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SHIPBOARD VENTILATION, AIR-CYCLE REFRIGERATION AND AIR-CONDITIONING OF STATIONS AND SPECIAL SPACES

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I. DESCRIPTION

A. PURPOSE AND CHARACTERISTICS

The system of ventilation, air-cycle refrigeration and air-conditioning of the stations and special spaces is designed to provide the desired change of air as well as to provide comfort and sanitation for the occupants, to maintain conditions necessary for proper operation of the equipment, stowage and preparation of torpedoes, stowage of ammunition, homing equipment and influence exploders and storage batteries.

The system includes:

1. Ventilation of magazines and battery wells.

2. Ventilation and air-cycle refrigeration of stations, devices, power rooms, power plants, ammunition magazines and under-turret compartments.

3. Air-conditioning and air-cycle refrigeration of torpedo spaces, homing equipment and influence exploders stowage.

The electrical blowers and heat exchangers of the ventilation, air-cycle refrigeration and air-conditioning system are arranged in the blower recesses (See Table 1).

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List of Blower Recesses

Table 1

No.	Blower recess	Location		
		frames	side	deck
1	No.1	58-60	SB	Hold
2	No.2	56-60	PS	Hold
3	No.3	35-41	CL	Plat.II
4	No.4	58-60	SB	Plat.II
5	No.5	122-126	SB	Plat.II
6	No.6	126-130	PS	Plat.II
7	No.7	139-141	CL	Plat.II
8	No.8	16-21	PS	Low.dk
9	No.9	62-66	PS	Low.dk
10	No.10	79-82	SB	Low.dk
11	No.12	120-126	PS	Low.dk
12	No.18	42-45	SB	Mid.dk
13	No.19	45-51	SB	Mid.dk
14	No.20	51-53	PS	Mid.dk
15	No.22	81-85	SB	Mid.dk
16	No.23	83-85	SB	Mid.dk
17	No.27	116-119	SB	Mid.dk
18	No.31	35-42	PS	U.dk
19	No.32	56-60	SB	U.dk
20	No.38	128-131	SB	U.dk
21	No.40	158-160	SB	U.dk
22	No.45	142-141	PS	Prestle dk
23	No.46	74-79	SB	Low. aft br.
24	No.47	76-78	CL	Pilot br.

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The type of ventilation used and the number of air changes per hour are given in Table 2.

According to the operating conditions the ventilation is divided into two groups:

(a) remotely controlled utility ventilation for the working spaces. It is designated by the letter "T";

(b) individually controlled combat ventilation serving the stations, turrets, magazines and other special spaces. It is lettered "Б."

Depending on the nature of the space ventilated, natural, mechanical or combination ventilation may be effected.

In some working spaces provision is made for heating the outside air supplied to the spaces in winter season with the aid of radiators.

To some spaces air is supplied through dust filters. To reduce the noise produced by the operative blowers, the latter are installed through shock absorbers.

The ventilation ducts in some spaces are fitted with noise absorbing branch pipes.

The ventilation pipes are welded of sheet steel, while those running above the upper deck are welded of the АМГ alloy.

The pipes are connected through flanges. The ventilation ducts feeding the fresh air as well as the ducts after the air coolers are insulated. Part of the ventilation ducts is constructed in the form of trunks and recesses.

B. GENERAL DESCRIPTION AND DESCRIPTION OF INDIVIDUAL UNITS

Ventilation of Primary and Secondary Detonators Stowages and Storage Batteries Rooms

These spaces may be ventilated in one of two ways:

(a) mechanical supply and natural exhaust. In this case fresh air from the open is drawn by means of an electric blower, thus creating an air lock, and is exhausted naturally through the doors, ladderways and ventilation trunks;

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(b) mechanical exhaust and natural supply. In this case foul air is exhausted from the spaces with the aid of an electric blower, thus creating a vacuum due to which fresh air enters the spaces through the ventilation trunks.

Ventilation and Air-Cycle Refrigeration of Stations, Power Rooms, Equipment, Main Switchboard Rooms, Ammunition Magazines and Under-Turret Compartments

These spaces may be ventilated in two ways:

(a) mechanical supply and mechanical exhaust: fresh air is supplied to and foul air is exhausted from the spaces with the aid of electric blowers;

(b) mechanical supply and natural exhaust: fresh air is drawn from the open by means of an electric blower, thus creating an air lock in the space; foul air being exhausted naturally through the ventilation trunks.

Ventilation of the equipment with individual cooling is divided into:

(a) mechanical supply and mechanical exhaust;

(b) mechanical exhaust and natural supply.

Ventilation and air-cycle refrigeration of the spaces may be effected in:

(a) open cycle;

(a) closed cycle.

Provision is made for partially recirculating the air when operating in the open cycle.

Fresh air supplied to the space is assessed at 33 m^3/man/hr.

Some spaces are ventilated fully in the open cycle, with no recirculation.

In summer at an outside air temperature of 32°C and a relative humidity of 80% the following temperatures are maintained in the spaces due to use of air-cycle refrigeration:

- in the stations and power plants: 30 to 32°C;
- in the power rooms and acid battery charging room: 40°C;

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- at the outlets of the individually cooled equipments: not above 60°C.

The loop-type air coolers operating on the chilled water are employed in ventilation and air-cycle refrigeration.

Air Conditioning and Air-Cycle Refrigeration of Torpedo Spaces and Homing Equipment and Influence Exploders Stowage

These spaces may be ventilated in two ways:

(a) mechanical supply and mechanical exhaust: fresh air from the open is drawn to and foul air is exhausted from the spaces with the aid of electric blowers. Provision is made for exhausting the hydrogen mixture from the torpedoes in the starboard torpedo stowage and discharging it to the space;

(b) mechanical supply and natural exhaust.

Air conditioning and air-cycle refrigeration may be effected in:

(a) open cycle;

(b) closed cycle.

In case content of hydrogen in the torpedo spaces exceeds 2% when operating in the closed cycle, the system shall be quickly switched to the open cycle to obtain a normal concentration of hydrogen in the spaces. Partial recirculation is possible in this case, as well.

In summer at 32°C air temperature and a relative humidity of 80% the air conditioning and air-cycle refrigeration systems make it possible to maintain a temperature of 25°C and a relative humidity of 80% in the following spaces: homing equipment and influence exploders stowage, torpedo preparation shop, torpedo stowage, warhead locker. In winter at an outside air temperature of -25°C and a relative humidity of 85%, the following air conditions are maintained in the spaces:

- in torpedo preparation shops and in warhead locker: temperature 14°C and relative humidity 80%;

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- in the torpedo stowage: temperature 5°C and relative humidity 60%.

The loop-type air coolers operating on the chilled water in summer and on the saturated steam (at a pressure of 5 kgf/sq.cm) in winter are employed in the air conditioning and air-cycle refrigeration systems of the torpedo spaces.

Control Instruments

1. To measure the temperature of air in the ventilation circuit before and after the air coolers, use is made of bimetallic thermometers, type TK-100.

2. To check the operation of the dust filters, use is made of portable differential diaphragm-type air pressure gauges, type TDM-100.

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II. MAINTENANCE INSTRUCTIONS

A. GENERAL SUPERVISION AND UPKEEP

To have the system constantly ready for action and to ensure its normal operation:

1. Check to see that the electric blowers are in good order and operate properly.

2. Check that the joints of the pipes are perfectly tight; tighten up the fastenings of the flanged joints when necessary.

3. Make sure that the ventilation fittings and the gearing rods are in good order; regularly lubricate the friction surfaces of the fittings.

4. Care should be taken that no dirt or water is allowed to get inside the ventilation ducts.

5. Regularly drain water from the ventilation lines through the drain plugs sited at the points where water is likely to accumulate.

B. PREPARATORY STEPS

6. With an outside temperature of 5°C or below the mechanical air-supply system of ventilation working in conjunction with steam radiators is permitted to be switched on at least five minutes after the radiators have been heated.

7. Never switch on the electric blower in case no steam is admitted to the radiator.

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C. STARTING, DURING-OPERATION MAINTENANCE AND STOPPING

8. For starting the system to operate on the open cycle and on the closed cycle see the schematic diagrams represent in Figs 1-36.

These diagrams are given as to the blowers, reference being made to the corresponding Nos in Table 2. For the arrangement diagrams see Appendices 2 to 7.

In case the ship as a whole or a space is to be shut down, all the outside ventilation fittings shall be shut with the exception of some spaces whose ventilation circuit is switched on by special order.

N o t e s : 1. In summer with the ventilation system operating on open cycle with recirculation and on closed cycle, chilled water shall be supplied to the air coolers.
2. In extremely cold weather switch on the electric blowers only after supplying the steam to the radiators.

For stopping the system, proceed in the order reverse to that of starting it.

N o t e s : 1. When shifting from one operating condition to another, do not shut the line fittings serving the spaces.
2. With the electric blowers being inoperative, have all the water- and gastight fittings in the shut position.

D. MAINTENANCE DURING PROTRACTED SHUT-DOWN PERIOD

Inactivation

In case of inactivation the system shall be completely shut down, water shall be drained through the drain plugs.

The ventilation fittings, viz.: ventilation doors, gastight covers, sluice valves, water- and gastight flappers shall be cleaned. The unpainted surfaces shall be coated with an anticorrosive compound. The fittings shall be in the shut position.

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Activation

For activation of the system remove the anticorrosive compound from its fittings; check the flanged joints for condition and replace defective gaskets, if any.

N o t e : For inactivation of the electric blowers see instructions for electrical equipment.

E. REFERENCE DATA

The nameplates of the fittings and blowers bear the inscriptions to show their purpose.

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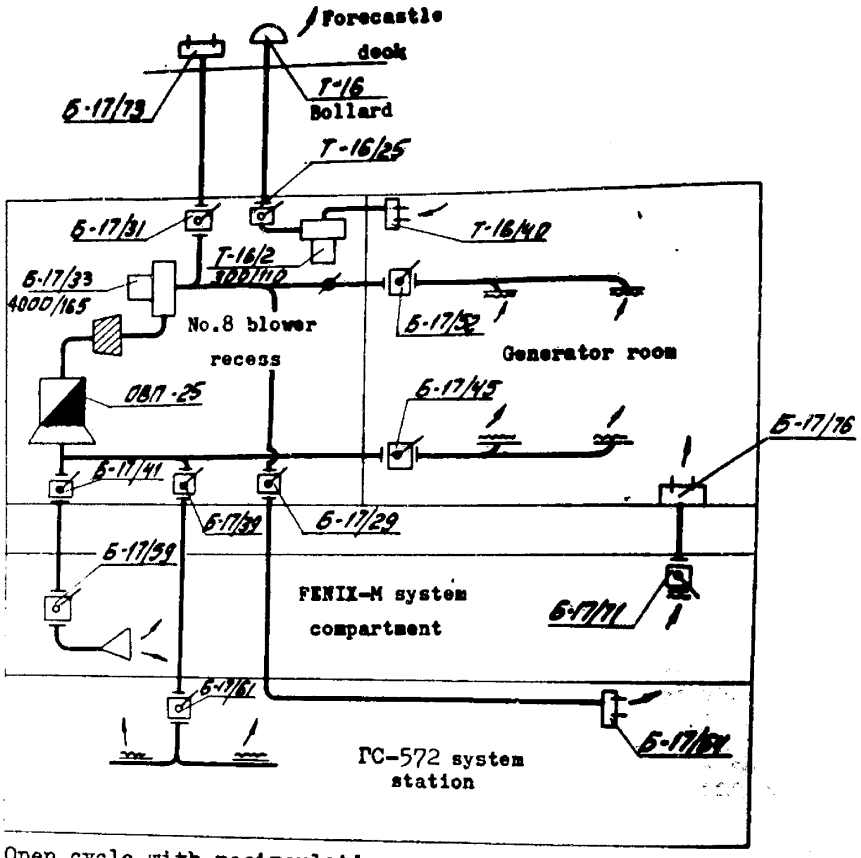
R e f s. 1, 2, 3



Open cycle with recirculation

Open: Б-17/73; Б-17/31; Б-17/41; Б-17/59; Б-17/39; Б-17/61; Б-17/45; Б-17/52; Б-17/29; Б-17/64; Б-17/76; Б-17/71; T-16/25; T-16/40.

Switch on electrical blowers Б-17/33 and T-16/2.

Closed cycle

Close: Б-17/73; Б-17/31; T-16/25; T-16/40.

Open: Б-17/52; Б-17/45; Б-17/29; Б-17/39; Б-17/41; Б-17/59; Б-17/61; Б-17/64; Б-17/76; Б-17/71.

Switch on electrical blower Б-17/33.

FIG.1

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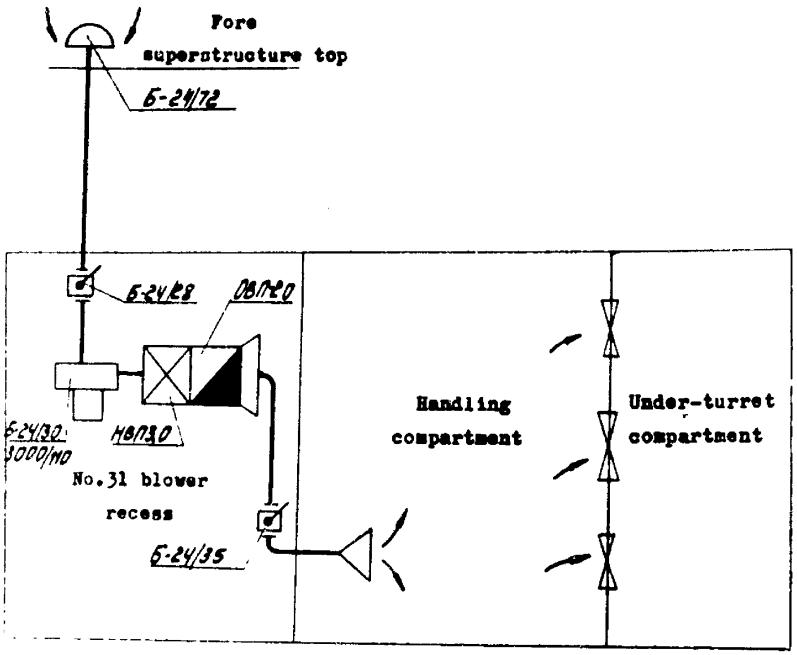
Refs. 4, 5



Open cycle

Open: Б-24/72; Б-24/28; Б-24/35.
Switch on electrical blower Б-24/30.
Exhaust through the under-turret compartment.

FIG.2

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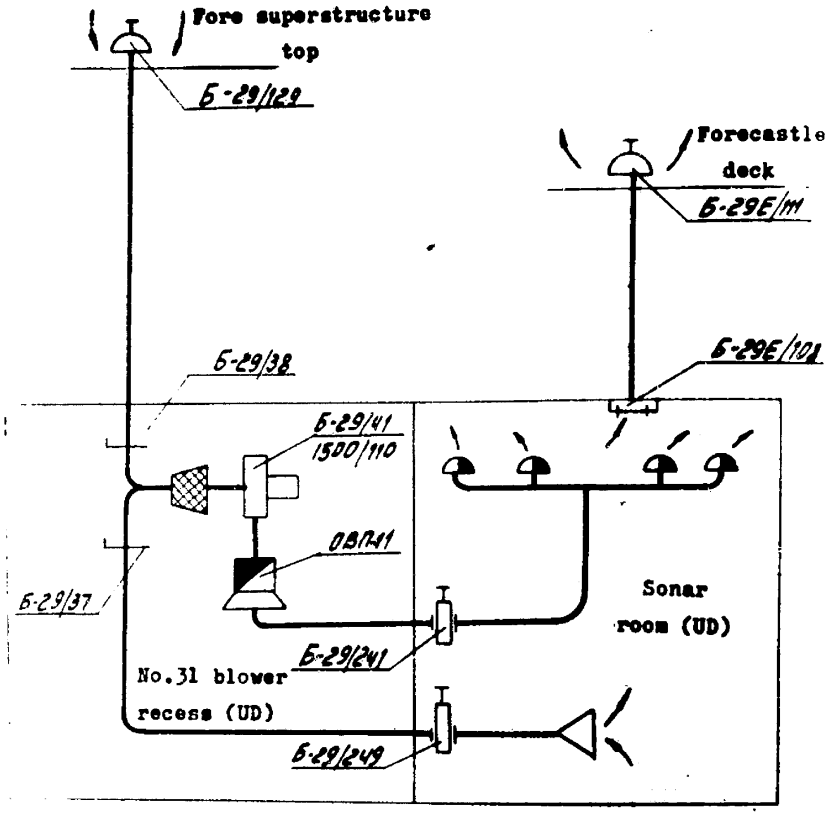
R e f. 6



Open cycle

Open: Б-29/129; Б-29/38; Б-29/241; Б-29Е/108; Б-29Е/111.

Close: Б-29/37; Б-29/249.

Switch on electrical blower Б-29/4.

Closed cycle

Open: Б-29/37; Б-29/241; Б-29/249.

Close: Б-29/129; Б-29/38; Б-29Е/11; Б-29Е/108.

Switch on electrical blower Б-29/41.

FIG.3

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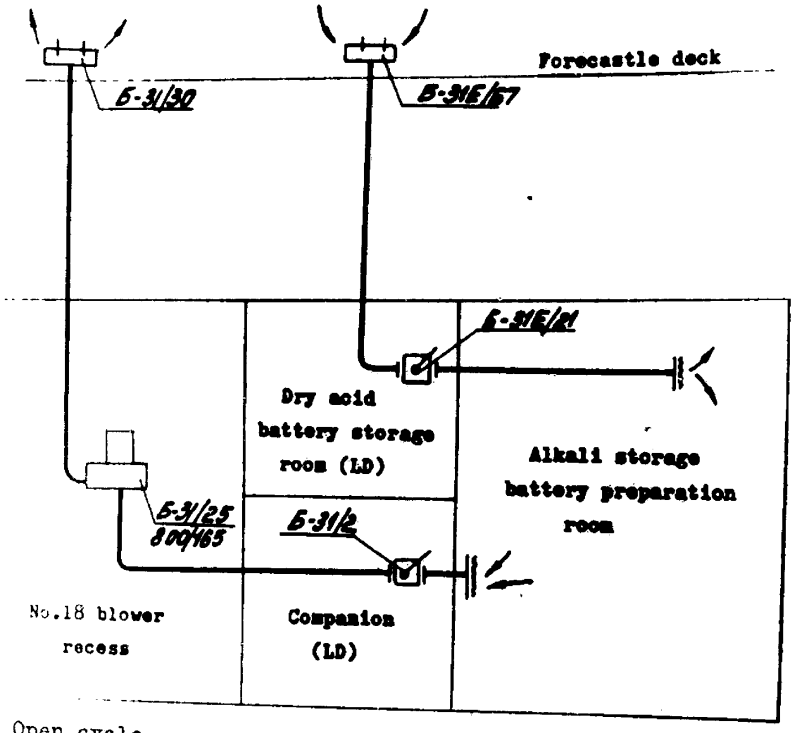
R e f. 7



Open cycle

Open: Б-31/30; Б-31/2; Б-31Е/67; Б-31Е/21.
Switch on electrical blower Б-31/25.
When the electrical blower Б-31/25 is running, electrical blower Б-212/28 shall be switched on to fit air lock in No.18 blower recess.

FIG. 4

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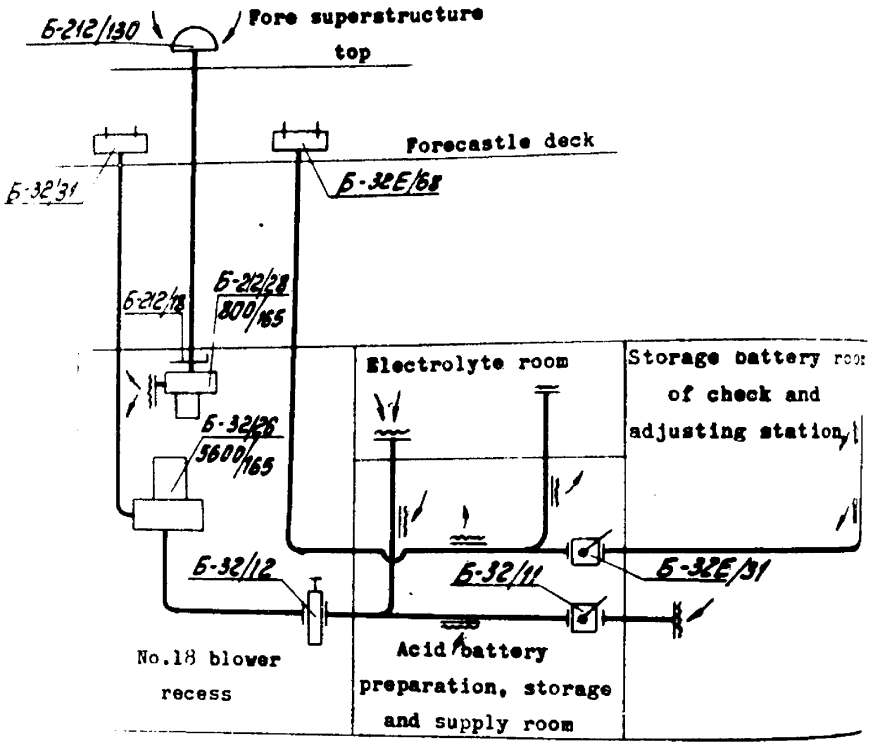
R e f s. 8, 9, 10, 11



Open cycle

Open: Б-32/31; Б-32/12; Б-32/11; Б-32Е/31; Б-32Е/68.
Switch on electrical blower Б-32/26.
Electrical blower Б-212/28 is run to fit air lock in No.18 blower recess when electrical blowers Б-31 and Б-32 are in operation, for which purpose fittings Б-212/30 and Б-212/[illegible] shall be opened.
Switch on electrical blower Б-212/28.

FIG.5

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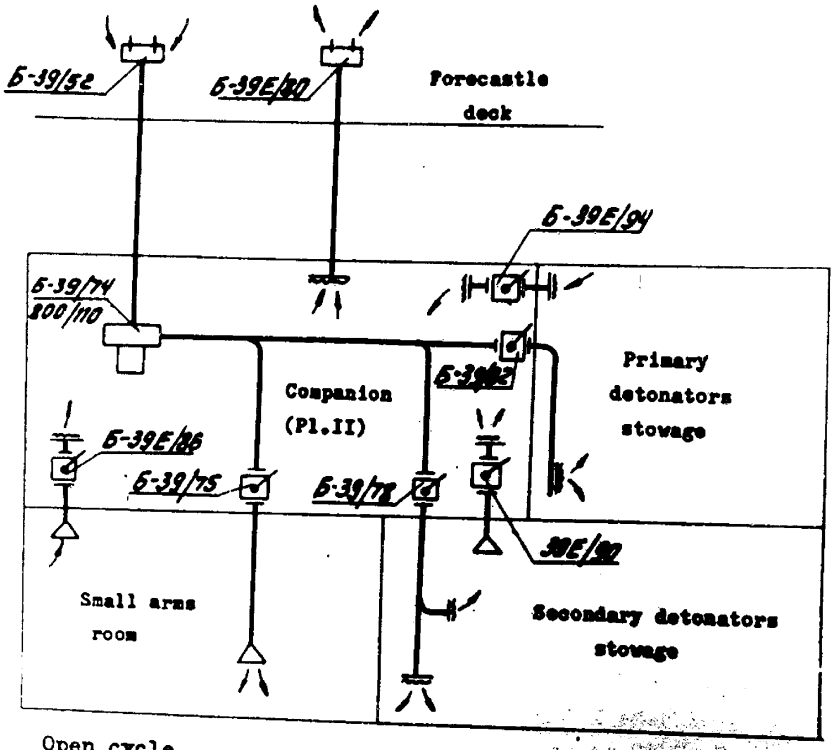
R e f s. 12, 13, 14



Open cycle

Open: Б-39/52; Б-39/82; Б-39/78; Б-39/75; Б-39Е/86; Б-39Е/90; Б-39Е/94; Б-39Е/80.
Switch on electrical blower Б-39/74.

FIG.6

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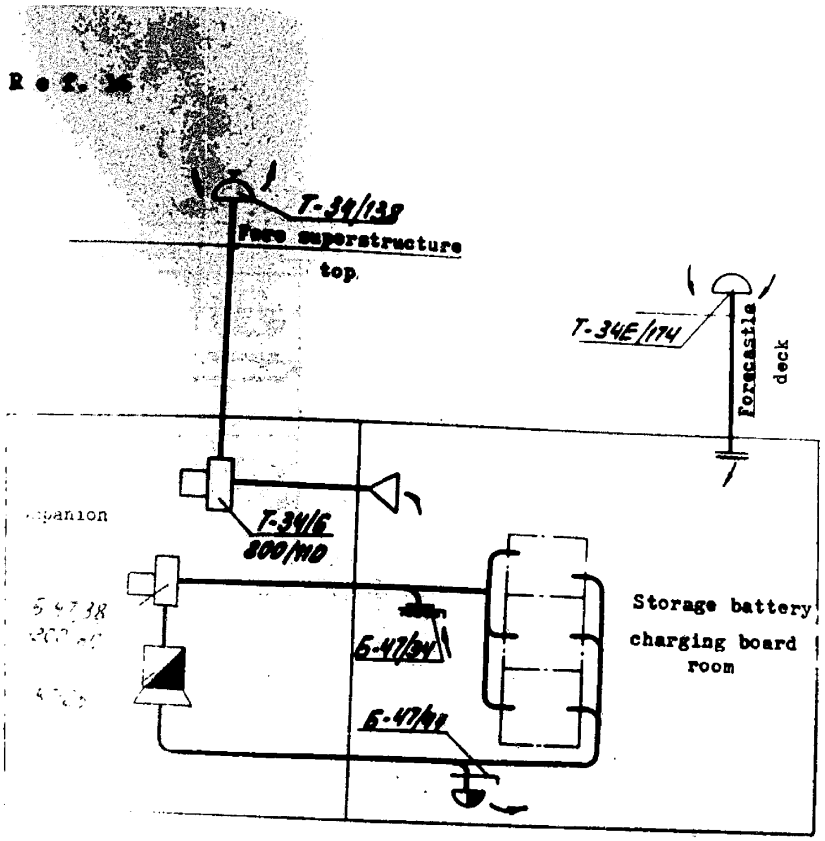
R e f. 36



[illegible] with recirculation

[illegible] T-34E/174; T-34/138.

[illegible] B-47/34 and B-47/44 are installed to adjust the amount [illegible] air supplied to the compartments.

Switch [illegible] electrical blowers B-47/38; T-34/6.

Closed cycle

Closed [illegible] T-34E/174; T-34/138.

Switch [illegible] electrical blower B-47/38

FIG.8

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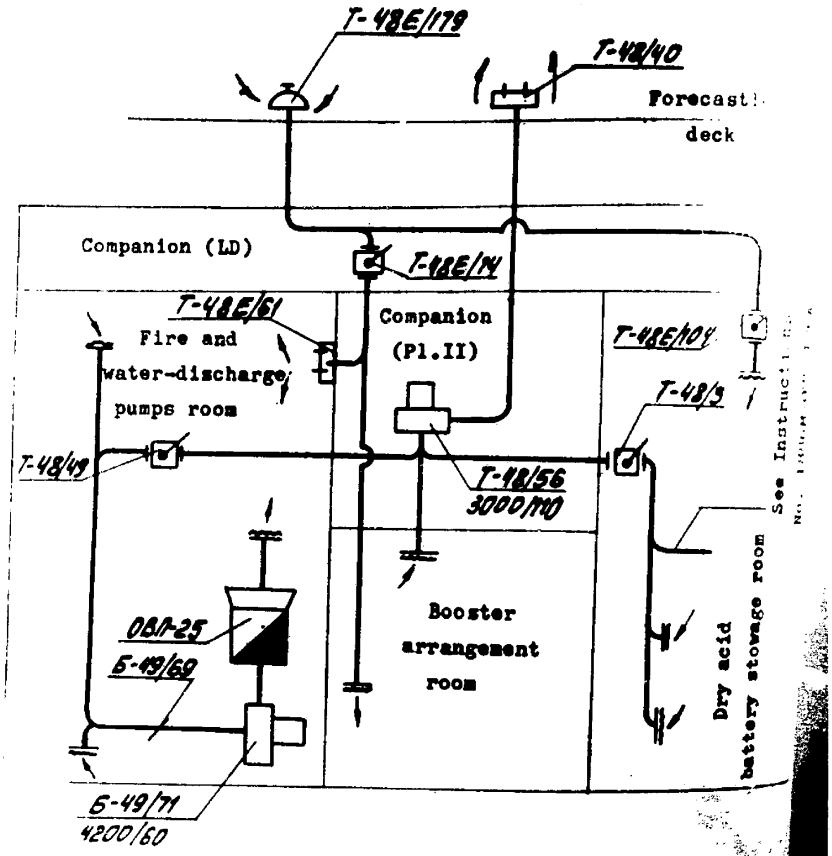
R e f s. 17, 18, 19



pen cycle with recirculation

pen: T-48/49; T-48/3; T-48/40; T-48E/179; T-48E/14; T-48
Switch on electrical blowers T-48/56; Б-49/71.

sed cycle for fire pumps room

en: Б-49/69.

: T-48/49; T-48E/61.

n electrical blower Б-49/71.

FIG.9

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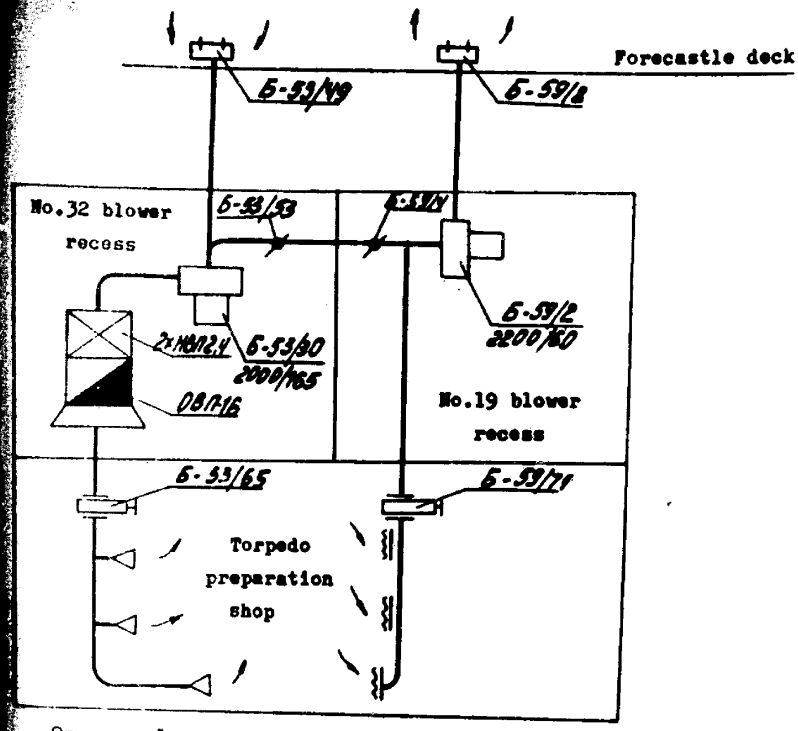

Open cycle

Open: Б-53/49; Б-53/65; Б-59/8; Б-59/74.
Close: Б-53/53.
Switch on electrical blowers Б-53/30; Б-59/2.

Closed cycle

Open: Б-53/65; Б-53/53; Б-59/74.
Close: Б-53/49; Б-59/8.
Switch on electrical blower Б-53/30.
Inside temperature shall be not above +25°C and not below +14°C.

FIG.10

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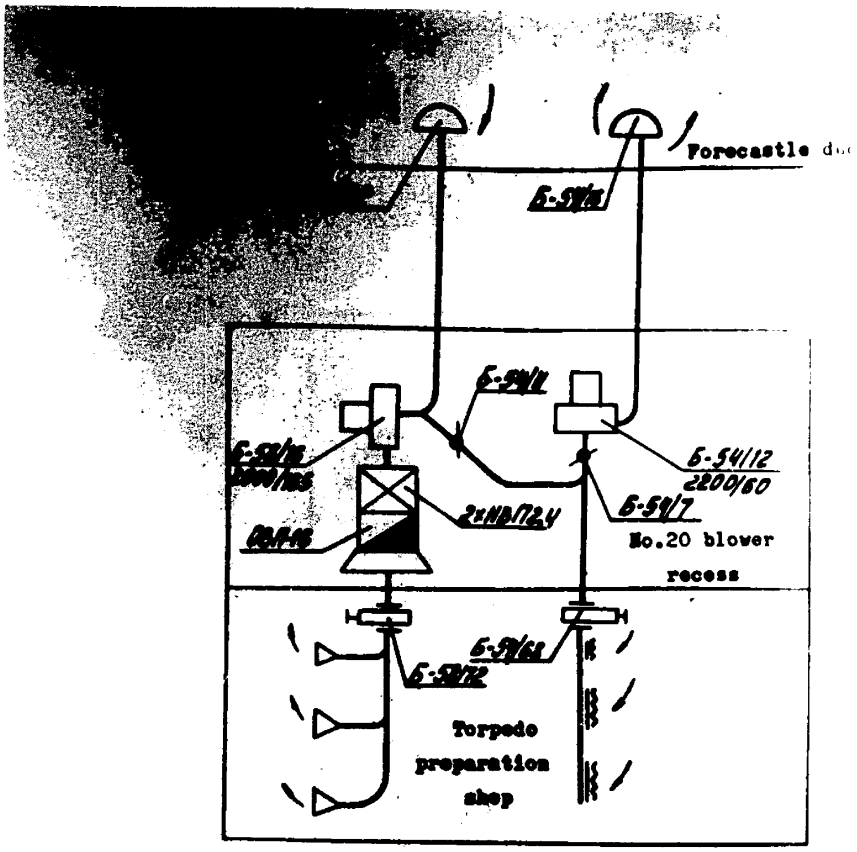

Open cycle

Open: Б-58/22; Б-58/72; Б-54/16; Б-54/7; Б-54/68.
Close: Б-54/11.
Switch on electrical blowers Б-58/16; Б-54/12.

Closed cycle

Close: Б-58/22; Б-54/16; Б-54/7.
Open: Б-58/72; Б-54/11; Б-54/68.
Switch on electrical blower Б-58/16.
Inside temperature shall be not above +25°C and not below +14°C.

FIG.11

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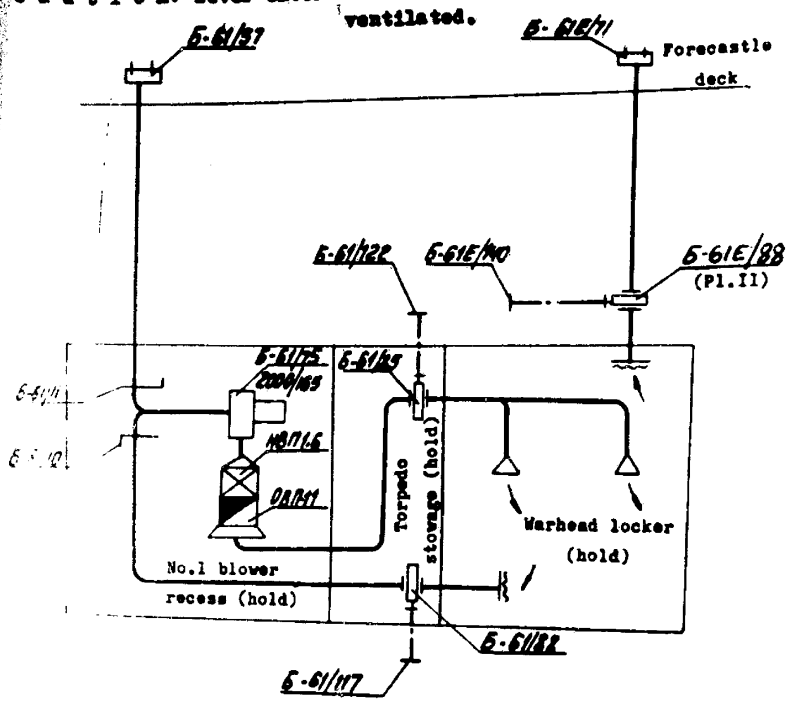
R e f. 23

C a u t i o n! Never enter the warhead locker unless it is ventilated.



Closed cycle

Closed: Б-61/10; Б-61/117 (88).

Open: Б-61/57; Б-61/11; Б-61Е/71; Б-61Е/140 (88).

Switch on electrical blower Б-61/75.

C a u t i o n! Never enter the warhead locker unless it is ventilated in the open cycle.

Closed cycle

Open: Б-61/10; Б-61/117 (88).

Closed: Б-61/57; Б-61/11; Б-61Е/71; Б-61Е/140 (88).

Switch on electrical blower Б-61/75.

Inside temperature shall be not above +25°C and not below +14°C.

FIG.12

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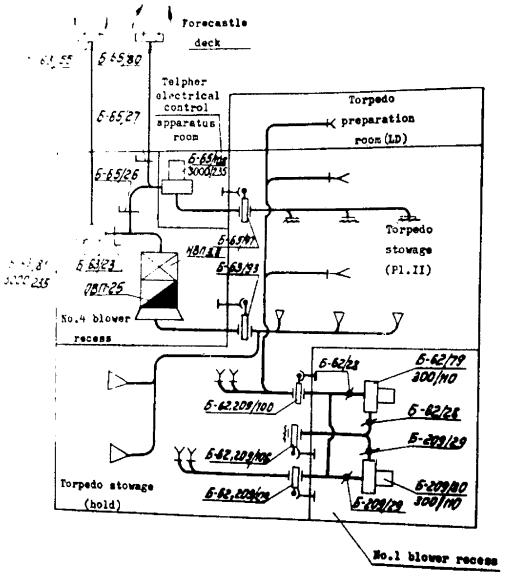
[illegible] 24, 25

[illegible] Never enter the torpedo stowage unless it is ventilated.



Open cycle

Open: Б-63/56; [illegible]; Б-65/[illegible]; Б-65/27; Б-65/80.
Close: Б-65/26.
Switch on electr[illegible] [illegible]3/81, Б-65/108.
Caution: [illegible] the torpedo stowage unless it is v[illegible] in the open cycle.

Closed cycle

Open: Б-65/26; [illegible].
Close: Б-63/56, [illegible]/27; Б-65/80.
Switch on electri[illegible] Б-65/108.
Inside temperature shall [illegible] not above +25°C and not below +5°C.
Electrical blowers Б-62 and Б-209 mounted for ventilating electric torpedo battery wells operate in turn.

To run electrical blower Б-62

Open: Б-62, 209/100; Б-62, 209/103; Б-62, 209/106; Б-62/28 (2 pcs).
Close: Б-209/29 (2 pcs).
Switch on electrical blower Б-62/79.

To run electrical blower Б-209

Open: Б-62, 209/100, 103, 106; Б-209/29 (2 pcs).
Close: Б-62/28 (2 pcs).
Switch on electrical blower Б-209/80.
Note: The torpedoes are exhausted with the [illegible] hoses.

FIG.13

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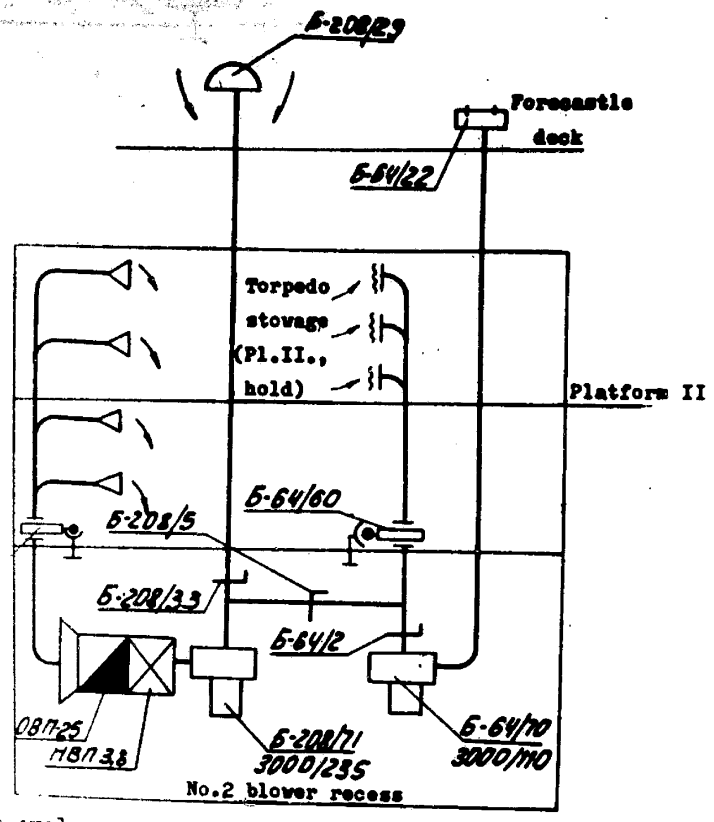
R e f. 26

C a u t i o n! Never enter the torpedo stowage unless it is ventilated.



Open cycle

Open: Б-208/29; Б-208/33; Б-208/81; Б-64/2; Б-64/60; Б-64/22.
Close: Б-208/5.
Switch on electrical blowers Б-208/71; Б-64/70.

C a u t i o n ! Never enter the torpedo stowage unless it is ventilated in the open cycle.

Closed cycle

Open: Б-208/81; Б-208/5; Б-64/10.
Close: Б-208/29; Б-208/33; Б-64/2; Б-64/22.
Switch on electrical blower Б-208/71.
Inside temperature shall be not above +25°C and not below +5°C.

FIG.14

50X1-HUM

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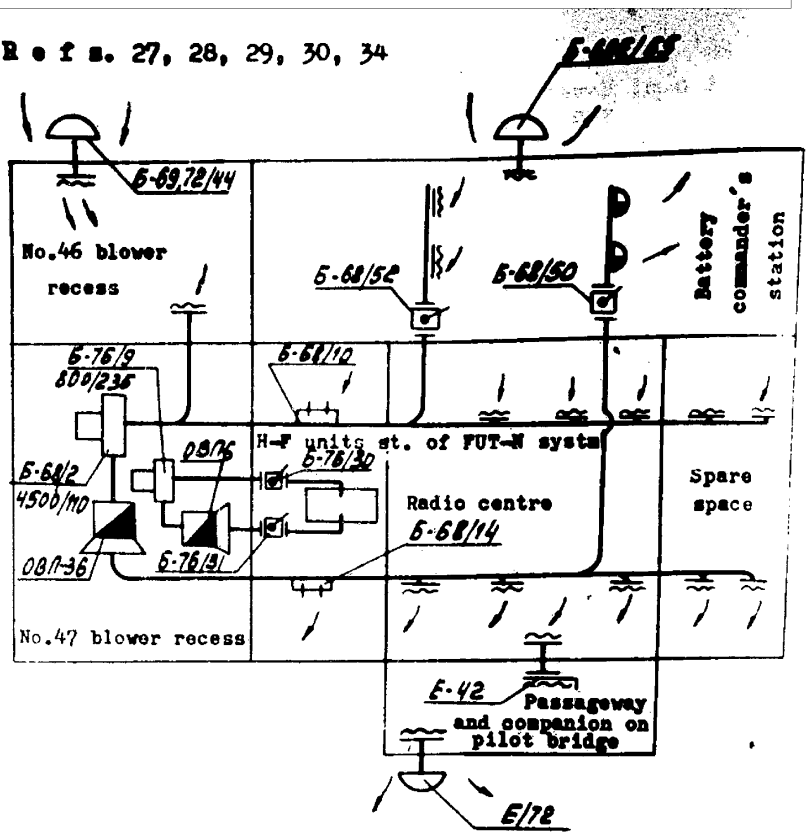
50X1-HUM

R e f s. 27, 28, 29, 30, 34



Open cycle with recirculation

Open: Б-68/52; Б-68/50; Б-68/10; Б-68/14; Б/72; Б/42; Б-69, 72/44; Б-68 Б/55.
Switch on electrical blower Б-68/2.

Closed cycle

Open: Б-68/52; Б-68/50; Б-68/10; Б-68/14.
Close: Б-69, 72/44; Б-68Б/55, Б/42, Б/72.
Switch on electrical blower Б-68/2.
Electrical blower Б-76/9 installed for ventilation of the device operates in the closed cycle only.
Open: Б-76/30; Б-76/31.
Switch on electrical blower Б-76/9.

FIG.15

50X1-HUM

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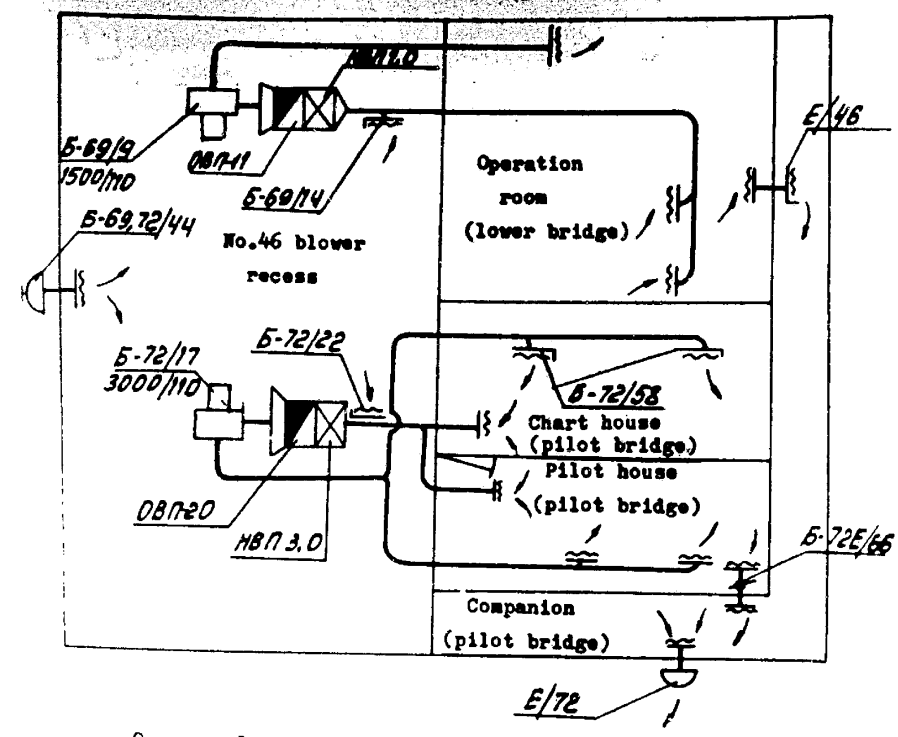
50X1-HUM



Open cycle with recirculation

Open: Б-69, 72/44; Б-69/14, Е/46, Б-72/22; Б-72Е/66; Е/72.

Switch on electrical blowers Б-69/9; Б-72/17.

Closed cycle

Close: Б-69, 72/44; Б-69/14, Е-46; Б-72/22; Б-72Е/66, Е-172.

Switch on electrical blowers Б-69/9; Б-72/17.

Fitting Б-72/58 is mounted for adjustment of air supply.

FIG.16

50X1-HUM

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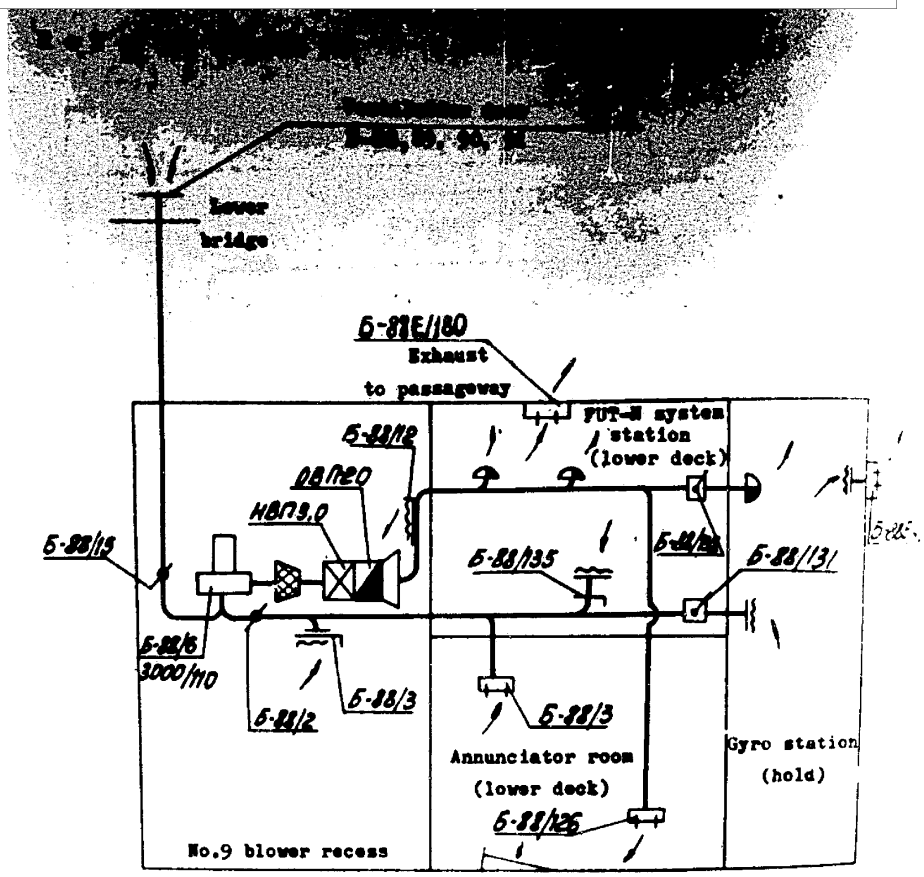
Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

50X1-HUM



Open cycle with recirculation

Open: ventilation door Б-88, 89, 90, 91; Б-88/15; Б-88/3; Б-88/126; Б-88/131; Б-88/132, Б-88Е/180, Б-88Е/40.
Switch on electrical blower Б-88/6.
Dampers Б-88/3, Б-88/12, Б-88/135 are used for adjustment of air supply to the spaces.

Closed cycle

Close: ventilation door Б-88, 89, 90, 91; Б-88/15; Б-88Е/40; Б-88Е/180.
Open: Б-88/3; Б-88/126; Б-88/131; Б-88/132.
Switch on electrical blower Б-88/6.

FIG.17

50X1-HUM

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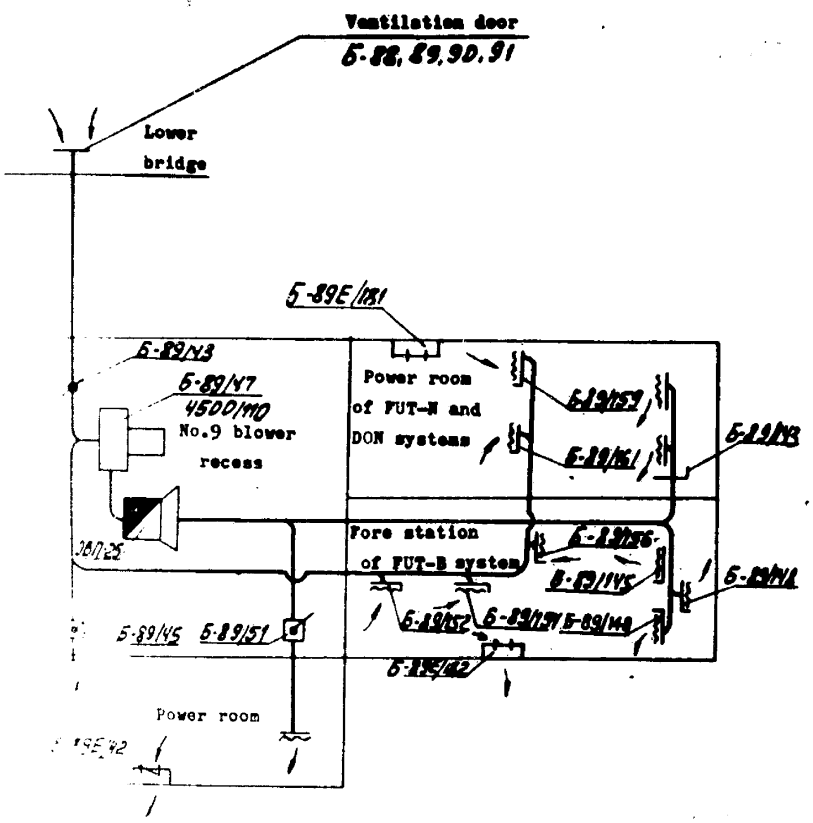
Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

50X1-HUM

R e f s. 39, 40, 41



[illegible] cycle with recirculation

[illegible] ventilation door Б-89, 88, 90, 91; Б-89/43, Б-89/45, [illegible]/51, Б-89Е/181; Б-89Е/182; Б-89Е/42.

[illegible] Б-89/159; Б-89/161; Б-89/143; Б-89/148; Б-89/145; [illegible]/142; Б-89/152; Б-89/154 are used for adjustment of air [illegible].

[illegible] on electrical blower Б-89/47.

[illegible]sed cycle

[illegible]: Б-89/43; Б-89Е/42; door Б-89, 88, 90, 91; [illegible] [illegible]Е/152.

[illegible]: Б-89/45; Б-89/51.

[illegible] on electrical blower Б-89/47.

FIG.18

50X1-HUM

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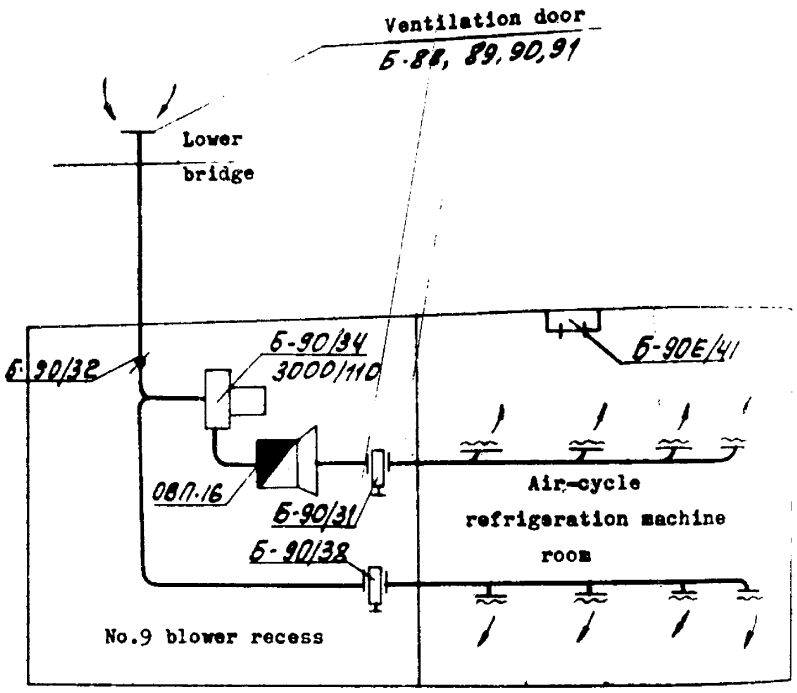
Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

50X1-HUM

R e f. 42



Open cycle with recirculation

Open: ventilation door Б-90, 88, 89, 91; Б-90/32; Б-90/37; Б-90/38; Б-90Е/41.
Switch on electrical blower Б-90/34.

Closed cycle

Open: Б-90/37, Б-90/38.
Close: Б-90/32, door Б-90, 88, 89, 91; Б-90Е/41.
Switch on electrical blower Б-90/34.

FIG.19

50X1-HUM

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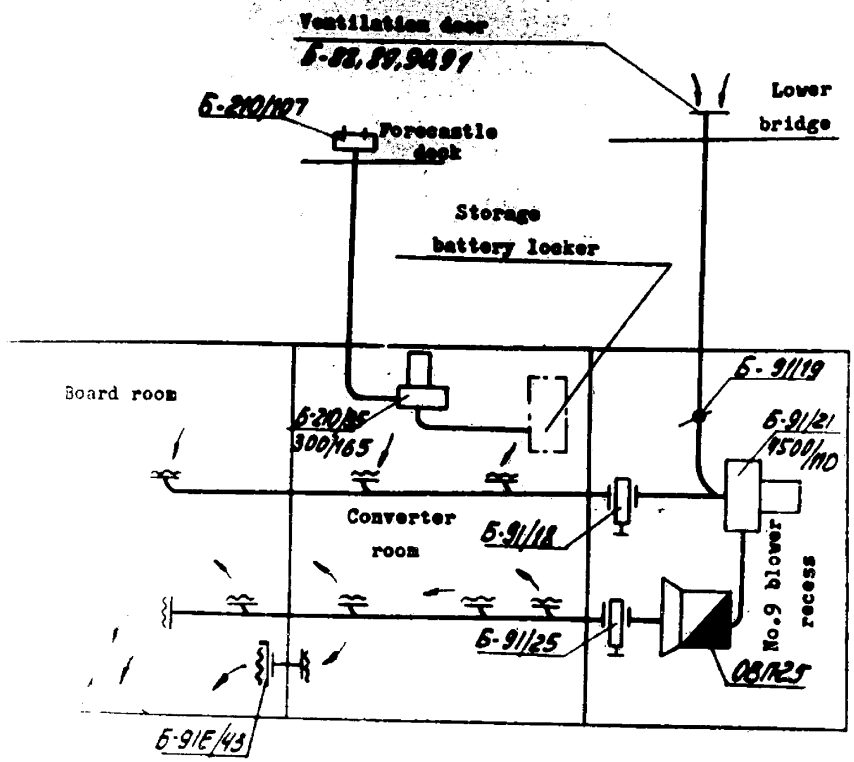
Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

50X1-HUM

R e f s. 43, 44, 45



Open cycle with recirculation

Open: Б-91/19; Б-91/18; Б-91/25; Б-210/107; ventilation door Б-91, 88, 89, 90; Б-91Е/43.
Switch on electrical blowers Б-91/21; Б-210/35.

Closed cycle

Close: Б-91/19; Б-210/107; ventilation door Б-91, 88, 89, 90, Б-91Е/43.
Open: Б-91/18, Б-91/25.
Switch on electrical blower Б-91/21.

FIG.20

50X1-HUM

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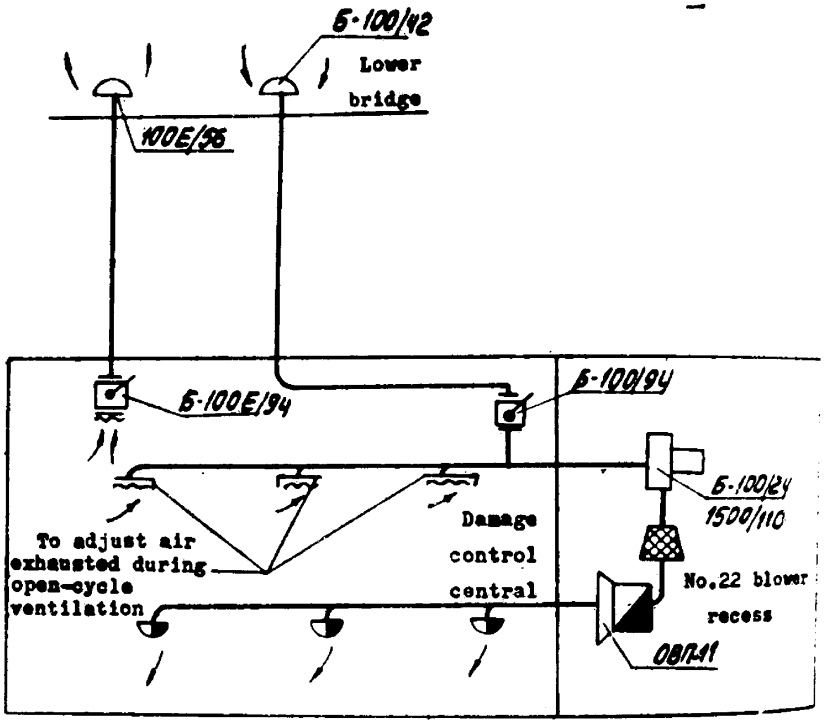
Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

50X1-HUM

R e f. 46



Open cycle with recirculation

Open: Б-100/42; Б-100/94; Б-100Е/94; Б-100Е/56.
Switch on electrical blower Б-100/24.

Closed cycle

Close: Б-100/42; Б-100/94; Б-100Е/94; Б-100Е/56.
Switch on electrical blower Б-100/24.

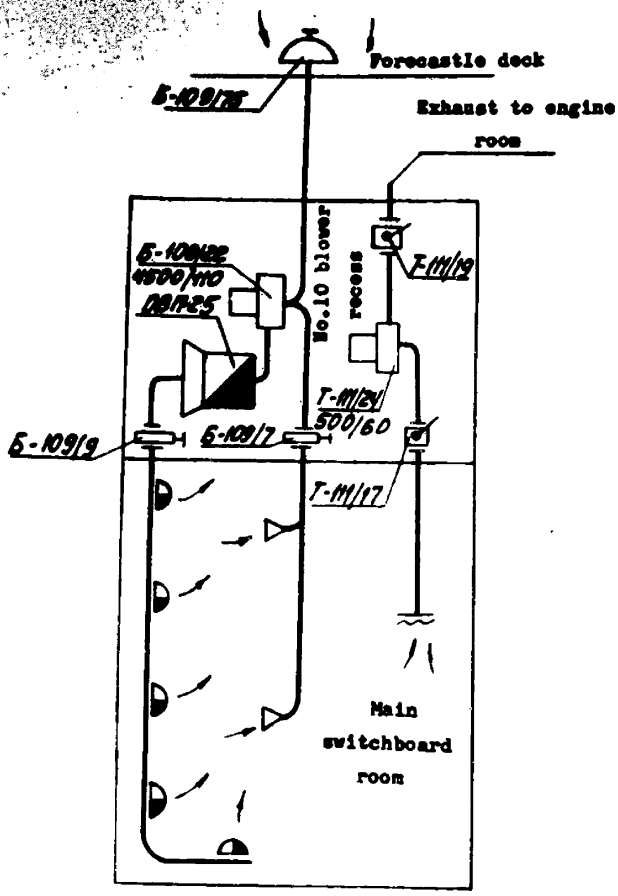
FIG.21

50X1-HUM

Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

50X1-HUM



Open cycle with recirculation

Open: Б-109/75; Б-109/9; Б-109/17; Т-111/9, Т-111/17.
Switch on electrical blowers Б-109/22, Т-111/24.

Closed cycle

Open: Б-109/9; Б-109/7.
Close: Б-109/75; Т-111/19; Т-111/17.
Switch on electrical blower Б-109/22.

FIG.22

50X1-HUM

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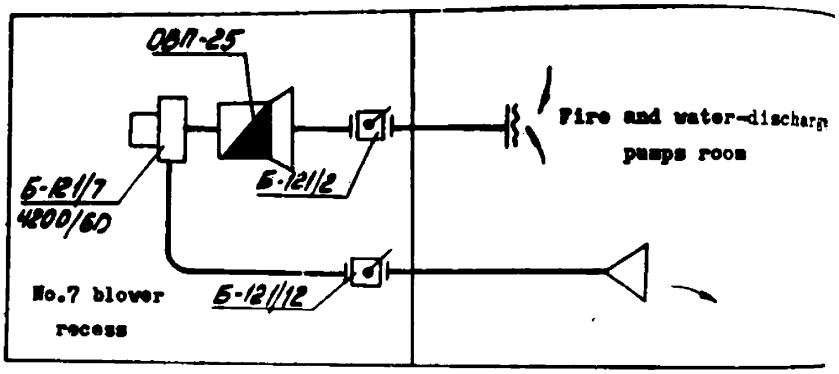
Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

50X1-HUM

R e f. 48



Closed cycle

Open: Б-121/2; Б-121/12.
Switch on electrical blower Б-121/7.

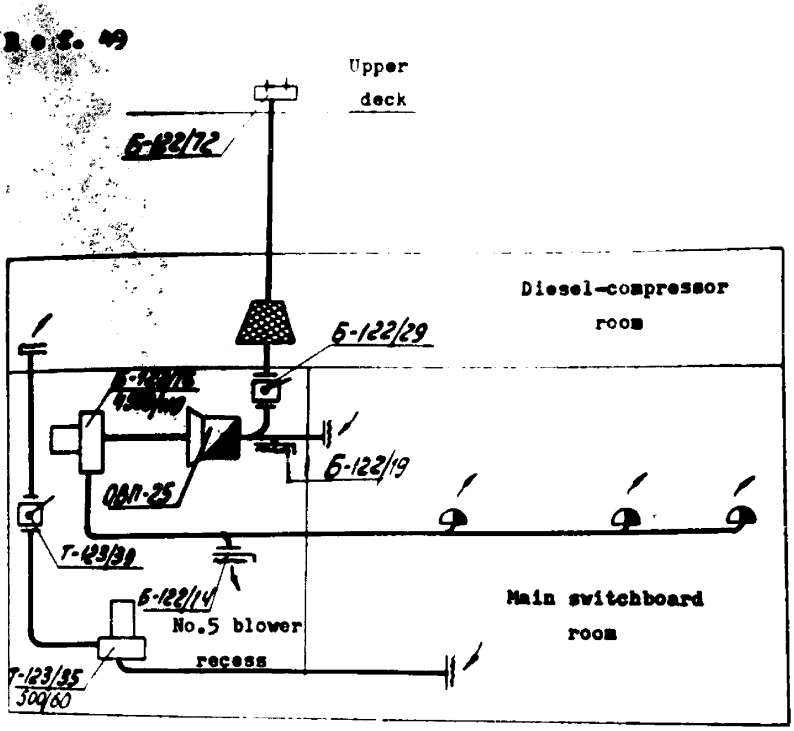
FIG.23

50X1-HUM

Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

50X1-HUM



Open cycle with recirculation

Open: Б-122/72; Б-122/29; Б-122/19; Б-122/14; Б-123/39.
Switch on electrical blowers Б-122/16; Т-123/35.

Closed cycle

Open: Б-122/19; Б-122/14.
Close: Б-122/29; Б-122/72; Т-123/39.
Switch on electrical blower Б-122/16.

FIG.24

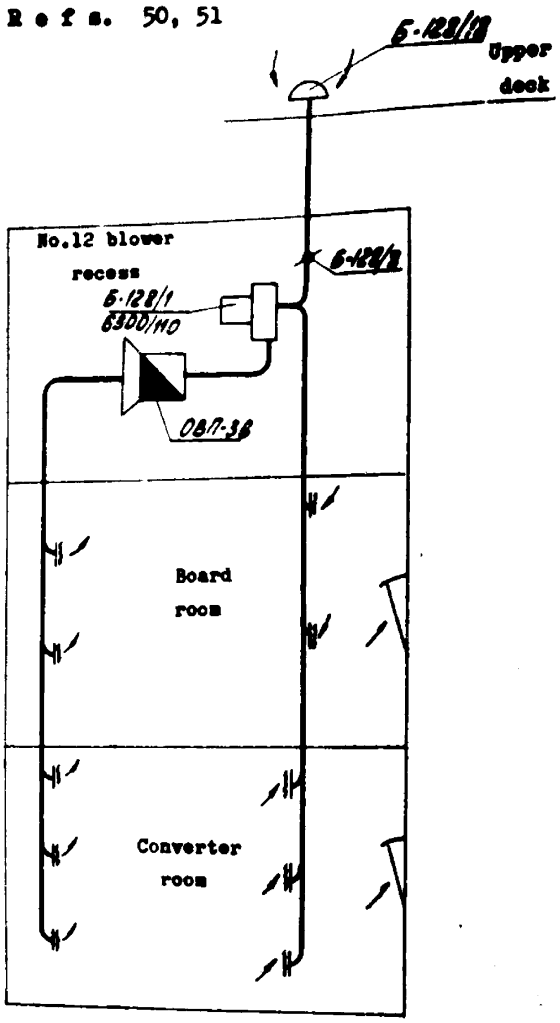
50X1-HUM

Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

50X1-HUM

Refs. 50, 51



Open cycle

Open: Б-128/18, Б-128/8.
Switch on electrical blower Б-128/1.

Closed cycle

Close: Б-128/18; Б-128/8.
Switch on electrical blower Б-128/1.

FIG.25

50X1-HUM

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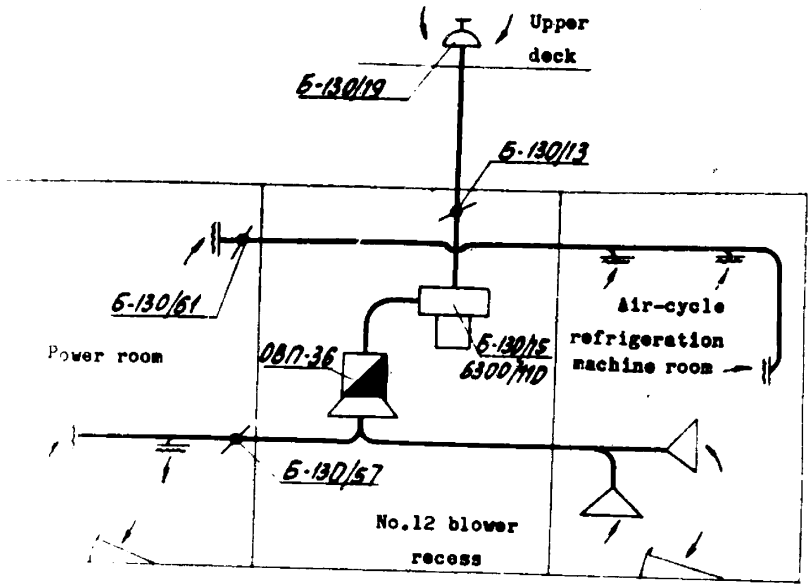
Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

50X1-HUM

R e f s. 52, 53



Open cycle with recirculation

Open: Б-130/19; Б-130/13; Б-130/61; Б-130/57.
Switch on electrical blower Б-130/15.

Closed cycle

Close: Б-130/19; Б-130/13.
Open: Б-130/61; Б-130/57.
Switch on electrical blower Б-130/15.

FIG.26

50X1-HUM

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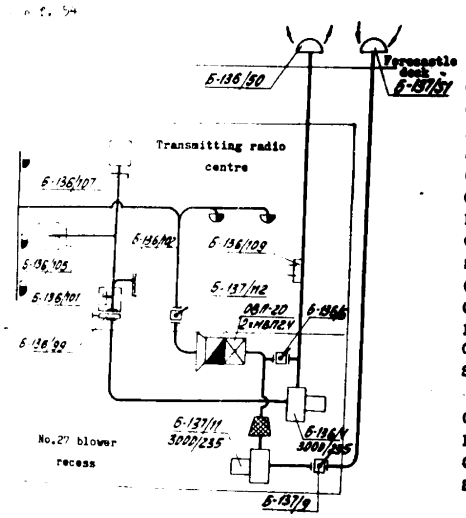
Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

50X1-HUM

50X1-HUM



Open cycle

(a) With the equipment and electrical blower E-136/4 not in use:

Open: E-136/109; E-136/50; E-137/112; E-137/9; E-137/51.

Close: E-136/107; E-136/105; E-136/101; E-136/102; E-136/99; E-136/6.

Switch on electrical blower E-137/11.

(b) With the equipment not in use:

Open: E-137/112; E-137/9; E-137/51; E-136/102; E-136/99; E-136/50.

Close: E-136/107; E-136/105; E-136/101; E-136/6; E-136/109.

Switch on electrical blowers E-136/4; E-137/11.

(c) With the equipment in operation:

Open: E-136/107; E-136/105; E-136/101; E-136/102; E-136/50; E-137/51; E-137/9; E-137/112; E-136/99.

Close: E-136/6; E-136/109.

Switch on electrical blowers E-136/4; E-137/11.

Closed cycle

Open: E-136/107; E-136/105; E-136/101; E-136/102; E-136/99; E-136/6; E-137/112.

Close: E-136/50; E-136/109; E-137/51; E-137/9.

Switch on electrical blower E-136/4.

FIG.27

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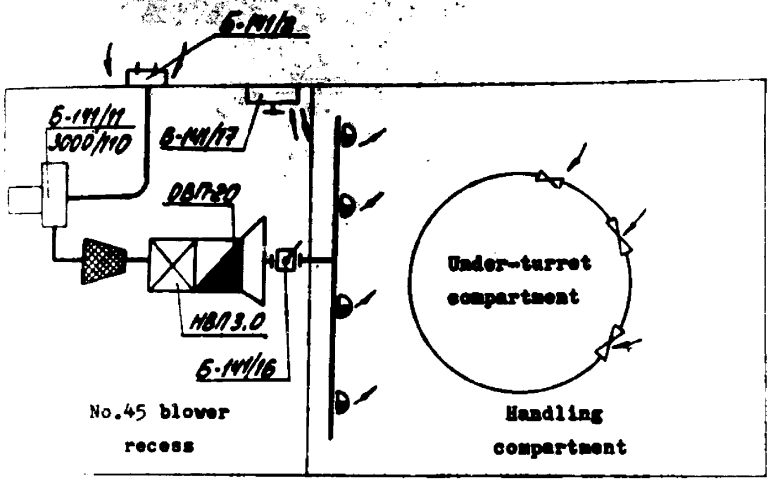
Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

50X1-HUM

R e f s. 55, 56



Open cycle

Open: Б-141/8; Б-141/16.
Switch on electrical blower Б-141/11.
Б-141/17 is natural ventilation of No.45 blower recess.

FIG. 28

50X1-HUM

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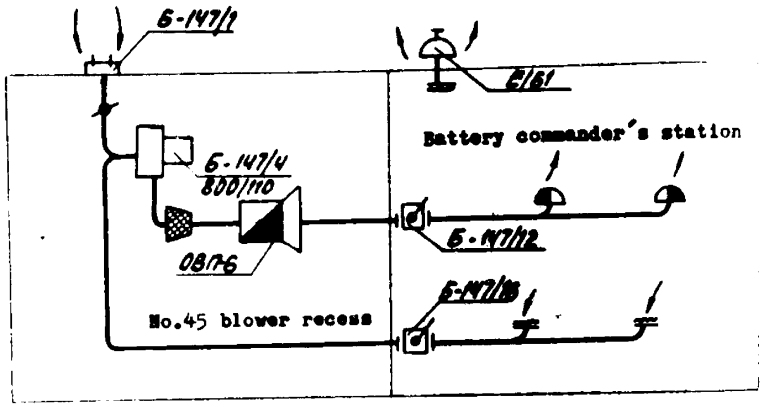
Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

50X1-HUM

R e f. 57



Open cycle

Open: Б-147/1; Б-147/12; Б/61.
Close: Б-147/16.
Switch on electrical blower Б-147/4.

Closed cycle

Open: Б-147/12; Б-147/16.
Close: Б-147/1; Б/61.
Switch on electrical blower Б-147/4.

FIG.29

50X1-HUM

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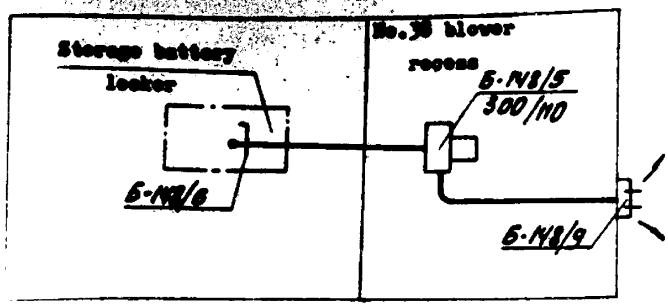
Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

50X1-HUM

R e f. 38

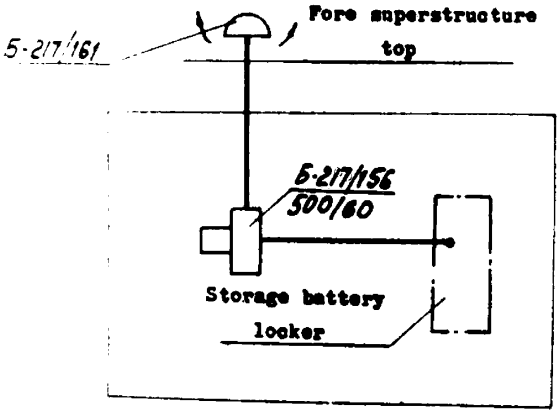


Open cycle

Open: Б-148/9; Б-148/6.
Switch on electrical blower Б-148/5.

FIG.30

R e f. 65



Open cycle

Open: Б-217/161.
Switch on electrical blower Б-217/156.

FIG.31

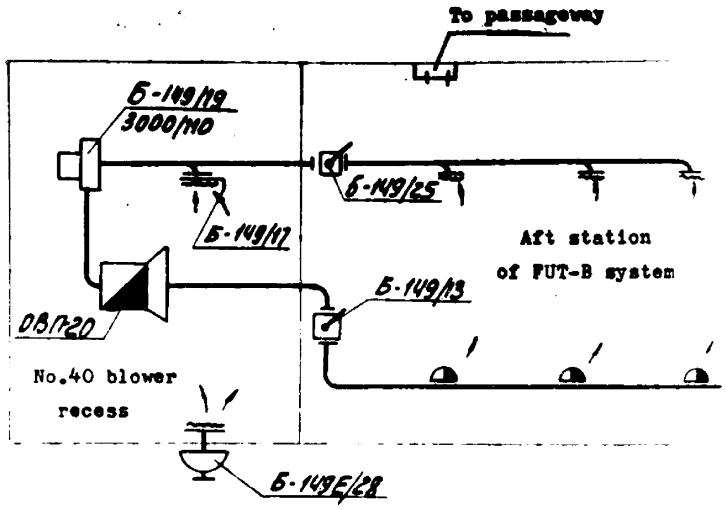
50X1-HUM

Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

50X1-HUM

R e f s. 59, 60



Open cycle with recirculation

Open: Б-149Е/28; Б-149/17; Б-149/25; Б-149/13.
Switch on electrical blower Б-149/19.

Closed cycle

Close: Б-149Е/28; Б-149/17.
Open: Б-149/25; Б-149/13.
Switch on electrical blower Б-149/19.

FIG.32

50X1-HUM

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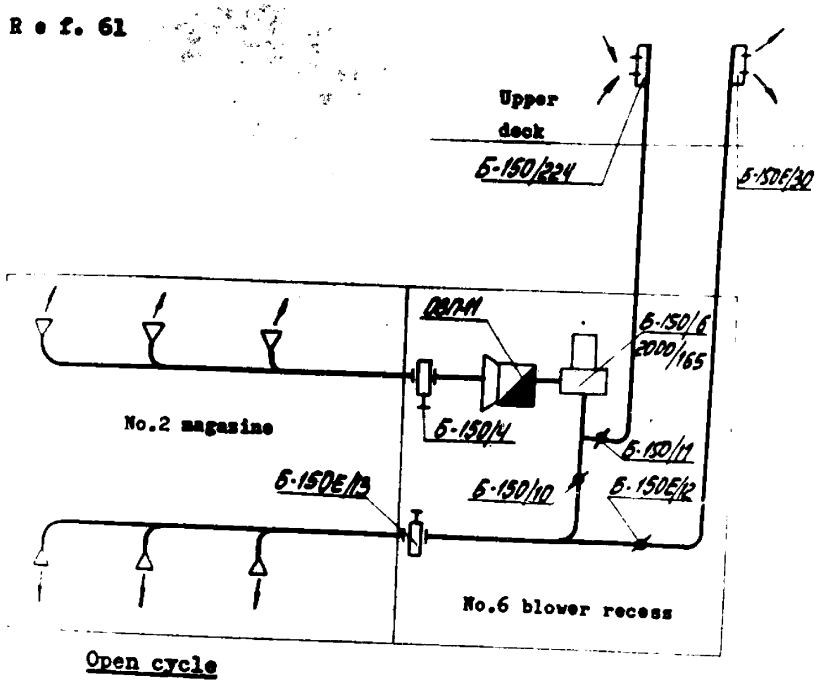
Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

50X1-HUM

R e f. 61



Open cycle

Open: Б-150/4; Б-150/11; Б-150/12; Б-150/224; Б-150Е/30; Б-150Е/13.
Close: Б-150/10.
Switch on electrical blower Б-150/6.

Closed cycle

Open: Б-150/4; Б-150/10; Б-150Е/13.
Close: Б-150/11; Б-150/224; Б-150Е/30; Б-150Е/12.
Switch on electrical blower Б-150/6.

FIG.33

50X1-HUM

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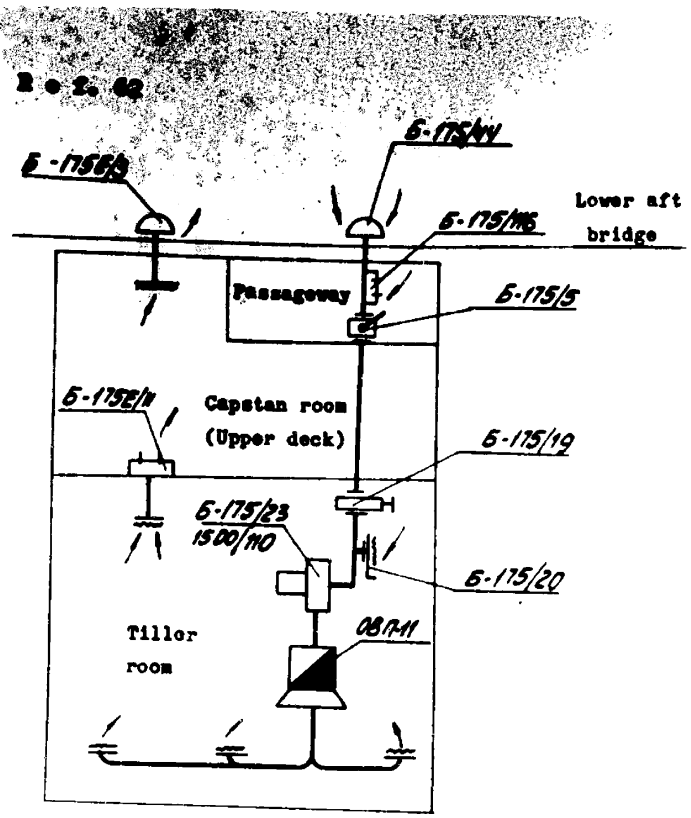
Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

50X1-HUM



Open cycle

Open: Б-175/44; Б-175/116; Б-175/19; Б-175Е/11; Б-175Е/3.
Close: Б-175/20.
Switch on electrical blower Б-175/23.

Closed cycle

Open: Б-175/20.
Close: Б-175/4; Б-175/116; Б-175/5; Б-175/19; Б-175Е/3; Б-175Е/11.
Switch on electrical blower Б-175/23.
In cold seasons air is supplied to the tiller room from the passageway on the upper deck through the cover Б-175/116.

FIG.34

50X1-HUM

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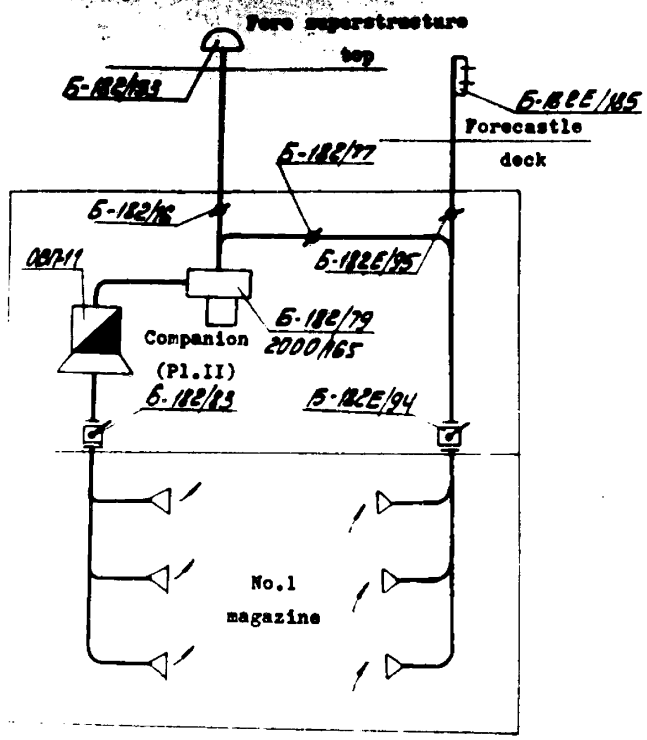
Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

50X1-HUM

R e f. 63



Open cycle

Open: Б-182/83; Б-182/76; Б-182/153; Б-182E/185; Б-182E/95; Б-182E/94.

Close: Б-182/77.

Switch on electrical blower Б-182/79.

Closed cycle

Open: Б-182/83; Б-182/77; Б-182E/94.

Close: Б-182/153; Б-182/76; Б-182E/185; Б-182E/95.

Switch on electrical blower Б-182/79.

FIG.35

50X1-HUM

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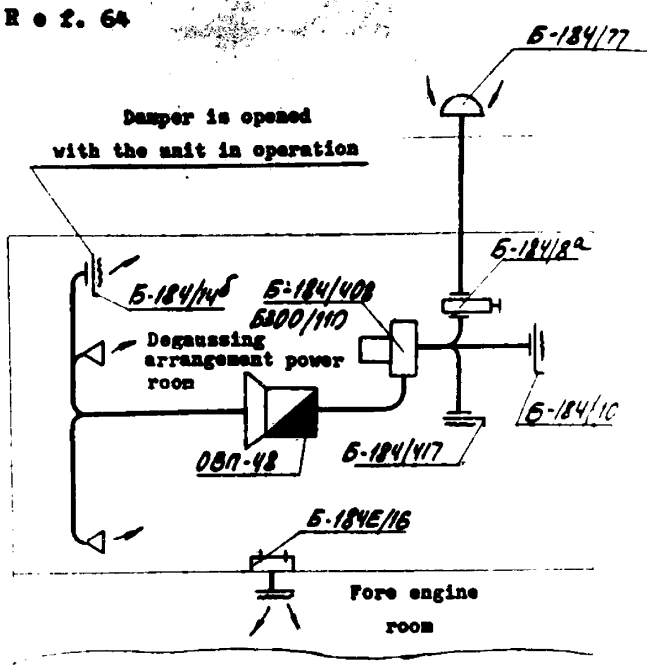
Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

50X1-HUM

Ref. 64



Open cycle with recirculation

Open: Б-184/77; Б-184/8а; Б-184/10; Б-184Е/16.
Close: Б-184/417.
Switch on electrical blower Б-184/408.

Closed cycle

Close: Б-184/77; Б-184/8а; Б-184Е/16.
Open: Б-184/10; Б-184/417.
Switch on electrical blower Б-184/408.

FIG. 35

50X1-HUM

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Sanitized Copy Approved for Release 2011/08/03 : CIA-RDP82-00038R002100040001-5

50X1-HUM

Appendix No.1

TABLE OF SYMBOLS

No.	Symbol	Symbol key
1		Pipe runs down
2		Pipe runs up
		Mechanical supply
		Mechanical supply with heating or cooling of air
		Mechanical exhaust
		Natural supply
		Natural exhaust
		Dust filter
		Water- and gastight valve or flapper
		Ventilation screen
		Noise absorbing branch pipe
		Ventilation cowl

No.	Symbol	Symbol key
13		Directional terminal
14		Water- and gas-tight cover
15		Mushroom head
16		Common-type gate valve
17		Sluice valve
18		Air heater
19		Air cooler with eliminator
20		Air heater and air cooler
21		Electric blower
22		Throttle valve
23		T-piece to connect hoses
24		Recirculation

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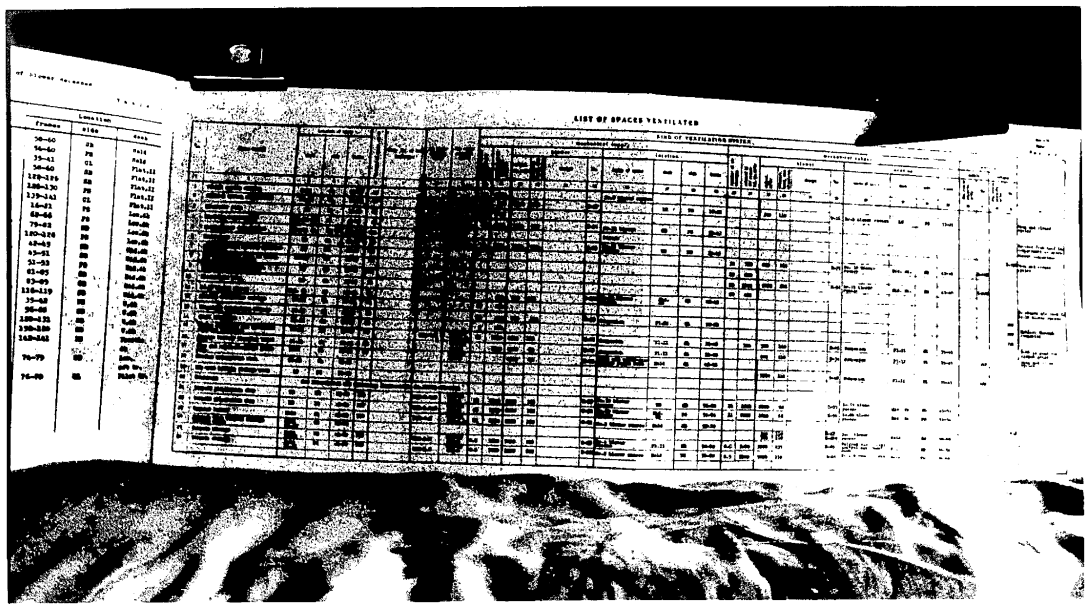

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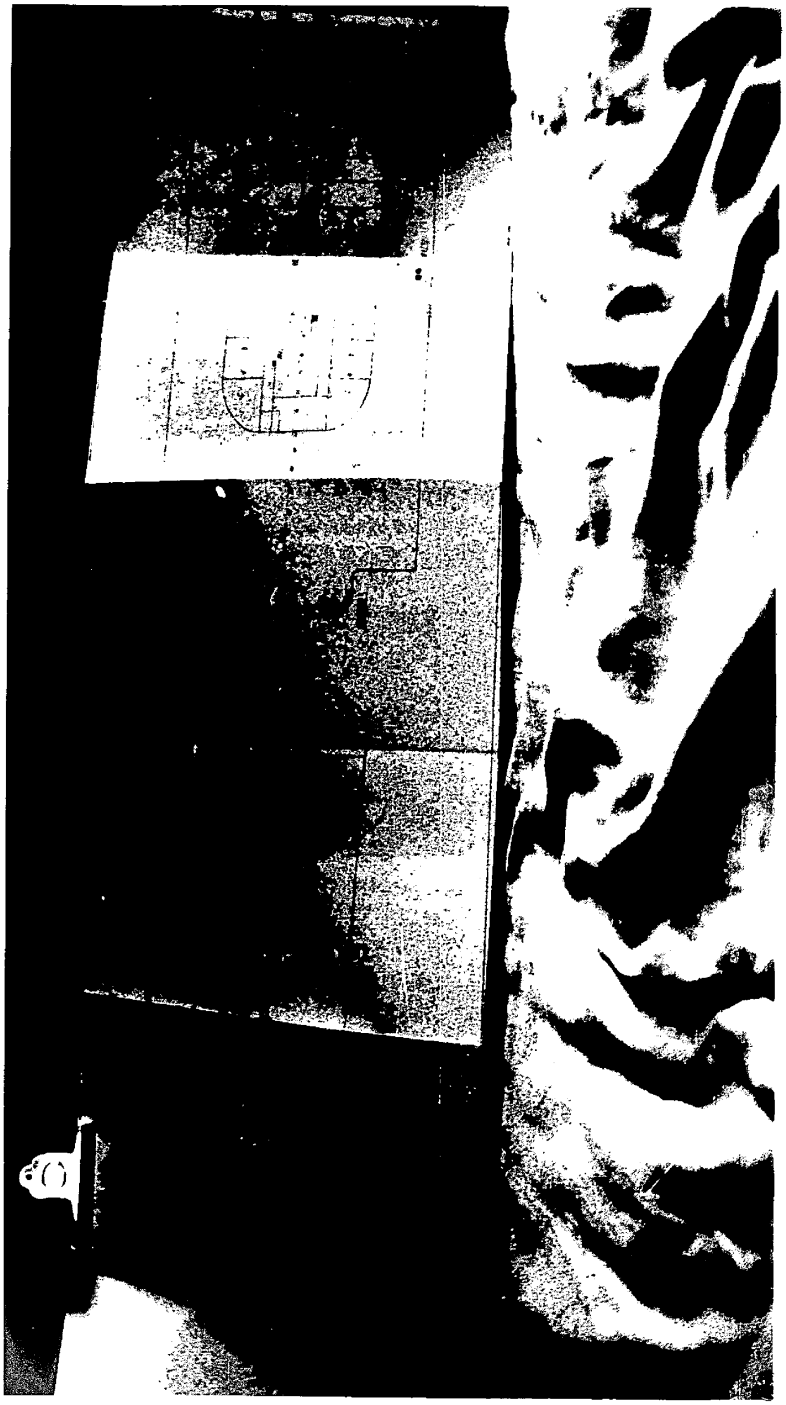

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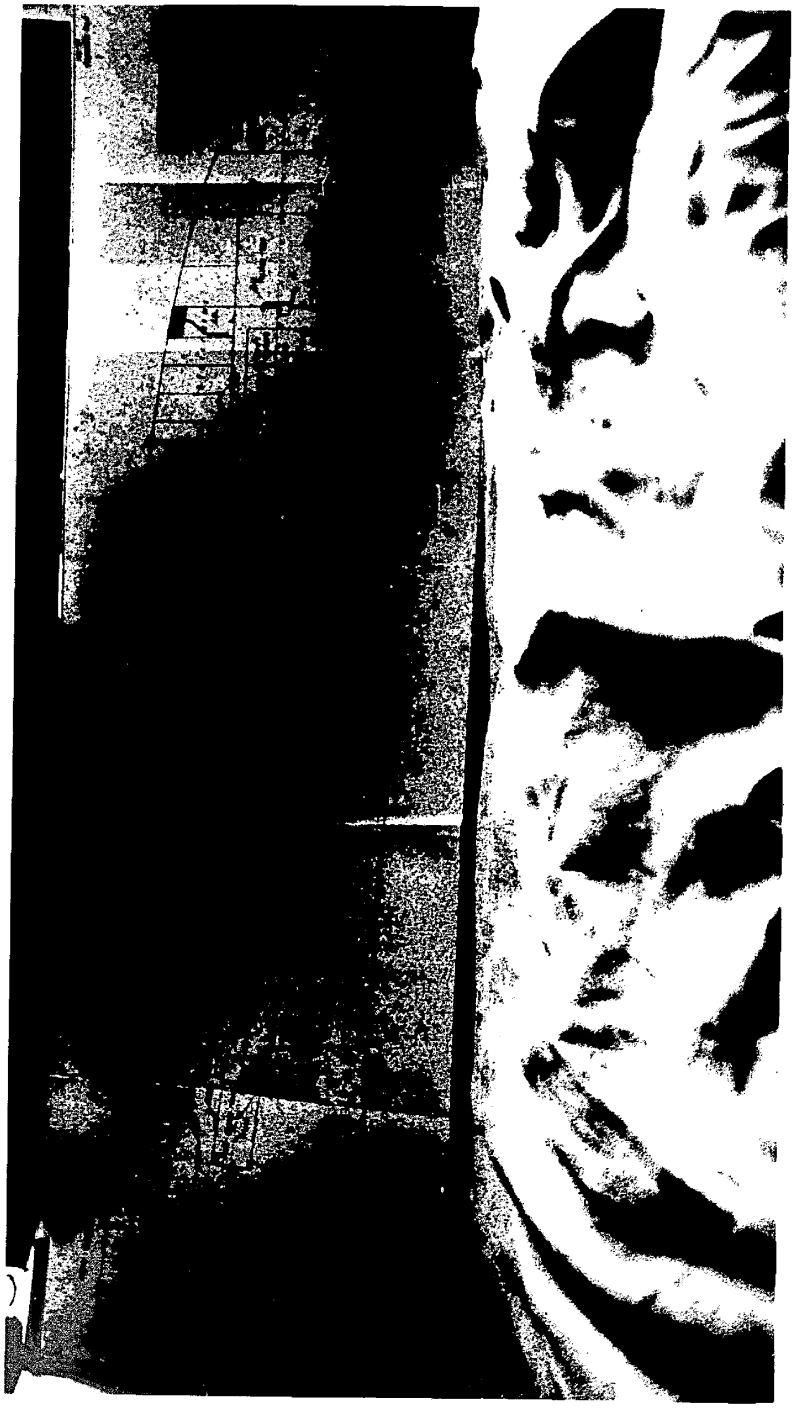

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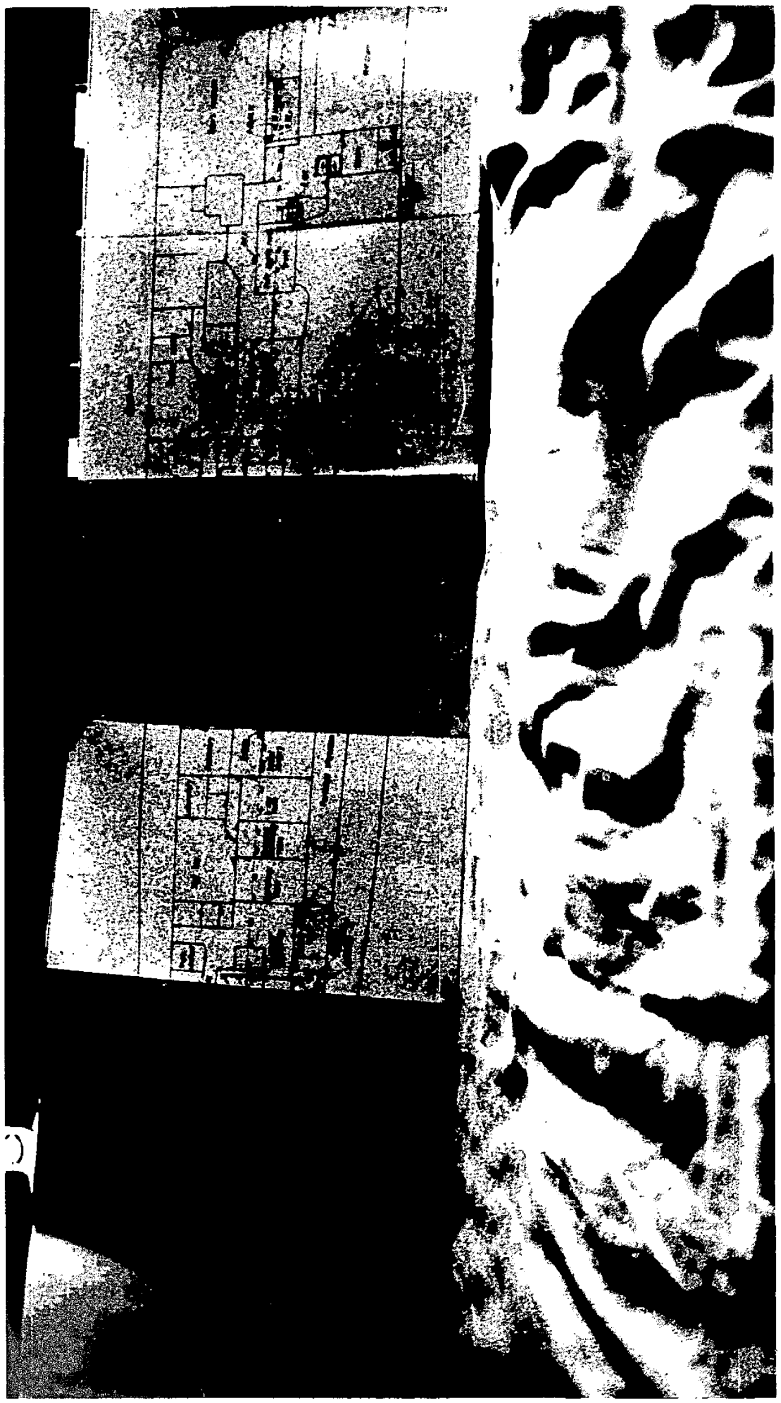

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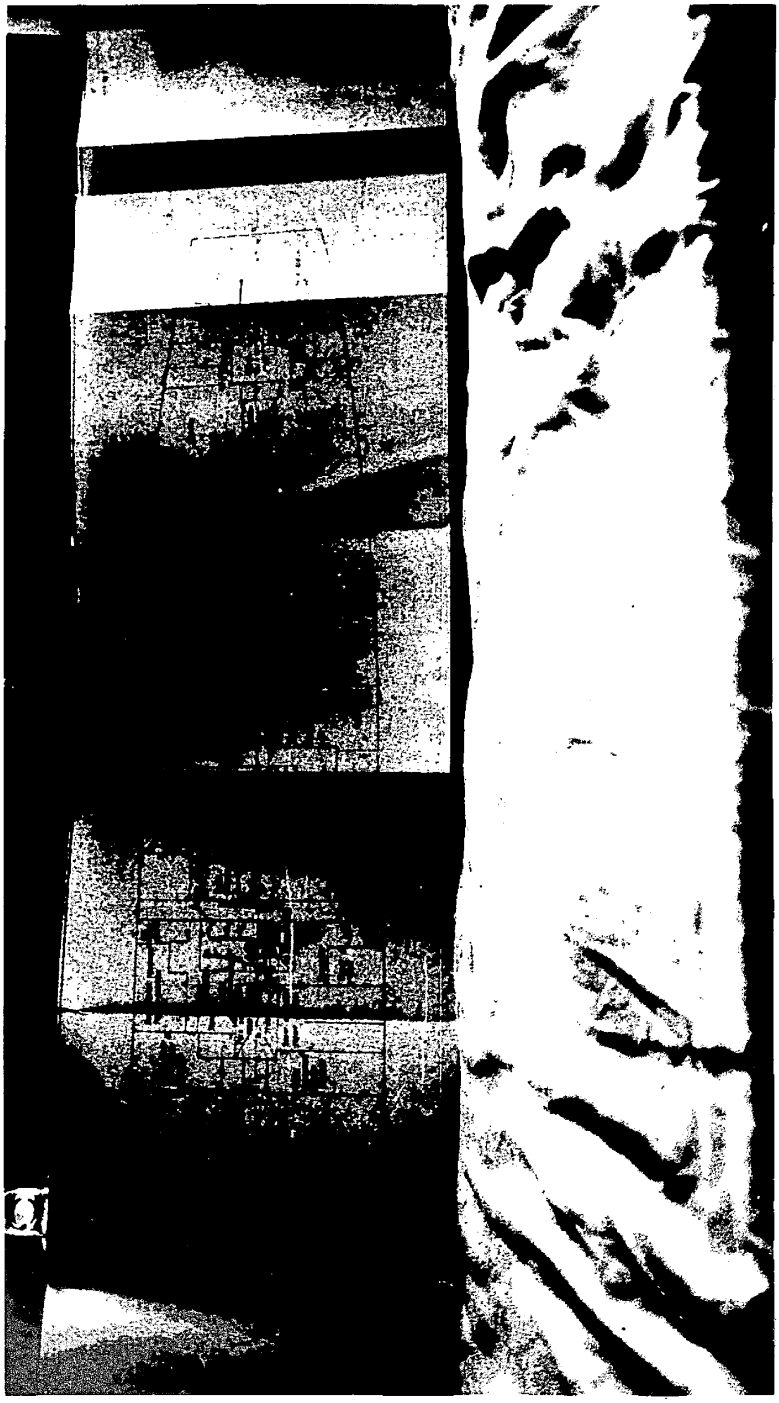

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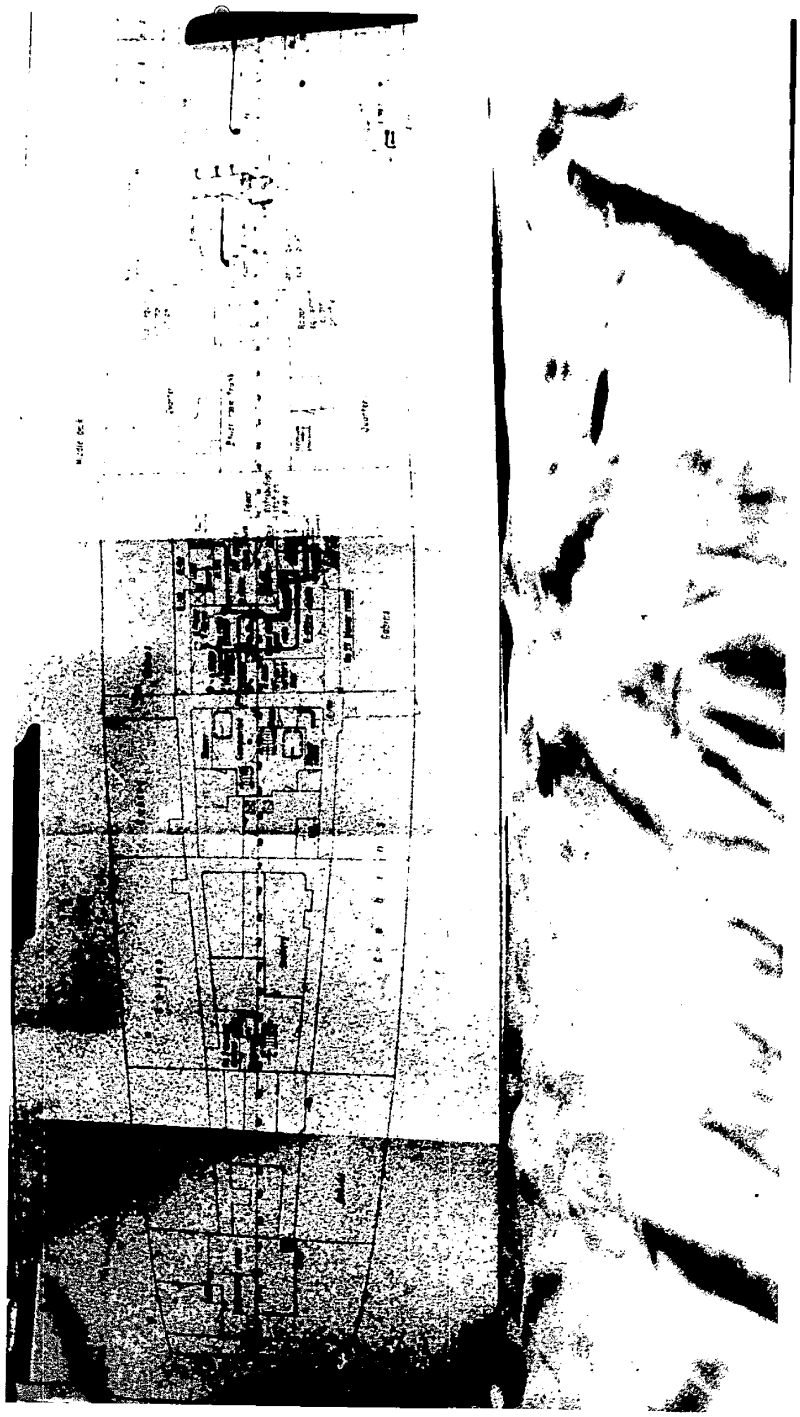

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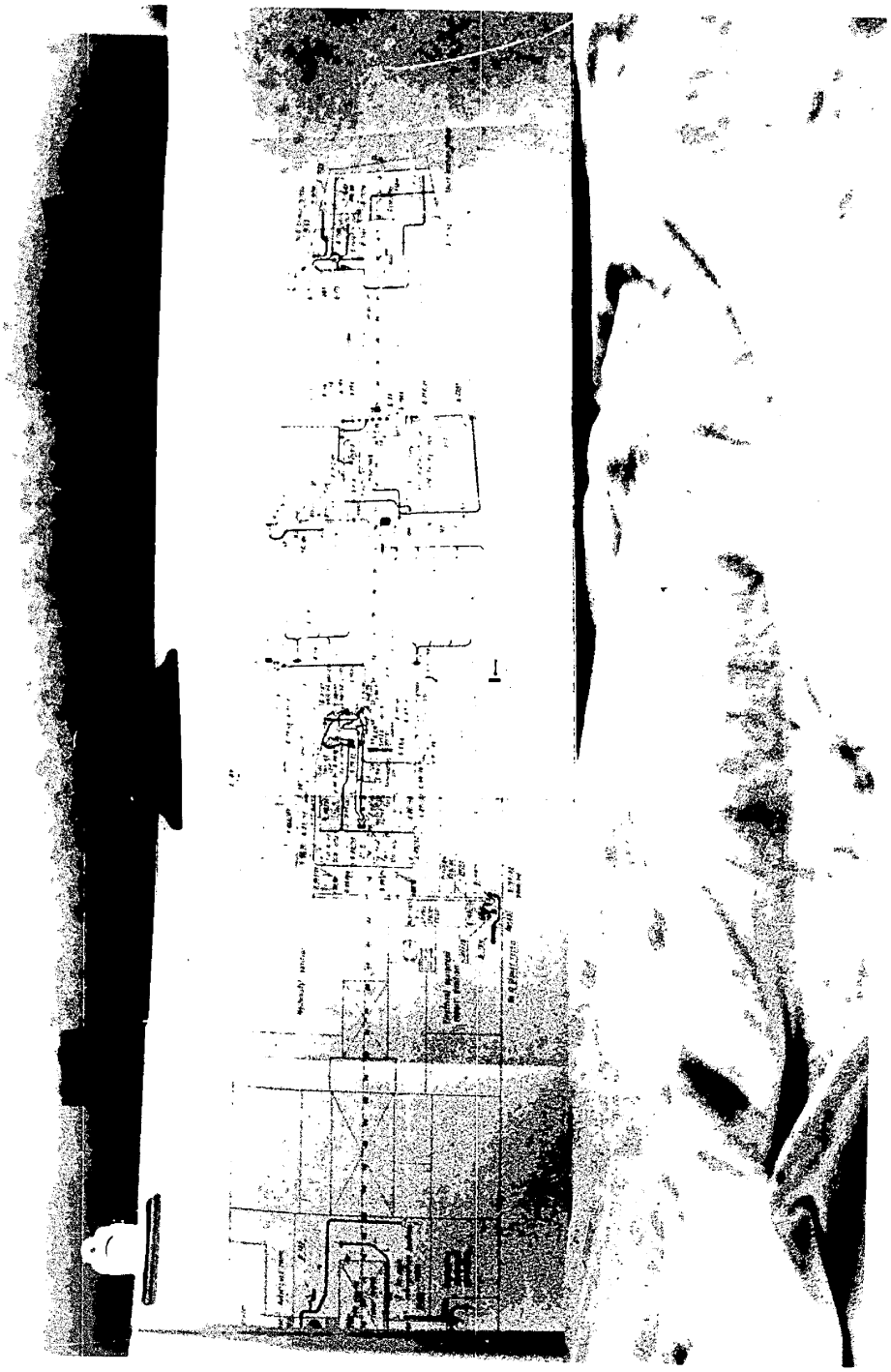

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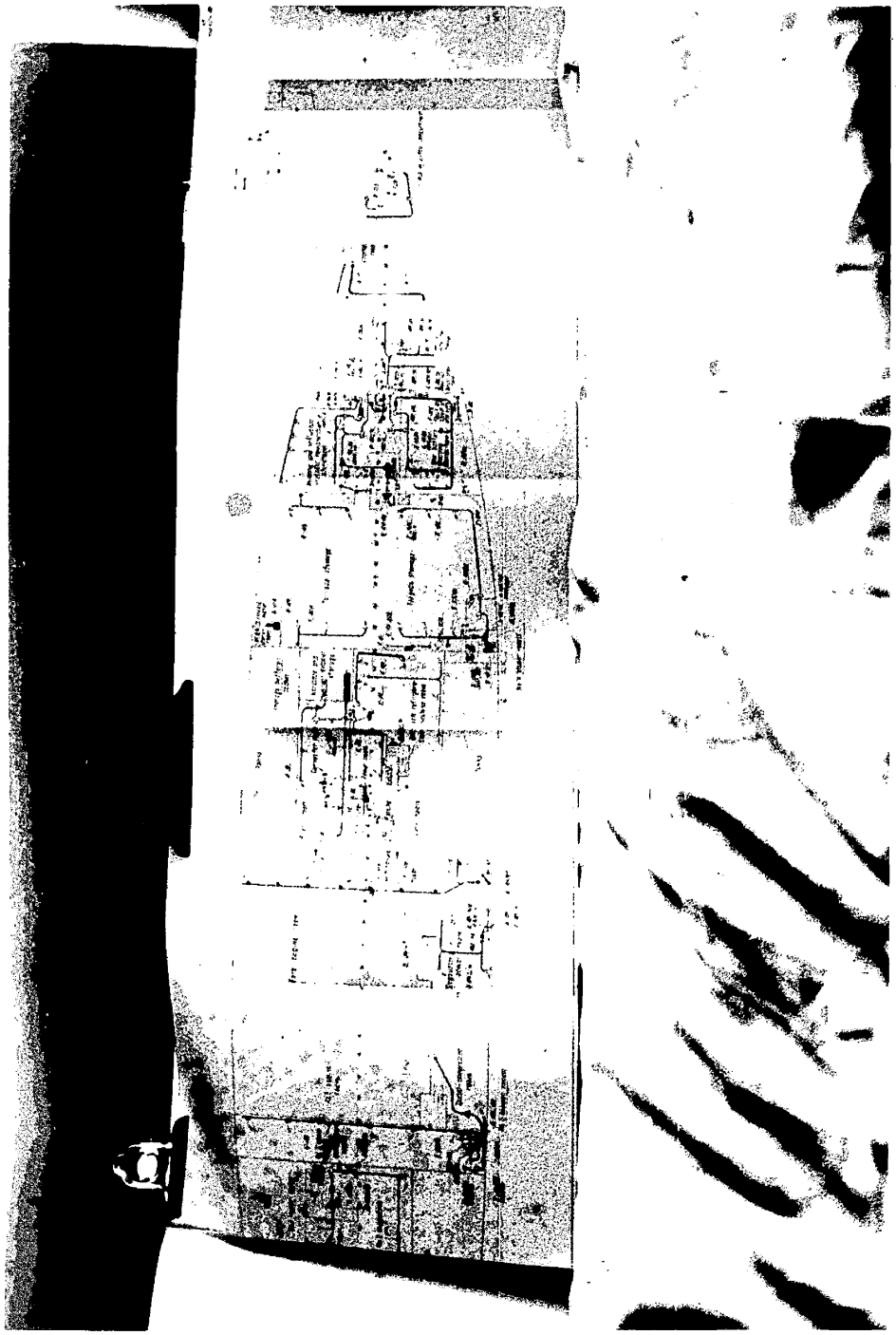

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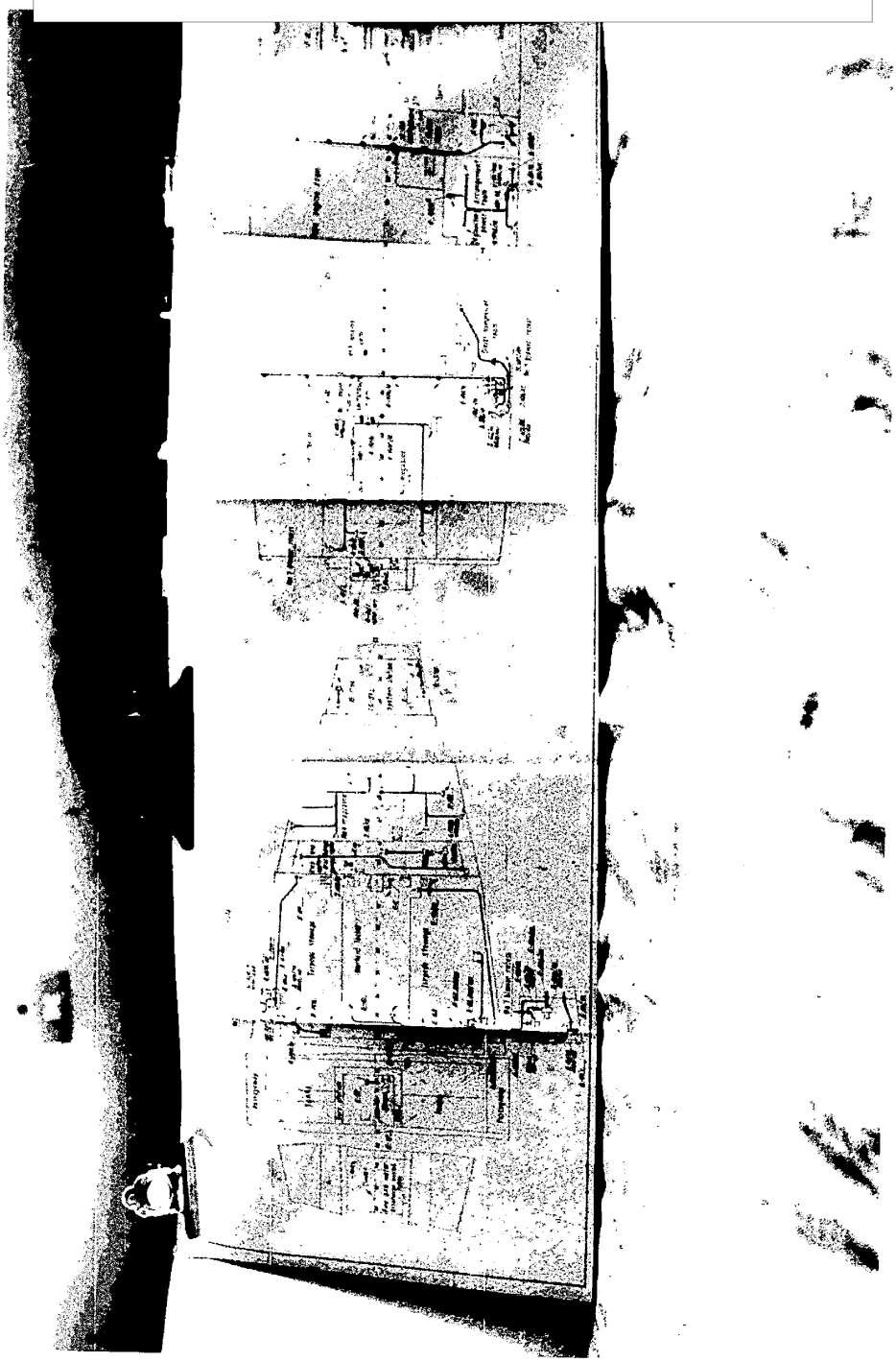

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