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3907

PRODUCTION OF BISON AIRCRAFT AT MOSCOW/FILI AIRFRAME PLANT NO. 23 IN THE USSR

(SUPPLEMENT)

1 JULY 1957 - 1 MARCH 1958

CIA/RR IP-582-S-1

13 June 1958

CENTRAL INTELLIGENCE AGENCY

Office of Research and Reports

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FOREWORD

This project is the second project on production of Bison aircraft (heavy bombers) at Moscow/Fili Airframe Plant No. 23 in the USSR. The first project, CIA/RR IP-582, Production of Bison Aircraft at Moscow/Fili Airframe Plant No. 23 in the USSR, 24 January 1958, SECRET/ contained the estimate of production of Bison aircraft at this plant from the initiation of production through June 1957. This project contains the estimate of production of Bison aircraft from 1 July 1957 to 1 March 1958 and summarizes and analyzes the background material which contributed to the estimate of production.

The estimate of production of the Bison aircraft during the latter half of 1957 has been based primarily on observations of Moscow/Fili Airframe Plant No. 23

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CIA/RR IP-582-S-1 ~~S-E-C-R-E-T~~
(ORR Project

PRODUCTION OF BISON AIRCRAFT AT MOSCOW/FILI AIRFRAME PLANT NO. 23 IN THE USSR*

(SUPPLEMENT)

1 JULY 1957 - 1 MARCH 1958

Summary

Observations of Moscow/Fili Airframe Plant No. 23 during the period of July 1957 through February 1958 indicate that the rate of production of Bison aircraft (heavy bombers) decreased from an average of 3 aircraft per month during the first 9 months of 1957 to 1 aircraft per month in February 1958. Cumulative production of Bison aircraft at this plant from January 1955 through February 1958 is estimated to be 84 aircraft as of 1 March 1958.

The cutback in production of the Bison aircraft is believed to indicate that the plant is tooling up for production of a new military aircraft.

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1. Estimates of Production.

a. Cumulative Production to 1 July 1957.

Cumulative production of Bison aircraft at Moscow/Fili Airframe Plant No. 23 as of 1 July 1957 was estimated to be 65 aircraft in CIA/RR IP-582, Production of Bison Aircraft at Moscow/Fili Airframe Plant No. 23 in the USSR, 24 January 1958, ~~SECRET~~.

Since the completion of CIA/RR IP-582, observation indicates that the latest possible

* The estimates and conclusions contained in this project represent the best judgment of ORR as of 1 April 1958.

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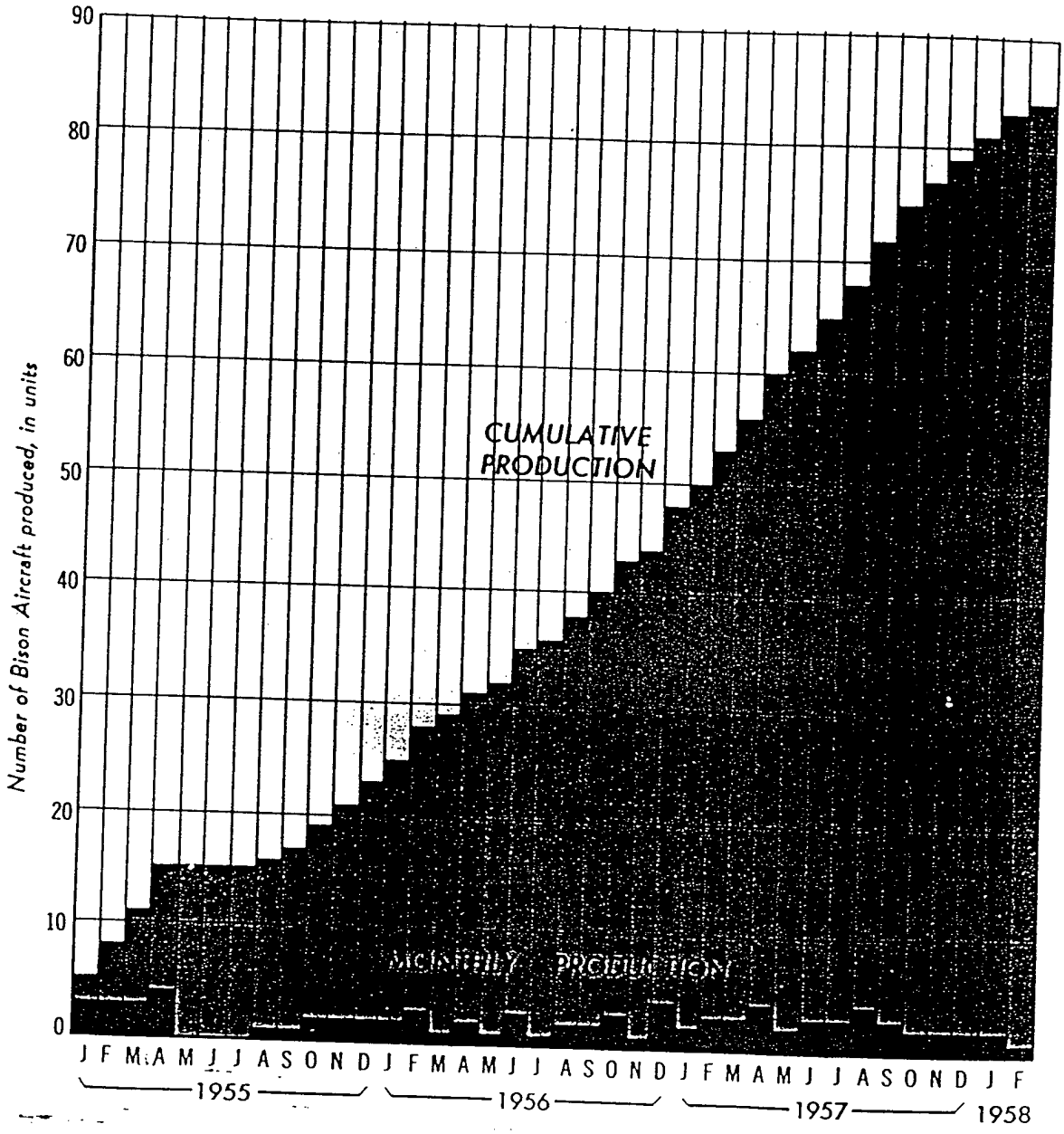
Figure 1

USSR: ESTIMATED PRODUCTION OF BISON AIRCRAFT AT MOSCOW/FILI AIRFRAME PLANT NO. 23

January 1955 Through February 1958



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date for the completion of the 65th Bison aircraft was 4 July 1957. Thus the estimate that the 65th Bison aircraft was shop completed by 1 July 1957 appears reasonable.

b. Cumulative Production to 1 January 1958.

The estimate of production of Bison aircraft since 28 July 1957, has been based entirely on observations of the plant.

From these observations, cumulative production of Bison aircraft at Airframe Plant No. 23 as of 1 January 1958 is believed to have been 81 aircraft.

c. Cumulative Production to 1 March 1958.

From 4 December 1957 through February 1958, no more than 1 Bison aircraft was observed at Moscow/Fili Airframe Plant No. 23 at any given time. During January and February, observations were made of a Bison aircraft standing in different positions in the open western doors of the final assembly hangar.

Thus cumulative production of Bison aircraft at Airframe Plant No. 23 as of 1 March 1958 is estimated to be 84 aircraft.

Estimated production of Bison aircraft, by month, is given in Table 1** and is plotted in Figure 1*** for the period from January 1955 through February 1958. The estimated departure dates of these

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** Table 1 follows on p. 3.
*** Following p. 2.

Table 1

Estimated Production of Bison Aircraft by Month at Moscow/Fili Airframe Plant No. 23 in the USSR a/ January 1955 - February 1958

Units

Month	Monthly Production	Cumulative Production
Before 1955		2
1955		
January	3	5
February	3	8
March	3	11
April	4	15
May	0	15
June	0	15
July	0	15
August	1	16
September	1	17
October	2	19
November	2	21
December	2	23
1956		
January	2	25
February	3	28
March	1	29
April	2	31
May	1	32
June	3	35
July	1	36
August	2	38
September	2	40
October	3	43
November	1	44
December	4	48

a. Including the three prototypes.

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Figure 2

USSR: ESTIMATED DEPARTURES OF BISON AIRCRAFT AT MOSCOW/FILI AIRFRAME PLANT NO. 23

December 1955 Through February 1958

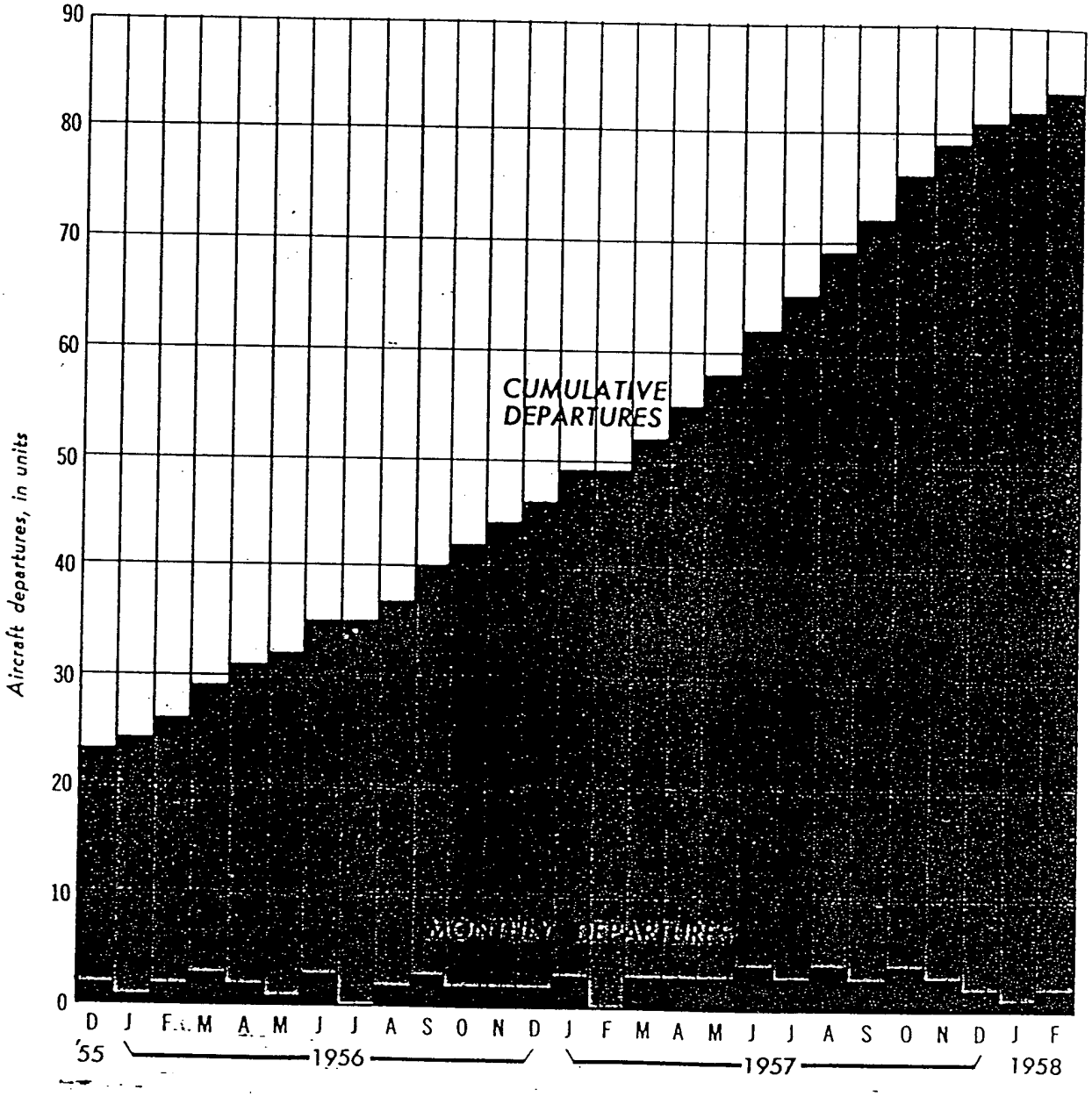

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Table 1

Estimated Production of Bison Aircraft by Month
at Moscow/Fili Airframe Plant No. 23 in the USSR
January 1955 - February 1958
(Continued)

Units

Month	Monthly Production	Cumulative Production
1957		
January	2	50
February	3	53
March	3	56
April	4	60
May	2	62
June	3	65
July	3	68
August	4	72
September	3	75
October	2	77
November	2	79
December	2	81
1958		
January	2	83
February	1	84

2. Number of Shifts.

The above estimate of production of Bison aircraft at Moscow/Fili Airframe Plant No. 23 is not dependent on the number of shifts being worked at the plant, because the estimate has been based or

Table 2

Table 2

observations of the plant. The number of shifts and in turn the number of workers is, however, a reliable parameter for use in estimating production of airframes. An attempt has been made, therefore, to determine the number of shifts being employed by Airframe Plant No. 23.

indicates that at least two shifts were worked from January 1956 through March 1957.

On 10 December 1957 a change of shifts was observed at 1515 hours. The plant appears, therefore, to have been operating with at least one full shift and a partial second shift during the last third of 1957.

During January and February 1958 the plant may have been working only one shift a day, filling in or catching up on work with a skeleton work force on a second shift. Observations at various hours of the day, mostly during January 1958, indicated a probable shift pattern as follows:

Weekdays:	Shift arrives between 0700 and 0730 Shift leaves between 1700 and 1730
Saturdays:	Shift arrives between 0700 and 0730 Shift leaves between 1430 and 1500

If there was a 30-minute lunch period, the plant probably was working a 9-hour shift on weekdays and a 6.5-hour shift on Saturdays. The plant is idle on Sundays.

No full count of a change of shift could be made. The peak flow observed during a 5-minute interval was 800 workers. About 650 workers were observed during a 5-minute interval near the end of the shift change period. About 67 to 70 percent of the workers were male.

Technical officers of the Soviet Air Force were seen entering or leaving the plant three times during January and February.

Moscow/Fili Airframe Plant No. 23 appears to have decreased the effort being expended on production of Bison aircraft. After March 1957

the number of workers being employed on production of Bison aircraft probably began to decrease. The estimate of monthly production of Bison aircraft presented in Table 1* reflects a decline in the size of the direct labor force. If the rate of production of an aircraft is held constant, requirements for direct labor will decline in direct proportion to the learning curve on which the plant is operating. If, however, the rate of application of direct labor declines at a rate greater than that which will offset the increasing productivity of the remaining workers, the rate of production will decrease as it is estimated to have decreased at Airframe Plant No. 23.

3. Number of Final Assembly Positions.

In CIA/RR IP-582 an estimate was made on the basis of two 46-hour shifts per week and an 83-percent learning curve. According to this estimate, with 4 final assembly positions, the peak monthly rate of production of Bison aircraft at Moscow/Fili Airframe Plant No. 23 would be 3 aircraft per month. Four final assembly positions were believed to leave enough floorspace in the final assembly hangar (Building No. 15 in Figure 3) for the assembly of the wings and empennage.

fuselages were seen outside the final assembly hangar on 21 June 1957 and 28 February 1958. The fuselages, therefore, are believed to be assembled in Building No. 45.

On 20 August 1957, unfinished probable wing sections were sighted in the final assembly hangar, thus lending support to the belief that

* P. 3, above.

Figure 3

USSR: LAYOUT OF MOSCOW/FILI AIRFRAME PLANT NO. 23

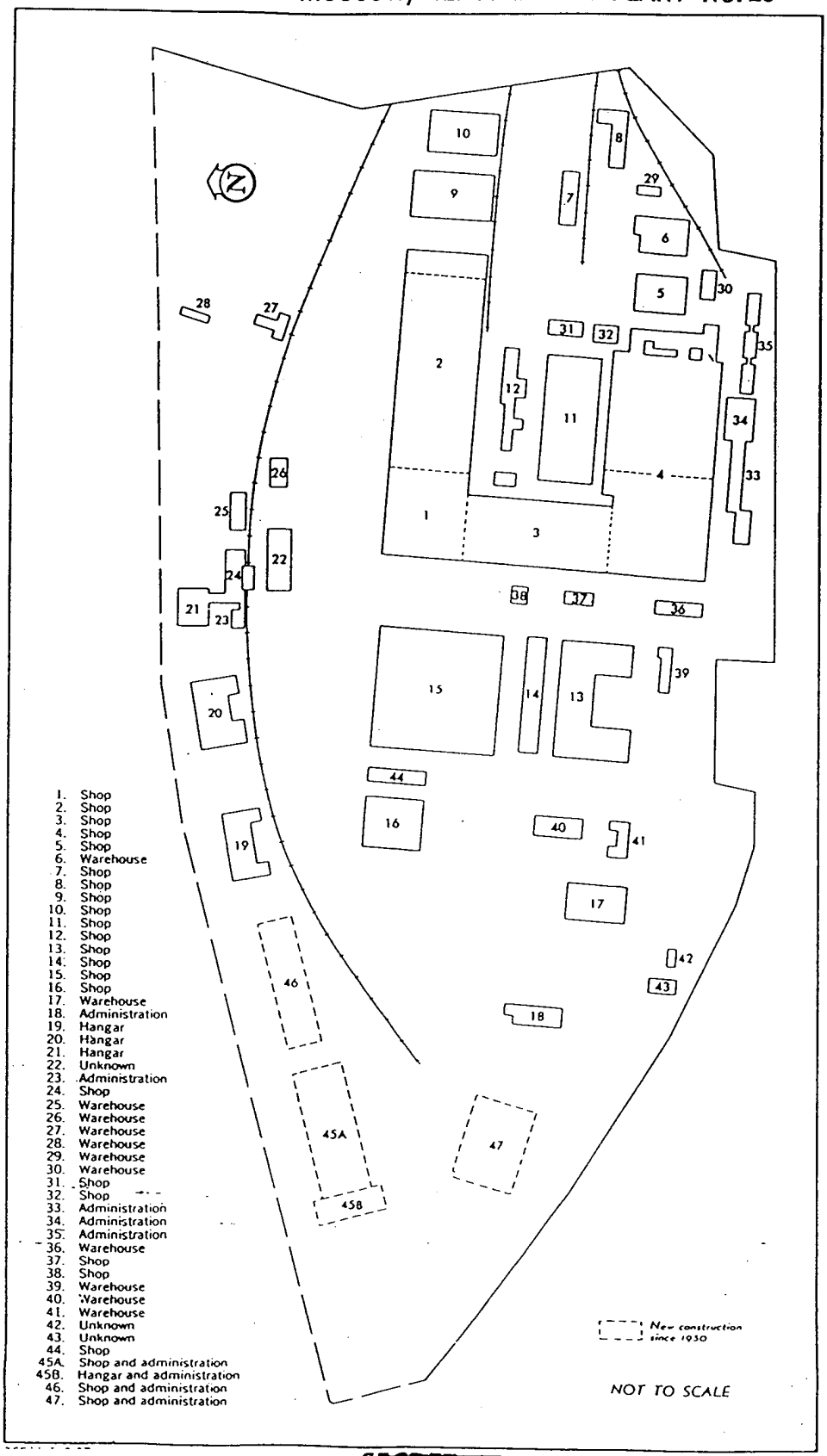

Figure 4

the wings are assembled there. The final assembly hangar can house a maximum of 6 final assembly positions, but the assembly of wings in the final assembly hangar leaves space for only 4 final assembly positions. As was shown in CIA/RR IP-582, 4 final assembly positions at Moscow/Fili Airframe Plant No. 23 can be expected to support peak monthly production of only 3 Bison aircraft.

4. New Construction.

In December 1957 reported the apparent completion of a large new assembly type of building at Moscow/Fili Airframe Plant No. 23 (see Figure 5*).

this construction is not connected with a new building but is a modification of Building No. 3. The height of the building has been increased, and a new roof has been added. Thus the high bay area at Airframe Plant No. 23 has been increased by 153,400 square feet, but the total covered floor area remains constant.

With the increased height, Building No. 3 could be used as a final assembly building. The dimensions of the building are such as to accommodate 4 and possibly 5 Bison final assembly positions. Use of Building No. 3 as a final assembly building would free Building No. 15 for use in postassembly and as a flight hangar in which aircraft could be sheltered from the weather and from observation Building No. 15 originally was used as a flight hangar. Because of its double arch construction, however, Building No. 15 is not believed to have overhead cranes. If Building No. 15 does not have overhead cranes, it is not so well suited for final assembly of large aircraft as is Building No. 3, which, because of its type of construction, easily could accommodate overhead cranes.

5. Conclusions.

Observations of Moscow/Fili Airframe Plant No. 23, during the period of November 1957 through February 1958, reflected a drop in the number of Bison aircraft seen on the field. Compared with the period from March to October 1957, when from 3 to 5 aircraft usually were seen, the largest number observed at any single time in November 1957 was 2, and from December 1957 through February 1958 no more than 1 aircraft was observed at any single time. Possible explanations for the reduced number of aircraft seen are as follows: (a) a cutback in production of Bison aircraft and (b) the onset of winter weather which may have dictated the practice of keeping aircraft under shelter most of the time.

* Following p. 10.

The first explanation is believed to be the more reasonable explanation for the reduced number of aircraft seen at the plant. The monthly rate of production of Bison aircraft, therefore, is estimated to have decreased from 3 to 1 aircraft.

The cumulative production of Bison aircraft at Airframe Plant No. 23 as of 1 March 1958 is estimated to be 84 aircraft.

Possible explanations for the cutback in production of Bison aircraft are as follows: (a) modifications in the Bison may be under way; (b) Airframe Plant No. 23 may be in the process of moving the final assembly operation from Building No. 15 to Building No. 3; and (c) the plant may be phasing the Bison out of production, and tooling may be under way for production of a new aircraft.

Of the three possibilities listed above, the third one is believed to be the most probable. The pattern of the decrease in production of Bison aircraft is more indicative of the phasing out of production of a model than of modifications in a model. The movement of the final assembly operation from one building to another could be accomplished without a marked decrease in production. Furthermore, observations of the plant in February indicated that the final assembly of Bison aircraft still was taking place in Building No. 15.

Figure 5

APPENDIX A

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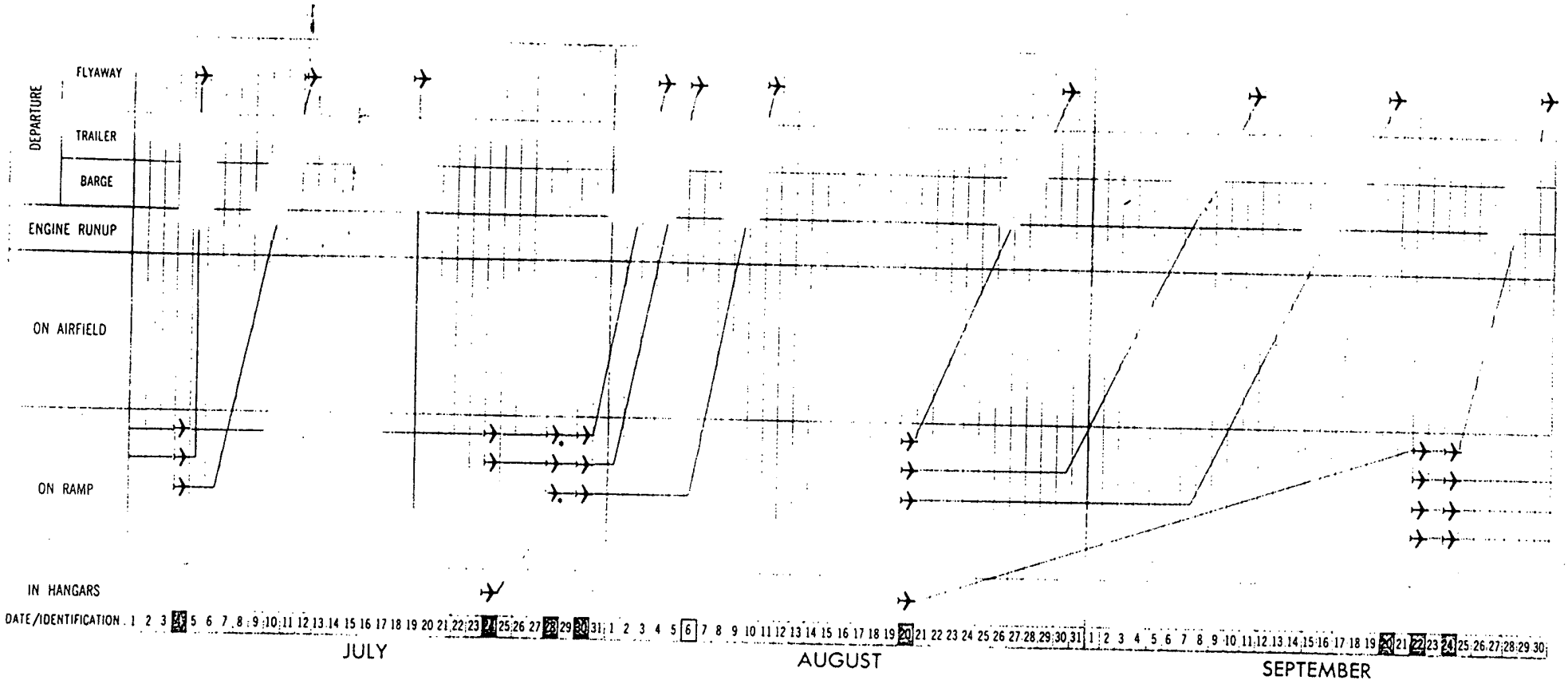
Figure 6

USSR

ACTIVITY OF BISON AIRCRAFT AT MOSCOW/FILI AIRFRAME PLANT NO. 23

JULY, AUGUST, AND SEPTEMBER 1957



DEPARTURE

- Known
- Assumed

IDENTIFICATION

- Visual (complete observation of plant)
- Visual (partial observation of plant)
- Visual (observation from American Embassy)
- Aural

PRODUCTION

	Quarterly	Cumulative Total
Identified	9	58
Assumed	1	17
TOTAL	10	75

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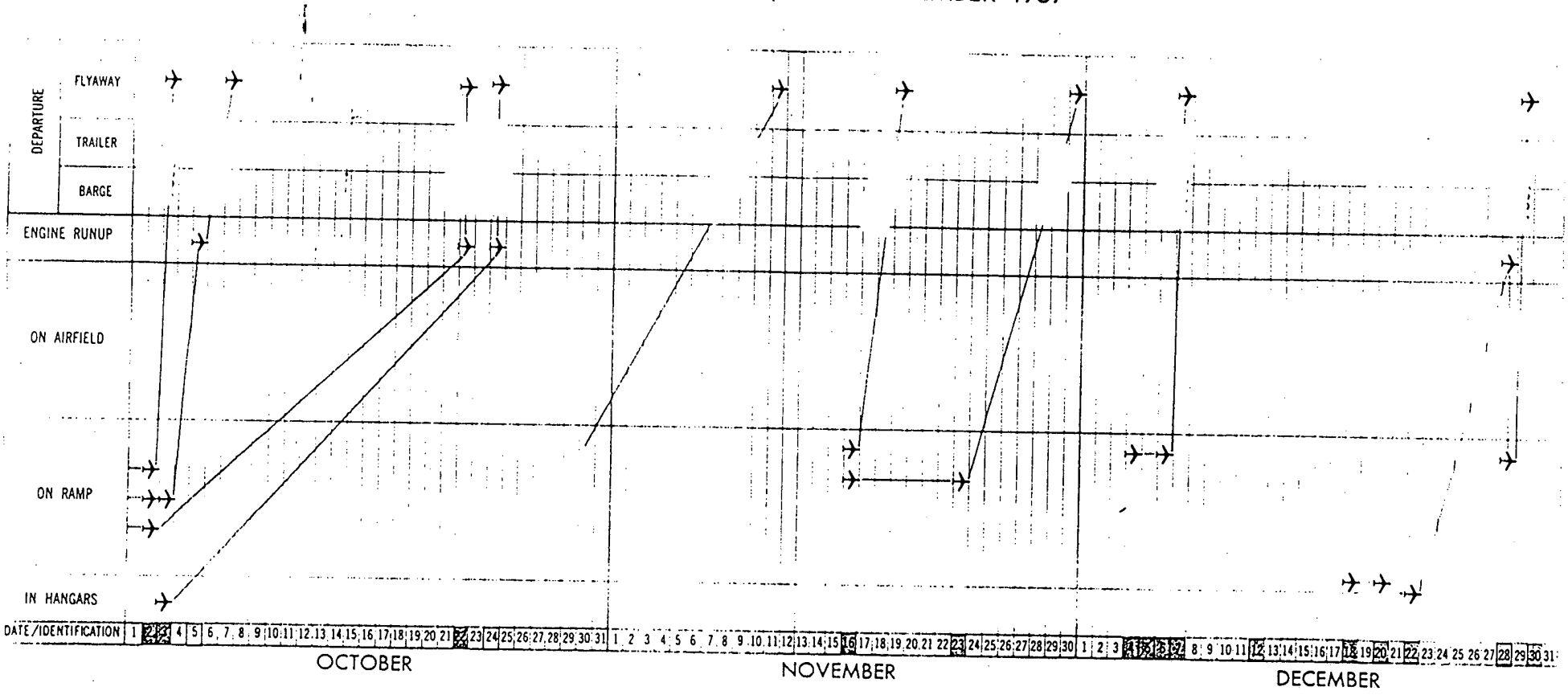
Figure 7

ACTIVITY OF BISON AIRCRAFT
AT MOSCOW/FILI AIRFRAME PLANT NO. 23
OCTOBER, NOVEMBER, AND DECEMBER 1957



DEPARTURE
- Known
- Assumed

IDENTIFICATION
- Visual (complete observation of plant)
- Visual (partial observation of plant)
- Visual (observation from American Embassy)
- Aural

PRODUCTION

	Quarterly	Cumulative Total
Identified	5	63
Assumed	1	18
TOTAL	6	81

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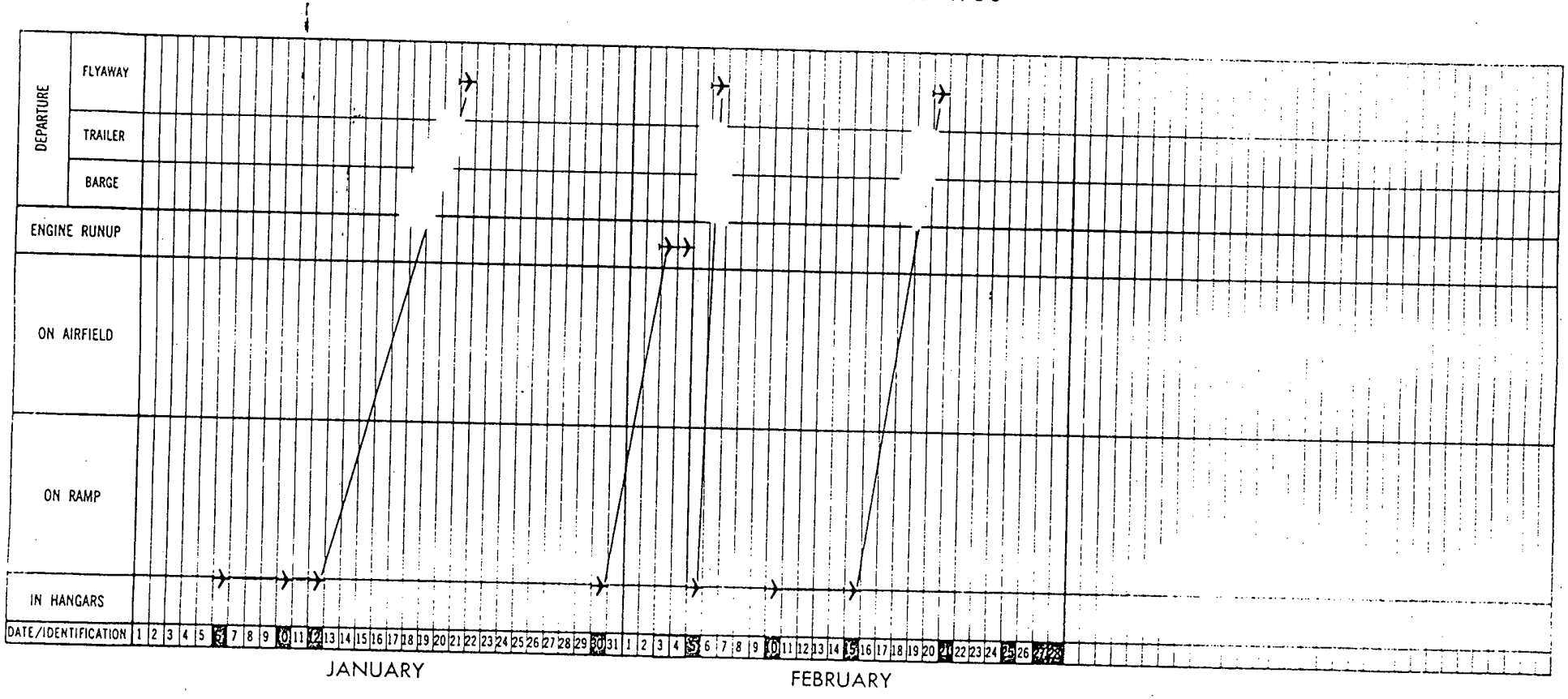
Figure 8

USSR

ACTIVITY OF BISON AIRCRAFT AT MOSCOW/FILI AIRFRAME PLANT NO. 23

JANUARY AND FEBRUARY 1958



DEPARTURE

- Known
- Assumed

IDENTIFICATION

- Visual (complete observation of plant)
- Visual (partial observation of plant)
- Visual (observation from American Embassy)
- Aural

PRODUCTION

	Quarterly	Cumulative Total
Identified		
Assumed		
TOTAL		

~~SECRET~~

APPENDIX C

APPENDIX D