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No 68

RESEARCH AID

ESTIMATED FLOORSPACE OF MOSCOW AIRFRAME PLANT NO. 30

CIA/RR RA-16
22 August 1957

CENTRAL INTELLIGENCE AGENCY

OFFICE OF RESEARCH AND REPORTS

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(ORR Project 33.1720)

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FOREWORD

This research aid, one of a series evaluating current floorspace of Soviet airframe plants of the Ministry of the Aviation Industry (Ministerstvo Aviatsionnoy Promyshlennosti -- MAP), is based on metrical analysis* of World War II German photography. Supplementary intelligence data also have been used in an attempt to ascertain the composition and functions of the individual plant buildings. An effort has been made to determine the areas of the plant which are multistory, and the latest information on new construction has been included. This research aid will be reviewed and reissued periodically to include new intelligence information as available.

* Determination of measurements by the use of aerial photographs.

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Appendixes

Illustrations

ESTIMATED FLOORSPACE OF MOSCOW AIRFRAME PLANT NO. 30*

Summary

Moscow Airframe Plant No. 30 in the USSR contains about 1.6 million square feet (sq ft) of floorspace.** The plant has a final assembly area of approximately 150,000 sq ft, or 9 percent*** of the total floorspace. The administration area reportedly comprises about 150,000 sq ft. Available reports have identified as warehouse area**** approximately 130,000 sq ft, or 8 percent of the total floorspace. It is estimated that the plant contains 310,000 sq ft of multistory area, accounting for 19 percent of the total floorspace.

Moscow Airframe Plant No. 30 encompasses some 3.3 million sq ft. With a total roof area estimated to be 1.3 million sq ft, the plant has a building density/ of approximately 39 percent.

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* Based on aerial photography. (See Figure 2, following p. 2.) 1/ (For serially numbered source references, see Appendix D.) The estimates and conclusions contained in this research aid represent the best judgment of ORR as of 1 June 1957.

** All figures dealing with square footage which are used in the text of this research aid are rounded to two significant digits.

*** All percentages are computed with actual figures.

**** The term warehouse is applied to those buildings or areas within the plant which have the primary functions of receiving materials from external sources and of holding these materials in bulk quantities for subsequent distribution to the processing points in the plant.

The term storage areas is applied to those buildings or areas, usually parts of buildings which have primary functions other than storage, in which materials are stored or maintained for the direct support of production or service activities. These areas normally are located adjacent to the activities which they support, and they receive their stores from plant warehouses.

/ The term building density represents the proportion of the total roof area of an airframe plant to the total plant site, expressed as a percentage.

1. Location.

Moscow Airframe Plant No. 30 (55°47' N - 37°33' E) is located in Moscow, USSR, on Leningrad Shosse near the Belorusskiy Railroad Station and adjacent to Moscow Central Airfield.

2. History.

Moscow Airframe Plant No. 30 is one of the oldest aircraft installations in the USSR. The plant reportedly was built in 1916 and later was designated Airframe Plant No. 1. The plant facilities were expanded between 1925 and 1937.

In 1941, although most of the machinery of Airframe Plant No. 1 was evacuated to Kuybyshev, about 20 percent was left behind for airframe repair. The Kuybyshev site has retained the designation Airframe Plant No. 1. In 1942 the Moscow installation received machinery from various airframe plants in the USSR and possibly from the US. After its reequipment the Moscow site received the designation Moscow Airframe Plant No. 30, which it has retained.

3. Description.

The boundaries of Moscow Airframe Plant No. 30 enclose an irregularly shaped site of about 3.3 million sq ft, and the axis of the main plant area is oriented in a northeast-southwest direction (see Figures 1 and 4*). Moscow Central Airfield is adjacent to the north and northwest borders of the plant site and serves as the plant airfield. Moscow Airframe Plant No. 381 adjoins the plant area on the northeast.

Analysis of World War II German photography (see Figures 2 and 3*) shows a total roof area of approximately 1.3 million sq ft. This analysis and other available information have indicated that the multistory area contains 310,000 sq ft, or 19 percent of the total floorspace.

The only post-World War II construction reported is the probable existence of a newly constructed building, Building No. 35 (see Figure 1*), of minor proportions in the southwest section of the plant area. 2/ This two-story building is estimated to have added only an additional 6,000 sq ft of floorspace.**

* Following p. 2.
** See Appendix A.

Figure 1

USSR: MOSCOW AIRFRAME PLANT NO. 30

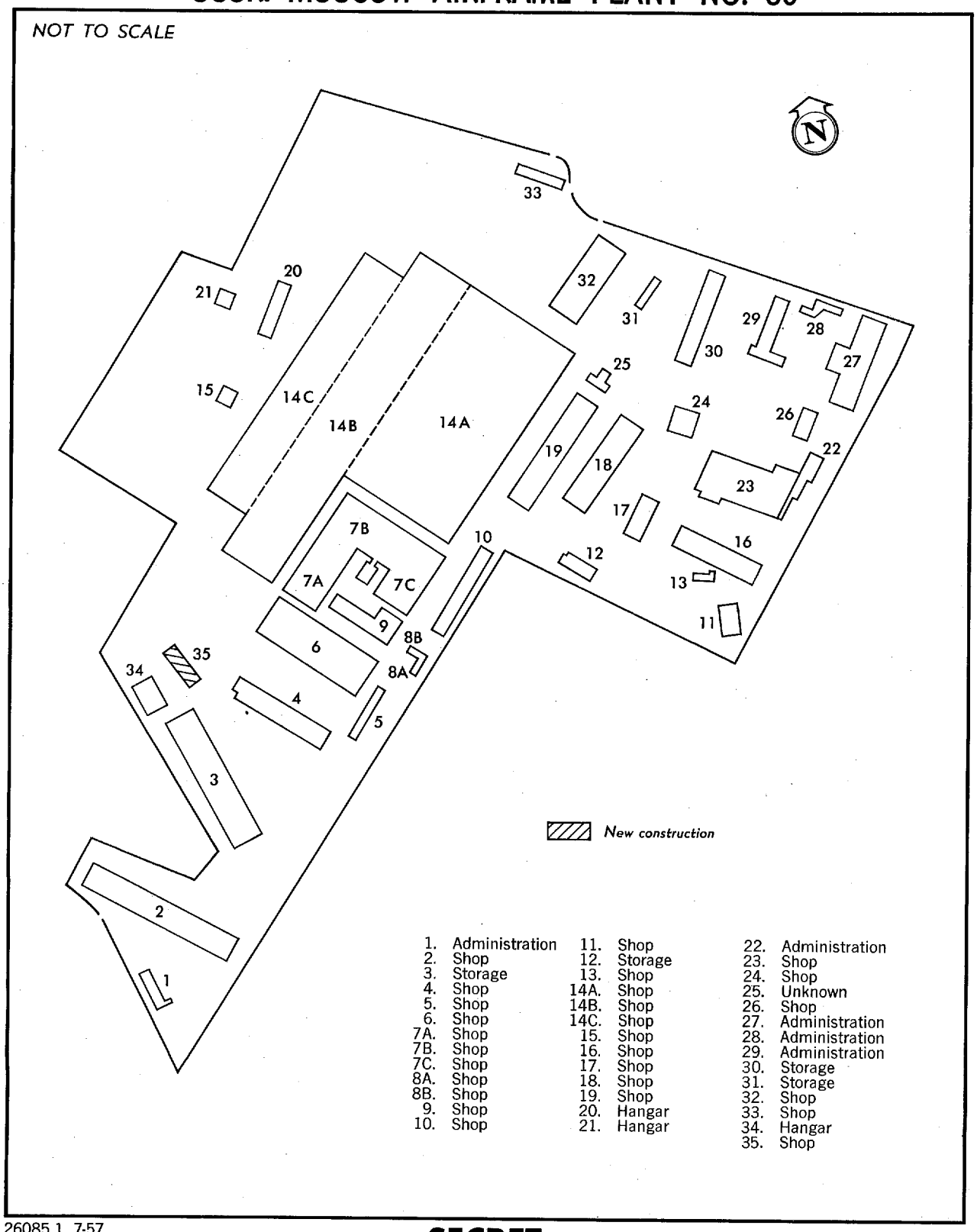

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Figure 2

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USSR: VERTICAL PHOTOGRAPH OF MOSCOW AIRFRAME PLANT NO. 30

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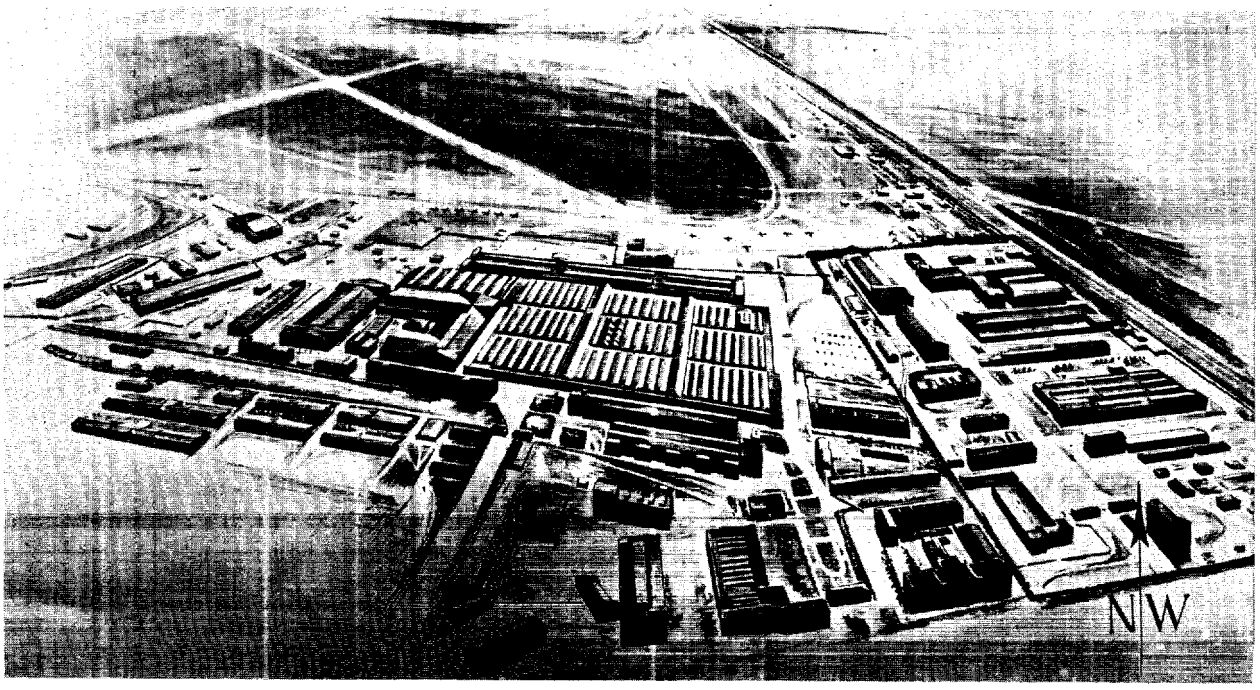
Figure 3

USSR: OBLIQUE PHOTOGRAPH
OF MOSCOW AIRFRAME PLANT NO. 30

Figure 4

USSR: SKETCH OF MOSCOW AIRFRAME PLANT NO. 30



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Moscow Airframe Plant No. 30 currently is estimated to contain a total of 1.6 million sq ft of floorspace. Of this amount, 150,000 sq ft are believed to be administration area and 130,000 sq ft, or 8 percent of the total floorspace, warehouse area.

Expansion of the plant within present boundaries would be seriously hampered by existing structures and by a building density that currently is estimated to be 39 percent. Significant expansion could be practicably directed only onto the adjacent airfield. Available information does not indicate that such expansion is being considered.

The main buildings of Moscow Airframe Plant No. 30 are of steel frame and brick construction. The predominant roof type is of monitor design (see Figure 5*).

The plant is serviced by a branch rail line from the Moscow Circular Railroad and by good road and tram facilities.

4. Final Assembly.

The final assembly area of Moscow Airframe Plant No. 30 reportedly is contained in Building 14 C (see Figure 1**). This building is 955 ft long by 155 ft wide, with 150,000 sq ft of floorspace. This floorspace represents about 9 percent of the total floorspace. The height of Building 14 C is estimated to be 40 ft, and it has a monitor roof. It is reported that the final assembly section contains two assembly lines.

5. New Construction.

Available reports have indicated no post-World War II construction of significant proportions at Moscow Airframe Plant No. 30. In 1955 a reliable source reported a newly constructed two-story workshop, Building No. 35 (see Figure 1**), in the southwest section of the main plant area. 3/ The part of the building that was observed was estimated to be 75 ft long. Pending receipt of additional information, the dimensions of Building No. 35 are estimated to be 75 ft long by 40 ft wide.

* Following p. 6.
** Following p. 2.

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APPENDIX A

COMPOSITION OF FLOORSPACE OF MOSCOW AIRFRAME PLANT NO. 30 a/*

Building Number	Type of Building	Type of Roof	Height (Feet)	Stories	Function	Dimensions (Feet)	Area (Square Feet) Total Roof	New Construction	Multi-story	Warehouse	Administration	Total Floorspace
1	Administration	Gable	15	1	Guardhouse b/	80 x 70 70 x 50	9,100				9,100	9,100
2	Shop	Monitor	15	1	Shop c/	520 x 80	41,600					41,600
3	Storage	Gable	20	2 d/	Storage c/	470 x 105	49,350		49,350	98,700		98,700
4	Shop	Flat	20	1	Shop	345 x 50 155 x 25	21,125					21,125
5	Shop	Gable	34	2 d/	Shop	190 x 30	5,700		5,700			11,400
6	Shop	Gable	30	1	Shop	400 x 110	44,000					44,000
7	A Shop	Gable	15	1	Shop	240 x 130	86,400					86,400
	B Shop	Gable	15	1	Shop	370 x 120						
	C Shop	Gable	15	1	Shop	90 x 120						
8	A Shop	Gable	17	1	Shop	125 x 50	7,475					7,475
	B Shop	Gable	17	1	Shop	35 x 35						
9	Shop	Gable	24	1	Shop	210 x 75	15,750					15,750
10	Shop	Gable	54	4 d/	Shop	330 x 50	16,500		49,500			66,000
11	Shop	Monitor	18	1	Shop	100 x 55	5,500					5,500
12	Storage	Gable	20	1	Storage	100 x 50	5,000			5,000		5,000
13	Shop	Gable and flat	16	1	Shop	90 x 30	2,700					2,700
14	A Shop	Sawtooth and saddle back	25	1	Workshop and subassembly e/	750 x 420	315,000					315,000
	B Shop	Monitor	25	1	Fuselage and wing assembly e/	1,185 x 190	225,150					225,150
	C Shop	Monitor	40	1	Final assembly e/	955 x 155	148,025					148,025
15	Shop	Flat	16	1	Shop	45 x 30	1,350					1,350
16	Shop	Monitor	62	2 d/	Shop	295 x 80	23,600		23,600			47,200
17	Shop	Flat	30	2 d/	Sheet metal shop c/	140 x 70	9,800		1,000			10,800
18	Shop	Gable	30	2 d/	Heat treatment shop c/	400 x 105	42,000		4,200			46,200
19	Shop	Gable	30	2 d/	Shop	415 x 70	29,050		29,050			58,100
20	Hangar	Arched	40	1	Hangar	200 x 35	7,000					7,000
21	Hangar	Arched	20	1	Hangar	50 x 60	3,000					3,000
22	Administration	Gable	58 f/	3 d/	Administration	120 x 50 80 x 70 70 x 35	14,050		28,100		42,150	42,150
23	Shop	Monitor	30	1	Shop	295 x 140 85 x 35	44,275					44,275
24	Shop	Gable	15	1	Shop	80 x 50	4,000					4,000
25	Unknown	Gable	17	1	Unknown	N.A.	3,600					3,600
26	Shop	Gable	20	1	Shop	75 x 30	2,250					2,250

* Footnotes for Appendix A follow on p. 6.

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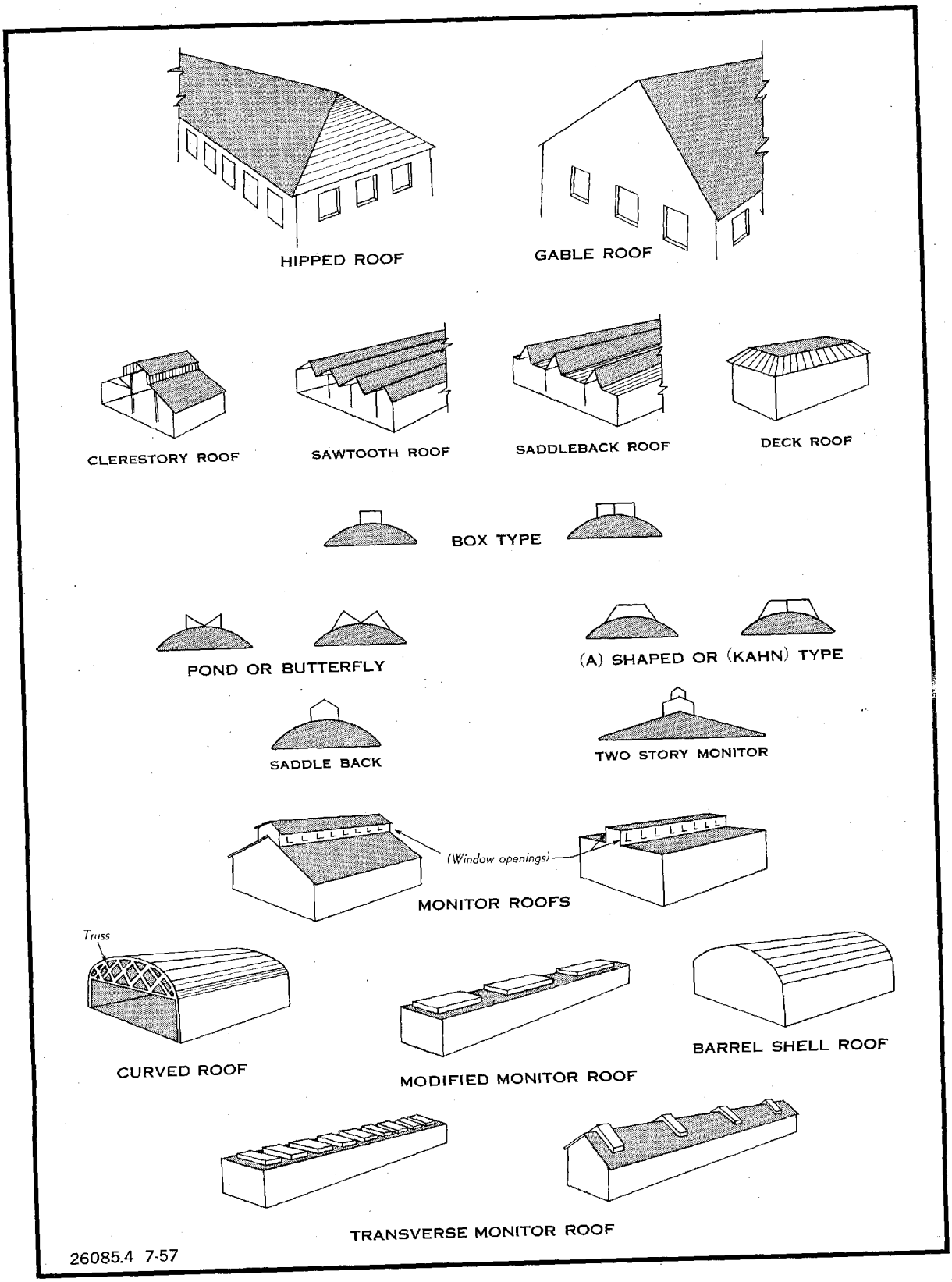
Building Number	Type of Building	Type of Roof	Height (Feet)	Stories	Function	Dimensions (Feet)	Area (Square Feet) Total Roof	New Construction	Multi-story	Warehouse	Admin-istration	Total Floorspace
27	Administration	Flat	62	3 d/	Administration g/	245 x 70 90 x 45	21,200		42,400		63,000	63,600
28	Administration	Flat	18	1	Administration g/	N.A.	5,770				5,770	5,770
29	Administration	Hipped	30	2 d/	Administration g/	225 x 50 50 x 35	13,000		13,000		26,000	26,000
30	Storage	Gable	15	1	Warehouse	315 x 80	25,200			25,200		25,200
31	Storage	Gable	11	1	Warehouse	110 x 35	3,850			3,850		3,850
32	Shop	Monitor	62	3 d/	Shop g/	280 x 105	29,400		58,800			88,200
33	Shop	Gable	24	1	Shop	110 x 30	3,300					3,300
34	Hangar	Arched	20	1	Hangar	105 x 80	8,400					8,400
					Estimated 1950 totals		1,292,470		304,700	132,750	146,620	1,597,170
35	Shop			2 d/ h/	Workshop	75 x 40	3,000	6,000	3,000			6,000
					Estimated 1957 totals		1,295,470	6,000	307,700	132,750	146,620	1,603,170
					Estimated 1957 rounded totals		1,300,000	6,000	310,000	130,000	150,000	1,600,000

a. Heights, dimensions, and total roof area are taken from source 4/, except where changed according to the best judgment of the analyst.
b. 5/
c. 6/
d. Estimates of multistory area are obtained from Figure 3 (following p. 2).
e. 7/
f. At peak.
g. 8/
h. 9/

TYPES OF ROOFS

Figure 5



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APPENDIX B

METHODOLOGY

On the basis of available intelligence an effort was made to determine the function of each building in Moscow Airframe Plant No. 30, to identify multistory plant areas, and to account for new plant construction. All buildings within the plant site, except sheds with areas less than 1,000 sq ft, are listed in Appendix A.*

German vertical photographs of 1943 were used to determine the roof area and the physical layout of the plant. Metrical analysis of this photography provided an estimate of the total roof area of the plant. In the computation of this total, no allowance could be made for multistory buildings. To compensate for this factor, intelligence information, consisting chiefly of prisoner-of-war interrogations, was used. Although this category of information is often considered unreliable, plausible data from this source were used to determine the functions of the plant buildings and, in some cases, to account for multistory areas. Whenever building functions were unknown, the best judgment of the analyst was used to provide an estimate.

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There is no reported evidence of multistory areas within the new construction.

* P. 5, above.

APPENDIX C

GAPS IN INTELLIGENCE

The accuracy of the estimates of the floorspace of Moscow Airframe Plant No. 30 is greatly impaired because of a paucity of information. German vertical photographs of 1943 are available, however, and from these photographs the roof area and the physical layout of the plant as it was in 1943 can be computed. Lack of current vertical photography precludes further study of the plant by this means.

Helpful information was obtained from interrogations of German prisoner-of-war returnees. Unfortunately, these returnees generally were restricted to the warehouse areas of the plant, and reports of their observations of the remainder of the plant area are vague and incomplete.

Information pertaining to multistory areas within the plant is virtually nonexistent. Because estimates of floorspace in multistory areas greatly affects the estimate of total floorspace, acquisition of this information is of prime importance. Oblique ground photography aids in the determination of multistory areas, although the lack of both oblique and vertical photographs taken since World War II hinders analysis of post-World War II construction.

Details of the final assembly area and reliable information concerning the composition of other essential buildings likewise are not available.

APPENDIX D

SOURCE REFERENCES

Evaluations, following the classification entry and designated "Eval.," have the following significance:

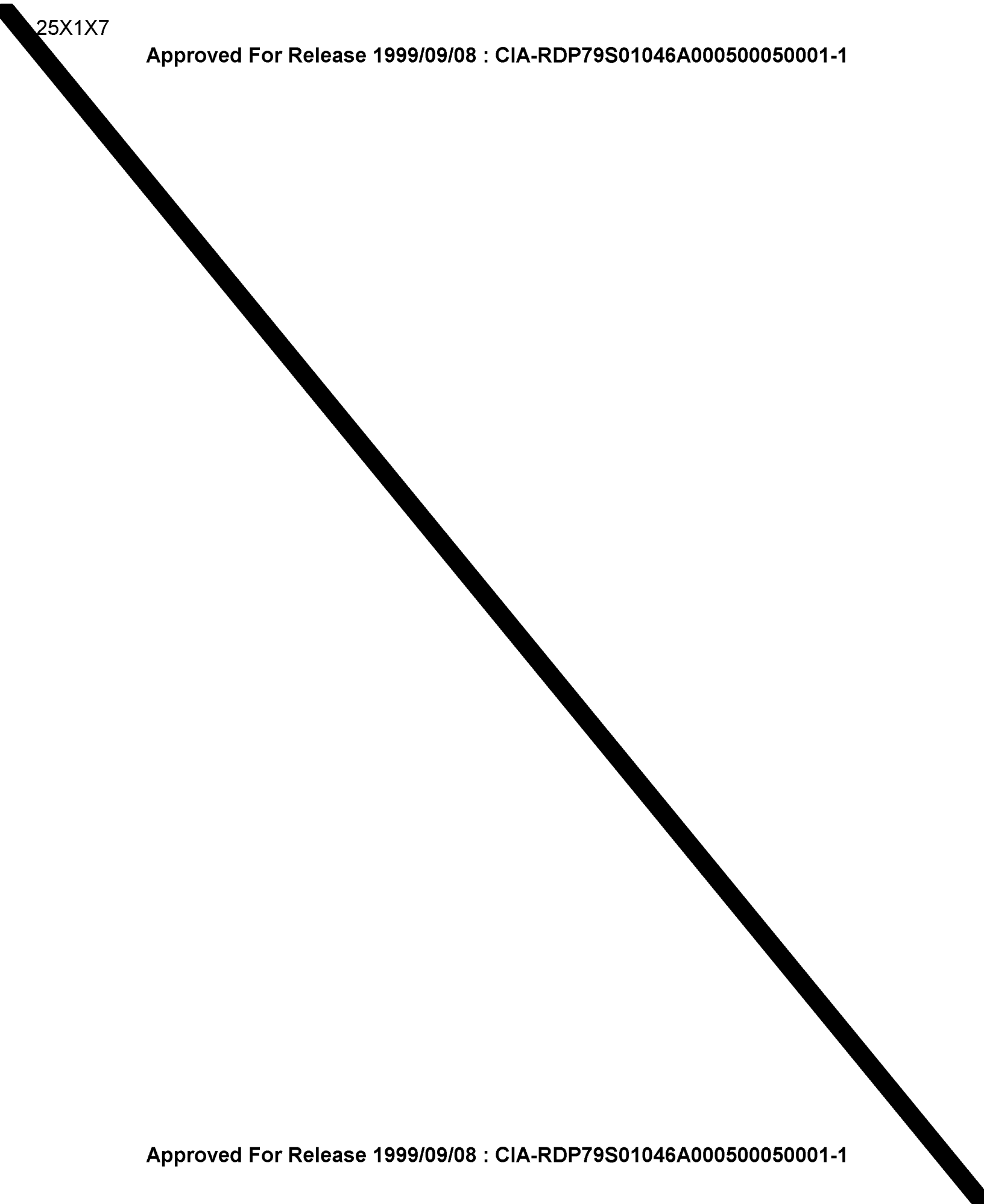
Source of Information	Information
Doc. - Documentary	1 - Confirmed by other sources
A - Completely reliable	2 - Probably true
B - Usually reliable	3 - Possibly true
C - Fairly reliable	4 - Doubtful
D - Not usually reliable	5 - Probably false
E - Not reliable	6 - Cannot be judged
F - Cannot be judged	

"Documentary" refers to original documents of foreign governments and organizations; copies or translations of such documents by a staff officer; or information extracted from such documents by a staff officer, all of which may carry the field evaluation "Documentary."

Evaluations not otherwise designated are those appearing on the cited document; those designated "RR" are by the author of this report. No "RR" evaluation is given when the author agrees with the evaluation on the cited document.

FOIAb3d

1. [redacted]
2. [redacted]
3. Ibid.
4. CIA. GP/I 193, Moscow Airframe Plant No. 30, 26 Jun 56, photography: GX 4319, prints 120-121, scale 1: 17,300. S.



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