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CIA/SC/RR-64

30 December 1953

Dissemination Authorized  
Assistant Director  
Office of Current Intelligence

No. Pages - 9  
Copy No. -

THE MIG-15 SUCCESSION PATTERN

CIA HISTORICAL REVIEW PROGRAM  
RELEASE AS SANITIZED

Office of Research and Reports  
CENTRAL INTELLIGENCE AGENCY

FOREWORD

This is an interim report in a series of studies

developments in the Soviet aircraft industry. The purpose of this report is to examine available evidence in regard to the MIG-15 succession pattern.

This report includes material from all sources

It has been coordinated with appropriate offices within CIA, but not with other IAC agencies.

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## THE MIG-15 SUCCESSION PATTERN:

### Summary and Conclusions:

The Soviet concentration upon the MIG-type design for large-scale fighter production during the past 5 years has created the intelligence problem of determining the MIG-15 succession pattern. As an interim report, this paper tentatively concludes: (1) that the MIG-17 and the MIG-15 Bis are basically the same aircraft; the versions of which probably differ mainly in electronic equipment and/or engine installation; (2) that the MIG-17 went into production in 1950 and is now the major fighter component of the Soviet air armies and fleet air forces; and (3) that a more advanced MIG (Type 38) went into production in 1952 and presumably is now filling out important units in the heart of the USSR.

From these tentative conclusions the following intelligence factors are derived. The USSR's present main line of fighter defense is composed of MIG-17's, an aircraft containing new VHF and IFF and with engine thrust (up to 7,000 pounds) comparable to that of present US operational fighters

Production of a more advanced MIG, known to US intelligence as the Type 38 of 1953 air shows

has been under way for approximately 1-1/2 years. This newer aircraft, therefore, has already become a significant part of the Soviet fighter establishment -- a complement to, or replacement for, the MIG-17.

I. Introduction.

Since the advent of the MIG-15 in 1948 the USSR has depended largely upon MIG-type aircraft for the fighter components of their military forces. This is borne out by the fact that no Stalin Awards have been given to other designers of fighter aircraft since 1948

This concentration on the MIG-15 design for the past 5 years has been accompanied by a periodical improvement of the design. This is seen in the bestowal of further Stalin Awards\*\* on the MIG designers in 1949 and in 1952

mid-1953 appeared to represent a considerable portion of the jet fighter strength in this area (the others being the MIG-15). In August 1953 a new MIG-type aircraft (Type 38) was unveiled in the Soviet air show. These relationships as tentatively interpreted in this report are as follows:

<u>Year</u>	<u>Air Show</u>	<u>Stalin Award</u>	<u>New Aircraft</u>	<u>Power</u>
1948	MIG-15	1st Class	MIG-15	RD-45
1949-50		2d Class	IG-17 MIG-15 Bis***)	VK-1A, VK-1
1952-53	Type 38	1st Class	MIG-?	Increased Thrust

\* For the production and distribution of selected Soviet combat aircraft, see the chart, p: 10, below.

\*\* The MIG designers were awarded Stalin Awards in 1947 and 1948, presumably for the MIG-9 and the MIG-15, respectively.

\*\*\* That is, MIG-15 "improved" or MIG-15 II.

In the subsequent sections this report reviews the evidence which has led to the tentative conclusion that the MIG-17 and MIG-15 Bis are basically the same aircraft and presents short sections assessing the place of the MIG-17 and the Type 38 MIG in the MIG-15 succession pattern.

Further background material for this report may be found in the paper Soviet Diversification of The MIG Program (CIA/SC/Z-49L(1) 53), which this report in part supersedes.

## II. MIG-17 and MIG-15 Bis.

The evidence and reasons for believing that the MIG-17 and the MIG-15 Bis are basically the same aircraft are as follows:

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\* Footnote references in arabic numerals are to sources listed in the Appendix.

3. Lack of Evidence of a Soviet-Designated MIG-15 Bis in the USSR.

Furthermore, since the "second MIG"\* represents a distinct advance in blind landing ability over the original MIG-15, it is highly probable that these aircraft are differentiated in flight traffic. In the USSR the two

\* The phrase "second MIG" as used in this report means the MIG which won a 2d class Stalin prize in 1949 and is related in some way to the "SD" MIG which succeeded the MIG-15.

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aircraft are differentiated by calling one the MIG-15 and the other the MIG-17, and in the Satellites they are distinguished by calling one the MIG-15 and the other MIG-15 Bis.

4. Probability That the Soviet "Second MIG" Was Designated  
MIG-17 (Not MIG-15 Bis)

The scale of change which went into the MIG design from 1948 to late 1950 is as great as the scale of change found in the La-5-7-9-11 fighter series, the Tu-2-6 bomber series, and the Yak-15-17-23 fighter series. 4/ Known changes in the MIG, between 1948 and late 1950, have increased its capabilities by the following: (a) 20-percent increase in engine thrust (40 percent with VK-1A engine), (b) improved blind landing system, and (c) power boost on some flight controls. The changes in the La, Tu, and Yak series (above) were, in most or all instances, of lesser degree. It seems more likely, then, that the "second MIG" was designated MIG-17 than MIG-15 Bis.

A Stalin Award was awarded to Mikoyan and Gurevich in 1949, apparently for the "second MIG." All Stalin Awards given to aircraft designers can be logically assigned to new aircraft (that is, a number change, not a letter change or a Bis). Many new aircraft have failed to win Stalin Awards. Therefore, if a Stalin Award was bestowed for a MIG-15 Bis, it ran counter to any known precedent.



6. Evidence from Air Order of Battle Distribution Sequence  
of the MIG-15, Il-28, and MIG-17.

An attempt has been made to analyze the recent widespread distribution of the MIG-17.

In those areas (see the accompanying chart\*\*) where Soviet Bloc tactical air armies and fleet air forces have recently received either MIG-17's or MIG-15 Bis's, it is noted that they also received Il-28's either about the same time or less than a year previously. MIG-15's were received in these areas about 1-1/2 to 2 years before MIG-17's. These time sequences compare with the 1-1/2-year interval between "first 100 MIG-15 produced" (first half of 1949) and "first 100 Il-28 and 'second MIG's' produced" (second half of 1950).

In general, in Soviet areas, the tactical air armies and fleet air forces received first the MIG-15, one or two years later the Il-28, and some months afterward the MIG-17. In the two non-Soviet areas, Manchuria and Poland, the situation was similar with the MIG-15 Bis appearing instead of the MIG-17. A possible reason for the Il-28's generally arriving earlier in the re-equipment program of tactical air armies and fleet air forces than the MIG-17's is that the first

\*\* P. 10, below.

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to 2,000 MIG-17's produced may have been assigned to units in the inferior of the USSR. \*11/

### III. MIG-17 in the Soviet Air Forces.

It appears from the preceding sections that the MIG-17 (MIG-15 Bis) has been in production since 1949-50, when the VK-1 engine was introduced, and

That the MIG-17 went into production at this time is partially confirmed by the fact that in the Soviet Far East

\* In considering the distribution of the MIG-17, it is interesting to suppose for a moment that the MIG-17 equates with the new 1952 MIG and given a Stalin Award in 1952. If this were the case, the Russians clearly would have set a new time priority on distribution. For, although MIG-15 aircraft did not arrive in the Soviet Far East until over 5,000 MIG's are estimated to have been produced, the MIG-17's arrived there before 500 of the new 1952 MIG's are estimated to have been produced. Although evidence is less firm in other areas, a similar situation would seem to exist in tactical air armies and fleet air forces in the Tbilisi, Black Sea, Leningrad, and White Sea areas.

about 2 1/2 years after the first [redacted] MIG aircraft rolled out of plants. This time span is comparable to the 2 years it took the MIG-15 to reach the Soviet Far East units after plant deliveries began, and the 2 years it took the Il-28 to reach these units.

The fact that the MIG-17 is available to the Satellites in the MIG-15 Bis version also testifies to the fact that this is a standard Soviet fighter which went into production several years ago (for the most recent Soviet fighter presumably would not be available to the Satellites).

Thus the MIG-17 is believed to be presently the major component of the Soviet fighter establishment.

#### IV. Type 38 (MIG) in the Soviet Air Forces.

The features recognized on the Type 38 in the 1953 air shows have, to some degree, been found

MIG. Specifically, there have been some references to changes of the wing and some hints of lengthened fuselage and increased thrust. In 1952 the MIG designers and an engine designer, Metskvarishvili, won Stalin Awards. Metskvarishvili has since been related to a MIG producing plant, in Tbilisi, which is working on the MIG. It is probable that the result of Mikoyan's and Metskvarishvili's efforts is a more powerful MIG, which has now been seen in 1953 air shows and designated Type 38.

it is estimated that these new MIG's began rolling out of the plants in about the third quarter of 1952 indicate that a 4-plant complex,

is producing the new MIG. From this starting date and with this complex it is estimated that approximately 2,000 of these new MIG's will have been produced by the end of 1953. These Type 38's are presumably filling out important defense units in the heart of the USSR, and, if they follow the previous patterns of AOB distribution (MIG-15, Il-28, Tu-4), may be expected to arrive in the Soviet Far East AOB in or after the third quarter of 1954.

The Type 38 MIG is already an important factor to consider in determining the degree of vulnerability of cities and installations in the heart of the USSR.

Production and Distribution of Selected Soviet Combat Aircraft  
1948 through 2d Quarter 1953

Year	Stalin Awards	Production Information	First 100 Aircraft	Germany 24th AA	Manchuria	Polish AF	Soviet Far East	Leningrad & North Tactical AA	Tbilisi Black Sea Tactical AA	Tbilisi Black Sea Tactical AA	Tbilisi Black Sea Tactical AA
1st Qtr 1948											
2d Qtr	MIG-15										
3d Qtr 1948											
4th Qtr											
1st Qtr 1949	VK-1 engine		MIG-15								
2d Qtr	MIG-17 (MIG-15 Bis)										
3d Qtr 1949		MIG's:									
4th Qtr				MIG-15							
1st Qtr 1950		VK-1 engine for MIG's & Il-28									
2d Qtr	Il-28										
3d Qtr 1950											
4th Qtr					MIG-15						
1st Qtr 1951											
2d Qtr											
3d Qtr 1951											
4th Qtr											
1st Qtr 1952											
2d Qtr	MIG (Type 38)										
3d Qtr 1952											
4th Qtr											
1st Qtr 1953											
2d Qtr											

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# APPENDIX

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