, 5.5 in 1966, 6 in 1967, 7 in 1968, and 8 in 1969.
- \* 10) 1970-71: The average bomb loadings for the B-52 and FB-111A bombers are eight and six respectively.
- \* 11) 1972-86: Twenty FB-111A bombers carry six SRAMs each and no bombs. The remaining FB-111A bombers carry six bombs each. The remaining SRAMs are carried on B-52 bombers. B-52 bombers loaded with SRAMs carry 12 SRAMs and four bombs. The remaining B-52 bombers carry an average of eight bombs. B-1B bombers beginning in 1986 carry eight bombs.

9. Eighty percent of the total inventory of nuclear armed Hound Dog (AGM-288) air-to-surface missiles are force loadings.

10. Counting assumptions for nuclear-armed Short Range Attack Missiles (SRAM) (AGM-69A). The total number of operational SRAMs is 1140 from 1975-1986; HAC, FY 1982 DOD, Part 2, p. 101. The SRAM inventory peaked in 1975 at 1471. During the 1972-74 period, SRAM operational missiles were assumed to be the same ratio of operational/total inventory as in 1975.

11. Counting assumptions for nuclear armed Air-Launched Cruise Missiles (ALCM) (AGM-86B). The number of ALCMs is assumed to be 12 per modified and deployed B-52G/H bomber.

Sources for Table 7: Authors estimates based on J.C. Hopkins and Sheldon A. Goldberg, The Development of Strategic Air Command 1946-1986 (Offutt AFB, Nebraska: Office of the Historian, Strategic Air Command, 1986); Department of Defense, OSD, "Appendix I to the Memorandum for the President, Recommended Long Range Nuclear Delivery Forces 1963-1967," 23 September 1961 (partially declassified); Department of Defense, OSD, "Memorandum for the President, Recommended FY 1964-FY 1968 Strategic Retaliatory Forces," 21 November 1962 (partially declassified); Department of Defense, OSD, "Memorandum for the President, Recommended FY 1965-FY 1969 Strategic Retaliatory Forces," 6 December 1963 (partially declassified); Department of Defense, OSD, "Memorandum for the President, Recommended FY 1966-1970 Programs for Strategic Offensive Forces, Continental Air and Missile Defense Forces, Civil Defense," 3 December 1964 (partially declassified); Department of Defense, "Memo [Deputy Secretary of Defense Cyrus R.] Vance to President, Military Strength Increases since FY 61, 3 October 1964, Annex G, SIOP" (located in Lyndon Baines Johnson Library)(partially declassified); Thomas B. Cochran, William M. Arkin, Robert S. Norris, Nuclear Weapons Databook: U.S. Nuclear Forces and Capabilities: Volume I, 2nd ed. (Cambridge, MA: Ballinger Publishing Company, forthcoming).

Table 8  
USSR Strategic Bombers and Bomber Weapons, 1956-1987

	End-1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987							
<u>Soviet Union Bombers (PAA) [1]</u>																																							
TU-95 Bear A	2	5	10	25	48	62	75	80	85	60	45	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30						
Bear B/C									12	30	45	60	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75					
Bear G																													10	20	30	40							
Bear H																													10	10	25	40	55						
MYA-4 Bison	20	23	40	50	56	58	58	58	58	58	54	54	54	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	46	30	15	0		
TOTAL	22	28	50	75	104	120	133	150	173	163	159	159	159	157	157	157	157	157	157	157	157	157	157	157	157	157	157	167	160	160	160	160	155						
<u>Soviet Union Bomber Weapons (Force Loadings) [2]</u>																																							
TU-95 Bear A [3]	4	10	20	50	96	124	150	160	170	120	90	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60				
Bear B/C [4]									48	120	180	240	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	260	220	180	120
Bear G [5]																																		60	120	180	240		
Bear H [6]																																			200	320	440		
MYA-4 Bison [7]	80	92	160	200	224	232	232	232	232	232	216	216	216	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	180	120	60	0
TOTAL	84	102	180	250	320	356	382	440	522	532	546	576	576	568	568	568	568	568	568	568	568	568	568	568	568	568	568	568	568	568	568	568	568	568	568	568	720	800	860

Figure 1. US-USSR Strategic Offensive Warheads, 1946-1986

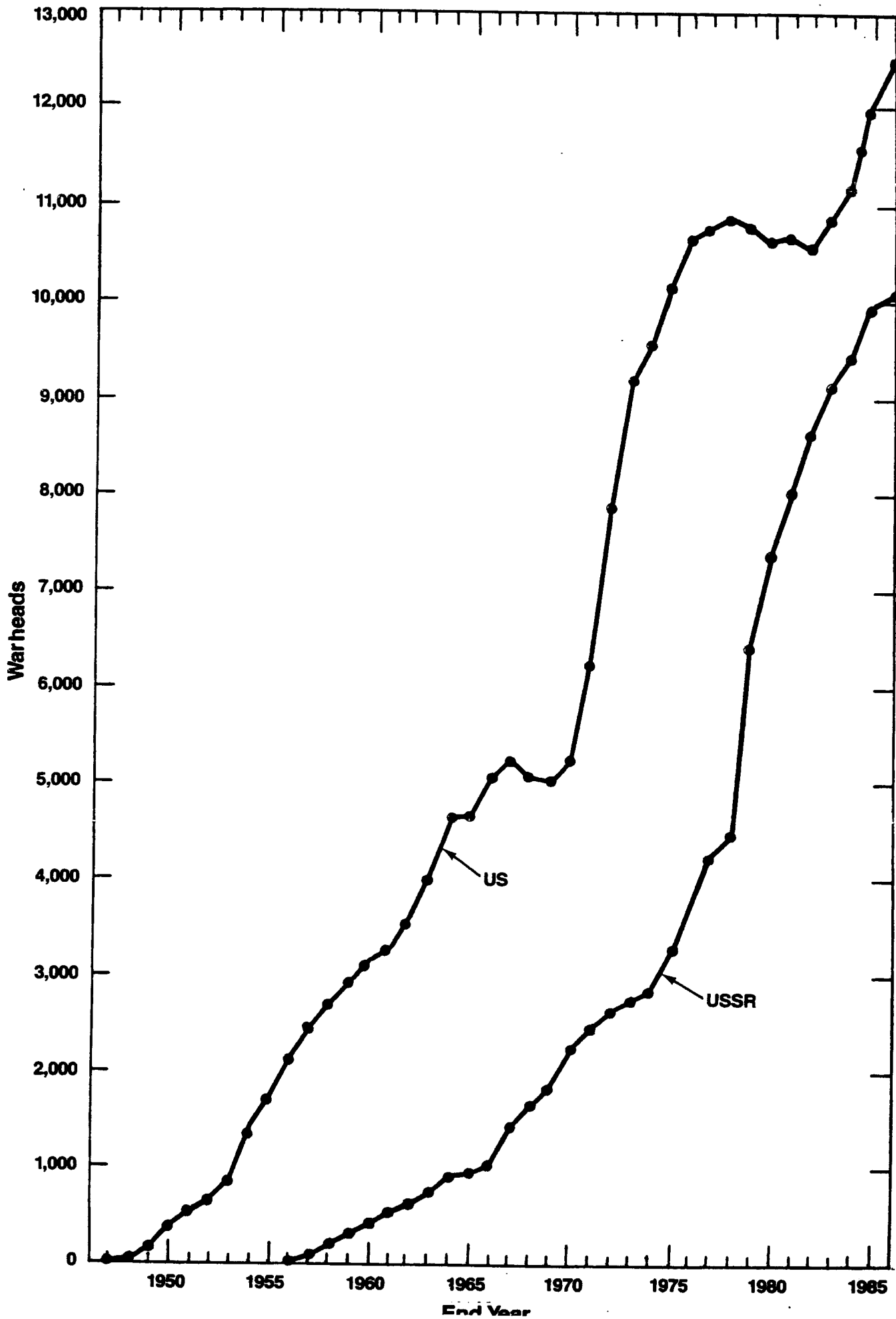


Figure 2. US-USSR ICBM Launchers, 1959–1986

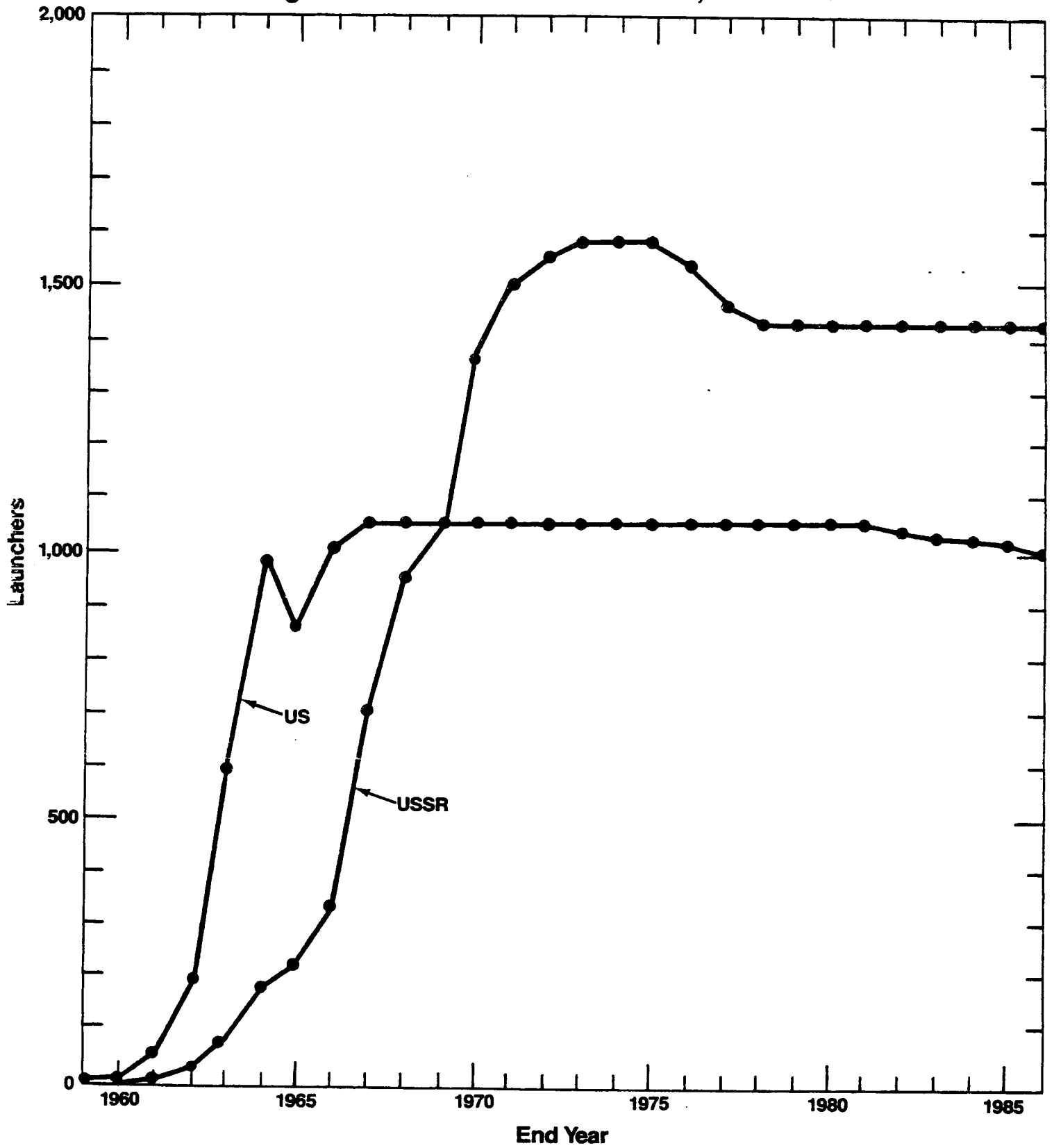


Figure 3. US-USSR ICBM Warheads/RV's 1959-1986

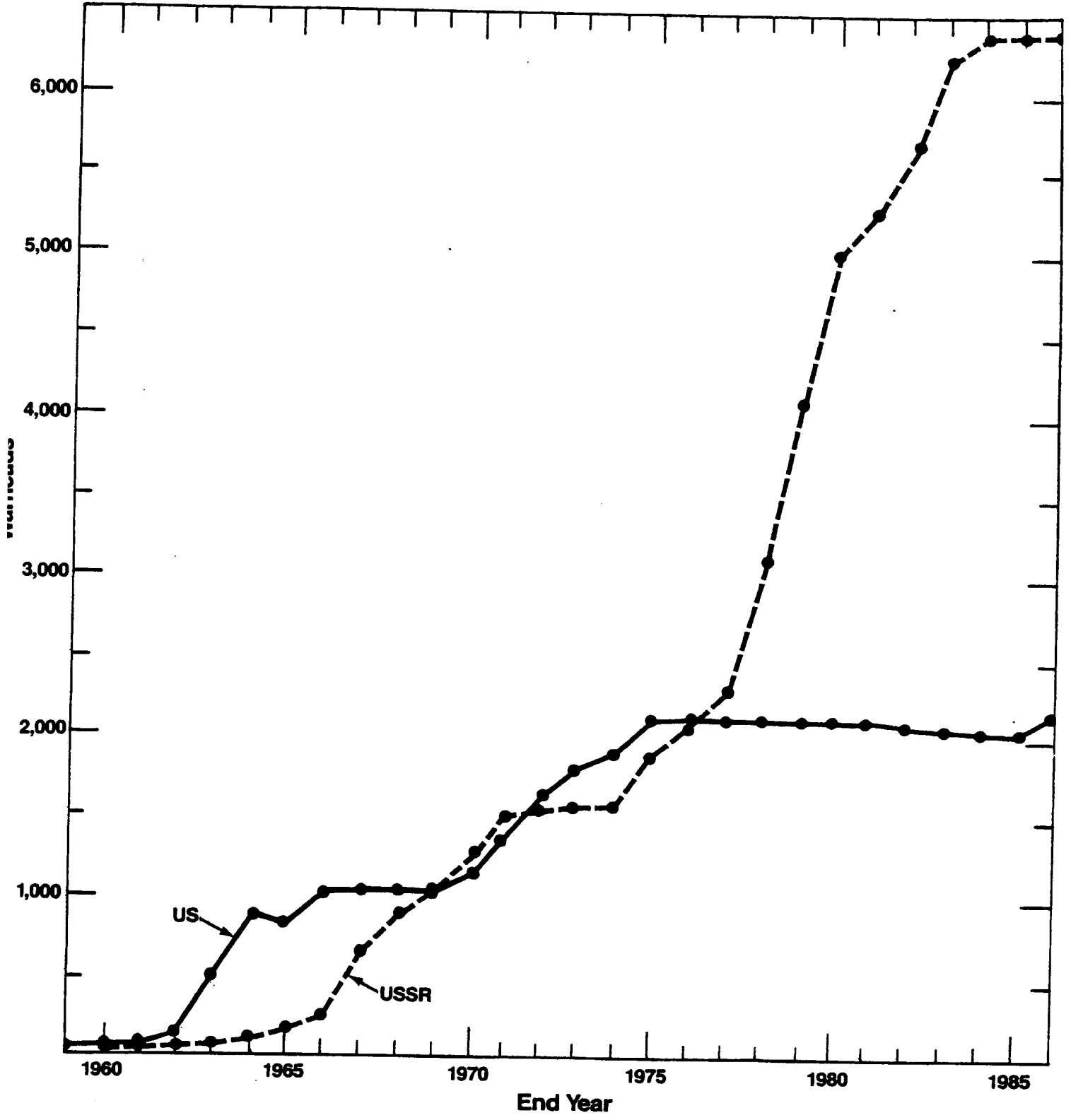


Figure 4. US-USSR SLBM Launchers, 1958-1986

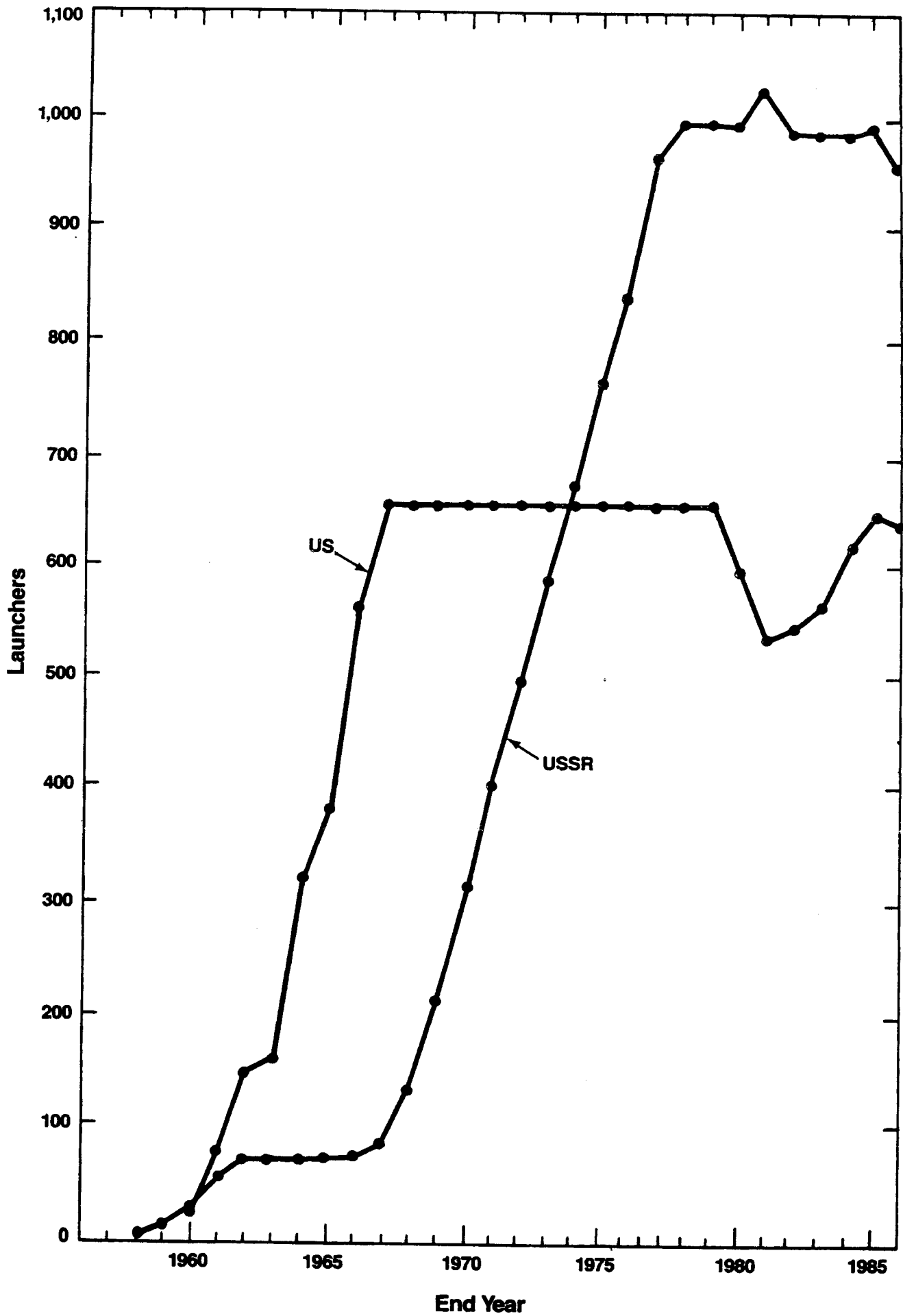




Figure 5. US-USSR SLBM Warheads, 1958-1986

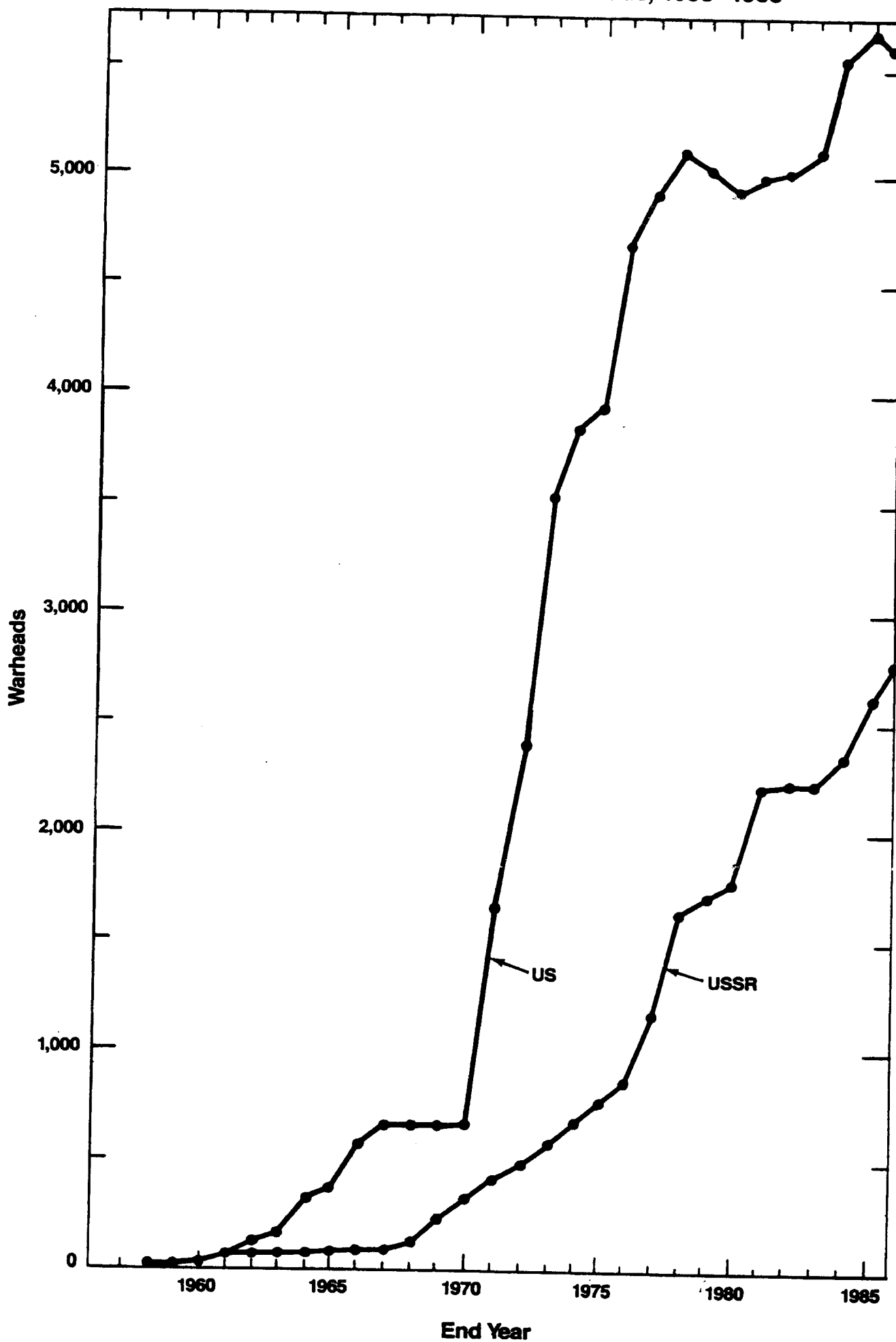


Figure 6. US-USSR Strategic Bombers, 1946-1986

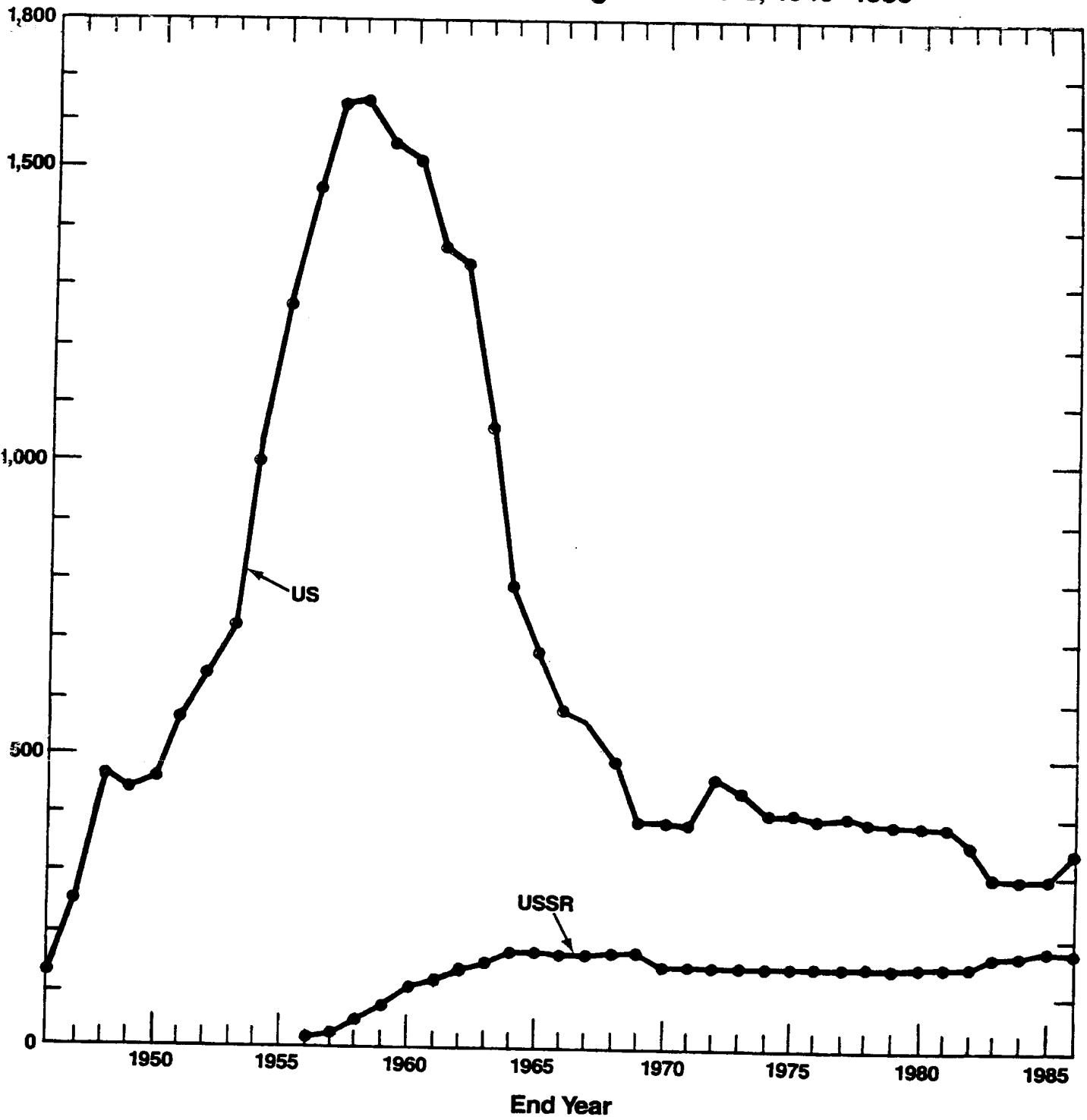
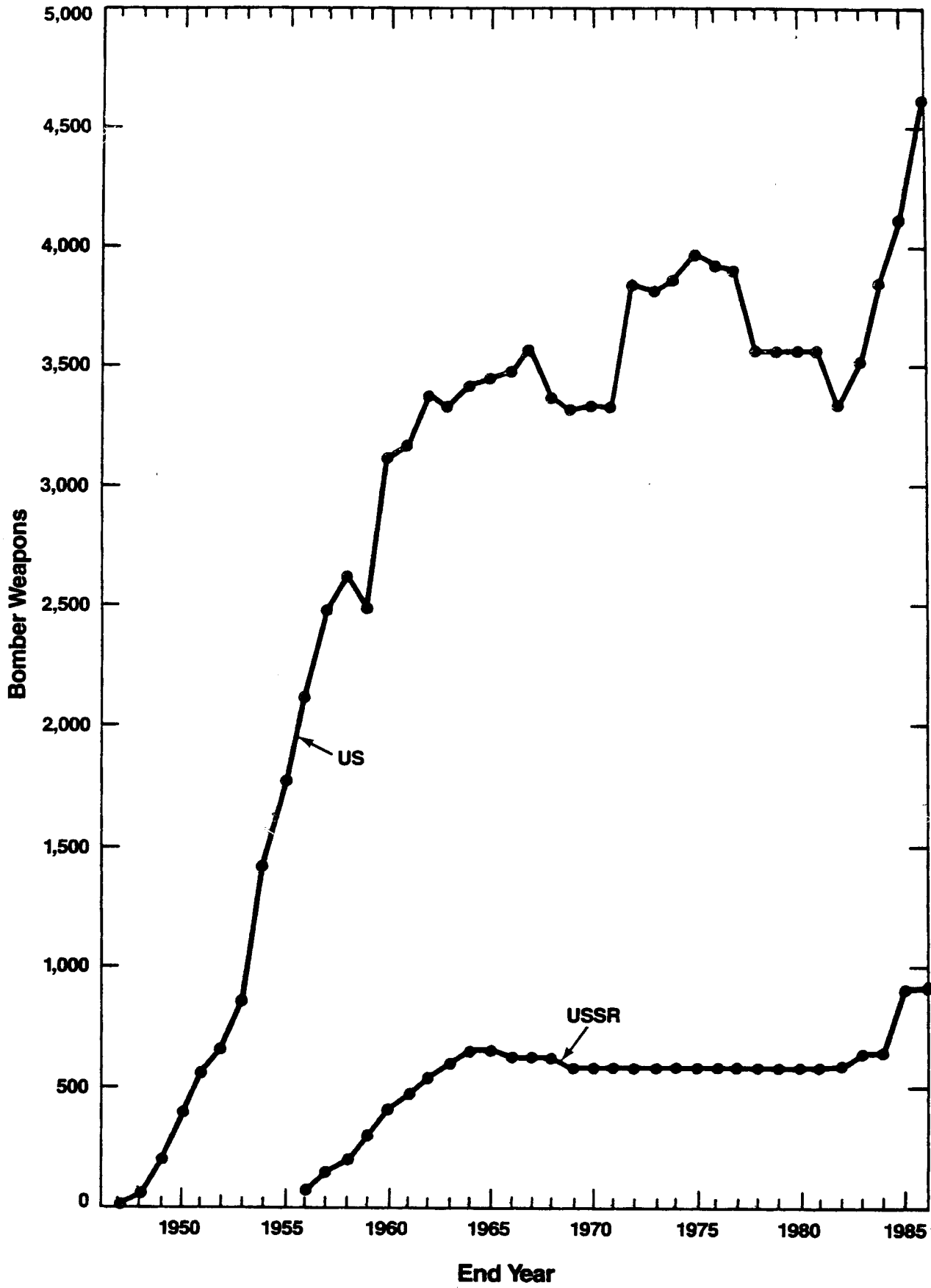


Figure 7. US-USSR Strategic Bomber Weapons, 1946-1986



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Nuclear Notebook, Bulletin of the Atomic Scientists (monthly).

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