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Estimates of Soviet Threat to North America from
Aircraft and Missiles - Canadian and US Positions

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JOINT INTELLIGENCE COMMITTEE

4 Sep 58

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Estimates of Soviet Threat to North
America from Aircraft and Missiles
Canadian and US Positions

1. In accordance with the decision of the Committee at the 631st meeting (Item V), attached for information is a copy of the final version of JIC 289(58) dated 4 Sep 58 on the above subject.
2. This paper is not being given any further distribution.

Att.

JHT/2-5459/ff

c.c. CJS
CB NRC
JIS(5)

J.H. Trotman
(J.H. Trotman)
Acting Secretary.

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JIC 289(58)
4 Sep 58

ESTIMATES OF SOVIET THREAT TO
NORTH AMERICA FROM AIRCRAFT AND MISSILES
CANADIAN AND UNITED STATES POSITIONS

INTRODUCTION

1. This document is intended to demonstrate the development of Canadian and United States intelligence appreciations of the Soviet aircraft and missile threat to North America since 1950. It consists mainly of extracts from the following papers:

Agreed Canadian-American Intelligence (ACAI) Estimates

ACAI 10:	Approved Aug 50:	Estimate for mid-54
ACAI 16:	Approved Feb 51:	Estimate for mid-54
ACAI 24:	Approved Oct 52:	Estimate for mid-57
ACAI 31:	Approved May 54:	Estimate for mid-58
ACAI 35:	Approved Apr 55:	Estimate for mid-59
ACAI 39:	Approved Jan 56:	Estimate for mid-60
ACAI 44:	Approved Sep 57:	Estimate for mid-61
ACAI 46:	Approved Mar 58:	Estimate for mid-59

Canadian JIC Papers

JIC 256/6(58) (Final) (Revise) dated 20 Jan 58
JIC 281/2(58) dated 21 May 1958

United States National Intelligence Estimates

NIE 11-4-57
SNIE 11-7-58 dated 5 Jun 58

Extracts relating to the position of the United Kingdom on this subject have not been included for two reasons:

- (a) in the early part of the period, United Kingdom views differed radically from those of Canada and the United States concerning the importance that the Soviet might attach to North America as a target and concerning Soviet capabilities to attack North America;
- (b) in the latter part of the period, United Kingdom figures (particularly aircraft estimates) have generally been between those of the United States and Canada.

2. Some extracts have been slightly amended in the interests of brevity and a standard presentation. The sense has not been altered.

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3. Unless otherwise noted, extracts from ACAI papers quote views that were agreed by both the Canadian and United States Joint Intelligence Committees.

CONCLUSIONS

This document shows that:

- (a) as long ago as August 1950, the Canadian and United States JICs were estimating that by mid-1954 heavy bombers and jet medium bombers would be part of the threat to North America. By October 1952 the estimate was quite firm that by 1957 some hundreds of such aircraft would be in the order of battle of the Long Range Air Force;
- (b) since 1955 - 1956 Canadian and United States estimates of the numbers of heavy and jet medium bombers that were likely to be part of the Soviet Long Range Air Force have differed. The tendency was for Canadian estimates to be lower than United States figures, and the differences became progressively greater until mid-1958. Canadian views culminated, early in 1958, in a hypothesis suggested by available evidence, that the Soviet Union was not intending to build up a large long range bombing force, at least with available aircraft, but was perhaps concentrating on the ICBM. Canadian views as to the relatively small number of heavy bombers likely to be in the order of battle of the Long Range Air Force in the next few years now appear to have been accepted by the United States;
- (c) in January 1956 the Canadian and United States JICs forecast that by 1960-1961 the Soviet Union would have an ICBM. The present estimate is that it will be available in 1960. The Canadian JIC believes that by about 1965 the ICBM will constitute the primary Soviet threat to North America, although manned aircraft will continue to be available as a reserve capability and submarine-launched missiles will also continue to be available;
- (d) in April 1954 the Canadian and United States JICs first estimated that a threat from non-ballistic submarine-launched missiles existed.

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EXTRACTS

ACAI 10: Approved Aug 1950: Estimate for mid-1954

Long Range Air Force

"... On the basis of production estimates, it is considered that the bomber element of this force will be composed of 1000 - 1100 TU-4s augmented by possibly 100 heavy bombers and 300 - 400 medium jet bombers. ... Considering all factors, it is anticipated that an improved TU-4 will still be the principal vehicle for Soviet long range air operations in 1954. ... In addition to the improved TU-4s, the Soviets probably will have heavy bombers and jet medium bombers in their Long Range Air Force. ..."

"... It is thought that TU-4 production may cease about mid-1952 at a total of possibly 1800 aircraft in order to switch production to a heavy bomber ..."

Missiles

No mention

Threat

"... TU-4 type aircraft employing atomic as well as conventional weapons ..."

"... the Soviet Union has more than enough aircraft to attempt the delivery of its full stockpile of atomic bombs ..."

"... the Soviet Union has 120-200 bombs in its stockpile of which it is estimated that 30-40 will be allocated to the United Kingdom, and the balance used against North America ..."

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ACAI 16: Approved Feb 1951: Estimate for mid-1954

Long Range Air Force

"... Projection of what is known about current production rates gives a minimum cumulative total of 2,300 TU-4s by 1 July 1954. It is, however, possible that the production of TU-4 aircraft may give way, at least in part, before that date to production of a heavy bomber and a jet medium bomber. ..."

"... the aircraft establishment of the Long Range Air Force in mid-1954 is estimated at 1500 bombers, including about 1000 TU-4 type aircraft augmented by both piston engined heavy and jet-engined medium bombers. In the United States view, up to 100 heavy and 400 medium jet bombers may be in operational units. In the Canadian view, there is no evidence regarding Soviet intentions to make use of their capability to produce these bombers, and it is preferable not to estimate quantities at this time, although it is believed that numbers would be small. ..."

Missiles

"... It is most unlikely that long-range, intercontinental surface-to-surface missiles will have been developed by mid-1954."

Threat

The number of TU-4 type aircraft that would be available to attack North America is estimated by Canada as 350, and by the United States as 500. These aircraft would be augmented by most if not all of the heavy bombers and possibly by some medium jet bombers.

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ACAI 24: Approved Oct 52: Estimate for mid-1957

Long Range Air Force

The bomber establishment in mid-1957 is estimated as follows:

Jet Light Bomber:	150
Jet Medium Bomber:	350
Piston Medium Bomber:	<u>Canadian view:</u> 500 <u>United States view:</u> 600
Heavy Bomber:	200-250 (may include piston, jet and/or turbo-prop types)

Missiles

By 1954, if the Soviets so chose, they could develop a type of V-1 surface-to-surface missile that could be launched from a submarine and guided to a range of 400-500 miles. ... By 1957 it might have sufficient accuracy to justify an atomic warhead.

"... The Soviets may be able to produce a prototype intercontinental missile by 1957. However, the performance of this missile would probably be marginal at best, and they could be available only in small numbers."

Threat

Attacks by heavy bombers and jet and piston medium bombers employing atomic bombs, other weapons of mass destruction or conventional bombers.

"The Soviets will have sufficient aircraft to deliver the bulk of their estimated stockpile of atomic bombs in one operation." "Projection of earlier estimates would indicate the availability of some 550 or more atomic weapons by mid-1957."

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ACAI 31: Approved May 54: Estimate for mid-1958

Long Range Air Force

"... No medium or heavy bomber other than the TU-4 is believed to have been in production in the Soviet Union during 1952. There is however evidence that the Soviet Union has progressed beyond the TU-4, at least in design. At the Moscow Air Show in 1951 a single four-piston-engined bomber was observed in flight and designated the Type-31. ... It is estimated that if production was begun on a Type-31 class bomber in 1953, the Soviet Union could have produced a sufficient number to have 240 (Canadian view) or 500 (United States view) in operational units by mid-1958. The lower Canadian figure is due to the estimate that production of the Type-31 class bomber will be phased out in favour of a heavy jet bomber in early 1956." A heavy or near-heavy jet bomber was observed in 1953 and was designated the Type-37. Available information on the Soviet jet engine programme is inadequate to support an estimate of the date of availability of an engine suitable for use with this aircraft. However, it is estimated that a jet heavy bomber might go into production in mid-1956, in which case about 100 would be available for operational units by mid-1958.

"... it is estimated that a Soviet jet medium bomber will appear by mid-1955. There is no indication that it is at present in production. However, if production is begun by April 1954, it could be available in operational numbers by mid-1958."

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ACAI 31 - Long Range Air Force (continued)

The bomber establishment in mid-1958 is estimated as follows: (This estimate had been amended in Sep 1954, after the sighting at the Moscow Air Show on May Day 1954 of one four-engined swept-wing jet bomber and nine twin-engined jet bombers. These confirmed earlier estimates of the appearance of a jet heavy bomber and advanced by one year the anticipated appearance of a jet medium bomber. Preliminary evaluation at the time of the amendment pointed to a sharp increase in jet medium bomber strength and some increase in jet heavy bomber strength by mid-1958, probably resulting in the elimination of the turboprop bomber from the order of battle).

Piston and Jet Medium Bomber: 650

Jet Heavy Bomber: 100

Turboprop Heavy Bomber: United States view: 500 (based on production beginning during first half of 1953).
Canadian view: 240 (based on estimate that turboprop production will be phased out early in 1956 in favour of a pure jet heavy bomber)

Missiles

"It is considered that the Soviet Union will NOT have available by mid-1958 a guided missile which would endanger vital areas of North America if launched from Soviet controlled territory."

"It is estimated that the Soviets could equip submarines of the launching of V-1 type missiles with ... a range of about 200 nautical miles, although accuracy limitations would probably preclude general use against other than area targets. Well before 1958 ... they could develop a turbo-jet powered guided missile for launching from submarines ... to a range of 400-500 nautical miles."

Threat

"If a combination of missions designed to achieve optimum weight of attack with recovery of a sizeable part of the attacking force were employed, " the Canadian view is that about 330 mission aircraft could be used, of which about 275 would reach target areas, not considering combat losses. Only about 60 of these aircraft would be TU-4s, and the remainder would be of higher performance. Perhaps 250 tankers would be required. The United States view is that about 550 aircraft could be mission aircraft, with about 550 additional aircraft used as tankers. As many as 450 aircraft could reach target areas, not considering combat losses."

"If the USSR should decide not to create a tanker fleet, but to commit the bulk of its forces to one-way unrefueled missions, it is estimated that the magnitude of the attack could be as large as 750 aircraft reaching target areas, not considering combat losses."

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ACAI 35: Approved Apr 1955: Estimate for mid-1959

Long Range Air Force

"The BULL (TU-4) is at present the only medium bomber available to the USSR in significant numbers. However, the appearance of two new Soviet jet type bomber aircraft, which were seen in flight for the first time at the Moscow Air Show

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ACAI 35 - Long Range Air Force (continued)

in May 1954, indicates an approaching change in the composition of the Soviet bomber forces. One, a medium jet bomber, has been given the designation of BADGER (Type-39), while the other, a heavy jet bomber ... has been designated the BISON (Type-37). ... The BADGER is believed to be in series production, and it is estimated that 1200 - 1500 will have been produced by mid-1959 of which 650-840 could be in operational units by that time. The BISON ... is considered presently in the prototype stage and is not expected to appear in operational units until about the end of 1956. It is possible that about 400-500 could have been produced by mid-1959, and that 275-350 jet heavy bombers could be in operational units by that date." It should be noted that "there is no intelligence concerning Soviet production plans for this aircraft. These figures are within estimated Soviet production capabilities, and are based on the assumption that the USSR might allot an effort of this magnitude to such a programme."

The bomber establishment for mid-1959 is estimated as follows:

Jet Medium Bomber:	650/840)	In each case the higher
Piston Medium Bomber:	125/150)	figure is the <u>United</u>
Jet Heavy Bomber:	275/350)	<u>States</u> view, and the
			lower the <u>Canadian</u> view.
			<u>United States</u> estimates
			are based on 32 aircraft per regiment, while
			<u>Canadian</u> estimates are based on 25 aircraft
			per regiment.

The strength of the Long Range Air Force could also be increased by mid-1959 by the addition of several hundred tanker aircraft, including jet types.

Missiles

"It is improbable that prior to 1957 the Soviets will have ballistic missiles capable of attacking vital areas of North America."

"The Soviets could have had since 1950 an improved version of the German V-1 suitable for launching from a submarine. ... The USSR could develop a subsonic, turbojet missile suitable for launching from a submarine in 1955."

Threat

"It is estimated that in mid-1959 the USSR could ... launch about 600 long range bomber aircraft against North America. This number could include 200 jet heavy bombers and 400 jet medium bombers, perhaps not all bomb carriers." Several hundred tanker aircraft could also be available in order to ensure recovery of a portion of the attacking force. "... About 475 aircraft could reach target areas not considering combat losses".

"If the USSR decided not to create a tanker fleet, but to commit the bulk of its long-range bomber force on one-way missions (or two-way unrefuelled missions where possible), it is estimated the magnitude of the attack could be about 750-850 aircraft reaching target areas, not considering combat losses."

"If the Soviets have developed a capability for launching guided missiles from submarines, it is probable that this method of attack will be employed with limited numbers of submarines."

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ACAI 39: Approved Jan 1956: Estimate for mid-1960

Long Range Air Force

"The medium bombers expected to be in use in 1960 are the BADGER and the improved BISON. ... It is estimated that all BULLs will be phased out of the Long Range Air Force during this period. By 1960 sufficient heavy bombers (BEARS and BISONS) can have been produced to full order-of-battle requirements plus necessary reserves."

"Estimated Long Range Air Force authorized bomber strength in mid-1960 is estimated as follows:"

Jet Medium Bomber: Canadian view: 500
United States view: 700

Jet Heavy Bomber: US view: 400
Turboprop Heavy Bomber: US view: 300

Jet and Turboprop
Heavy Bombers: Canadian view: 700 together
(the Canadian view does not
specify heavy bomber types)

Missiles

"We estimate that as soon as 1960-1961 the USSR could have ready for series production an ICBM with a range of about 5500 nautical miles, and a CEP of roughly 5 nautical miles."

"The USSR could now have a subsonic, turbo-jet type missile suitable for launching from submarines. ... with a range of about 500 nautical miles."

Threat

"We estimate that in mid-1960 the USSR could initially launch against North America 1000/1100 medium and heavy bombers. Of these 800/850 might reach target areas, not considering combat losses. However, exercise of this maximum capability would involve the expenditure on one-way missions of a considerable portion of the Soviet long range bomber force."

"We consider it more likely that the USSR would employ only heavy bombers in an initial attack. In such an attack, the USSR could launch about 600 bombers, of which about 480 could arrive in target areas, not considering combat losses. "

"We believe ... that if ICBMs ... were available in mid-1960 the USSR would employ them against major centres of industry and population in North America."

"There is no positive evidence of the existence of a Soviet capability for launching guided missiles from submarines, but we estimate that it will have been developed. It is probable that this method of attack would be employed to at least a limited extent."

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ACAI 44: Approved Sep 1957: Estimate for mid-1961:

Long Range Air Force

"It is estimated that by 1961 the medium bomber force will consist mainly of improved BADGERS" A mediumjet bomber/missile combination could be in operational service at about this time. In the Canadian view the bomber could have a supersonic dash capability, and the missile could be capable of a speed in excess of Mach 2.5 with a range of 100 nautical miles. A fully supersonic

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ACAI 44 - Long Range Air Force (continued)

jet medium bomber may also enter operational service during the year. It is estimated that all BULLs will be phased out of the Long Range Air Force before 1961." "It is estimated that BISON and BEAR heavy bombers, including improved versions of both types, will be in operational use in mid-1961."

Soviet bomber strength in operational units is estimated as follows for mid-1961: (Soviet aircraft production facilities are more than adequate to meet this requirement, although the proportion of aircraft production facilities assigned to heavy bomber production would have to be increased. Many unknown factors, including the degree of future Soviet success in the guided missile field, could lead to Soviet decisions which would alter both the future size of the Soviet Long Range Air Force and the balance between types of aircraft within this force.)

Jet Medium Bomber:	<u>Canadian view:</u> 625
	<u>United States view:</u> 700
Jet Heavy Bomber:	<u>United States view:</u> 500
Turboprop Heavy Bomber:	<u>United States view:</u> 300
Jet and Turboprop Heavy Bombers:	<u>Canadian view:</u> 725 together

In the Canadian view compatible tankers for heavy bombers, if produced, would reduce the number of heavy bombers.

Missiles

The missile estimate in ACAI 44 is sophisticated and technical and in tabular form. In effect, the paper estimates that non-ballistic missiles for launching from submarines to ranges of 500 nautical miles could have been available since 1955. Progressive improvements in speed and accuracy are estimated to have taken place up to 1957.

The paper estimates that an ICBM with a range of 550 nautical miles and a CEP of about 5 nautical miles could be available to operational units in 1960-1961.

Threat

"We estimate that in mid-1961 the USSR could initially launch against North America in the Canadian view 1000, and in the United States view 1150, medium and heavy bombers, including about 500 medium bombers on one-way missions. A few of the attacking aircraft could be capable of supersonic dash, and in the Canadian view a few could be supersonic. Some will carry supersonic missiles. About 800(Canadian view) or 900(United States view) of the aircraft could reach target areas, not considering combat losses. However, exercise of this capability would involve the expenditure on one-way missions of a sizeable portion of the Soviet long-range bomber force ..."

"Should the USSR elect to employ only heavy bombers in an initial strike from forward bases, about 625 could be launched, of which 500 could arrive in target areas. In the Canadian view, it is more likely that the USSR would employ only heavy bombers in an initial attack against North America."

"... We believe that the USSR would use ICBMs against major centres of industry and population in North America."

"In the initial phase of a war, missiles launched from submarines probably would

ACAI 44 - Threat (continued)

be used in conjunction with nuclear strikes by aircraft against North America. We believe that by mid-1961 about 28 guided missile submarines, some of which would be nuclear powered, could be available."

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ACAI 46: Approved Mar 1958: Estimate for mid-1959

Long Range Air Force

"Large numbers of BADGERS and BULLS are now in service. The BULLS are being phased out and a BADGER with improved performance will enter operational service in 1958."

"In the United States view, while BISON and BEAR continue to constitute the heavy bomber force, evidence indicates that the BISON will be the major heavy bomber produced. A BISON with improved performance probably could be operational in 1958."

"In the Canadian view, there are some indications that BEAR production has either ceased or is continuing at the low rate of two aircraft per month. Although BISON continues to be produced at a low rate, there is little evidence of a serious effort to expand production, and the future of this aircraft appears uncertain. It is estimated that no more than 200 BISONs will have been produced by mid-1959. However, development of a supersonic bomber is expected during the period of this estimate and could become operational by 1960. The scale of production of this aircraft will depend on the missile programme."

Estimated bomber and tanker strength in the Long Range Air Force in mid-1959 is as follows:

	<u>Canadian view</u>	<u>United States view</u>
Jet Medium Bombers and Tankers	950	1000-1100
Piston Medium Bombers and Tankers	500	150
Heavy Bombers and Tankers	150	250-450

Missiles

"The United States estimates that some time during the period mid-1958 to mid-1960, the USSR will probably have a first operational capability with up to ten prototype ICBMs, with a range of about 5500 nautical miles and a CEP of 5 nautical miles or less at maximum range."

"Canada estimates that this weapon will not be a threat to North America before 1960. However, future developments may cause a revision of this estimate to an earlier date."

"ICBMs could probably be produced, launching facilities completed, and operational units trained at a rate sufficient to give the USSR an operational capability with 100 ICBMs about one year after its first operational capability date."

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ACAI 46 - Missiles (continued)

"The USSR could now (Mar 1958) have a subsonic turbojet missile suitable for launching from ship or submarine with a range of 500 nautical miles." "In 1957, the USSR could have had a supersonic turbojet missile with similar characteristics."

Threat

"... In an initial strike designed to achieve optimum weight in a surprise attack, the USSR might launch about 100 tankers and about 650 strike aircraft. About 500 might arrive in target areas, not considering combat losses. Even under these conditions, a majority of the strike aircraft launched would be on one-way missions."

"... Within their operational capability limitations, the Soviets would probably employ ICBMs against important targets in North America, especially in the continental United States."

"In the initial phase of war, missiles launched from submarines could be used in conjunction with nuclear strikes by aircraft against North America. We believe that by mid-1959 about 18 submarines with missile armament could be available ..."

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Canadian JIC 256/6(58)(Final)(Revised). Approved 20 Jan 1958. Estimate for 1958 - 1967.

Supplement to Above Paper: Canadian JIC 281/2(58). Approved 21 May 1958.

These papers, which represent the most recent Canadian JIC views on the threat to North America from aircraft and missiles, cannot be effectively extracted. However, the general thesis is that it is probable that the Soviet Union is not building up a large heavy bomber force, at least with BISON and BEAR, and that after about 1965 the primary threat to North America will be from the Soviet ICBM; manned aircraft as weapons carriers will continue to be available as a reserve capability and submarine-launched missiles will continue to be available for attack on North America. The period before 1965, from about 1961 onwards, will be one of transition, during which the ICBM threat will sharply increase. Manned aircraft and submarine-launched missiles will be employed, especially during the early part of the period, as well as the ICBM, but the need to employ these weapons will progressively reduce as ICBMs become available in larger numbers.

The most recent Canadian JIC estimate of the composition of the Long Range Air Force is as follows (from JIC 281/2(58):

MID-	BULL	BADGER	BISON AND BEAR	SUPERSONIC BOMBER OR RECCE A/C
1958	650	1100	Not exceeding	-
1959	500	1050	100 aircraft	-
1960	350	1000	during period	10
1961	200	950	Phased out	80
1962		900	early in period	160
1963		850	1961-1967	200
1964		750		200
1965		650		185
1966		500		170
1967		350		160

There will be no requirement for the supersonic aircraft as a weapons carrier if the Soviet ICBM programme generally conforms with our estimates. In this case, only sufficient of these aircraft (about 200) to perform a reconnaissance role would be produced.

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United States NIE 11-4-57 and SNIE 11-7-58

United States recent views on Long Range Air Force strength are shown by these two NIEs. It should be noted that SNIE 11-7-58 amends relevant paragraphs of NIE 11-4-57.

A comparison of the original United States estimates in NIE 11-4-57 and the Canadian estimates in JIC 281/2(58) is given below:

	<u>Heavy Bombers and Tankers</u>		<u>Medium Jet Bombers and Tankers</u>	
	<u>JIC</u>	<u>NIE</u>	<u>JIC</u>	<u>NIE</u>
Mid-1958	Less	150-250	1100	1000-1050
Mid-1959	than	250-450	1050	1000-1100
Mid-1960	<u>100</u>	400-600	1000	1000-1100
Mid-1961	Phasing	400-600	950	950-1100
Mid-1962	out	400-600	900	900-1000

The amending SNIE 11-7-58 dated 5 Jun 1958 presents a different picture. It may be noted that this NIE was written after exposure to the views and arguments of the Canadian JIC at a meeting with the IAC early in 1958, and in subsequent correspondence. This SNIE represents the latest known US position. Figures are as follows: (The Canadian JIC figures are repeated):

	<u>Heavy Bombers and Tankers</u>		<u>Medium Jet Bombers and Tankers</u>	
	<u>JIC</u>	<u>SNIE</u>	<u>JIC</u>	<u>SNIE</u>
Mid-1958	Less	100-125	1100	925
Mid-1959	than	100-150	1050	1025
Mid-1960	100	100-200	1000	1100

Recent Missile Estimates

The most recent Canadian JIC position on the availability of the Soviet ICBM is (from JIC 281/2(58)) that it will be available in 1960 at the latest. The most recent United States view is thought to be that this missile will be operationally available in 1959. However, the argument turns partly on the precise definition of "operationally available", and for practical purposes the differences between our estimates is slight.

With regard to the submarine-launched missile, the position is more complex. All agree that a non-ballistic missile could be available now. The Canadian view however is that, although it is technically feasible for the Soviet Union to produce a submarine-launched ballistic missile by 1962, there is little evidence of a Soviet programme to develop even a non-ballistic missile for this purpose, and no evidence of the development of a ballistic missile for this use. The Canadian JIC believes that, although the development of these missiles will probably proceed, production will be dependent upon the success of the Soviet ICBM programme.

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