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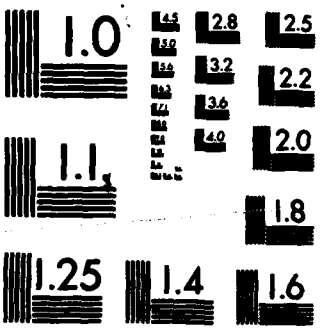

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The KRIVAK II Class, Part II

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ANALYSIS OF THE ANATOMY OF A MODERN SOVIET FFG-FRIGATE

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SUPERSTRUCTURE

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In comparison to the size of the ships, the superstructures appear to be rather meager. One fact is particularly conspicuous in this regard: On the one hand, the low silhouette of the ship, on the other and the apparent attempt to avoid excessive topweight. The latter feature certainly does not appear to be a usual configuration in Soviet naval design; the Soviets have constantly been confronted with such problems, when several post-war ships are considered for conparison.

On the foreship a high wavebreaker is installed, which with its height of almost 2 meters should be capable of deflecting large quantities of water coming from forward and of keeping the foreship dry, a factor which is of critical importance for the main guided missile system mounted there, because this system has to be operational under any weather conditions and in rather severe seaways. A deckhouse which is almost 2 meters high, 3.5 meters long and 3 meters maximum width is located in front of the guided missile system and integrated into the wavebreaker. The access to the inside of this deckhouse is in front of the wavebreaker from both sides; the oblique wall which can be noted on its rear side makes apparent that a companionway is located there, which probably leads to the spaces under deck at the front of the foreship. Behind the SS-N-14 container group the superstructure follows, which is used for the forward SA-N-4 system and the two following RBU-600 AS-rocket projectors. The bridge complex beginning behind this has a length of almost 20 meters, a width up to 12 meters and reaches a height of up to 5 meters. Its volume can be estimated as being more than 1,000 m^3, and its floor space, which is distributed over two decks is certainly more than 400 m^2. The deckhouse which is mounted on it, with a length of 8.5 meters, a width of 5 meters and a height up to 2 meters, should also be mentioned; this provides another ca. 80 m^3 of space and 42 m^2 of surface. On this basis it can be assumed that the bridge complex has sufficient space to accommodate all facilities which are required for the operation of the ship and of the weapons systems. The actual bridge is located on the bridge deck and is enclosed. Sixteen glassed window panels provide good visibility forward and abeam. Other windows one deck lower on the startboard side indicate areas for the crew - perhaps messes for the officers and non-commissioned officers; the absence of windows on the opposite side suggest technical facilities, particularly since a rail track leads through it, which might be associated with the suspected torpedo servicing workshop an other point. At a short distance a two-story assymetrically configured deckhouse follows as a facility for weapons fire control instruments. Was is contained inside cannot be definitively stated, however it could be imagined that electronics facilities or system which directly or indirectly serve power supplyare located there - for example - power station, switching point or controle console.

*Numbers in the right margin indicate pagination in the original text

The stack, which has an almost square configuration - its basic surface at the opening is ca. 25 m^2 is terminated by a deflector fin extending far to the rear. Its height above deck is only slightly more than 5 meters, whereby it is extraordinarily low. Numerous ventilation slots run around its lower half, and on its base numerous large-area openings can be noted for drawing in the combustion air for the gas turbines.

Then the rear superstructure deck follows, which contains the SA-N-4 system installed there. In contrast to the KRIVAK I Class, this has a different floor area structure, which has been increased considerably in width, so that the rail track laid on the port side deck ends immediately in front of it. Similarly differing from the KRIVAK I Class, the chaff projectors (v. Electronics Section) have different positions, specifically no longer at both sides of the VDS-chamber, but somewhat further forward, specifically on both sides if this after superstructure deck.

Immediately behind the after SA-N-4 guided missile weapon system the forecastle deck terminates, which - as the so called spar deck - is constricted here towards the inside on both sides. Shortly thereafter another superstructure deck follows of not quite circular configuration, but only ca. 1 meter high as the substructure for the after 100 mm gun turret (in the KRIVAK I Class this semi-high superstructure deck is not present, because the after 76 mm gun turret is located directly on the upper deck).

The VDS-chamber is also differenciated from the KRIVAK I Class: the issue is less that they differ in their floor area volume from each other, but the floor area structure is different; however, this would not have to be necessarily caused by a newer VDS-system (as was initially assumed), but could be caused - and this is the more probable solution - by modification of the individual system elements, perhaps because more room was required for the new tube weapon systems and their ammunition magazines, conveyor systems and other facilities.

All KRIVAK's are equipped with three quadrupod trellis masts each of different height. In this regard the trellis mast top mast (LONG FOLD) has the greatest height with a height of 15 meters and a height above the waterline of 25 meters; this mast construction is combined with the 6 and 18 meter high mainmast, The forward mast located on the bridge has a height of 5 and 15 meters, the after mast located in front of the stack has a height of 2.5 and 12 meters.

SHIP'S BOATS AND RESCUE EQUIPMENT

All KRIVAK's have two ship's boats, specifically an oar-propelled boat presumably of wood and a motor-powered boat, which is possibly made of glass-fiber reinforced plastic. The oar-powered boat could be regarded as a yawl on the basis of its length of ca. 6 meters and its six oar positions. The boat is located on the port side near the stack, where there is a pair of gravity davits, with which the boat is lowered and lifted. Exactly opposite this on the starboard side is the location for the ca. 8 meter long motorboat, on the basis of dimensions and form it would be designated a motor cutter in German naval terminology. Its lowering and lifting are is provided by a boat handling gear, which is mounted on the starboard side of the amidships superstructure directly behind the torpedo tube mount.

The actual shipwreck group rescue systems are the inflatable rescue /575
islands provided, of which there are sixteen, each designed for 15 persons. This figure certainly does not correspond to those obligatory rules in regard to privision of rescue facilities for up to 150% of the crew strength on each side of the ship in the sense of the corresponding international agreements (which the Soviets observe strictly in their merchant ships*),

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* Cf. Fregattenkapitän (Commander) Ludwig Stoll,"Sea Rescue Systems of The Warsaw Pact Navies"(Soldat und Technik 2/82, pp. 92 ff. Translator's Note: Article translated by this translator and available from USNI.

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but it could be designed for the complete crew strength and include a certain /576
reserve. The conventration of these rescue islands - respectively eight on each side of the bridge complex - is contradictory to current principles of ship safety* and also suggests considerations in other regards.

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* Stoll, cf. cited reference, p. 94

PROTECTIVE FACILITIES

In combat ships of the size of the KRIVAK's the scope of the protective systems to be considered cannot be particularly large. Basically these are essentially two protection functions, if the standard systems such as fire protection, collision protection, etc., are not included. These protective systems are underwater protection and ABC-protection.

A certain, not at all always completely satisfactory underwater protection should be realized by the greatest possible subdivision of the ship hull into a number of water-tight compartments, in order to maintain flotation in the even of water penetrations. A double bottom is also advantageous, particular because of hazard from mines, which the Soviet Navy has to anticipate on a regular basis. Since in this regard no definitive information is available in this regard about the KRIVAK's however, no defintive statements can be made in regard to this area.

The ABC-protection of this Class would probably be restricted to a citadel in the interior of the ship, which includes only the essential facilities, which are supplied with filtered external air. This can to an extent be "read" on the ship's hull, and specifically in reference to the bulleyes, which at least in the majority of them would belong to the crew accommodations. On this basis it can be assumed that the crew accommodations are not included in the ABC-protection system, and again it can be concluded from this that the Soviet Navy has taken a different route in regard to ABC-protection than most Western navies, which often extend the ABC-protection over the entire ship. However advantageous (and convenient for the crew) this may be, it is also difficult and full of problems to maintain the hermetic seal condition overall on a controlled basis - particularly when a single hit, and not necessary a serious hit, could incapacitate such a protective system.

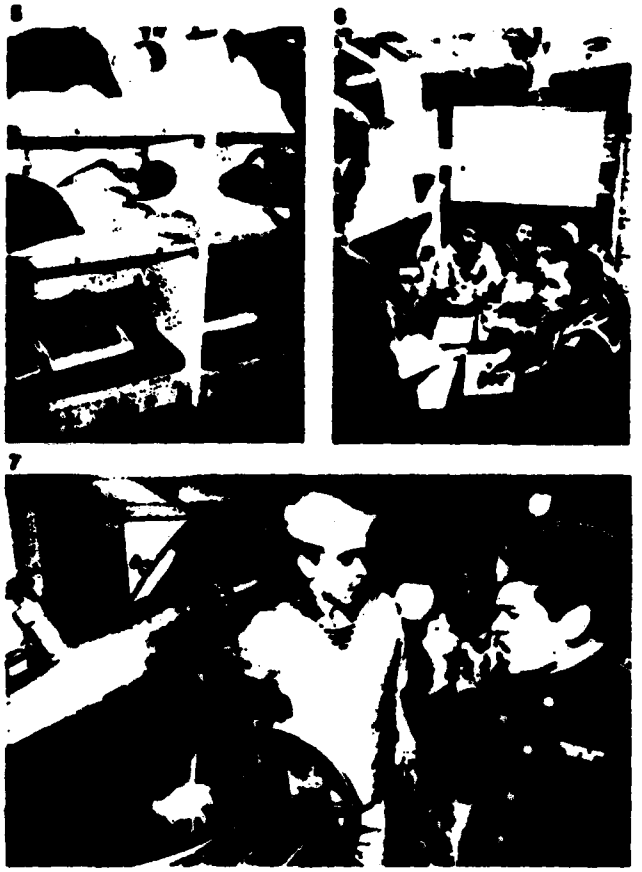

Fig. 5: View in a crew quarters of a KRIVAK II FFG frigate with triple-deck bunks.■ Fig. 6: Crew members during instruction, which is conducted in crew quarters.■ Fig. 7: A view of the galley of a KRIVAK II frigate.

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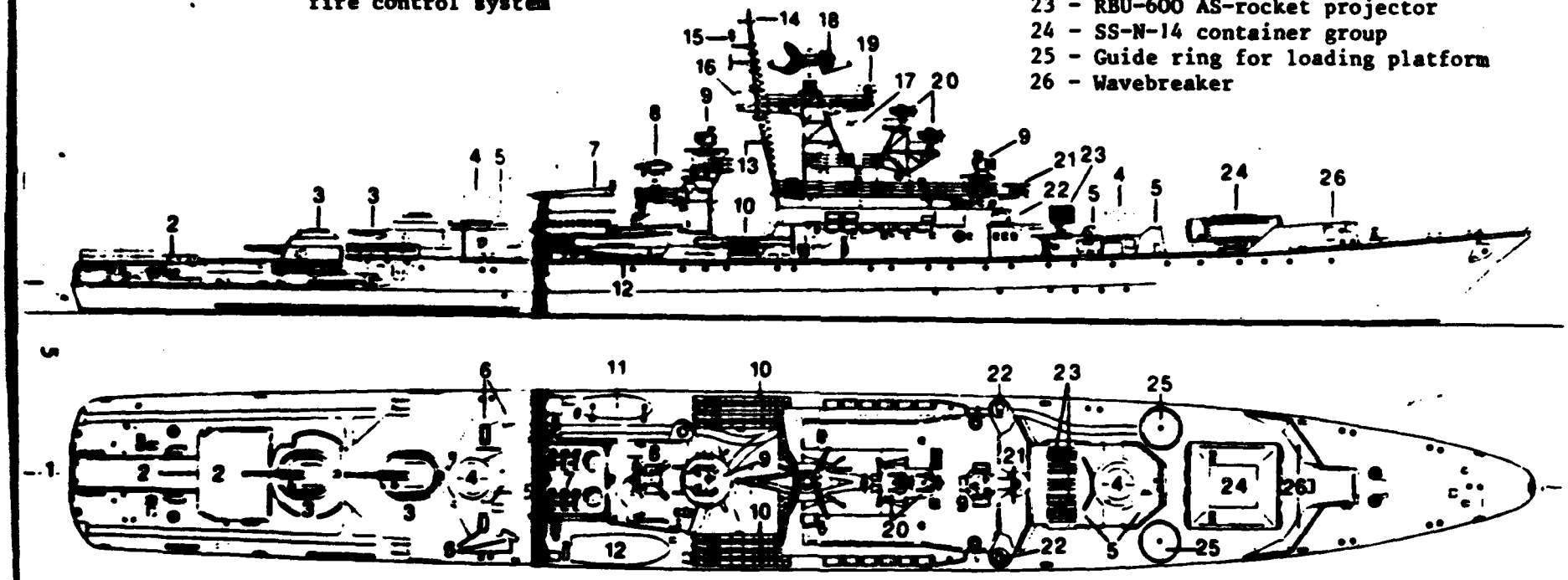
As opposed to this, the restriction to an "ABC-citadel" has the advantage that the sealed situation is more apparent and therefore is certainly easier to control, however unpleasant this may be for the crew, when it has to remain at battle stations during a protracted ABC-alarm cannot use crew quarters.

The presence of an efficient "wash-down" system can be assumed. Certainly to date no accesible photographic material has been available, which would demonstrate the operation of such a system, but it has to be assumed that the Soviet Naval Command would not have dispensed with such systems.

Another requirement in modern naval ship design - the requirement for the most possibly smooth and sealed surfaces of the superstructures - has been incorporated. The sidewalls of almost superstructures are slightly slanted, and their edges are rounded off in high curve radius, whereby the intent is that radioactive fall-out and other ABC-particles should be prevented from collecting in corners and angles can be washed overboard relatively easily. This does not appear to be realized in

Fig. 8: Two-perspective drawing of the KRIVAK II Class

1 - VDS-opening
2 - VDS-chamber
3 - 100 mm gun
4 - SA-N-4 double starter
5 - Blast deflector
6 - Decoy rocket projector
7 - Stack
8 - KITE SCREECH artillery fire control system
9 - POP GROUP guided missile fire control system
10 - Torpedo tube group
11 - 6-meter yawl
12 - 8-meter motorboat
13 - LONG FOLD lattice mast
14 - HIGH POLE B antenna
15 - POP ART antenna
16 - CROSS LOOP direction finding antenna
17 - RT-antenna of the CAGE family
18 - HEAD NET C omnidirectional air search radar
19 - DON KAY sea surveillance and navigation radar
20 - EYE BOWL missile fire control system
21 - DON 2 navigation radar
22 - BELL SHROUD system
23 - RBU-600 AS-rocket projector
24 - SS-N-14 container group
25 - Guide ring for loading platform
26 - Wavebreaker



Standard displacement	ts	ca. 3,000	Propulsion System		4 gas turbines
Operational displacement	ts	ca. 3,800	Power	kW (HP)	43,690 (72,964)
Length at waterline	m	ca. 115.0	Speed	kn	ca. 32
l.o.a.	m	121.5	Number of shafts		2
Beam at waterline	m	13.4	Rudder		2
Beam over upper deck	m	14.2	Crew	men	220-230
Normal draft	m	ca. 4.7	Fuel supply	t	700-800
Maximum draft	m	ca. 6.0	Range	sm/kn	ca. 4,500/14 and 1,600/31

Armament: 1 x 4 SS-N-14 (4 missiles); 2 x 2 SA-N-4 (2 x 20 missiles); 2 x 1 100 mm guns; 2 x 4 533 mm torpedo tubes (8 or more torpedoes); 2 x 12 RBU-6000 AS-rocket projectors; Mine carrying capability

Electronics: Air surveillance and search radar; sea surveillance radar; navigation radar; missile control radar for SS-N-14; missile control radar for SA-N-4; IFF-equipment; EW-eq ipment; 4 decoy rocket projectors; bow sonar; Variable depth sonar (VDS)

all instances, when it is noted that frequently not all external hatches /576
are flush with the oblique surfaces, but project from them, because they are mounted in vertical position, which results in corners and edges, which actually should be prevented

LIVING ACCOMODATIONS

The positions of the bulleyes in the Ship hull inducate where the crew quarters are; the majority are in the foreship, there in two crew decks, and a small number amidships. Hammocks for the enlisted personnel apparently belong to the past. The few interior photos available to date make apparent that bunks are available for the crew, which are installed triple-deck end-to-end, lockers are stacked six high, and are of small dimensions as is customary in naval ships, and the accommodations are as close as usual. Photos on board a KRIVAK-II make apparent that instruction is also accommodated in the living quarters, as is frequently the case on naval ships.

A publication which appeared in the Communist sphere of influence /577
states that there are combined galleys in the KRIVAK's, in which the food is prepared for officers and men together; included in the official duties of the captain is the daily "taste test", which is always performed before the food is issued. In the same publication it is stated that there are radio, television, a movie projector, baths and a sauna on board.

NAMES AND ASSIGNMENTS

All KRIVAK II units like those of the KRIVAK I units have names which are derived from adjectives. IN this regard they are often traditional names, which to an extent were already customary in the czarist navy. From the Table in Vo. 9/82, p.502, their names with the English translation, their building dates and their assignments (to particular fleets) are listed.

SUMMARY

The units of the KRIVAK II Class like those of the KRIVAK I Class are designed as modern, balanced surface combatants for operation in littoral seas and for oceanic operations. Their AS-capability is their primary mission, However, the absence of an on-board stationed AS-helicopter is particulary conspicuous in this regard. This does not appear to be regarded as being a particular disadvantage by the Soviet Naval Command, since as a rule the KRIVAK's operate with the "Large AS-Ships", whose equipment as known includes such helicopters. Whether or not this cooperation can be sustained in operational combat conditions, which may not allow the consolidation of such coordinated groups, remains in abeyance.

The inclusion of an on-board stationed AS-helicopter would have been possible only by restricting other weapons systems:

- Either by completely eliminating the artillery armament or
- by reducing the artillery armament and the ship-to-air guided missile systems by half.

The fact that the Soviet Naval Command did not opt for either of these two alternatives might on the one hand indicate it assigns the artillery of this Class important missions (for example, in the forcing of narrow straits by surpressing land targets) and on the other hand wants to provide the Class the best survival probabilities insofar as possible against air attack and therefore provides two ship-to-air guided missile systems. □