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No 67

Economic Research Aid

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PHYSICAL LAYOUT AND PRODUCTION AT THE DNEPROPETROVSK MISSILE DEVELOPMENT AND PRODUCTION CENTER IN THE USSR

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CIA/RR A.ERA 63-3
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CENTRAL INTELLIGENCE AGENCY

Office of Research and Reports

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FOREWORD

This research aid is concerned with the physical layout of the Dnepropetrovsk Missile Development and Production Center (DMDPC), one of the most important installations in the USSR engaged in research, development, and production of ballistic missiles. The DMDPC probably is involved in the development and production of the SS-7 ICBM, a second-generation ICBM that constitutes the backbone of the present Soviet ICBM force. This research aid provides only a basic descriptive reference of the DMDPC, portraying the physical plant as it now stands and as it was developed to support Soviet ballistic missile programs during the 1950's. Other reports* cover the history of this facility, its position in the Soviet ICBM program, and nonmilitary production at this key facility. Although available information does not permit an accurate estimate of rates of production, the layout of the facility can provide a probable flow pattern for fabrication and assembly of missiles and rocket engines to permit estimates of rates of production.

Most of the information used in this research aid covers the years before 1960, and it therefore is recognized that some changes may have occurred since then. These changes, however, are not believed to have altered significantly the physical layout or the capability of the facility.

* CIA/RR G.CG 60-7, Dnepropetrovsk Automobile Plant No. 186 (DAZ), July 1960, SECRET, and CIA/RR A.ERA 61-2, Production of Belarus' Tractors at the Dnepropetrovsk Automobile Plant No. 186 (DAZ), May 1961, SECRET/NOFORN [redacted]

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CONTENTS

Appendixes

Illustrations

PHYSICAL LAYOUT AND PRODUCTION AT THE DNEPROPETROVSK MISSILE DEVELOPMENT AND PRODUCTION CENTER IN THE USSR*

Summary and Conclusions

The examination of all available information indicates that the Dnepropetrovsk Missile Development and Production Center (DMDPC) in the USSR has a minimum floorspace of approximately 7.3 million square feet (sq ft), not including a reported test area. Within this area the USSR is believed to be currently producing rocket engines, ballistic missiles, and possibly ground-support equipment for the IRBM and ICBM systems, as well as Belarus' tractors and Dnepr refrigerators. The over-all assessment of the available floorspace indicates that the DMDPC has adequate facilities to carry on all of these activities at volume production rates.

From a number of sources the annual production of both tractors and refrigerators can be established firmly for the past few years, and reasonable estimates can be made of the floorspace required to produce these civilian products. It is probable that the remaining area at the DMDPC is allocated entirely to missile-related production, in some manner distributed to production or assembly of rocket engines, missiles, and ground-support equipment. Accordingly, it is estimated that, since 1957, floorspace in square feet at the DMDPC has been allocated approximately as follows:

	Million Square Feet
System development and production of missiles, engines, and ground-support equipment	5.4
Production of Belarus' tractors	1.8
Production of Dnepr refrigerators	0.14
	7.3

* The estimates and conclusions in this research aid represent the best judgment of this Office as of 15 February 1963.

The area devoted to missile-related activity is considerably more than that utilized for missile fabrication and assembly at Scientific Research Institute/Plant (NII) No. 88 in Kaliningrad -- the other major Soviet ballistic missile developmental center -- which currently is estimated to have a total roof cover of 2.5 million sq ft.*

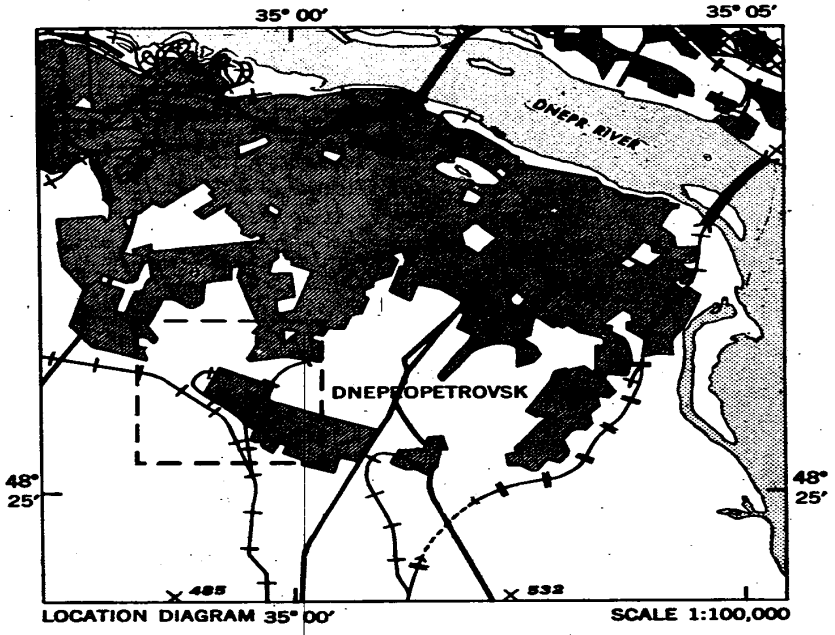
With more than 5 million sq ft of floorspace continuously available for development and production of missile systems, there seems to be no doubt that the DMDPC has the capability to produce large quantities of missile airframes and rocket engines. Estimates of actual monthly rates of production, however, will vary, depending on assumptions made for assembly flowtime, number of work shifts, capacity of the test facilities, quantities of ground-support equipment produced, and the proportionate amount of subcontracting that may be involved in a typical Soviet missile program.

Although no specific peak in the capability for production of missiles at the DMDPC is known, the reported initiation of missile manufacture, the timing of construction of new facilities at the center, and Soviet missile requirements all indicate that this center probably has been a major producer of the Soviet SS-1 SRBM, the SS-3 and SS-4 MRBM's, the SS-5 IRBM, and the second-generation SS-7 ICBM.** The rates of production for these systems, when paced to probable Soviet deployment schedules, appear to be within the capability of the DMDPC alone, if the USSR should elect to keep all production at this facility. It seems more reasonable, however, to assume that production of each system also was phased into other "follow-on" plants capable of followup volume production. Such a choice would provide the DMDPC with greater flexibility and would allow it to devote a major effort and a substantial area to fabrication of advanced developmental missile systems.

* The roof cover of the DMDPC is about 5.9 million sq ft.
** The designations are those of US intelligence.

I. Introduction

The DMDPC is located in the southern outskirts of the city of Dnepropetrovsk (48°26'N - 34°59'E) in the USSR, approximately 7.8 kilometers (km) from the center of the city, 10 km north-northwest of Volozhskoye airfield, and 4 km north-northeast of Krasnopol'ye (see the location diagram). The DMDPC is divided between two plants, Post



Box No. 186 and Post Box No. 192, which are physically separated by the local Dnepropetrovsk-Dneprodzerzhinsk railroad line.

These two basic facilities originally were established as separate but mutually supporting plants. It is believed that they have operated somewhat independently in production of consumer goods. Reports from [redacted] informants,* however, indicate clearly that for military production the two plants were combined into one complex under the Ministry

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of Defense Industry as early as 1951 and have since operated as one production unit.

It is believed that the two plants, supported by a test area directly southwest of the complex, operate as a ballistic missiles development and production center.

II. Description of Individual Facilities

A. Plant Post Box No. 186

Plant Post Box No. 186 is located in the northern section of the DMDPC. It is bounded by Rabochaya Ulitsa on the east, by Krugovaya Ulitsa on the north, and by the local Dnepropetrovsk-Dneprodzerzhinsk railroad line on the south and west. Construction of this installation, known as the Dnepropetrovsk Automobile Plant (DAZ), was begun in 1945 (see the photograph). The announced purpose of this plant was production

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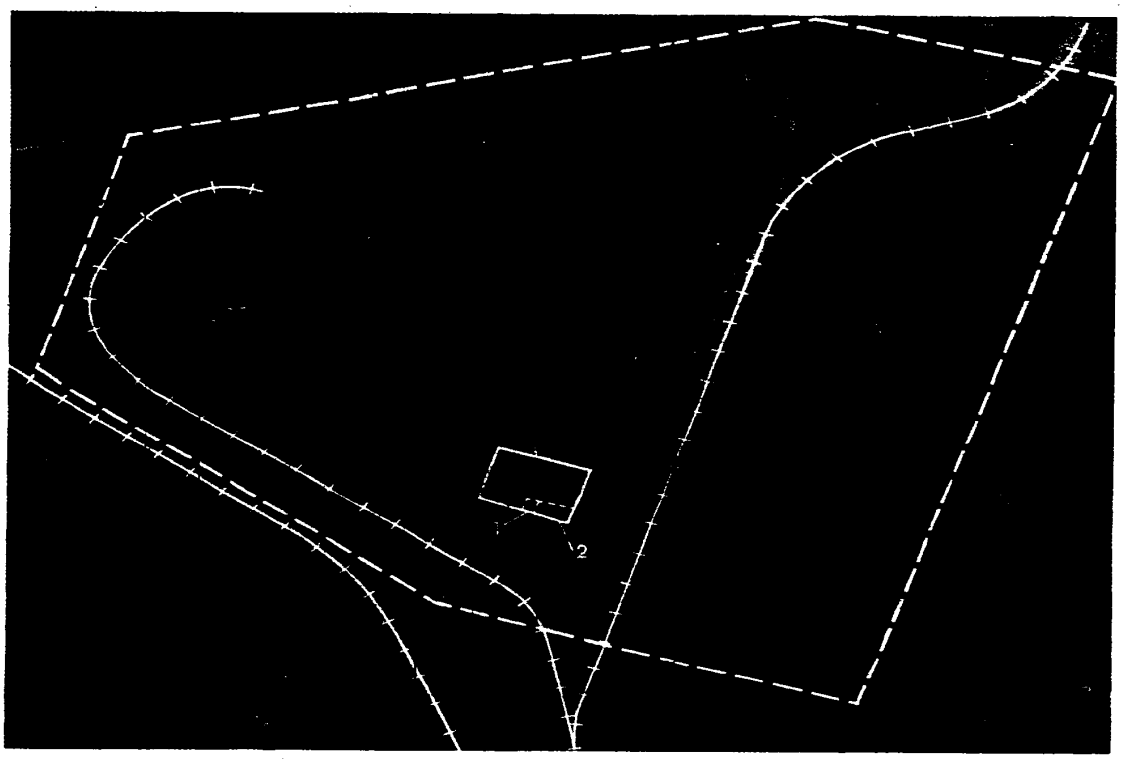

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of ZIS-150 trucks. At the time that construction was undertaken, a Moscow newspaper stated that the total floorspace of the plant shops on completion would be 4.5 million sq ft. Construction plans published in 1946 specified the use of a total plant area of approximately 500 acres and the erection of 70 industrial types of buildings (see the photograph). A section of the plant was scheduled for completion in 1947, and the total area was to be in operation by 1949.

The plant never became an independent producer of trucks. By 1950 the plant was partly completed and was engaged in mounting dump bodies and cranes on truck chassis shipped from the ZIL plant in Moscow. Late in 1950 and early in 1951, production related to trucks decreased, and military personnel made frequent visits to the plant. It became obvious that a major shift in activity was contemplated. Late in 1951 the subordination of DAZ was shifted to the Ministry of Defense Industry. At this time the plant included that part of the layout (see Figure 2*) which is indicated in red. During the next few years the plant, still commonly known as DAZ, was expanded considerably. An administration building was built to the north, laboratories to the east, warehouses to the south, and assembly buildings to the west, and there are reports of the plant undertaking production of rocket engines (developed at Khimki) in the 1951-52 period. Following the death of Stalin in 1953 and the subsequent attention of the new leadership -- notably Khrushchev -- on urgent domestic problems, DAZ was among the facilities of the defense industry that were given the task of undertaking major production of agricultural machinery, in this case the Belarus' tractor. The plant expansion of 1952-53 provided suitable facilities for production of the Belarus' tractor, which began in 1954.

* Inside back cover.

By 1957 or 1958, additional new construction was in progress within DAZ, now designated Post Box No. 186, as follows: another administration building and a large assembly hall to the north; a large warehouse to the west; and a laboratory and probable hydrostatic test tower ([redacted] feet), which was first identified in photography of 1959 (see Figure 1*), to the south. There have been no reports of major construction in this section of the complex since the completion of these buildings.

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That part of the DMDPC represented by Plant Post Box No. 186 currently is estimated to have at least 5.76 million sq ft of floorspace. On the basis of a comparison of available photography with other information, it is possible to determine the general type of production process involved for most buildings in this part of the complex. In general, Plant Post Box No. 186 is engaged in heavy and light forging and casting, precision grinding and stamping, experimental and developmental work, and major and minor assembly. Known end products coming from this section of the DMDPC include tractors and probably missile engines. Inclusion of the latter product is justified on the basis of collateral reports indicating the manufacture of engines in the Plant Post Box No. 186 area and the fact that the Post Box No. 192 area was not completed when work on missile engines first began at DAZ in the early 1950's. It is not possible, however, to determine with confidence which specific buildings or portions of buildings are assigned to civilian as opposed to military production. Likewise, the administrative-organizational relationship between these two elements is not known.

The Plant Post Box No. 186 part of DMDPC also appears to be the most reasonable location for the forming and the shaping of raw stock in support of the fabrication and the final assembly of missile airframes that probably takes place in the Plant Post Box No. 192 area. The probable hydrostatic test facility in the southeastern section of the Plant Post Box No. 186 area suggests that the surrounding laboratory area is concerned with system developmental work.

B. Plant Post Box No. 192

Plant Post Box No. 192, located immediately south of the Dnepropetrovsk-Dneprodzerzhinsk railroad line, also is known as the Dnepropetrovsk Machine Building Plant. Initial construction activity apparently took place soon after World War II and was well underway during the period 1949-51. Informants have stated variously that the plant was to be fully operational by 1954, 1956, and 1960. It seems evident that considerable construction was going on at least as recently as 1956.

* Following p. 6.

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Figure 1

USSR: AERIAL PHOTOGRAPH OF PLANT POST BOX NO. 186 AREA

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GROUP 1
EXCLUDED FROM AUTOMATIC DOWNGRADING
AND DECLASSIFICATION

The plant was frequently called the "Shinnyy Zavod" (Tire Plant) and was designed to become an independent supplier of tires for the automobile plant. From the outset it was known to be affiliated with Plant Post Box No. 186. A reported visit by high-ranking military officials in 1950 suggests that Plant Post Box No. 192 probably became subordinate to the Ministry of Defense Industry at the same time as Plant Post Box No. 186 and that the nature of its planned activity was then changed.

Various sources have indicated that some portion of the large assembly building in this area (Building No. 50, Appendix B*) was in operation at least by 1955 and reportedly was engaged in missile-related production. The completion of this building, probably in 1956, ties in with the belief that the DMDPC undertook fabrication of missiles sometime in 1956. The size and characteristics of this building and those in the immediate area, as well as the date of construction, make the building a most logical choice for assembly of missiles.

III. Over-All Production

A. General

With reference to the utilization of floorspace at the DMDPC, there is no evidence that the DMDPC is involved in any type of production other than that already mentioned -- that is, Belarus' tractors, Dnepr refrigerators, and missile-related items. Because information is available on areas within the DMDPC where certain types of production functions take place, it is possible to specify with some confidence those areas where the major missile work probably takes place. Information identifying areas of known production is examined below, with the floorspace for missile-related production being treated as a residual, although major, portion of the DMDPC, after the space allocated to known production has been delineated.

B. Production of Tractors at Plant Post Box No. 186

In the fall of 1953 when the defense industries of the USSR were directed to assist in the fulfillment of programs aimed at the increased production of tractors, Plant Post Box No. 186 (DAZ) was one of the plants assigned to production of Belarus' tractors. The estimated output of Belarus' tractors at this plant during the period 1954-62 is shown in the following tabulation:

* P. 19, below.

1954	1955	1956	1957	1958	1959	1960	1961	1962*
6,500	15,100	29,700	30,200	32,000	31,400	31,500	31,500	20,000

On the basis of the floorspace requirements of the Minsk Tractor Plant to produce some 45,000 Belarus' tractors and engines in 1962, it is estimated that approximately 1.8 million sq ft of floorspace at Plant Post Box No. 186 is required to support output of tractors at observed levels.** Published plans for the future total Soviet production of tractors, when examined in conjunction with plans for the considerable expansion and modernization of the Minsk Tractor Plant, suggest that, by 1965, Plant Post Box No. 186 no longer will be involved in production of tractors.

It is believed that production of tractors currently continues in the northern section of Plant Post Box No. 186, where it originally was reported during the middle and late 1950's. At the time of the decision to produce the Belarus' tractor at DAZ in 1953, the floorspace in this section was in excess of 1.5 million sq ft. Since that time, this section of the plant has been enlarged to more than 3 million sq ft. Throughout the entire time period, therefore, the floorspace available in this section of the plant has been more than adequate to handle the estimated rates of production of Belarus' tractors.

C. Production of Refrigerators at Plant Post Box No. 192

The Dnepr refrigerator has been produced at Plant Post Box No. 192 at least since 1957, increasing from an annual rate of approximately 42,000 units in that year to an estimated output of more than 80,000 during 1962. This level of production probably can be accommodated in an area of 140,000 sq ft or less. A variety of combinations of several of the smaller buildings in the Plant Post Box No. 192 area therefore could provide the facilities needed for production of refrigerators.

D. Missile-Related Production

1. Rocket Engines

The DMDPC is believed to have become involved in missile-related production initially late in 1951, when the facility was

* January-June. This figure was obtained from tractor markings reported in a newspaper article of September 1962.
** The article cited in the footnote, above, indicates that at least some of the Belarus' engines are produced at the Yaroslavl' Engine Plant.

transferred to the Ministry of Defense Industry. At first the DMDPC produced rocket engines under the guidance of Plant No. 456, the major Soviet facility for rocket engine research and development, located at Khimki. Production of rocket engines is known to have been centered at Plant Post Box No. 186, presumably in the area then available in the northern section of the present plant. Information from returnees clearly indicates that production of engines continued at least through 1956, and reports of engine test noises persist into the 1960's. There is and has been considerable floorspace in this section of the plant that would not be required for production of tractors and therefore is presumably available for manufacture of rocket engines, as indicated in A.*

2. Missile Airframes

The DMDPC is not believed to have become involved in the fabrication and/or the assembly of missile airframes earlier than the 1955-56 period. The construction of the hydrostatic test tower and the completion of the major assembly building in the area of Plant Post Box No. 192 support this opinion. Although there is no firm evidence as to how the DMDPC operates, from the point of view of assembly flow within the DMDPC, one likely operational mode would place assembly in the Plant Post Box No. 192 area and fabrication in the southern half of the Plant Post Box No. 186 area. The most probable location for the final assembly of missiles would be the large assembly type of building in the Plant Post Box No. 192 area. The floorspace of this building appears to be more than adequate to handle the necessary welding of tankage, the assembly and the mating of various sections and subassemblies, the calibration, the installation of electronic equipment and wiring, and the final checkout of the complete missile. All of the components both for major and subassembly fabrication could come from the Plant Post Box No. 186 area. The early known functions of certain buildings in this area are entirely compatible with this allocation of activity.

3. Ground-Support Equipment

Fragmentary evidence suggests that some elements of ground-support equipment also are manufactured at the DMDPC. Although there is no firm evidence as to where within the DMDPC this activity may be carried on, its requirements as to floorspace suggest that the Plant Post Box No. 192 area is the best choice.

* P. 7, above.

APPENDIX A

STRUCTURE DESCRIPTION

Plant Post Box No. 186

1. Probable storage area

2. Previous function: Entrance to a guardhouse
   Dimensions : 60 x 60 x 30 ft*
   Roof cover : 3,600 sq ft
   Floorspace : 7,200 sq ft (two floors)
   Roof : Low gable
   Date constructed : 1954 (?)

3. Krugovaya Ulitsa

4. Previous function: Production hall
   Dimensions : 1,000 x 450 ft; 150 x 50 ft
   Roof cover : 457,500 sq ft
   Floorspace : 487,500 sq ft (five-floor adminstrative section, 150 x 50 ft)
   Roof : Partly gabled, partly monitored
   Date constructed : 1959

5. Main entrance to the plant

6. Previous function: Administration building
   Dimensions : 400 x 100 ft
   Roof cover : 40,000 sq ft
   Floorspace : 120,000 sq ft (three floors)
   Roof : Low gable, steel
   Date constructed : 1958

7. Rabochaya Ulitsa

8. Previous function: Administration
   Dimensions : 350 x 60 ft
   Roof cover : 21,000 sq ft
   Floorspace : 63,000 sq ft (three floors)
   Roof : Low gable, steel
   Date constructed : 1957

* Dimensions are given in order of length, width, and height, as available. If a structure is oddly shaped, several sets of dimensions may be given.

9. Wooded area

10. Previous function: Probable laboratory
Dimensions : 400 x 275 ft
Roof cover : 110,000 sq ft
Floorspace : 110,000 sq ft (probably one floor)
Roof : Partly gabled, partly monitored
Date constructed : 1956 (?)

11. Previous function: Precision grinding and stamping shop
Dimensions : 885 x 415 ft
Roof cover : 367,275 sq ft
Floorspace : 546,075 sq ft (two wings, 80 ft in width, on the east and the west side, one of four floors and one of three floors, with an 80-ft square tower of five floors)
Roof : Partly gabled, partly monitored
Date constructed : 1950

12. Previous function: Heavy pressing and assembly shop
Dimensions : 1,260 x 450 ft
Roof cover : 567,000 sq ft
Floorspace : 567,000 sq ft (probably one floor)
Roof : Pool type of monitor
Date constructed : 1951 (extended 1953)

12a. Previous function: Heavy pressing and assembly
Dimensions : 200 x 450 ft
Roof cover : 90,000 sq ft
Floorspace : 90,000 sq ft (probably one floor)
Roof : Monitor
Date constructed : 1953

13. Previous function: Production shop for rubber items
Dimensions : 450 x 400 ft
Roof cover : 180,000 sq ft
Floorspace : 330,000 sq ft (three floors in administrative wings, 100 ft wide, on the west and the south)
Roof : Partly gabled, partly monitored
Date constructed : 1951

14. Previous function: Warehouse
Dimensions : 800 x 600 ft
Roof cover : 480,000 sq ft
Floorspace : 480,000 sq ft (probably one floor)

Roof : Partly gabled, partly monitored
Date constructed : 1958 (?)

15. Probable storage area

16. Previous function: Possible transmission shop
Dimensions : Unknown
Roof cover : In excess of 75,000 sq ft
Floorspace : In excess of 75,000 sq ft
Roof : Unknown
Date constructed : 1953 (?)

17. Previous function: Assembly hall
Dimensions : 750 x 400 ft
Roof cover : 300,000 sq ft
Floorspace : 300,000 sq ft (probably one floor)
Roof : Steel-truss monitor
Date constructed : 1953 (?)

18. Previous function: Assembly hall
Dimensions : 1,275 x 400 ft
Roof cover : 510,000 sq ft
Floorspace : 510,000 sq ft (probably one floor)
Roof : Steel-truss monitor
Date constructed : 1947 (extended 1952?)

19. Grass and tree-covered park area

20. Previous function: Administration building or laboratory
Dimensions : 425 x 75 ft
Roof cover : 31,875 sq ft
Floorspace : 85,500 sq ft (two floors with a four-floor section in the center, 145 x 75 ft)
Roof : Low gable
Date constructed : 1956 (?)

21. Parkovaya Ulitsa

22. Previous function: Entrance to a guardhouse
Dimensions : 110 x 70 ft
Roof cover : 7,700 sq ft
Floorspace : 15,400 sq ft (two floors)
Roof : Low gable
Date constructed : 1949 (?)

23. Previous function: Administration building or laboratory
Dimensions : 350 x 75 ft

	Roof cover	: 26,250 sq ft
	Floorspace	: 65,250 sq ft (two floors, with a four-floor section in the center, 85 x 75 ft)
	Roof	: Low gable
	Date constructed	: 1953 (?)
24.	Previous function	: Possible foundry
	Dimensions	: 400 x 250 ft, 300 x 125 ft, 300 x 125 ft
	Roof cover	: 175,000 sq ft
	Floorspace	: 175,000 sq ft (probably one floor)
	Roof	: Partly gabled, partly monitored
	Date constructed	: 1953 (?)
25.	Previous function	: Foundry
	Dimensions	: 315 x 240 ft
	Roof cover	: 75,600 sq ft
	Floorspace	: 75,600 sq ft (probably one floor)
	Roof	: Sawtooth monitor
	Date constructed	: 1951
26.	Previous function	: Forge
	Dimensions	: 825 x 600 ft
	Roof cover	: 495,000 sq ft
	Floorspace	: 585,000 sq ft (one floor, except for a four-floor administrative section on the east side, 50 x 600 ft)
	Roof	: Partly gabled, partly sawtooth monitor
	Date constructed	: 1951
27.	Previous function	: Forge
	Dimensions	: 685 x 265 ft
	Roof cover	: 181,525 sq ft
	Floorspace	: 208,025 sq ft (one floor, except for a three-floor administrative section on the east side, 50 x 265 ft)
	Roof	: Steel-truss monitor
	Date constructed	: 1948
28.	Previous function	: Foundry
	Dimensions	: 525 x 265 ft
	Roof cover	: 139,125 sq ft
	Floorspace	: 165,625 sq ft (one floor, except for a three-floor administrative section on the east side, 50 x 265 ft)
	Roof	: Steel-truss monitor
	Date constructed	: 1949

29. Previous function: Experimental research shop
Dimensions : 450 x 330 ft
Roof cover : 148,500 sq ft
Floorspace : 249,500 sq ft (one floor, except for three-floor administrative sections, 50 ft wide, on the north, the east, and the west)
Roof : Partly gabled, partly monitored
Date constructed : 1948

30. Western railroad entrance to the plant

31. Previous function: Warehouse
Dimensions : 350 x 200 ft
Roof cover : 70,000 sq ft
Floorspace : 70,000 sq ft (probably one floor)
Roof : Sawtooth monitor
Date constructed : 1954 (?)

32. Previous function: Warehouse
Dimensions : 300 x 200 ft
Roof cover : 60,000 sq ft
Floorspace : 60,000 sq ft (probably one floor)
Roof : Sawtooth monitor
Date constructed : 1954 (?)

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33. Previous function: Possible hydrostatic test stand
Dimensions : [redacted] ft
Roof cover : 5,250 sq ft
Floorspace : 5,250 sq ft (probably one floor)
Roof : Flat concrete
Date constructed : 1958

34. Previous function: Possible laboratory
Dimensions : 350 x 200 ft
Roof cover : 70,000 sq ft
Floorspace : 70,000 sq ft (probably one floor)
Roof : Flat concrete
Date constructed : 1958

35. Previous function: Metal storage tanks
Dimensions : 40 ft in diameter x 30 ft in height
Date constructed : 1958 (?)

36. Extension of Rabochaya Ulitsa

37. Area of small buildings, with an estimated roof cover of 48,000 sq ft and an estimated floorspace of 96,000 sq ft

38. Previous function: Water-cooling towers
Dimensions : 130 ft in diameter x 130 ft in height
Date constructed : 1950

39. Previous function: Heating plant and powerplant
Dimensions : 460 x 160 ft
Roof cover : 73,600 sq ft
Floorspace : 147,200 sq ft (probably two floors)
Roof : Low gable
Date constructed : 1950

40. Southern railroad entrance to the plant

41. Plant wall

42. Dnepropetrovsk-Dneprodzerzhinsk railroad line

Plant Post Box No. 192

43. Workers' entrance to Plant No. 192

44. Plant wall of Plant No. 192

45. Previous function: Production building
Dimensions : 525 x 115 ft
Roof cover : 60,375 sq ft
Floorspace : 60,375 sq ft (probably one floor)
Roof : Low gable, partly monitored
Date constructed : 1956

46. Previous function: Production building
Dimensions : 600 x 100 ft
Roof cover : 60,000 sq ft
Floorspace : 120,000 sq ft (probably two floors)
Roof : Sheet-metal gable
Date constructed : 1956

47. Previous function: Warehouse
Dimensions : 395 x 150 ft
Roof cover : 59,250 sq ft
Floorspace : 118,500 sq ft (probably two floors)
Roof : Sheet-metal gable
Date constructed : 1955

48. Previous function: Warehouse
Dimensions : 165 x 100 ft
Roof cover : 16,500 sq ft
Floorspace : 16,500 sq ft (probably one floor)
Roof : Sheet-metal gable
Date constructed : 1951

49. Western railroad entrance to the plant

50. Previous function: Main production building
Dimensions : 1,310 x 525 ft
Roof cover : 687,750 sq ft
Floorspace : 766,500 sq ft (probably one floor, except for a four-floor administrative or laboratory section on the east, 50 x 525 ft)
Roof : Partly gabled, partly monitored
Date constructed : 1956 (?)

51. Previous function: Kitchen and dining area
Dimensions : 230 x 80 ft
Roof cover : 18,400 sq ft
Floorspace : 36,800 sq ft (probably two floors)
Roof : Sheet-metal gable
Date constructed : 1951

52. Previous function: Administration and apartment building
Dimensions : 165 x 65 ft, 115 x 65 ft
Roof cover : 18,200 sq ft
Floorspace : 54,600 sq ft (probably three floors)
Roof : Sheet-metal gable
Date constructed : 1951

53. Previous function: Garage, repair shop, and fire department
Dimensions : 245 x 245 ft
Roof cover : 60,025 sq ft
Floorspace : 60,025 sq ft (probably one floor)
Roof : Sheet-metal gable
Date constructed : 1949

54. Previous function: Possible production shop
Dimensions : 460 x 100 ft
Roof cover : 46,000 sq ft
Floorspace : 138,000 sq ft (possibly three floors)
Roof : Steel gable
Date constructed : 1959 (?)

55. Previous function: Possible production shop
Dimensions : 525 x 130 ft
Roof cover : 68,250 sq ft
Floorspace : 204,750 sq ft (possibly three floors)
Roof : Steel gable
Date constructed : 1959 (?)

56. Streetcar line for cars number 10, 11, 13.

APPENDIX B

BUILDINGS OF THE DNEPROPETROVSK MISSILE DEVELOPMENT AND PRODUCTION CENTER

Plant Post Box No. 186

Building Number	Roof Cover (Square Feet)	Floorspace (Square Feet)
2	3,600	7,200
4	457,500	487,500
6	40,000	120,000
8	21,000	63,000
10	110,000	110,000
11	367,275	546,075
12	567,000	567,000
12a	90,000	90,000
13	180,000	330,000
14	480,000	480,000
16	75,000	75,000
17	300,000	300,000
18	510,000	510,000
20	31,875	85,500
22	7,700	15,400
23	26,250	65,250
24	175,000	175,000
25	75,600	75,600
26	495,000	585,000
27	181,525	208,025
28	139,125	165,625
29	148,500	249,500
31	70,000	70,000
32	60,000	60,000
33	5,250	5,250
34	70,000	70,000
37	48,000	96,000
39	73,600	147,200
	4,808,800	5,759,125

Plant Post Box No. 192

Building Number	Roof Cover (Square Feet)	Floorspace (Square Feet)
45	60,375	60,375
46	60,000	120,000
47	59,250	118,500
48	16,500	16,500
50	687,750	766,500
51	18,400	36,800
52	18,200	54,600
53	60,025	60,025
54	69,000	138,000
55	68,250	204,750
	1,094,750	1,576,050
	5,903,550	7,335,175

APPENDIX C

METHODOLOGY

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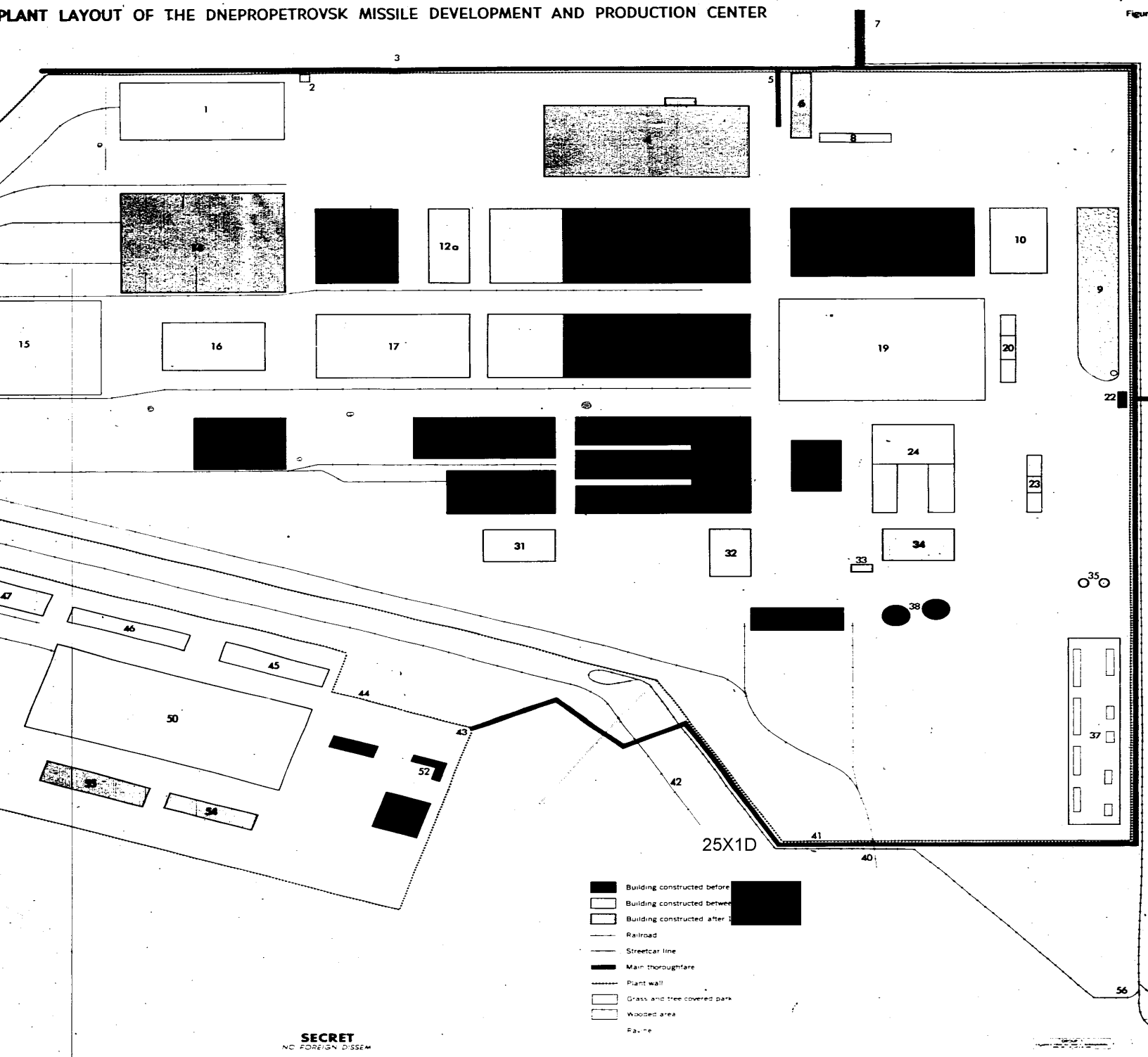
The main portion of this research aid, presenting a floor plan and functional description of the DMDPC, is based primarily on information received from [redacted] There is such a large quantity of this information and so much divergence therein that considerable personal judgment was required in selecting those reports which seemed most useful to provide a basis for the floor plan. When possible, the information from these reports was checked against the small amount of firm information on layout of the DMDPC available from other sources. For example, [redacted] was used extensively as a check on the information received from the [redacted] On the average the dimensions given should be interpreted as accurate within less than [redacted] In spite of the sometimes variable quality of individual measurements or estimates as they pertain to individual buildings, it is believed that the over-all numerical data on floorspace are quite realistic.

PLANT LAYOUT OF THE DNEPROPETROVSK MISSILE DEVELOPMENT AND PRODUCTION CENTER

Figur



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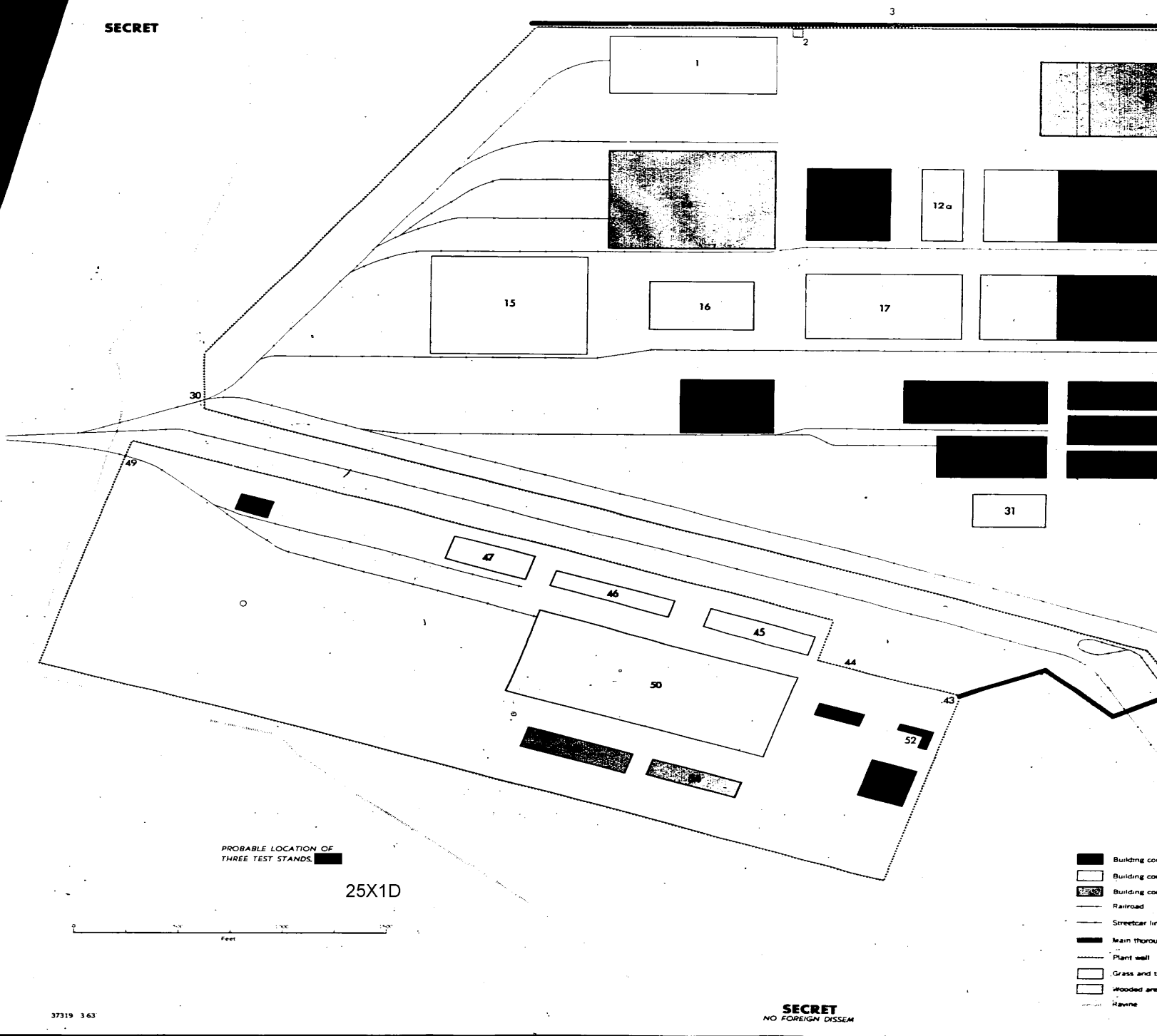

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