Basic Imagery Interpretation Report

NATIONAL
PHOTOGRAPHIC
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CENTER

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SEVERODVINSK SHIPYARD 402

25X1

STRATEGIC WEAPONS INDUSTRIAL FACILITIES

USSR

AUGUST 1969

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PREFACE

This publication has been prepared in accordance with NPIC responsibilities for third-phase imagery exploitation under the National Tasking Plan. It has been compiled in response to basic readout requirements and basic presentation instruction as approved by the Committee on Imagery Requirements and Exploitation (COMIREX), US Intelligence Board.

The scale of the photography used in this report varies; overall interpretability is good to excellent. All pertinent imagery available has been utilized. Measurements, previously reported, are accurate to within whichever is greater.[1]

It should be noted that information contained in this study was derived solely from the interpretation of overhead photography and is not intended to constitute all-source, finished intelligence.

INSTALLATION OR ACTIVITY NAME			COUNTRY
Severodvinsk Shipyard 402			UR
UTM COORDINATES	GEOGRAPHIC COORDINATES	CATEGORY	
NA	64-34-42N 039-49-09E		
		NEGATION DATE (If required)	
		NA	

ABSTRACT

Severodvinsk Shipyard 402 is one component of four closely related installations that together provide complete facilities for the construction, conversion, and maintenance of Soviet naval ships, particularly submarines. The shipyard itself is primarily concerned with the construction of submarines, but some conversions and repairs are performed. This report on Shipyard 402, the heart of the Severodvinsk Complex, mentions the related installations of the complex only briefly.

INTRODUCTION

Severodvinsk Shipyard 402 is located on the north edge of the city of Severodvinsk, on the southeastern coast of the White Sea (Figure 1). The closest city of significant size is Arkhangelsk which lies 18 nautical miles (nm)to the east. The shipyard occupies the southern bank of the Nikolskoye Estuary which separates it from other components of the shipyard complex.

Environment

The terrain surrounding the shipyard is flat tundra which extends to and beyond low rolling hills to the south. The highest point within 20 miles of the yard is a 413-foot hill to the southwest. The yard is linked to Arkhangelsk by rail and all-weather road, and Arkhangelsk is linked by rail and air service to population and industrial centers of European USSR. Waterborne transportation to and from Severodvinsk is restricted somewhat by ice from late October to mid-April. Vessel tracks have been seen extending into the White Sea as late in the winter as the end of January. If there is a period when Severodvinsk is isolated from seaborne transportation because of ice, the available photography indicates it would be a period beginning in February and ending in March. Movement of vessels within the estuary, however, is not halted completely, even in the coldest periods.

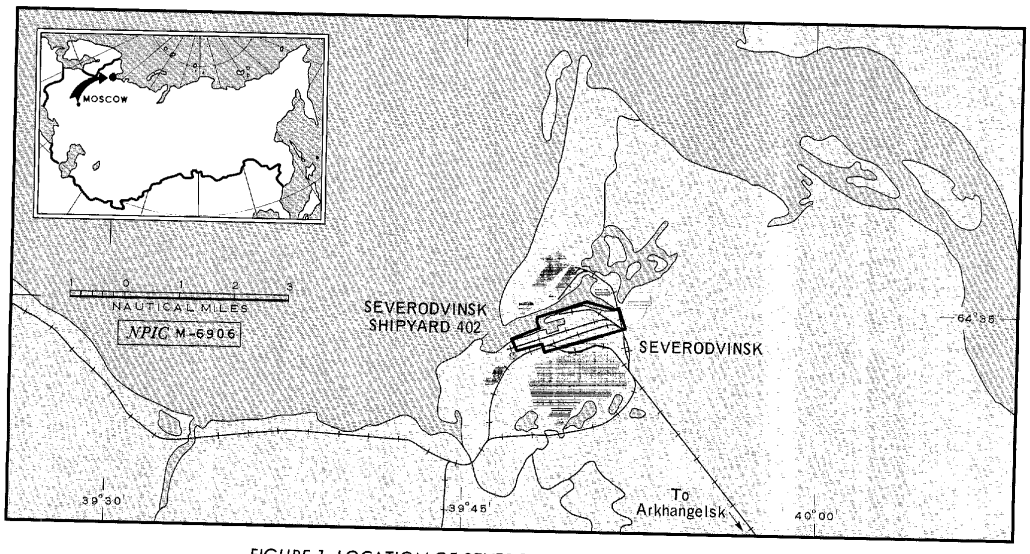

FIGURE 1. LOCATION OF SEVERODVINSK SHIPYARD 402, USSR

Related Installations

The following installations are adjacent to Severodvinsk Shipyard 402 and, with it, form the Severodvinsk Shipyard Complex:

a. Severodvinsk Naval Repair Facility Yagry Island
b. Severodvinsk Nuclear Submarine Special Support Facility ; and
c. Severodvinsk Naval Base West

A fourth installation, not part of the shipyard complex, is Severodvinsk Naval Missile Support Facility (.

BASIC DESCRIPTION

Physical Features

Severodvinsk Shipyard 402 is roughly rectangular, slightly more than 2 nm long by one-half mile wide, and occupies approximately 640 acres. It has approximately 7,200 linear feet of quayed shoreline available for berthing and fitting-out (Figure 2). The dominant structure in the yard is Construction Hall No 1, which is wide (item 46).

Production Capabilities

Shipyard 402 is the most prolific producer of submarines in the world. It has produced diesel- and nuclear-powered submarines, cruise-missile and ballistic-missile submarines, and the new Polaris-type Y-class nuclear-powered ballistic-missile submarine (Y SSBN). It has also been involved in the H-class SSBN conversions and the lengthening of the N-class nuclear attack submarine (SSN).

Current programs include the construction of the Y-class SSBN, 402/J probable SSN, and the conversion of the H-III SSBN. Also underway is the final fitting-out and delivery of the C-class SSN and the J-class cruise-missile submarine (J SSG), built at Gorkiy Shipyard 112, and the V-class SSN, which is produced at Leningrad Shipyard, Admiralty 194. In addition, Shipyard 402 probably provides support and materials to other components of the shipyard complex which are involved in the conversion programs for the G-class SSB and H-class SSBN, and the nuclear refueling of H-, E-, and N-class submarines and the nuclear icebreaker Lenin.

Shipbuilding Sequence

Construction Hall No 1 (Figure 2, item 46) covers two building docks with two buildingways in each, permitting simultaneous construction of eight Y-class SSBNs. A model of this building and the associated elements that contribute to the flow of construction is shown in Figure 3. View A, showing the roof removed, has eight submarines on the ways.

Preassembled Y-class pressure hull sections enter the construction hall on a rail through a door at the rear, or east, end (view B). These sections, complete with internal decks and probably some other basic equipment installed, are stored or staged in an area served by a transverser until needed inside the construction hall. As many as 24 sections have been seen in this area at the same time.

Frames and bent plate are assembled into cylindrical pressure hull sections in the subassembly building (Figure 2, item 40) which, unlike most of the structures in the yard, is a fairly recent addition (1964). The utilization of a facility able to preassemble and move large, extremely heavy sections containing internal decks and basic equipment (such as machinery foundations, reactor containment vessels, and large pumps and valves) would greatly reduce the way time of a ship under construction.

Supplying the subassembly building, as well as other components at the yard, are no less than 15 fabrication shops, machine shops, and forge and foundry buildings, including one large main fabrication building with a roof that covers nearly 0.75 million square feet (Figure 2, item 24).

Newly constructed submarines are moved from the construction hall out into the shallow portion of the main launch basin as shown in view C of the model. Once the ship is outside, a number of rectangular flotation devices (usually eight or ten, not shown on

the model) are attached to the hull. The basin is then flooded (view D), enabling the ship to float free of the dollies and to be moved by tugboats to the deep portion of the basin. Finally, the basin is drained down to sea level, the floating caisson gate is opened, and the ship is moved to the fitting-out quay. This procedure is, in general, reversed for submarines being put into the shallow portion for repairs, the difference being that submarines to be repaired are not placed on transfer dollies but on standard docking blocks. These blocks do not straddle the rails and are not as high as the transfer dollies; therefore the ship requires fewer flotation devices (usually four) to float it into a position over the blocks. The basin is large enough to permit the moving of Y-class submarines in and out without disturbing ships not being moved. To date, ways A, B, and C have been used for repairs. Ways A and B have bow staging scaffolds attached to the construction hall door caisson. The scaffolds provide access to the deck of the ships being worked on as well as to the construction hall.

Construction Hall No 2 (Figure 2, item 88) at the west end of the yard has a single set of launch rails but probably has two buildingways inside, and a fabrication section (item 87) is attached to the south side. Hall 2, commonly referred to as the diesel shed, apparently does not use the preassembled hull section mode of ship construction as extensively as construction hall no 1 does; consequently, ships probably spend a much greater amount of time on the buildingway. A detailed line drawing compares the front of hall 2 with the front of hall 1 (Figure 4).

Ships are moved from hall 2 on transfer dollies to the top of the side launchway. At this point, special launching cradles are positioned under the ship to hold it upright and level as it is lowered down the incline into the sheltered launch basin (Figure 5). The launching cradles vary in shape for the type ship to be launched. It is possible to reverse the sequence in order to place a ship in the construction hall for repair or modification.

The main fitting-out quay located between the two construction halls is approximately 2,800 feet long. It is served by two large fitting-out shops, several small shops, two rail lines, and five cranes. A large floating dock is also located perpendicular to the quay. Berthing spaces have been assigned to all the quayed shoreline in the yard, the main fitting-out quay having been assigned numbers I through VI, east to west. There is apparently no specific berthing sequence a new submarine follows while outfitting; ships have been observed in different positions during their fitting-out phase, but no pattern of movement has emerged. Nor does there seem to be a pattern in the orientation of ships to the quay. Whether the submarine is port- or starboard-side to the quay seems to be of little significance. In all cases, however, at least one rectangular support barge is positioned between the fitting-out quay and the ship.

Except for a small section, the east quay is used primarily for berthing shipyard support craft. It is in two segments totaling 3,900 feet. C-class SSN and J-class SSG, built at Gorkiy Shipyard 112, undergo final fitting-out near the center of this quay. This quay also has a cargo handling capability, and its extremities have direct access to open and covered storage areas in the shipyard.

Prior to delivery, and probably at least once during the fitting-out phase, submarines that are built, fitted-out, or repaired at this yard, are degaussed. This operation takes place at a permanent facility immediately outside the main launch basin gate (item 75). The facility consists of a small rectangular building that probably houses generating and control equipment, a paved apron and pier approach, a short pier, and five mooring buoys. Augmenting the permanent features are two rectangular barges, one of which has a small low structure at one end and usually remains tied to the end of the pier. The other has a group of four cylinders, possibly cable drums, in its depressed center and a small shack at one end. Also associated with this facility are two identical small rectangular floats, each of which has a small square platform in the center. One of these floats has been observed on each side of a Y-class SSBN that was being degaussed.

Ships using this facility are usually oriented on a heading of [redacted] true or its reciprocal, [redacted] true. The magnetic headings respectively are [redacted] and [redacted] Sekstan-class degaussing deperming ships (ADG) have been seen at this facility, presumably assisting in the operation. From available photography it appears that ships do not leave the shipyard after being seen on the [redacted] true heading, and that the ships seen on the heading of [redacted] always leave. 25X1 25X1 25X1 25X1 25X1

Located adjacent to and immediately north of the degaussing facility is a separately secured facility whose function is unidentified (items 77-81). It has a crane-served quay

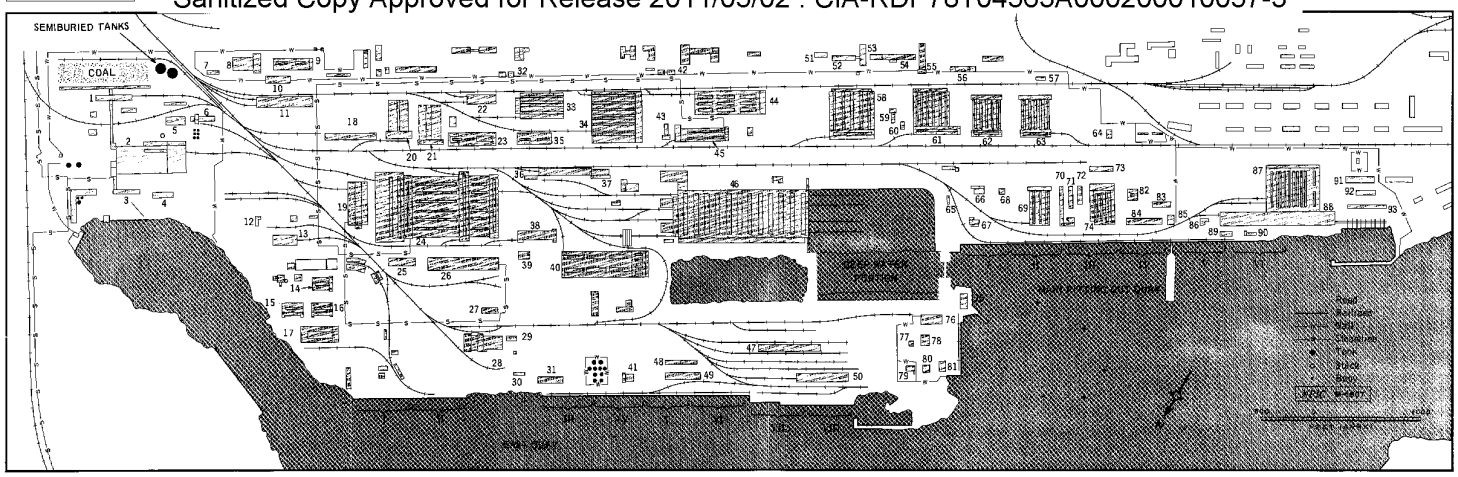

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Table 1. Data on Structures at Severodvinsk Shipyard 402
(Item numbers are keyed to Figure 2)

Item	Function	Dimensions (ft) L	W	Floors	Floorspace (sq ft)	Roof Type
1	Coal dressing building			1		Gable
2	Heat and power plant			3		Monitored/flat
3	Control house			3		Flat
4	Control house			2		Flat
5	Unidentified			1		Flat
6	Unidentified			1		Flat
7	Storage			1		Flat
8	Fabrication, with office section			1/4		Barrel vault/flat
9	Fabrication			1		Flat
10	Storage			1		Gable
11	Fabrication/storage			1		Flat
12	Steamplant					Flat
13	Rail stock repair barn			1		Arched
14	Machine shop			1		Monitored
15	Machine shop/foundry			1		Monitored
16	Machine shop			1		Monitored
17	Machine shop			1		Monitored
18	Engineering/admin			4		Flat
19	Design mold loft			2		Monitored
20	Fabrication, with office section			1/4		Monitored
21	Fabrication, with office section			1/4		Monitored
22	Machine shop			1		Flat
23	Machine shop			1		Monitored
24	Main fabrication building			1		Monitored
25	Storage			1		Arched
26	Design/possible photo lofting			1		Flat
27	Unidentified			1		Flat
28	Pattern shop/woodworking			1		Monitored/flat
29	Unidentified			1		Flat
30	Storage			1		Flat
31	Machine shop			1		Flat
32	Yard entrance (2 buildings)			1		Flat
33	Fabrication			1		Monitored
34	Fabrication/foundry			1		Monitored
35	Machine shop			1		Monitored
36	Design/admin			3		Flat
37	Superstructure subassembly			1/2		Flat
38	Forge/foundry with office section			1/3		Monitored
39	Unidentified			1		Flat
40	Hull section subassembly			1		Monitored
41	Unidentified			1		Flat
42	Yard entrance (2 buildings)			1		Flat
43	Design/admin			2		Flat
44	Fabrication			1		Monitored
45	Fabrication/foundry			1		Monitored
46	Construction Hall No 1			1		Monitored
47	Storage			1		Flat
48	Storage			1		Gable
49	Design/admin			4		Flat
50	Storage			1		Quonset
51	Administration			2		Hip
52	Administration			4		Hip
53	Administration			2		Hip
54	Administration			4		Hip
55	Administration			3		Hip
56	Main entrance			1		Hip/flat
57	Unidentified			1		Flat
58	Fabrication			1		Monitored
59	Design/admin			2		Flat
60	Design/admin			1		Flat
61	Fabrication			1		Monitored
62	Fabrication			1		Monitored
63	Fabrication			1		Monitored
64	Firehouse			1		Hip
65	Winch house			1		Flat
66	Unidentified			3		Flat
67	Unidentified			1		Flat
68	Unidentified			1		Hip
69	Fitting-out shop			1/3		Monitored
70	Machine shop			1		Gable
71	Machine shop			1		Gable
72	Storage			1		Gable
73	Design/admin			1		Flat
74	Fitting-out shop			1		Monitored
75	Degaussing control/ generating			1		Flat
76	Unidentified			1		Flat
77	Unidentified			1		Flat
78	Unidentified			6/3		Flat
79	Unidentified			1		Flat
80	Unidentified			2		Flat
81	Unidentified			3		Flat
82	Design/admin			2		Monitored
83	Design/admin			3		Flat
84	Design/admin			2		Flat
85	Machine shop			1		Flat
86	Unidentified			1		Flat
87	Fabrication section			1		Monitored
88	Construction hall			1		Flat
89	Machine shop			1		Flat
90	Machine shop			1		Flat
91	Storage			1		Gable
92	Design/admin			2		Flat
93	Winch house			1		Flat

*Maximum overall dimensions

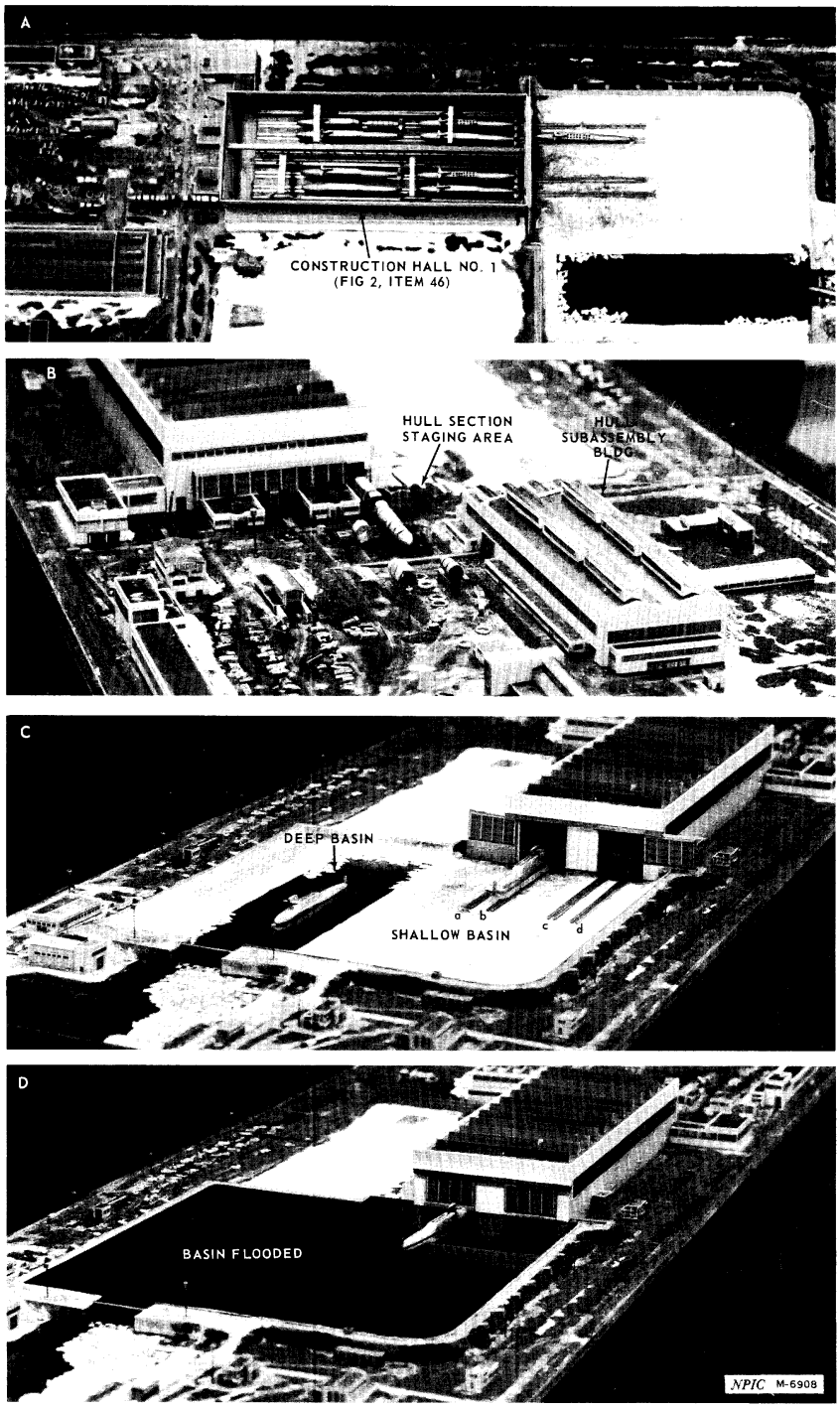

FIGURE 3. MODEL OF CONSTRUCTION HALL NO 1 (Constructed by NRTSC)

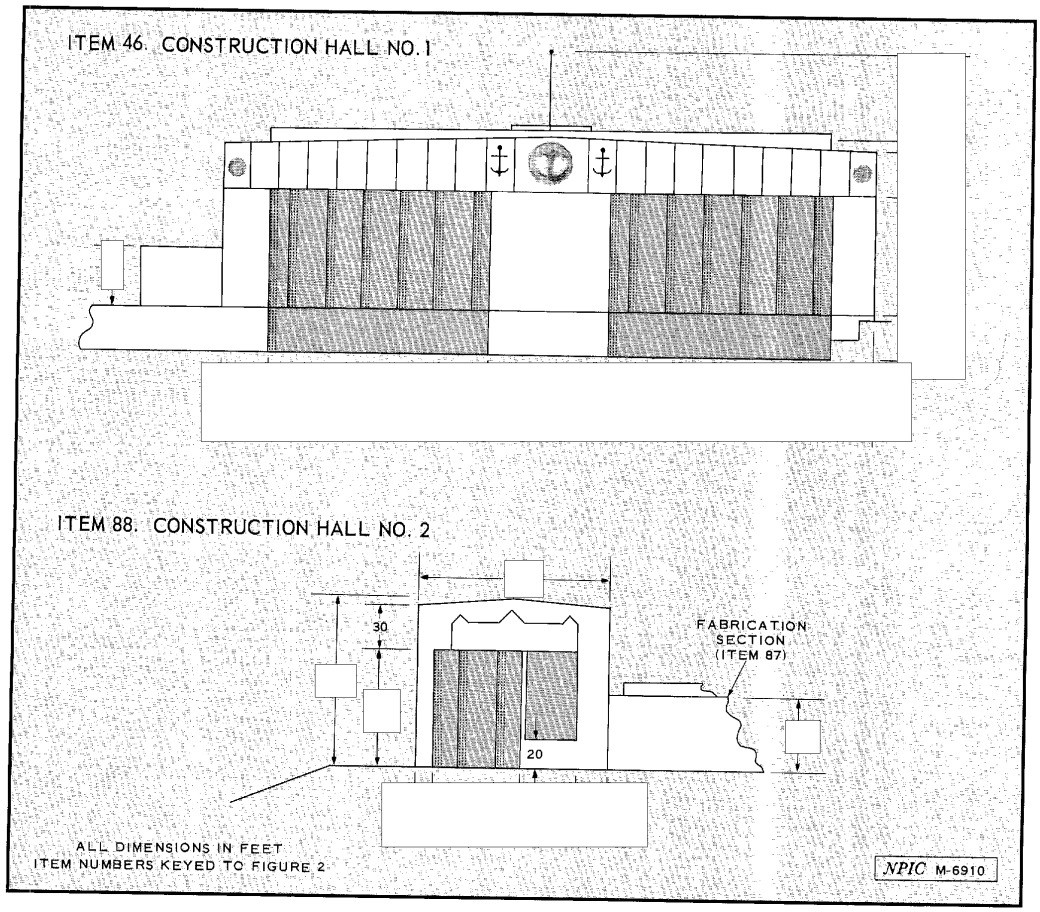

FIGURE 4. FRONT VIEW OF CONSTRUCTION HALLS 1 AND 2

480 feet in length and six unidentified buildings, all connected by an elevated steamline. Four of the buildings have roof vents, and one has a very tall stack on a square platform at its center. There is no rail service, but all are served by a paved roadway. Various types of submarines and surface ships have been observed at this quay. Although the unidentified facility may be associated with the degaussing facility, it probably serves in checking out and evaluating ship systems and in calibrating shipboard weapons-associated electronic equipment.

Status and Activity

This shipyard has been highly active since first observed on KEYHOLE photography of [redacted] Construction of new buildings and facilities has been gradual but steady during the eight years of observation. Most major changes to facilities have taken place in the other components in the complex. Ship construction has always been at a very high level.

Security

A wall completely surrounds the yard on the landward side. It has only four entrances other than rail gates: one is apparently the main entrance and security checkpoint, two are standard vehicle and pedestrian gates with two guard buildings each, and the fourth is a small pedestrian entrance which serves the administration complex. Nine SAM sites which surround Severodvinsk also protect the complex.

Associated Objects

Because of the significance and variety of order of battle at the shipyard, a separate report published at the end of each quarter covers in detail the location, type, and appearance of major ships and hull components in the yard.[2,3]

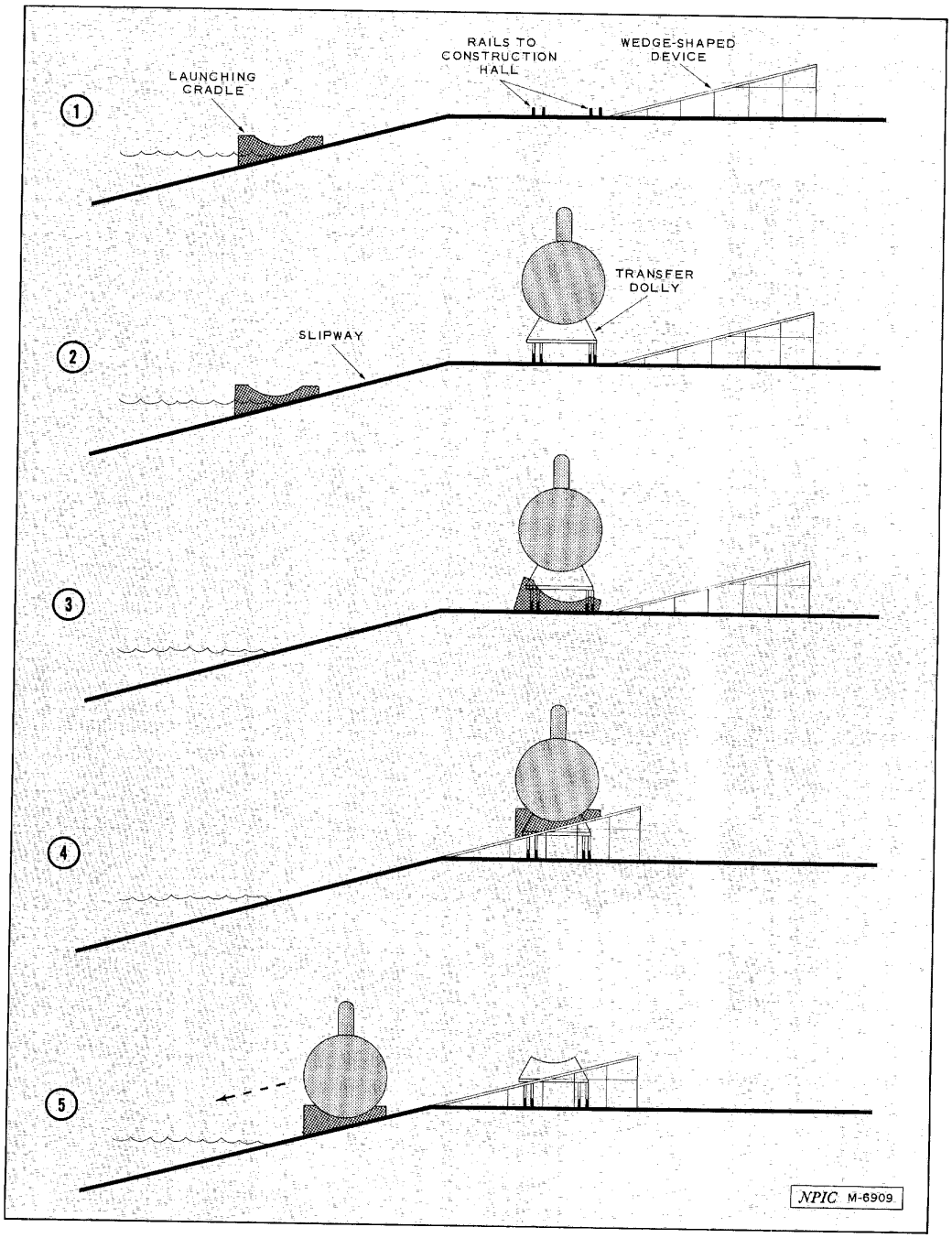

FIGURE 5. LAUNCHING FROM CONSTRUCTION HALL NO 2

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REQUIREMENT

COMIREX BR-J/005-69
NPIC Project 210589