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STRENGTH AND COMPOSITION OF THE SOVIET LONG RANGE BOMBER FORCE

Submitted by the

DIRECTOR OF CENTRAL INTELLIGENCE

The following intelligence organizations participated in the preparation of this estimate: The Central Intelligence Agency and the intelligence organizations of the Departments of State, the Army, the Navy, the Air Force, and The Joint Staff.

Concurred in by the

INTELLIGENCE ADVISORY COMMITTEE

on 5 June 1958. Concurring were The Director of Intelligence and Research, Department of State; the Assistant Chief of Staff, Intelligence, Department of the Army; the Director of Naval Intelligence; the Assistant Chief of Staff, Intelligence, USAF; and the Deputy Director for Intelligence, The Joint Staff. The Atomic Energy Commission Representative to the IAC and the Assistant Director, Federal Bureau of Investigation, abstained, the subject being outside of their jurisdiction.

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STRENGTH AND COMPOSITION OF THE SOVIET LONG RANGE BOMBER FORCE

THE PROBLEM

To estimate the strength and composition of the Soviet long range bomber force, through mid-1963.

CONCLUSIONS

1. At present, Soviet Long Range Aviation is primarily a medium bomber force, best suited for operations against targets on the Eurasian periphery and capable of large-scale attacks against the continental US through extensive use of one-way missions. Considerable effort has been devoted to the development of heavy bombers, but it appears that within the past year or two Soviet planners decided to forego a rapid buildup with present versions of the BISON and BEAR. *(Para. 12)*

2. In estimating the operational strength and composition of Soviet Long Range Aviation, we have projected heavy bomber and tanker figures for 1959 and 1960 as lying within a range. The low side reflects a Soviet option to forego further buildup of their heavy bomber force through mid-1960. The high side reflects a Soviet option to produce some additional aircraft of BISON and/or BEAR types, and to introduce a new subsonic heavy bomber into operational units before mid-1960. A new medium bomber with supersonic "dash" capability will probably be introduced some time during 1960–1961; the Soviet jet medium bomber force in mid-1960 may include a few such aircraft in addition to BADGERs.

	mid-1958	mid-1959	mid-1960
Jet and Turboprop Heavy Bombers and Tankers	100–125	100–150	100–200
Jet Medium Bombers and Tankers	925	1025	1100
Piston Medium Bombers	425	300	150

(Paras. 24, 25)

3. There is no question that by mid-1963 the Soviets could produce and put into operational units five or six hundred heavy bombers and tankers, should they desire this large a force of such subsonic aircraft, augmented by small numbers of advanced types. It seems to us more likely, however, that the Soviet heavy bomber and tanker force will remain smaller than this — say about two or three hundred — and that by about mid-

1963 the USSR will be placing major reliance on ICBMs for intercontinental delivery of nuclear weapons. *(Paras. 30, 31)*

4. The number of medium bombers in Soviet Long Range Aviation will probably decrease by mid-1963. Supersonic "dash" medium bombers may become an important element in the force, but BADGERs will probably have continuing utility. *(Para. 32)*

DISCUSSION

CURRENT STATUS OF SOVIET LONG RANGE AVIATION

5. A rapid expansion of Soviet Long Range Aviation occurred with the introduction of the present generation of long range bombers. About 1950 the Soviets began devoting high-priority efforts to developing the BADGER jet medium bomber and the BISON jet and BEAR turboprop heavy bombers, which were placed in series production in 1954–1955, after lead-times which were relatively short by US standards. The greatest expansion in total strength took place from 1954 through 1956; it apparently levelled off around mid-1957. We estimate that as of 1 April 1958, Long Range Aviation included more than 1,450 bombers in about 60 regiments, against an early 1954 strength of about 1,000 in about 40 regiments.

6. *Medium Bomber Force.* Most of the recent expansion has occurred in medium bomber strength, which comprised about 900 BADGERs and about 450 obsolete BULL piston medium bombers as of 1 April 1958. The production of BADGERs, and their introduction into operational units, has proceeded at a fairly high and steady rate since 1954. This rate is now tapering off somewhat, but production is still estimated to be in excess of 30 per month, and deliveries to Long Range Aviation units continue. BADGERs are also being supplied to some Soviet air components other than Long Range Aviation. BULLs began phasing out of the force with the introduction of the BADGER, but the present rate of retirement is slow.

7. About four-fifths of these medium bombers are based in the area west of Moscow between Leningrad and the Black Sea; most of the remainder are in the southern portion of the Soviet Far East; a few are in the Caucasus. Their base locations and normal patterns of activity would facilitate bombing missions launched directly from home bases to targets in Eurasia and its periphery. The majority of land targets of strategic importance to the US outside the Americas — including overseas air bases, potential IRBM sites, allied ports, and industrial, military, governmental and communications centers — fall within the combat radii of Soviet medium bombers operating directly from home bases. Many important naval operating areas are also within their combat radii.

8. The Soviets have also taken measures to prepare medium bomber elements for the type of operations necessary for attack on North American targets. Training activities over the past several years have included more realistic, larger-scale exercises and long-range flights. More recently, there have almost certainly been an increasing number of flights to potential staging bases in the Soviet Arctic, though far fewer than would be expected for a fully combat-ready capability against the US. Inflight refueling techniques have been developed for BADGERs, apparently using a convertible tanker-bomber version of the aircraft, although at present only a limited operational capability exists. Moreover, certain BADGER units have been trained and equipped to employ air-to-surface missiles of about 55 nautical miles range, probably designed primarily for anti-ship use but also suitable for attacking well-defined radar targets on land. By staging through Arctic bases, BADGERs could reach: Alaska, Greenland, and part of Canada on unrefueled two-way missions; more of Canada and a small portion of the US on refueled two-way missions; all of Canada and much of the US on

unrefueled one-way missions; all US targets on refueled one-way missions.

9. *Heavy Bomber Force.* In strong contrast to the apparent rapidity with which the BISON and BEAR were developed, their production and introduction into units has been at very low and uneven rates. The BISON program was characterized by repeated modifications to the aircraft until about mid-1956, when an improved version appeared. Production rates at the one identified BISON factory (Moscow/Fili) rose to a maximum of three to four per month in the summer of 1957, and then began to decrease in a manner suggesting the phase-out of production of this model. Aircraft design work and/or retooling were apparently instituted at Moscow/Fili in the fall of 1957, and we are reasonably confident that no other factory is producing BISON. We therefore believe that production of the present version has virtually stopped, and that as of 1 April 1958, total cumulative BISON production amounted to about 85 aircraft.

10. Considerably less evidence is available on BEAR production, but at no time does more than a fraction of the capacity of one aircraft factory (at Kuibyshev) appear to have been allocated to the program. BEAR production has probably averaged no more than about two per month. A continuing absence of good indications of BEAR production since late 1956, together with the subsequent development at Kuibyshev of the TU-114 transport version of the BEAR, leads us to believe that the BEAR program was probably terminated, at least temporarily, by early 1957, although it is possible that production continues at a low rate. Total cumulative BEAR production as of 1 April 1958 may have been between 50 and 60 aircraft.

11. The activity of Long Range Aviation units has likewise failed to demonstrate a recent enlargement of the heavy bomber force, although unit structure could readily accommodate expansion. We estimate total operational strength in BISON and BEAR as probably between 100 and 125 aircraft as of 1 April 1958; the bulk are based in Southwestern USSR, with a small number in the Far East. During 1957, operational BISON units conducted only a small amount of training in Arctic staging and inflight refueling, both of which would be essential for two-way operations against most US targets. Moreover, discernible BISON activity has virtually ceased during the past six months, while BEAR activity has continued at modest rates.

12. In sum, Soviet Long Range Aviation remains primarily a medium bomber force, best suited for operations against targets on the Eurasian periphery and capable of large-scale attacks against the continental US through extensive use of one-way missions. Considerable effort has been devoted to the development of heavy bombers, but it appears that within the past year or two Soviet planners decided to forego a rapid buildup with present versions of the BISON and BEAR.

FACTORS AFFECTING SOVIET POLICY

13. Dissatisfaction with the BISON and BEAR probably affected the Soviet decision. Unexpected technical difficulties apparently delayed the BISON program in its early stages and may still be plaguing the Soviets. Moreover, the combat radius of the current BISON, even with inflight refueling, appears to be insufficient to ensure flexibility in two-way operations against the continental US. The BEAR's combat radius is adequate, but its speed and altitude are somewhat inferior to those of the BISON and its turboprop propulsion system probably has less growth potential than a turbojet system. Furthermore, existing heavy bomber models have become progressively less effective in relation to US defensive capabilities. While the Soviet program lagged, the West continued counter preparations which included improved active air defense, early warning, and other measures calculated to reduce the USSR's chances of successfully neutralizing US retaliatory forces.

14. Progress in developing more advanced intercontinental weapon systems probably also played an important role in the Soviet decision. Evidence in technical fields leads to the conclusion that the Soviets have active and well-advanced programs in those primary

areas which support new long range bomber development; they have probably made good progress toward a successor to BISON and BEAR. Moreover, in the past two years the Soviet leaders have probably become increasingly confident of their ability to acquire an early operational ICBM capability, in view of the impressive results achieved to date in missile testing and earth satellites. Soviet plans for submarine-launched missiles may also have contributed to the decision.

15. But the curtailment of BISON and BEAR production before acquiring even an initial operational capability with either an ICBM or a follow-on bomber involved Soviet acceptance of at least some calculated risk. The Soviet leaders almost certainly appreciate that at present the USSR could not launch an all-out nuclear attack against the US and its allies without receiving unacceptable damage in return, but at the same time, they are probably confident that their existing capabilities are a powerful deterrent to Western initiation of general war. Moreover, the risk involved is reduced by the existence of a still-growing BADGER force. In the face of known US power, Soviet planners have lived with a one-way medium bomber capability against the US for some ten years, and may think they can live with it at least a little longer. Thus the USSR may consider its medium bomber force, together with a small heavy bomber capability, at least temporarily acceptable for supporting Soviet foreign policy objectives and for use against the US if general war should occur.

16. Meanwhile, the USSR is almost certainly continuing to strive for technological superiority over the US in intercontinental weapon systems. It is clear that Soviet planners are laying great store by the ICBM as posing an entirely new type of threat. However, they probably also take into account that a mixed strike capability including both manned bombers and missiles would further complicate Western defensive problems, and that the accuracy and payload of the ICBM will for some time be inferior to those of manned bombers. In this connection, last year's derogatory remarks about bombers by Khrushchev and others have been considerably mitigated by subsequent statements. We believe that manned bombers, especially advanced types, will almost certainly continue to play a considerable role, with emphasis on those functions for which they are particularly well-suited, such as attacks on small, hardened targets, damage assessment, and reconnaissance.

BOMBER DEVELOPMENT AND PRODUCTION CAPABILITIES

17. We estimated in SNIE 11-58 that over the next few years the USSR could: (a) improve the BISON and BADGER by modifying them between now and 1960 to increase their range and altitude capabilities; (b) develop a new subsonic heavy bomber having performance somewhat better than that of an improved BISON, especially in range, introducing it into operational units in 1959–60; (c) develop a new medium bomber with supersonic "dash" capabilities and a range roughly equivalent to that of an improved BADGER, introducing it into operational units in 1960–61. We also noted, however, that none of the above types would add substantially to Soviet intercontinental attack capabilities, and that the USSR may be proceeding directly toward considerably more advanced aircraft for operational use. It was estimated that a nuclear reactor suitable for propulsion of subsonic aircraft could probably be available by 1962. Soviet achievement of two-way operational capabilities against all targets in the continental US with manned delivery systems capable of supersonic speed was estimated to require longer periods, i.e., probably until after about 1962 for a chemical-powered aircraft and well beyond 1962 for either nuclear-powered aircraft or hypersonic boost-glide vehicles.[1]

18. Evidence received since publication of SNIE 11-58 does not justify any change in the above estimate of Soviet bomber development capabilities, but it strengthens the likelihood that the USSR now has one or more types of

[1] See SNIE 11-58: Possible Soviet Long Range Bomber Development, 1958-1962, 4 March 1958 (Secret). Refer, however, to the footnote to the following paragraph by the Assistant Chief of Staff, Intelligence, USAF.

large bomber aircraft in flight-test status.[3] Considering the available information on research, development, flight-testing and aircraft plant activities, we believe that a prototype of at least one new or improved type of large bomber has probably been completed, possibly early in 1957. Khrushchev recently stated that the USSR would soon unveil a "new and very interesting bomber." Although we are still unable to determine what specific type or types of aircraft may have reached flight-test status, we expect to see a prototype at any time, possibly on Soviet Aviation Day this summer. In the interim, we do not exclude the further possibility that the USSR is developing a very advanced intercontinental bomber at a faster pace than we estimated in SNIE 11-58.

19. Meanwhile, Soviet capacity to produce long range bombers and other large aircraft has continued to expand. Major new construction has been reported at most Soviet airframe plants over the past four years; construction at bomber plants has been characterized by high-bay buildings well suited to the assembly of large aircraft. Expansion amounting to some 20 to 30 percent additional floor space has already occurred at some bomber plants, and it is probable that comparable increases will have been completed at others by 1959. Much of this added capacity is believed to be for the production of large transport aircraft. Nevertheless, fulfillment of the USSR's announced transport production goals would still leave sufficient plant capacity to build bombers at more rapid rates than those of the past few years. In recent years the USSR has also expanded or constructed a number of airfields, including some in potential Arctic staging areas, which are identified with or suitable for heavy bombers of current or advanced types. This program is still under way.

20. Considerable lead-time is required prior to achieving an operational capability with large, complex military aircraft. Analysis of past Soviet experience indicates that reasonable times to be expected are: (a) about two years or a minimum of eighteen months, between completion of a prototype and completion of the first series produced aircraft; (b) about an additional year until the introduction of aircraft into operational units. Assuming that a new prototype was completed early in 1957 (see para. 18 above), and that a priority program was undertaken without delay, the first series produced aircraft could probably be completed in late 1958 or early 1959, and such a new type could probably be introduced into operational units in late 1959 or early 1960. Because of deficiencies in our information, we recognize that the USSR could already have instituted series production of a new long range bomber type entirely without our knowledge, but consideration of all the factors involved leads us to believe that no *new* bomber type will appear in Long Range Aviation units until some time after mid-1959. On the other hand, if the recent cut-back in heavy bomber production merely marked the modification or redesign of existing types, production of an improved model could begin at any time.

SHORT-TERM ESTIMATE, TO MID-1960

21. We believe that during the five-year period of this estimate the USSR will continue to maintain a heavy bomber force. It follows from what has been said in previous paragraphs that the Soviets may either begin at an early date to produce improved versions of the BISON and perhaps additional BEARs, or may forego any buildup at least until a new subsonic heavy bomber can be made available, some time after mid-1959. Even in the first case, the numbers produced would probably not be very large, because Soviet planners probably do not feel compelled, in the interim before the advent of more advanced weapon systems, to acquire a heavy bomber force of much larger size but with aircraft of only marginally better performance.

22. The 1959-60 subsonic heavy bomber mentioned in SNIE 11-58 would help the USSR overcome the geographic disadvantage it faces in the application of strategic nuclear

[3] The Assistant Chief of Staff, Intelligence, USAF, believes the evidence does, in fact, change the estimate of Soviet bomber development capabilities. In this respect, he believes an aircraft nuclear propulsion system could now be undergoing flight tests in a prototype airframe.

power against the US, but its capabilities to penetrate North American defenses would be little better than those of an improved BISON. The Soviets might nevertheless produce such an aircraft during the early years of ICBM availability and prior to the advent of more advanced intercontinental bombers — partly as a "hedge" against slippage in either of the latter programs. A few might be introduced into operational units by mid-1960.

23. The BADGER force will probably be strengthened somewhat over the next year or more. Soviet planners will continue to view a large medium bomber force as a necessity, not only for potential employment against targets in and near Eurasia, but also for maintaining a one-way intercontinental strike capability. However, the rate of introduction of new BADGERs will probably continue to decline, and a peak strength of about 1,100 (including convertible tanker-bombers) will probably be reached in 1960. A program of modification and improvement of BADGERs may be undertaken during the next two years. The BULL will continue to be useful for some purposes; its phase-out will probably be gradual, reducing the piston medium bomber strength of Long Range Aviation to about 150 in mid-1960.

24. The new supersonic "dash" medium bomber mentioned in SNIE 11-58 would be a useful successor to the BADGER, particularly if equipped with advanced air-to-surface missiles. We believe that a new medium bomber will probably be introduced some time during 1960-61; a few might have reached operational units by mid-1960.

25. In estimating the operational strength and composition of Soviet Long Range Aviation, we have projected heavy bomber and tanker figures for 1959 and 1960 as lying within a range. The low side reflects a Soviet option to forego further buildup of their heavy bomber force through mid-1960. The high side reflects a Soviet option to produce some additional aircraft of BISON and/or BEAR types, and to introduce a new subsonic heavy bomber into operational units before mid-1960.

	mid-1958	mid-1959	mid-1960
Jet and Turboprop Heavy Bombers and Tankers	100-125	100-150	100-200
Jet Medium Bombers and Tankers	925	1025	1100
Piston Medium Bombers	425	300	150

26. The Soviets will continue their efforts to optimize the capabilities of their long range bomber force. Over the next two years, they will probably improve inflight refueling techniques and make them more generally available. The weight of present evidence points to continued employment of convertible tanker-bombers, but one or more of the new Soviet transport types could be modified to perform a tanker role. Improved electronic countermeasures, navigation and bombing techniques, and other supporting equipment will probably be provided. Air-to-surface missile launching capabilities will probably be augmented. Operations into and from potential Arctic staging areas will probably be intensified, and base facilities in these areas will continue to be improved.

LONGER TERM TRENDS, TO MID-1963

27. Our estimates of trends in Soviet long range bomber strength beyond 1960 are tinged with more uncertainty, especially with respect to heavy bombers. If our estimates of Soviet guided missile capabilities are correct, 1960-63 could see the advent of a substantial Soviet ICBM capability, increased submarine-launched missile capabilities, and a considerable buildup of ballistic missiles with short and medium ranges. The same period could bring the introduction of very advanced intercontinental bombers, of new medium bombers, and of improved air-to-surface missiles. The range of options open to the Soviet planners is wide and the number of variables great. Indeed we question whether decisions which the Soviets may have made along these lines will remain firm.

28. A key factor influencing Soviet decisions as to military force levels is of course the Soviet estimate of the likelihood of all-out nuclear war with the US. We believe that the Soviet leaders do not intend during the period

of this estimate to initiate general war themselves as a deliberate act of policy, and that they judge that the US is likewise indisposed to do so. It is true that the Soviets, like ourselves, are well aware that general war may arise out of accident or miscalculation. Their armed forces must be reasonably prepared for such a contingency. Yet it is obvious from Soviet policies, both military and non-military, that the Soviet leaders do not believe the likelihood of general war in itself to be so great as to require a rapid buildup in force levels.

29. Regardless of the immediate political situation, however, the Soviet leaders would probably build up their force levels very greatly if they believed that by doing so they could acquire the capability to attack the US and at the same time to prevent an unacceptable return blow. The achievement of such a capability would be tantamount to the achievement of military superiority over the US. From a military and technological point of view, then, a main factor determining Soviet decisions as to force levels will be their judgment as to whether the attainment of this capability is practicable. Their judgment will be influenced to a great extent by programmed improvements in US air defenses, the dispersal and alert status of retaliatory forces, and the dispersal and hardening of IRBM and ICBM launching sites. The structure of the forces would be influenced by the Soviet assessment of the effectiveness of missiles and bombers in various employments, and of their own capabilities in using these weapon systems.

30. Soviet military planners would probably feel that even though they had available substantial numbers of ICBMs and some submarine-launched missiles, it would still be desirable to introduce advanced intercontinental bombers into operational units. Late in the period of this estimate these could include chemical-powered aircraft capable of supersonic speed at high altitude or possibly subsonic nuclear-powered aircraft with long endurance at various altitudes, including very low altitude. They are likely to be equipped to launch improved air-to-surface missiles as well as bombs, and to be fitted with considerably improved defensive and other equipment. Some aircraft of either or both these types could probably be in operational units by mid-1963.

31. There is no question that by mid-1963 the Soviets could produce and put into operational units five or six hundred heavy bombers and tankers, should they desire this large a force of such subsonic aircraft, augmented by the advanced types mentioned in the previous paragraph. It seems to us more likely, however, that the Soviet heavy bomber and tanker force will remain smaller than this — say about two or three hundred — and that by about mid-1963 the USSR will be placing major reliance on ICBMs for intercontinental delivery of nuclear weapons.

32. We believe that the number of medium bombers in Soviet Long Range Aviation will probably decrease in the later years of the period. BULLs will probably have phased out entirely shortly after mid-1960. Supersonic "dash" medium bombers may become an important element in the force by mid-1963, but BADGERs will probably have continuing utility.