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RESEARCH AID

ESTIMATED FLOORSPACE
OF KAZAN' AIRFRAME PLANT NO. 22



CIA/RR RA-21

12 November 1957

CENTRAL INTELLIGENCE AGENCY

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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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ESTIMATED FLOORSPACE OF KAZAN' AIRFRAME PLANT NO. 22*

Summary

Kazan' Airframe Plant No. 22 in the USSR is now located on the site originally occupied by Airframe Plant No. 124, and until late 1941 it was located in Moscow on the site presently occupied by Moscow/Fili Airframe Plant No. 23. After Plant No. 22 was evacuated to the Kazan' site, it was merged with Plant No. 124 but retained the designation Airframe Plant No. 22. This plant currently has a minimum of 3.3 million square feet (sq ft) of floorspace** and a final assembly area of approximately 520,000 sq ft, or 16 percent*** of the total floorspace. The administration area of the plant comprises about 200,000 sq ft, or 6 percent of the total floorspace. It is estimated that the plant has 180,000 sq ft of warehouse area,**** approximately 5 percent of the total floorspace. There are no reported basement areas within the plant. Analysis of current ground photography reveals 160,000 sq ft of multistory area, approximately 5 percent of the total floorspace. New construction estimated

* Based on aerial photography. (See Figure 1, 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 15 September 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.

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at 500,000 sq ft has been reported by reliable observers. The overall area of the plant is estimated to be 6 million sq ft with a building density* of about 55 percent.

1. Location.

Kazan' Airframe Plant No. 22 (55°52' N - 49°08' E) is located in the USSR in the northeast suburbs of Kazan' immediately adjacent to Kazan' North Airfield. The plant is approximately 5.5 nautical miles northeast of the confluence of the Volga and Kazanka Rivers.

2. History.

Kazan' Airframe Plant No. 22 originally was established in Moscow on the present site of Moscow/Fili Airframe Plant No. 23. In late 1941, during the evacuation of Moscow, the plant was moved to its present location and combined with Airframe Plant No. 124, which reportedly had existed since the early 1930's at Kazan' North Airfield. The combined plants received the designation Airframe Plant No. 22, which has been retained to the present time.

3. Description.

The plant site of Kazan' Airframe Plant No. 22 is rectangularly shaped and occupies an area of approximately 6 million sq ft. The longer axis of the site is oriented in a northeast-southwest direction (see Figures 1 and 2**).

Analysis of World War II German photography (see Figure 1) dated July 1942 reveals a total estimated roof area of approximately 1.8 million sq ft. Available information indicates that as of July 1942 there were, in addition, a minimum of 200,000 sq ft of multistory area enclosed within the plant. The total floorspace of the plant at the end of World War II, therefore, is estimated to have been approximately 2 million sq ft.***

* 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.

** Following p. 2.

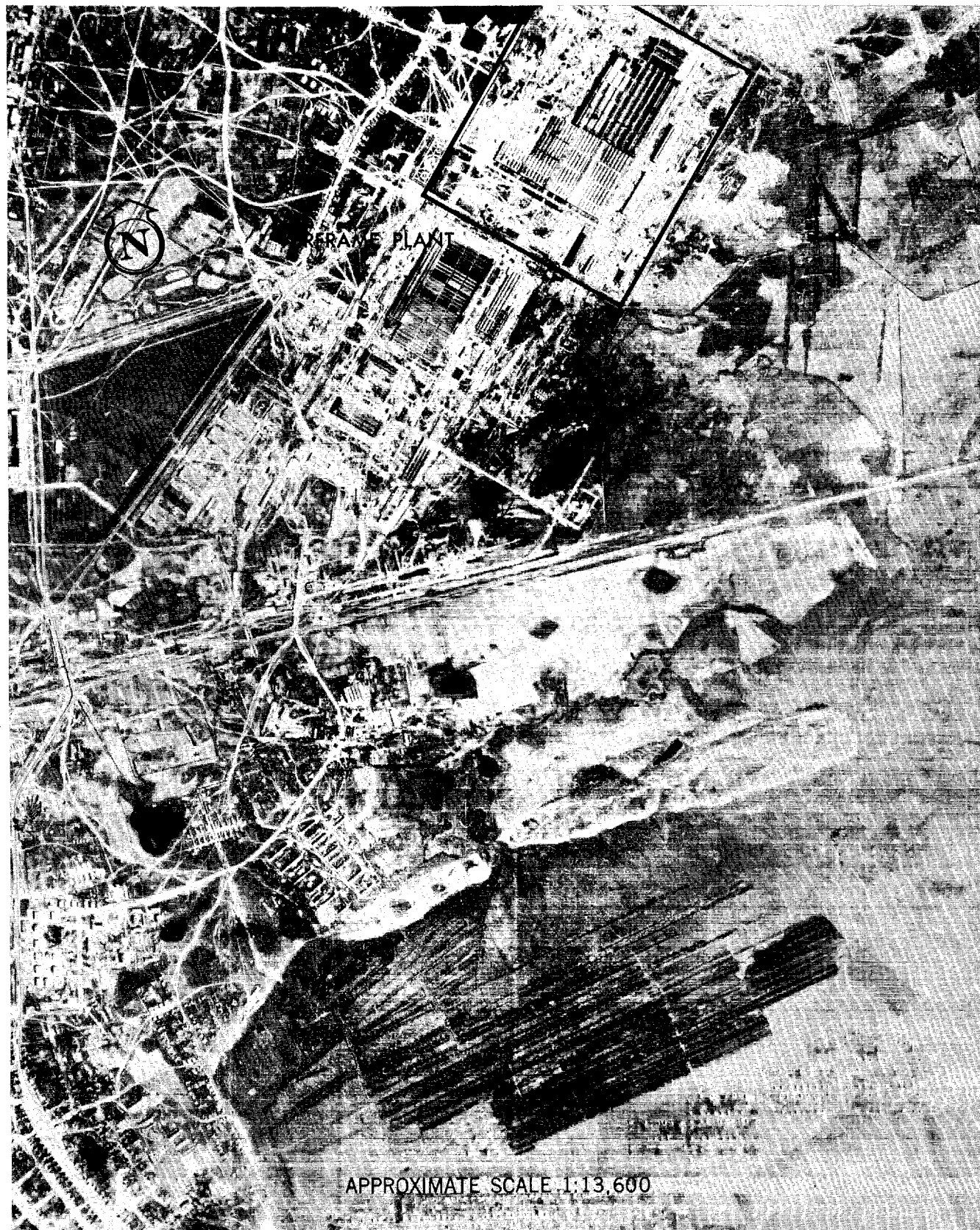
*** See Appendix A.

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Approved For Release 1999/09/08 : CIA-RDP79S01046A000500100001-5 Figure 1

USSR: VERTICAL PHOTOGRAPH OF KAZAN' AIRFRAME PLANT NO. 22



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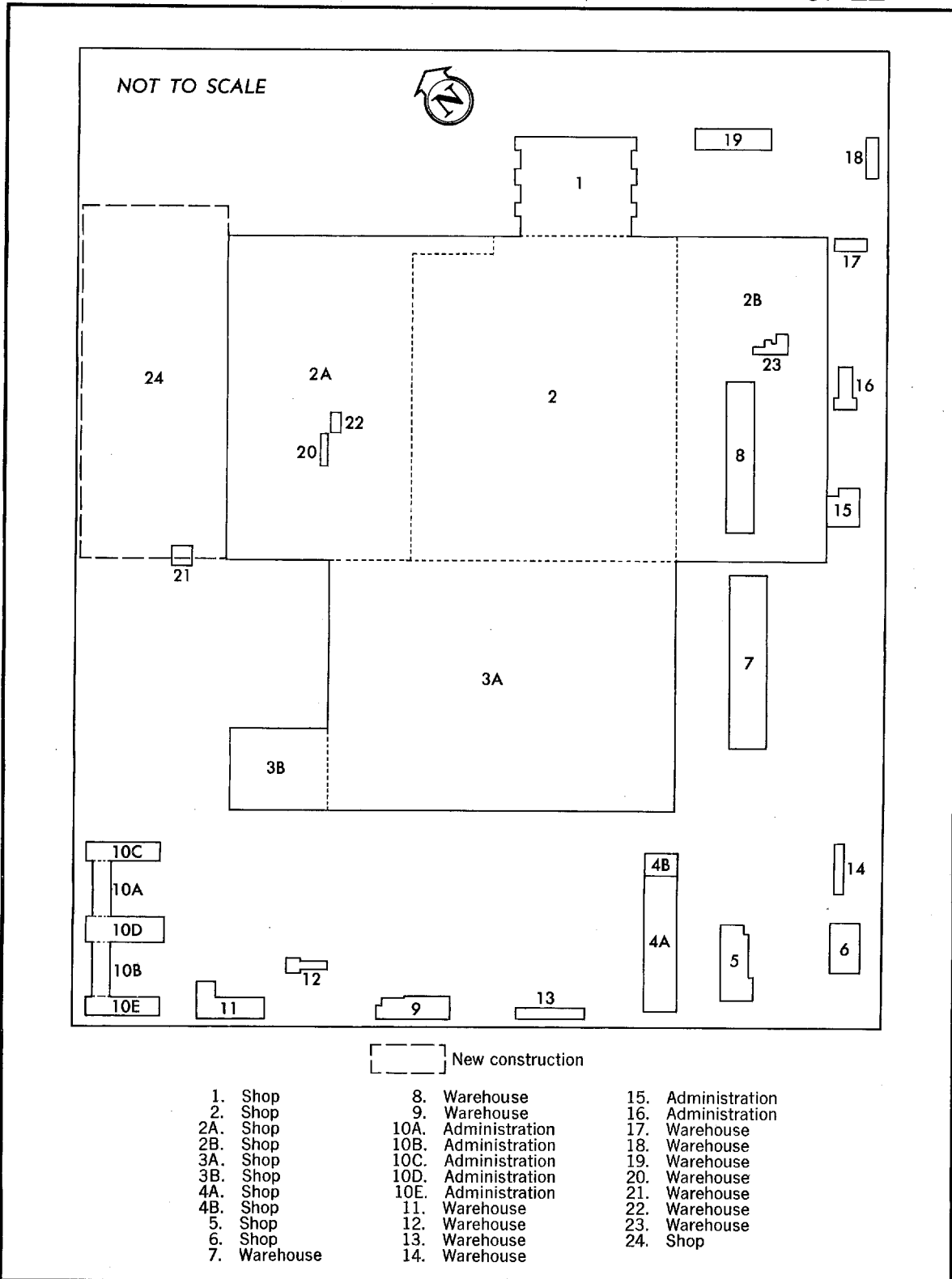
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Figure 2

USSR: LAYOUT OF KAZAN' AIRFRAME PLANT NO. 22



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An aerial sighting in January 1951 by a reliable observer revealed a major expansion of Building No. 2.* 2/ It is estimated that approximately 900,000 sq ft of floorspace were added by this expansion. The extent of this expansion required the removal of Buildings Nos. 8, 15, 16, 17, 20, 21, 22, and 23, which had a total floorspace of 94,000 sq ft. In computing 1950 floorspace totals, the floorspace of these eight buildings was subtracted from the 1942 totals and the floorspace of Buildings Nos. 2A and 2B was added to the result.** This computation resulted in a 1950 floorspace total of approximately 2.8 million sq ft.**

In 1953 the first reports were received of the construction of a new, large building, Building No. 24, in the northwest section of the plant site (see 5, below). 3/ Progress in construction of this building was reported several times during 1954-56. 4/ Completion of construction was reported in 1956, 5/ and it is estimated that at that time 500,000 sq ft of floorspace were added. The plant includes approximately 200,000 sq ft of administration area, or 6 percent of the total floorspace, and 160,000 sq ft of multistory area and 180,000 sq ft of warehouse area, each constituting approximately 5 percent of the total floorspace. The current total roof area at Airframe Plant No. 22, therefore, is estimated to be 3.2 million sq ft and the total floorspace to be 3.3 million sq ft. With a plant site of approximately 6 million sq ft, the plant has a building density of 55 percent.

The layout of Airframe Plant No. 22 deserves special attention. It is unique among Soviet airframe plants in that most of the major functions of the plant are contained under one roof. Also, the layout of the plant is modern even by Western standards. In several important respects (size, layout, and type of construction) the plant is quite similar to US aircraft plants.

Almost unlimited expansion of Airframe Plant No. 22 could be effected on the east and north sides of the plant site. Several reports have been received which indicate that a plant buildup of undetermined proportions has been accomplished on the airfield northeast of the plant site as depicted in Figure 1.***

* Building numbers refer to the designations in Figure 2, following p. 2, above.

** See Appendix A.

*** Following p. 2, above.

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The buildings of Airframe Plant No. 22 are constructed of steel frame and reinforced concrete with some brick or stone. The plant is served by several good roads, by a railroad spur of the Moscow-Kazan'-Sverdlovsk Railroad, and by two Kazan' tram lines. Kazan' North Airfield serves as a flyaway field for the plant.

4. Final Assembly Area.

The final assembly area of Kazan' Airframe Plant No. 22 cannot be accurately identified from available information. It is estimated that during World War II approximately two-fifths of the floorspace of Building No. 2, or 260,000 sq ft, was utilized as a final assembly area. ^{6/} Since the expansion of this building, first reported in 1951, ^{7/} it is believed that a final assembly area in the same position as it appeared to be during World War II would result in an interrupted and inefficient assembly flow pattern. It is therefore estimated that the final assembly area has been relocated, possibly to the western section of Building No. 2A. This section contains approximately 520,000 sq ft, or 16 percent of the total floorspace.

Building No. 24, constructed between 1953 and 1956, has adequate dimensions (estimated at 1,000 ft by 500 ft by 175 ft ^{8/}) for a final assembly area at Airframe Plant No. 22, and its proximity to Building No. 2A invites this conclusion. Supporting evidence for such a conclusion, however, cannot be gained from available intelligence, and until such evidence becomes available, it is considered that Building No. 24 is being utilized in an undetermined function, possibly related to postassembly.

5. New Construction.

For the purposes of this research aid, construction before 1950 is considered to be rehabilitation of World War II facilities. Construction after 1950 is considered to be expansion of World War II facilities and therefore "new construction." For this reason, Buildings Nos. 2A and 2B of Kazan' Airframe Plant No. 22, although constructed after World War II, are not considered to be "new construction."

An observation in November 1953 by a reliable source revealed substantial progress in the construction of a large, new building (No. 24) in the northwest section of Airframe Plant No. 22 (see Figure 2*). The source reported the building to be of "six-sectioned, heavy steel

* Following p. 2, above.

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girder construction about 100 ft in height and 180 to 200 yards in length." In May 1954, another reliable source reported continuing construction on this building, with a seventh section of the structure added. 10/ In November 1955 a third reliable source reported on the advances in the construction of the building, there being 10 sections to the building by this date. 11/ In May 1956 a fourth reliable source reported the completion of the building and estimated its dimensions to be 1,000 ft in length, 500 ft in width, and 175 ft in height. 12/ These dimensions have been accepted in this research aid.

Because of a conflict in reports of the location of Building No. 24, its exact location cannot be determined. An estimate of its location is shown in Figure 2.* The function in which this building is being utilized cannot be determined from available intelligence.

* Following p. 2, above.

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APPENDIX A

COMPOSITION OF THE FLOORSPACE OF KAZAN' AIRFRAME PLANT NO. 22 a/*

* Footnotes for this appendix follow on p. 9.

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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 Kazan' Airframe Plant No. 22, 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 1942 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 functions of buildings were unknown, the best judgment of the analyst was used to provide an estimate. Estimates of new construction are based on observations [REDACTED] There is no reported evidence of multistory areas within the new construction.

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* P. 7, above.

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APPENDIX C

GAPS IN INTELLIGENCE

The accuracy of the estimates of the floorspace of Kazan' Airframe Plant No. 22 is impaired because of a paucity of information. German vertical photographs of 1942 are available, however, and from these photographs the roof area as it was in 1942 can be computed. An aerial sighting of the plant in 1951 by a reliable observer aided significantly in identifying a major addition to the floorspace of the main plant building. The report of this observer was used to refute information related to post-World War II construction reported by several prisoners of war.

Since the 1951 aerial sighting, no other similar observations have been reported by Western observers, and a lack of current vertical photography precludes further study of the plant by this means.

Information provided by interrogations of German prisoner-of-war returnees generally is fragmentary or conflicting with more reliable information. Little aid was obtained from these sources in the preparation of this research aid.

Information pertaining to multistory areas within the plant is virtually nonexistent. Because estimates of floorspace in multistory areas greatly affect the estimate of total floorspace, acquisition of this information is of prime importance. The lack of ground 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.

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APPENDIX D

SOURCE REFERENCES

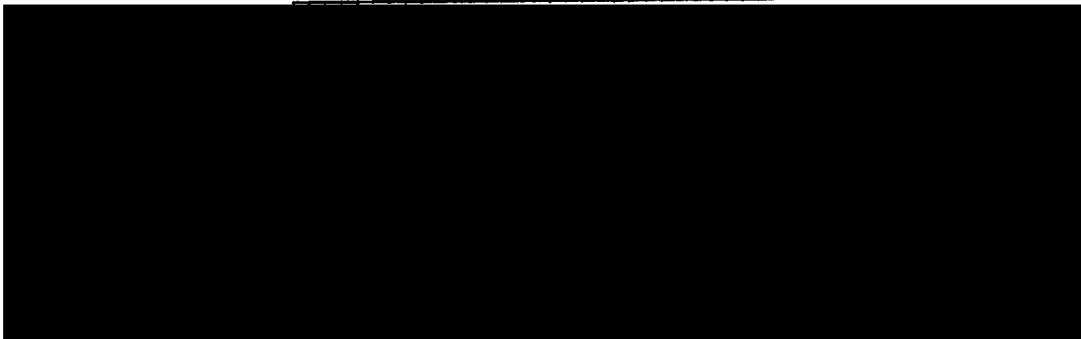
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| <u>Source of Information</u> | <u>Information</u> |
|------------------------------|--------------------------------|
| Doc. - Documentary | 1 - Confirmed by other sources |
| A - Completely reliable | 2 - Probably true |
| B - Usually reliable | 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."

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