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CENTRAL INTELLIGENCE AGENCY

17 April 1956

PRESENTATION BY THE DIRECTOR OF CENTRAL INTELLIGENCE

FOR SYMINGTON COMMITTEE, 18 APRIL 1956

Communist Bloc Air Capabilities Through Mid-1959

Introduction

In order to give you as graphic a presentation as possible on this very broad subject, I intend to follow the outline you see on this slide. The strengths which enable the Communist Bloc to undertake a wide variety of air actions against the US and its Allies can best be examined in terms of three broad capabilities:

First, to undertake penetration of Western defended air space;
Second, to resist penetration of Bloc defended air space;
Third, to engage in fighter versus fighter contests for control of air space.

I will discuss the first of these capabilities from the standpoint of Bloc capability to undertake penetration of Western defended air space

(1) Over North America

(2) Over Europe, North Africa and the Middle East, and

(3) Over the Far East.

The second will be considered in terms of Bloc capability to resist penetration of its own air space

(1) Over the Soviet Union

(2) Over the European Satellites, and

(3) Over Communist China and North Korea.

The third will be considered in terms of Bloc capability to engage in fighter versus fighter contests for the control of air space.

Finally, I will summarize some of the related Soviet capabilities which support the air establishment or contribute to its effectiveness in performing assigned missions.

I. Bloc Offensive Air Capabilities

In discussing Bloc offensive air capabilities, it will first of all be necessary to evaluate those capabilities which could be devoted to conducting initial attacks against the continental US and against her key installations and forces overseas. In undertaking such attacks the Soviet leadership would most probably have in mind three major objectives. First of all, the Soviet leaders would aim to destroy or neutralize US capabilities for nuclear warfare. In the second place they would seek to prevent the effective operational employment of US military forces by attacking our overseas forces and our lines of communication with these forces. Thirdly, the Soviet leadership would aim to deliver such attacks on urban and industrial targets as would hamper, to the maximum degree possible, the mobilization of US military and industrial strengths. These are the objectives which the Soviet Union would pursue in initial attacks delivered against us both now and in mid-1959.

(1) Penetration over North America

Let us consider, to begin with, Soviet capabilities for achieving these objectives insofar as attack on the continental United States is concerned. Such an attack would be executed primarily by Soviet Long Range Aviation.

Currently we estimate that Soviet Long Range Aviation has at its disposal about 1,250 bombers. Nearly two-thirds of these bombers (790) are BULL piston medium bombers comparable to the US B-29, and are incapable of reaching the continental United States on two-way missions, unless modified to achieve maximum range by sacrificing equipment and crew weight, in a manner similar to the US B29B. In this event they could reach the area of Seattle on two-way missions. Nearly one-third (375) of the bombers currently available to Soviet Long Range Aviation are BADGER jet medium bombers, roughly comparable to the B-47. The speed and combat ceiling of the current BADGER represent a significant advance over the BULL. Its range capabilities are approximately the same as those of the BULL, however, and it is capable of reaching the Seattle area of the United States on two-way missions. Both the BULL and the current BADGER could cover most significant targets in the United States providing: (a) they were refueled inflight and (b) they were dispatched on one-way missions. We believe the Soviets are psychologically capable of undertaking one-way missions if required. There is thus far little evidence that inflight refueling has gone beyond the experimental stage in the USSR, although its development is well within Soviet capabilities.

There remain some 90 BISON and BEAR heavy bombers which, we estimate are currently operational. The BISON, whose performance characteristics are shown on this slide, is a jet heavy bomber roughly comparable to the B-52. With single inflight refueling, the BISON, if based on Chukotski, could range over the US as far as Los Angeles and Detroit on two-way missions. The BEAR, which is a turboprop heavy bomber, is inferior to the BISON in speed and altitude capabilities, as shown on this slide. With its superior range, however, it could reach virtually any target in the United States on two-way missions from forward bases without refueling.

Slide #2

Slide #3

The ranges I have just given for the BULL, the BADGER, and the BISON are based on the assumption that these bombers would be launched from Soviet bases closest to North America, those in the Chukotski, Kamchatka, and Kola peninsulas, and those located in the Central Arctic. No Soviet Long-Range Air Force units are currently known to be stationed at these forward bases. While these bases are, in the nature of things, dependent upon seasonal supply lines, the supplies necessary for a staging operation could be stockpiled in advance. Moreover, although these forward bases are usable on the basis of estimated aircraft performance figures, runways existing at many of these airfields are considerably below the standards normally associated with Soviet long-range bomber bases, and their use in 1956 would require the acceptance of reduced safety margins. We estimate that as a

gross capability the USSR could at present launch from these forward areas an initial force of about 600 bombers. Not considering combat losses, a maximum of 500 of these bombers could arrive in target areas. If tanker aircraft were available, and if they were employed from these same forward bases, the initial strike force would have to be reduced accordingly.

In addition to the forward bases, Long Range units might also employ airfields in the Leningrad and Baltic-East German areas. In this case a maximum of some 900 bombers could be launched at the present time, of which some 700 would reach target areas if combat losses are not taken into account. But in the event these additional bases were used, the chances of surprise would be materially reduced.

Soviet crews, in additional to the basic navigational skills, are believed to be receiving training in the utilization of radar and other electronic bombing and navigation aids. Some Soviet crews are almost certainly capable of navigation to the most difficult targets in the US. Most crews are probably capable of navigating with sufficient accuracy to reach major cities and industrial centers in the US.

With regard to crew proficiency, let me detail for a moment the status of personnel in the Soviet air forces. Officer and non-commissioned officer personnel, the real backbone of the air forces, are nearly all career personnel. They enjoy many special privileges

and morale is believed to be high. Their career status means that their proficiency improves cumulatively with years of training. The Soviet air forces, along with the air defense forces, submarine and armored forces, also receive high priority in the allocation of conscripted personnel. A high rate of re-enlistment is achieved through both pay benefits and coercive methods. The air forces probably do have problems in acquiring skilled technicians. Many young men entering service have already been subjected to pre-induction training in military skills, but their average level of mechanical know-how is low. The retention of air force personnel for long periods of service is part of the Soviet answer to this problem.

While the Soviet government would be dependent primarily on the BULL and the BADGER for attacks on the continental United States at the present time, this dependence will decrease as the period advances and increasing numbers of heavy bombers become available. This slide shows the estimated Soviet bomber force in mid-1959. By that time the USSR will almost certainly place great reliance on heavy bombers for intercontinental attacks, with an improved BADGER playing a significant

Slide #4

role primarily in shorter range missions. We estimate that by mid-1959 the Long-Range Air Force will contain no BULLS, 700 BADGERS, 400 BISON, and 300 BEAR. By that time, we expect a considerable number of improved BADGERS to be in service. The performance characteristics of the improved BADGER are shown on this slide. The BADGER, though improved, would still be unable to reach target areas in any but the northwestern portion of the United States except on one-way missions, as shown on this slide.

Slide #5

Slide #6

Slide #7

The combat radius of the BISON would have been improved by some 300 miles. This slide shows coverage of the US by the improved BISON. With inflight refueling the 300 BEAR could reach most significant targets in the US on two-way missions even from interior Soviet bases. Here is a Slide #8 slide showing the BEAR's range coverage from these bases.

Parenthetically, I must say that in the several years following 1959 first,
we may well see the emergence of a new medium bomber with supersonic dash thereafter
capability and a nuclear-powered heavy bomber capable of reaching all US targets on two-way missions from home bases in the USSR. We also estimate that an intercontinental ballistic missile with a range of 5,500 nautical miles could be ready for series production in 1960-61.

With regard to Soviet employment of missiles against the North American continent between now and 1959, we believe that submarine-launched missiles might be an important supplement to attacks by aircraft. These missiles could reach many important targets up to a distance of 500 n.m. from the launching submarines, though with decreasing accuracy at ranges over 200-250 n.m. Nevertheless, we believe that in attacks through 1959 the USSR would place chief reliance upon aircraft carrying nuclear weapons.

By mid-1959, the capacity of the bases in the Kola, Chukotski, and Kamchatka peninsulas, as well as those in the Central Arctic and Leningrad areas, could have been increased so that, from these bases, the entire

long-range bomber force could be launched simultaneously. Furthermore, the USSR could have, by mid-1959, an adequate inflight refueling capability either through conversion of BISON and BEAR to tankers or by the development of a new type specifically for use as a tanker. We estimate also that by 1959 Soviet Long Range Aviation will have considerably increased its overall proficiency in long-range navigation, and that at 50,000 feet Soviet bombardiers will be able to achieve a median probable error of approximately 3,000 feet by visual bombing or by radar bombing against well-defined targets.

Under the circumstances just outlined, the USSR in mid-1959 would have a gross capability of launching an initial strike force of more than 1,100 planes. Of these 300 might be tankers, 280 BADGERS (all of them on one-way missions), 310 BISON, and 225 BEAR. Not counting the losses imposed by combat, we calculate that nearly 650 planes would reach the target areas assigned to them. We should also note that in mid-1959 only one-third of the bombers will be flying one-way missions, whereas in 1956 the proportion of one way missions would be nine-tenths.

This is our best estimate of Soviet capabilities against the continental United States, now and in mid-1959. Next, what can be said of Soviet capabilities against overseas installations and forces?

(2) Penetration over Europe, North Africa and the Middle East

The strengths already discussed could also be used against Allied-defended air space in Europe, North Africa, and the Near East. Targets in North Africa, the North Atlantic approaches to Europe, and the bases in the Azores could best be reached by medium bombers. We estimate that by mid-1959, more than 300 BADGERS would be available in the Soviet Long Range Air Force after the 1959 long-range strike force had been made up. None the less, the principal component of Communist aviation available for attacks in Europe and the Mediterranean area at present is a force of nearly 2,400 jet light bombers. There is also a ground attack force of some 60 jet fighters and 1,500 piston aircraft. We believe that the trend in the USSR is toward the use of jet fighters and light bombers for direct ground support. We estimate that by mid-1959 the jet light bomber force will reach the figure of 2,850 aircraft, while the ground attack units will include some 1,100 jet day fighters.

Currently, the standard Soviet jet light bomber is the BEAGLE. This plane has a combat radius of about 700 nautical miles, a maximum speed of 440 knots, and a combat ceiling of 43,000 feet. Before the end of 1956 we expect to see a new and improved jet light bomber in the Soviet arsenal,

one which will have a combat radius of 800 nautical miles, a maximum speed of 500 knots, and a combat ceiling of 51,500 feet.

Chief reliance for ground attack has been placed on the BEAST, a piston aircraft used in World War II. The BEAST has a combat radius of 170 nautical miles and a maximum speed of 270 knots. In addition to the BEAST, ground attack units also include the FAGOT (MIG-15) jet fighter, with a maximum speed of 580 knots and a combat radius of 100 nautical miles when employed as a fighter bomber. By mid-1959 the BEASTS will have been phased out and the FAGOTS supplemented by numbers of newer jet day fighters.

For the use of the aircraft which would be dispatched against Europe, North Africa, and the Middle East, there are within the Bloc some 800 suitable airfields. Five hundred fifty of these airfields are located in the Soviet Union itself, and 250 in the European Satellites. Not all of these fields would be used by jet light bombers at one time, for many would have to stage aircraft serving other roles than attacks on US overseas forces. Maintenance facilities at the fields on the periphery of the Soviet Bloc and the logistical system for their supply appear to be adequate to support the Communist capability to penetrate Allied defended air space in Europe, North Africa and the Middle East. It should also be

noted that the USSR is believed to have a radio navigation and bombing system similar to the US SHORAN system.

With respect to our overseas bases I hasten to point out that the Soviet Union is in process of developing guided missiles capable of attacking these bases. A short range missile, with a range of 350 nautical miles, has probably been available since 1954. A medium range missile, capable of reaching the 850 to 1,000-mile bracket, could now be available in limited quantities, but there is as yet no evidence that such a missile has reached operational readiness. Based primarily on a logical projection of demonstrated Soviet abilities in the medium range missile category, credible intelligence on the development of a 100-ton thrust propulsion unit, and some intelligence indicating a stated Soviet requirement for an intermediate range ballistic missile of 1,600 nautical mile range, we estimate that the USSR could have such a missile in about two or three years. Large-yield nuclear warheads for ballistic missiles will probably be available in limited quantities in 1959-1960.

(3) Penetration over the Far East

In so far as Soviet offensive capabilities are concerned, there remain to be discussed the US overseas installations and forces located in the Far East. In the Soviet Far East, one long-range air army, three tactical air armies and some units of naval aviation are deployed. In terms of actual strength, these Far Eastern units comprise 200 BULLS, 750 BEAGLES, 190 FAGOTS, and 120 BEASTS. The combat equipment of the Chinese Communist and

North Korean air forces is wholly Soviet and include most standard operational types. Currently, the Communist forces altogether have available in the Far East approximately 210 piston medium bombers, 1,125 jet light bombers, and 260 jet attack aircraft.

We estimate that there will be no significant change in total numbers of Communist aircraft deployed in this area by mid-1959. The striking power of the Communist Far East airforces will, however, grow substantially with the phasing in of new types, and by mid-1959 we estimate that it will include about 50 jet heavy bombers, 30 turbo prop heavy bombers, 150 jet medium bombers, 45 piston medium bombers, 1,500 jet light bombers, and nearly 750 jet ground attack aircraft. Of these, however, the heavy bombers and many of the jet medium bombers would probably be used in attacks on North America.

To recapitulate Soviet offensive air capabilities for a moment, we believe that in attacks on the US through 1959 the USSR would place chief reliance upon aircraft carrying nuclear weapons. Present Soviet capabilities for air attack on continental US are restricted by the small numbers of operational heavy bombers, the limited capacity of forward bases, the limited availability of megaton-yield weapons, and the probable lack of

an operational inflight refueling capability. By mid-1959, however, the USSR could have made considerable strides to overcome each of these limitations. With regard to Bloc capabilities to attack areas peripheral to its borders, a wide range of capabilities are already available, probably including both aircraft and missiles, and these capabilities will increase significantly between now and 1959.

II. BLOC DEFENSIVE AIR CAPABILITIES

Let us now examine the other side of the coin -- those strengths which enable the Soviet Bloc to resist penetration of its own air space. Bloc air forces will attempt to carry out the mission of defense of their own territory by two principal methods: one will be active air defense of Bloc territory, while the other will be offensive operations against Western nuclear capabilities. I have already discussed the second of these methods, but I want to emphasize at this point that a high degree of Soviet success in attacking Western nuclear capabilities at the outset would greatly simplify the Soviet air defense problem. I shall present the air defense problem in terms of Bloc capabilities to resist penetration of the air space over (1) the Soviet Union itself, (2) the European Satellites, and (3) Communist China and North Korea, with particular attention in all three cases to estimated Bloc capabilities in mid-1959.

(1) Air Defense of the Soviet Union

At present, the USSR has more than 9,100 jet fighter aircraft available for resisting penetration of Soviet defended air space. Of these, 3,250 are in air defense units, including 2,850 day fighters and 400 all-weather fighters. We estimate that the number of fighter

aircraft in the Soviet establishment will increase relatively little between now and mid-1959, but that the Soviets will concentrate their efforts on sharply increasing the proportion of all-weather fighters in units. To illustrate, at present all-weather fighters comprise only about 10% of total Soviet fighter strength, whereas by mid-1959 we expect more than 35% of this strength to be all-weather types. This slide Slide #9 will give you an indication of the total strength of the fighter aircraft we expect to be available for air defense of Soviet and Satellite territory in mid-1959. Of the total of 9,300 Soviet fighters shown on the slide, about 3,350 fighters, including more than 2,000 day and 1,300 all-weather fighters, will probably be assigned directly to the Soviet air defense organization, but we know that fighters of the tactical and naval aviation components are also available for air defense. Notice especially the improved day and all-weather fighters, several of which the Soviet Union already has in operation. The FRESCO "D" is equipped with airborne aids to interception and has a maximum speed of 570 knots at 40,000 feet and a combat ceiling of almost 58,000 feet. The FLASH- Slide #10 LIGHT is a true all-weather fighter, with speed and ceiling slightly inferior to those of the FRESCO "D". This slide shows key performance characteristics of the FLASHLIGHT. By 1959, we expect the Soviets to have in operation an improved day and all-weather fighter, capable of a maximum speed of 800 knots at 40,000 feet, and with a combat ceiling of 62,000 feet. This slide shows the probable performance characteristics of this aircraft, compared with those of the FARMER, a day fighter which Slide #11 is already operational.

These fighters can be deployed over a very extensive base network. At present, there are approximately 750 airfields in the USSR suitable for use by fighter aircraft. Even this number of bases might be inadequate to meet all the air defense and other requirements for a major war effort, and evidence on new airfield construction indicates that the Soviets recognize the need for greater flexibility for aircraft deployment in the future.

The location of US bases on the periphery of the Soviet Bloc and US ability to augment these fixed facilities by the use of carrier task forces in adjacent waters make the problem of achieving adequate warning an extremely difficult one for Soviet planners. The USSR has developed an extensive warning and control system which has been undergoing continuous modernization for the past four years. At present, we estimate that over 1,130 ground-controlled-intercept, early warning and other radar sites exist in the USSR, with a heavy concentration in the western portion of the country. While gaps in early warning radar coverage appear to exist in the Central Arctic and southern and central Asia, early warning radar will probably completely ring the Soviet Bloc by mid-1959. Maximum altitude coverage of existing Soviet early warning radar is generally about 45,000 feet, and may extend to 60,000

for certain types of targets under certain conditions. Detection ranges are estimated to extend to approximately 200 n.m. against the B-36, and probably vary between 100 and 180 n.m. against B-47's at altitudes between 25,000 and 55,000 feet. The range and altitude capabilities of existing Soviet radars for ground-controlled interception are, of course, less. By mid-1959, we estimate that the Soviets will have replaced many of its existing radars with improved models, with range capabilities which may increase as much as 50%.

The Soviet Union continues to place considerable emphasis upon radar-directed anti-aircraft artillery, and significant developments in both high and low altitude weapons have been detected during the past year. We estimate that the Soviet air defense and field forces now possess a total of over 17,000 anti-aircraft artillery pieces, of which more than 7,000 are medium weapons. In addition, within the past year we have begun to see 122 mm. heavy AA guns appear in operational units. The heavier weapons are estimated to be capable of continuously-pointed, radar-directed fire up to approximately 45,000 feet. Anti-aircraft gun defenses are most heavily concentrated around Moscow and other areas of strategic importance.

It is highly likely that the USSR will place increasing reliance on guided missiles for air defense use. Surface-to-air guided missile sites are currently being constructed in two rings around Moscow, 25 and 45 nautical miles from the center of the city. We estimate that when complete this antiaircraft guided missile system will consist of 50 to 60 launching sites. At the present rate of progress this entire Moscow antiaircraft guided missile system could be operational in late 1956. Construction of similar sites may be in progress in the Leningrad area, and such defenses may be expected to appear around other key Soviet centers. Although there is little evidence of Soviet employment of air-to-air guided missiles, we estimate that such missiles could currently be available for operational use. The probable infrared guidance equipment would limit the use of these missiles to tail attacks in fair weather. In 1958-1959 the USSR could probably have an all-weather, higher speed, air-to-air missile using a semiactive radar homing guidance system which would permit more flexible employment. The effective range would be about five nautical miles.

We believe the Soviets have not yet succeeded in providing a communications network adequate to integrate fully the defensive system

I have just described. They are developing a complex but flexible system of communications for passing the necessary alert and scramble data and coordinating the activities of the forces of various districts and subordinations that would be employed in the air defense effort. They are developing, and may now have in production, automatic computation and data-handling devices.

To summarize Soviet capabilities to defend against penetration of the air space over the USSR, I would say that a powerful Soviet air defense organization exists today and is constantly being strengthened. This system, in daylight and good weather, is now capable of inflicting severe losses on individual piston bomber formations and moderate losses on individual high-speed jet bomber formations at altitudes between 5,000 and 35,000 feet. Under conditions of poor visibility and above 35,000-40,000 feet altitude this capability would diminish considerably, although the Soviet deficiency in all-weather fighters is rapidly being overcome. ~~come.~~ Against formations penetrating peripheral defended areas at high speed and minimal altitude the effectiveness of the defenses would be very low. Against multiple-pronged penetrations utilizing altitude stacking, diversionary tactics and electronic countermeasures, we believe the Soviet air defense system is susceptible to disruption and saturation. By mid-1959, the increased proportionate

strength in all-weather fighters, improved and more numerous radar equipment, and the availability of larger numbers of guided missiles, some possibly with nuclear warheads, will greatly increase the Soviet kill probability against Western air attacks. Despite these improvements, we estimate that Soviet air defenses will still have numerous deficiencies which can be exploited by penetration forces.

(2) Air Defense of European Satellites

Let us now turn briefly to Communist strengths for resisting penetration of the air space over the European Satellites. I think it fair to say that the Satellites are "country cousins" in the air defense field as in so many other fields. The Soviet concept of deployment of air defense forces appears to be from Moscow outward -- the newest and best equipment is first assigned to the defense of the Soviet citadel, and the peripheral areas and Satellites receive progressively lower priorities. The Satellites are tied into the over-all command structure of the Bloc air defense system, but this, we believe, is

principally for the purpose of extending the protection of Soviet territory as far as possible beyond the borders of the USSR.

There are at present about 1,500 jet fighters in the European Satellites which could be used in air defense. Most of these are older day fighter types, although some fighters equipped with airborne aids to interception are beginning to appear in the Satellite air forces. There are approximately 250 airfields in the Satellites on which these fighters could be deployed. Radar sites number over 135. Anti-aircraft weapons total nearly 3,500, and are mostly older Soviet models. No surface-to-air guided missiles have yet appeared in the Satellite area.

Satellite capabilities to defend their own air space will increase moderately between now and mid-1959. By that time, we estimate that there will be about 2,500 jet fighters in the Satellite air forces, but in marked contrast to the USSR, only about 1/5 of these aircraft are expected to be all-weather fighters. The Satellites will receive increasing numbers of anti-aircraft artillery pieces as the Soviets replace various models with newer equipment and introduce more guided missiles into their own air defense system. We do not expect the Satellites to acquire a significant guided missile air defense

2,100
400
2500
2050
4550

capability by mid-1959. Older radars will probably be turned over to the Satellites in increasing numbers. The early warning and interception problems facing the Satellites will, of course, continue to be complicated by their geographic position on the edge of Bloc-controlled territory.

(3) Air Defense of China and North Korea

Turning now to the third area of air space to be defended by the Bloc, we estimate that the Chinese Communists and North Koreans have about 1,500 fighter aircraft (mostly FAGOT MIG-15's) and more than 200 airfields suitable for use by these aircraft. Anti-aircraft artillery totals an estimated 4,500 pieces, mostly older Soviet models. No surface-to-air guided missiles have been identified in this area. The Asiatic Communist forces now have about 200 operational aircraft control and warning radar sites.

2050

By mid-1959, we estimate that these forces will have about 1,650 jet day fighters and about 400 all-weather fighters. However, the size of the region makes the development of an air defense network an extremely difficult and costly undertaking. Although Communist capability to resist penetration of the air space over China will gradually improve, we expect it to remain considerably inferior to that attained within the USSR.

III. BLOC CAPABILITIES TO CONTEST CONTROL OF AIR SPACE

As mentioned at the outset, we are also concerned with the Bloc capability to engage in fighter versus fighter contests for control of air space. A large portion of the strengths which support the Bloc capability to resist penetration also contribute directly to this capability.

Depending upon the area of conflict, the airfields, associated facilities, fuel, and logistic strengths available for resisting penetration of Bloc defended air space would also be available for use in supporting the Bloc capability to engage in fighter contests. Obviously many of these resources could not be used simultaneously for both purposes. Since these strengths and resources have previously been described in detail, at this point they need only be noted as available to support this third Bloc capability.

The great majority of Bloc aircraft suitable for resisting penetration could also be used in fighter contests for control of air space. However, we believe that the Bloc would not employ its all-weather types to engage enemy fighters. How the Bloc would apportion its day fighters between intercepting enemy bombers

and engaging enemy fighters would depend upon a number of factors, such as the number of enemy fighters and bombers involved, where the Bloc fighters were based with reference to enemy fighters, the availability of other Bloc weapons such as guided missiles, and how the Bloc assessed the importance of intercepting enemy bombers as opposed to engaging enemy fighters. It is obviously impossible to determine with any assurance of accuracy how the Bloc would make such an apportionment in a war occurring between now and 1959, beyond the generalization that defense against penetration of Bloc air space would almost certainly have first priority. Nevertheless, it is worth noting the number of aircraft which could be available to the Bloc for engaging in fighter versus fighter contests during this period.

The USSR currently has about 8,300 jet day fighters suitable for engaging in fighter versus fighter contests. This number is made up of more than 2,000 of the obsolescent FAGOTS, and more than 6,200 better day fighter types. We believe that the older types will gradually be phased out of fighter units and replaced by new types with greatly improved performance. By mid-1959 the Soviets will have an estimated 7,300 aircraft suitable for engaging in fighter versus fighter contests. This total will be made up of about 6,000 modern and improved day

fighters and about 1,300 aircraft which could be used as day fighters or as all-weather fighters.

The European Satellite air forces at present have approximately 1,500 day fighter aircraft suitable for use in fighter versus fighter contests. Most of these aircraft are FAGOTS, although a few better models have begun to appear in these forces. The European Satellites will have about 2,100 day fighters in mid-1959, and most of the FAGOTS will have been phased out by that time.

The current estimated actual strength of aircraft in the Chinese Communist and North Korean air forces suitable for use in fighter versus fighter contests is almost 1,500, mostly FAGOTS. By mid-1959 these air forces will have an estimated 1,650 better aircraft for use in fighter versus fighter contests.

IV. RELATED SOVIET CAPABILITIES

Before I conclude, I should like to comment on some of the basic Soviet capabilities to support air delivery systems, as well as several of the technological fields related to the achievement of success of the Soviet air missions.

First let me point out that the USSR is technologically and economically capable of supporting an increasingly powerful establishment to carry out the three major objectives outlined at the beginning of this discussion. We believe that the USSR recognizes its mounting demands for complex industrial products and basic materials needed to produce and support extensive complex weapons systems. Moreover, it is actually taking specific economic measures to assure the capabilities of fulfilling the anticipated industrial demand of such weapon systems. For example, we note in the Soviet Sixth Five Year Plan (1956-1960), that sectors of industry critical to the production of complex modern weapons are to increase output by as much as 200 to 400 percent over their current rates, while industrial output as a whole will increase by 65 percent. These critical sectors include (a) instruments for automation, to be increased 3.5 times; (b) control and automatic regulating instruments, 4 times; (c) optical instruments, 3 times; (d) capacity for producing heat-resistant alloys, 6 times; (e) radio measuring instruments, 3 times; and (f) computors and calculators, 4.5 times.

Some of the basic materials used in the production or operation of aircraft and guided missiles are expected to increase at much

higher rates than the whole industrial sector of the Soviet economy. For example, the 1960 output of aluminum and petroleum is planned to be double that of 1955 and the output of electronics is planned to be three times that of current levels.

These planned goals are to develop further an economy which has already reached rather high levels of performance. The 1955 Soviet gross national product was about 130 billion 1951 dollars, or approximately one-third of that of the US. According to some preliminary results of a study now in progress (and as yet not coordinated throughout the Intelligence Community), Soviet military expenditures in dollar terms, were equal to some 90 percent of US military expenditures.

Of the Soviet military expenditures of some 30 billion dollars in 1955, almost seven billion was spent to purchase over 5,400 combat aircraft with airframe weight totalling 70 million pounds. The slide shows the production of airframes by weight for the period 1947 through 1955. Before 1952 the USSR was producing combat aircraft at a very high rate in an effort to overcome its postwar deficit in modern military aircraft. The decreased Soviet production in 1953 was primarily due to a change-over to the medium

Slide #12

and heavy jet bombers. The build-up following this change-over resulted in increasing output which has not yet reached its peak.

I have already mentioned nuclear weapons several times where they were appropriate to individual portions of this briefing, but I would like to summarize the Soviet position with regard to this vital element in air warfare. At the present time we estimate that the USSR has a significant number of large-yield nuclear weapons. We estimate that sufficient large-yield nuclear weapons will soon be available to furnish at least one weapon each for the estimated 90 heavy bombers currently available. In addition a small number of the medium bombers could have available medium-yield (less than 100 kilotons) nuclear weapons. By mid-1959 we estimate that all the estimated 700 heavy bombers could be equipped with large-yield nuclear weapons. In addition, by this date, some large-yield warheads would be available for use in ballistic missiles and some surface-to-air missiles could be equipped with small-yield nuclear warheads.

Bloc capabilities for electromagnetic warfare are also an important addition to both offensive and defensive air capabilities. As a base for electromagnetic warfare, the USSR and its Satellites have an active, large, and well-organized radio jamming system consisting of several thousand radio jamming transmitters. We estimate this jamming system has a capability to interfere seriously with radio communication between the US and its overseas bases and forces. It can also seriously interfere with US long range mobile communications and radio navigational aids. The USSR has had access to several types of World War II US defensive radar and to some US jamming equipment. Since 1950, a number of instances of Soviet use of CHAFF have been observed, and recently the use of active airborne jammers has been noted. We estimate that the USSR now has at least limited quantities of both ground and airborne equipment for jamming radar. Such equipment would include active, passive, and confusion devices. We have no evidence of Soviet use of decoys, but consider their use to be within Soviet capabilities. Over the next several years, the USSR will probably continue to improve its jamming capability by the development of equipment covering a wider range of frequencies and by increased effectiveness of jamming operations.

Finally, notice that the development of Soviet air capabilities I have outlined is based on our estimate that the Soviet leaders will devote a substantial effort to improving their air capabilities within the limits of fairly steady technological progress. Our estimates are based on the assumption that neither domestic and international political factors nor unexpected technological breakthroughs will alter the general nature of Soviet weapons programs between now and 1959.

This concludes my formal presentation.