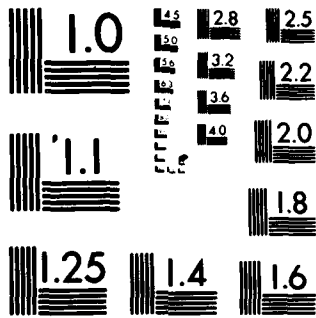


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AUTHOR(S) AND/OR EDITOR(S): Siegfried Breyer

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## THE SOVIET KASHIN CLASS AND ITS CONVERSION VARIANTS

/146\*

[Siegfried Breyer: Soldat und Technik; Verlag Soldat und Technik; 3, March 1982, D 6323 E, pp. 146 - 150; German]

## CAN NEW CONVERSION VARIANTS BE EXPECTED?

Exactly twenty years ago the planning and design studies of a new Soviet guided missile destroyer had been prosecuted to the extent that construction could be initiated. This new class of destroyers is noted in the history of marine technology as at that time the largest surface combatant, which was powered exclusively by gas turbine propulsion. In addition, this class constituted first Soviet destroyer type, which was designed from the beginning for guided missile armament. We are addressing here the KASHIN Class, which caused some excitement in professional circles, when the first units were sighted at sea in 1964.

The construction of the Class, which included 20 units, was divided between two shipyards, specifically at the "Sixty-first Kommuna" shipyard at Nikolayev and at the Zhdanov Yard, at Leningrad. Fifteen contracts were assigned to Nikolayev, and only five construction contracts were awarded to Leningrad; this assignment was probably caused by the fact that the Leningrad Yard was probably strained almost to the limit of its resources with the construction of the guided missile cruisers of the KYNDA, KRESTA-I and KRESTA-II Classes and only had a reduced capacity available.

The integration into the fleet began already at the end of 1962, first in the Black Sea, and from 1963 in the Baltic. The flat stacks arranged in pairs, inclined towards the outside, were the prominent feature of this class; however, as well, the symmetry in the arrangement of the weapons systems, electronics and a part of the superstructures was sufficiently characteristic to be noted for purposes of ship identification. In toto these units manifested in the lines of the hull and in the architecture of their superstructure that a new and arbitrary style, which scarcely referred to foreign models, had been incorporated in Soviet combatant ship construction; this style has been sustained until today. The KASHIN Class destroyers have been noted to date in several versions, which justify discussion of them here, particularly by virtue of the fact that the latest version was noted and analyzed just a few months ago.

1. The first three units - specifically, two in the Black Sea and one in the Baltic - had considerably lower stacks for several months after their entry into service. Because the exhaust gases coming out of the stacks probably caused negative effects on the upper deck because of their high temperatures, the stacks were soon thereafter raised by ca. 1 meter (astern) and 2 meters (forward). The following modified ships were provided initially with these raised stacks. Because of this apparently a better flow-off of the gases was obtained, since from that time until the present the stacks have remained unchanged.

2. The first Black Sea unit had on both sides of the forward stack a platform, which was somewhat above the level of the superstructure deck, on which in addition to not more specifically identified equipment and sensors a saluting gun was mounted, when a foreign visit was scheduled.

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

These platforms were removed after a time. Thereafter the saluting guns were mounted on the roof of the forward SA-N-1 magazine, which projects out on both sides, when saluting guns are required.

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Data on the variants of the KASHIN Class

	KASHIN (original design)	KASHIN-MOD	KASHIN-PROVORNY
Standard displacement ts	3,750	3,900	3,750
Operational displacement ts	4,750	4,850	4,750
Length at DWL m	133.50	136.50	133.50
L.o.a. m	143.30	146.60	143.30
Beam at DWL m	14.60	14.60	14.60
Maximum beam m	15.90	15.90	15.90
Maximum draft m	4.80	4.80	4.80
Propulsion	4-gas turbines	4-gas turbines	4-gas turbines
Propulsion power kW	70,640	70,640	70,640
SHP	96,000	96,000	96,000
No. of shafts	2	2	2
Speed	35.0	35.0	35.0
Fuel capacity t	850	850	850
Crew	280	280?	280?
Armament			
guided missiles ship/air	2x2 SA-N-1 (48 GM)	2x2 SA-N-1 (48 GM)	1 x 1 SA-NX-7 (No. ?)
guided missiles ship/ship	none	4x1 SS-N-2C (4 missiles)	.x. SA-NX-..?
Artillery	2x2 76 mm L/59	2x2 76 mm L/59 4x1 30 mm Gatling	2 x 2 76 mm L/59
Torpedo tubes	1 x 5 533 mm	1x5 533 mm	1 x 5 533 mm
ASW weapons	2x12 RBU-6000 2x6 RBU-1000	2 x 12 RBU-6000	2 x 12 RBU-6000
Mines	yes	no	yes
Helicopter platform	yes	yes (elevated)	yes
Range sm/kn	7,000/12	7,000/12	7,000/

DWL = Design Water Line

3. The units which were built up to ca. the middle of the 1960's had a HEAD NET-A radar installed on each of the two masts. These units were built at Nikolayev. Insofar as these ships were not modified in the course of further conversions, they still have the originaly equipment on board - this applies only to OGNEVOY and PROVORNY.

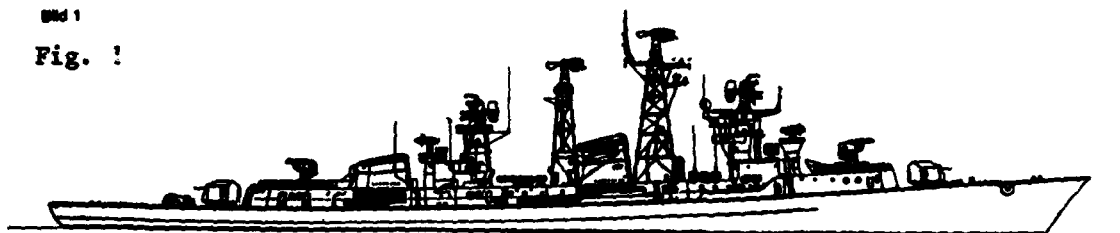
From SLAVNY and from STROYNY on, the forward mast was equipped with the HEAD NET-C and the after mast, which was strengthened specifically for this purpose, with the BIG NET radar. On most of the ships - until today still - the equipment with IR-devices and smaller radomes and sensors is more or less differentiated, but it would be too exaggerated within the spatial constraints

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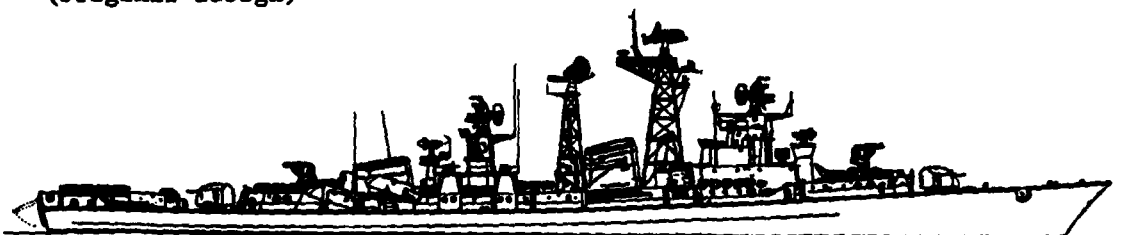
imposed here to address these differentiations in detail. It should however be noted here that the units built in Nikolayev from STROGY onwards - initially with retrofit - have a terminating platform of the forward mast which extends further aft, on which a DON KAY navigation radar is installed.

Blatt 1

Fig. 1



KASHIN (Originalsteuerführung)  
(original design)



KASHIN-MOD



KASHIN 'Provennyy'

4. At the beginning of the 1970's a retrofit of the KASHIN Class was decided; in this regard apparently the requirements for an improved ASW capability were the primary issue, while the increase in the armament was presumably of secondary importance, if they are not to be regarded merely as being the result of fortuitously available increase in space which could be exploited. The intended improved ASW capability did not depend upon the corresponding weapons systems - these were available from the beginning - but upon an upgrading of the ASW detection capability. Therefore, a VDS (Variable Depth Sonar) system was provided, for which reason the afterdeck had to be extended by over ca. 3 meters, because otherwise it would not have been sufficient to accommodate the VDS-chamber. At this time two important developments had become operational in the weapons sector or would become available in the immediate future: the improved SS-N-2C guided missile weapons system for engaging surface ship targets, a further development of the SS-N-2, which was mounted in the OSA Class fast attack missile craft, and the 30 mm AA automatic gun, which is designated in the West as the GATLING after its inventor, as a new element in air defense in the close-in and very close-in sector; this is of importance because of the increasing danger to Soviet surface ships from the guided missile weapons systems which are becoming progressively more available and operational in Western countries. Therefore, the modification plan included in addition to the VDS installation also 4 SS-N-2C single starters firing aft, which were located in pairs on each side deck, and in addition to this, four of these GATLING 30 mm automatic guns (because of these the two previously installed RBU-1000 ASW rocket launchers had to be removed, because no other space was available for them) with two BASS TILT fire control radars. In addition to these modifications an expansion of the bridge superstructure and installation of a helicopter platform over the VDS-room were implemented. The first of these measures might have been associated with improving the electronic control facilities, and the second of these modifications was necessary, because the space utilized for the purpose was no longer available because of the VDS installation.

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In 1971 the OGNEVOY went into the shipyard as the first ship; the STROYNY as the sixth and last unit returned from shipyard in February 1971 after considerable delays. The SDERZHANNY, which had not yet been completed when this conversion program was initiated, was adapted to these modifications during fitting out, and was then entered into service in this new configuration. Of these six ships only the OGNEVOY has retained the two HEAD NET A radars; the other ships are equipped with the HEAD NET-C (forward) and the BIG NET (aft). NATO designates this group as KASHIN-MOD.

5. PROVORNY was modified in 1978/79 in the Black Sea area - probably at the Nikolayev Yard - specifically for testing new guided missile weapons systems. Because this ship remained in the Black Sea for several years after the conclusion of these trials, to date there has been little clarity in regard to the modifications and alterations it had experienced. However, in August 1981 PROVORNY left the Black Sea and transferred to the Northern Fleet. Because of this more specific conclusions could be drawn, although there are still some areas not yet clarified.

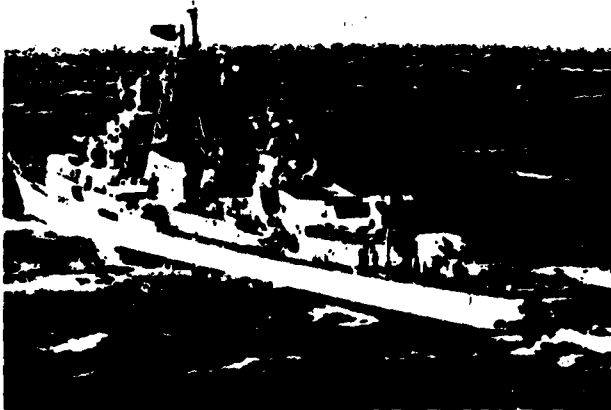
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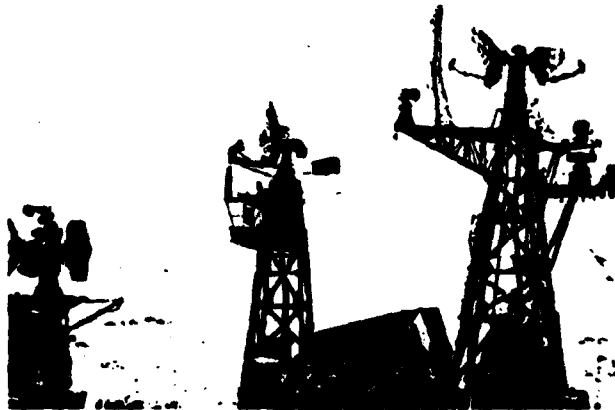


Fig. 2: 17 years ago: The first Baltic Sea KASHIN, the OGNEVOY, here still with the flat stack. ■ Fig. 3: The SLAVNY, ca. 4 years prior to conversion. ■ Fig. 4: KOMSOMOLETS UKRAINY, the first Black Sea unit of the KASHIN Class, had for a time platforms on both sides of the forward stack pair, on which inter al. a saluting gun was mounted in each platform. ■ Fig. 5: From the fourth Baltic KASHIN (SLAVNY) and the fifth Black Sea KASHIN (STROYNY) the ships had the BIG NET radar on the after mast, which was strengthened for the purpose, while on the forward mast the improved HEAD NET-C radar was installed. At the same time in the Black Sea units from STROYNY onwards the terminating platforms of the forward mast were expanded to the rear and had a DON KAY radar installed on the extension.

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The two SA-N-1 double starters were removed as well as the PEEL GROUP fire control radars. In this process the substructures would probably have been subjected to extensive modifications because of the inclusion of the guided missile magazine. What was installed in place of the previous weapons systems cannot currently be specifically identified, because the photographs which have become available to date have provided only minimal information. However, there is certainty in regard to the fact that the weapons systems installed forward and aft are not identical, but in fact are basically differentiated from each other. In regard to the after weapons system it is a system of the usual type with a starter on the upper deck and a magazine located below the deck, and in regard to the forward system, as opposed to this, it is completely below deck.

The first of these new systems has the NATO designation SA-NX-7, a completely new air defense weapons system with a "one-arm" launcher. In the photographs which have been available to date, this system has been concealed under a tarpaulin, so that its contours are only partially observable, but nothing so specific as to allow details to be determined. What can adequately be perceived about this system is for one the new blast deflector, which is no longer installed so close behind the after stack, and otherwise the restricted surrounding field on deck, whose surface area is considerably smaller as compared to the system previously installed.

What has been installed in place of the forward SA-N-1 system is considerably more difficult to determine. The photos available to date allow only to be noted that the substructure is no longer identical with that of the previous SA-N-1, but evidences definite signs of modification: first, there is a new blast deflector, which is not only noticeably higher, but is also wider than the originally installed blast deflector. In front of it on the former SA-N-1 substructure on its longitudinal axis two circular to elliptical contours can be discerned, which are separated in the center by a longitudinal beam and between the contours there is a socket-shaped structure, whose function is not apparent. Insofar as the the two mentioned contours on deck are concerned, these are not - as it may appear to be at first glance - the hatches of perhaps a below-deck vertical launcher system, but upon closer observation it can be noted that they are merely painted on. Essentially, therefore, it is still not clear what is actually concealed in this position or was concealed, because with the removal of a system which was installed on board only temporarily (in this regard it could be imagined to be a usual starter installed on deck) would have to be considered as a possibility. In this regard it should also be considered that for a vertical launch starter system a blast deflector would not be necessary, which, as mentioned, is definitely new. Such a blast deflector would only then be logical, if a below-deck starter system would contain missile shafts, which were positioned obliquely, not vertically, perhaps on the model of the SS-N-19 on the nuclear powered guided missiles cruisers of the KIROV Class.

Coincidentally with the modification a redistribution of the electronic equipment was associated, since some new equipment had to be installed. ON the bridge roof, the former position of the forward PEEL GROUP radar fire control system, a HEAD NET-C radar (in place of the previous HEAD NET-A on the forward mast) was installed, which caused a reduction of its horizon, i.e., the measuring range, which was accepted. Presumably this had become

necessary, because aft, in place of the previous PEEL GROUP pylon, a tower /150 mast had been installed, whose TOP STEER radar otherwise could possibly have shadowed or affected the HEAD NET-C radar. The fact that such a possibility had been anticipated would explain the presence of protective beam deflector screen somewhat below the TOP STEER antenna in the direction of the HEAD NET-C radar. This tower mast has consoles on both sides of the rear side for additional devices.

Overview of the KASHIN Class guided missile destroyers according to building yards, construction periods and assignment

Building yard (hull number)	Name	Const. Period	Conver- sion	Conversion Yard	Assignment
Zhdanov, Leningrad (1)	„Ognevor“ (mod)	1982-84	1971-73	Zhdanov, Leningrad	B
Zhdanov, Leningrad (2)	„Obratovyy“	1982-86			B
Zhdanov, Leningrad (3)	„Odarennyy“	1983-86			P
Zhdanov, Leningrad (4)	„Stalnyy“ (mod)	1984-87	1972-74	Zhdanov, Leningrad	B
Zhdanov, Leningrad (5)	„Strogushchyy“	1984-87			P
61 Kommunar, Nikolav (1)	„Komsomolec Ulazhnyy“	1981-83			SM
61 Kommunar, Nikolav (2)	„Sobrazitelnyy“	1981-83			SM
61 Kommunar, Nikolav (3)	„Provornyy“	1982-84	1978-79	Black Sea Area (Nikolayev Yard?)	SM
61 Kommunar, Nikolav (4)	„Ovoshnyy“	1983-84			SM
61 Kommunar, Nikolav (5)	„Stalnyy“ (mod)	1984-87	1976-80	" " "	N
61 Kommunar, Nikolav (6)	„Krasnyy Kavkaz“	1985-88			SM
61 Kommunar, Nikolav (7)	„Rashchetyy“	1985-88			SM
61 Kommunar, Nikolav (8)	„Smychivnyy“ (mod)	1985-88	1971-73	Zhdanov, Leningrad	N
61 Kommunar, Nikolav (9)	„Strogyy“	1987-70			P
61 Kommunar, Nikolav (10)	„Smolyy“	1987-70			SM
61 Kommunar, Nikolav (11)	„Smolyy“ (mod)	1988-70	1973-75	Zhdanov, Leningrad	SM
61 Kommunar, Nikolav (12)	„Krasnyy Krym“	1988-70			SM
61 Kommunar, Nikolav (13)	„Spetsbnyy“	1989-71			P
61 Kommunar, Nikolav (14)	„Blaznyy“	1989-72			SM
61 Kommunar, Nikolav (15)	„Sobrazitelnyy“ (mod)	1970-74		Completed as KASHIN-MOD	SM

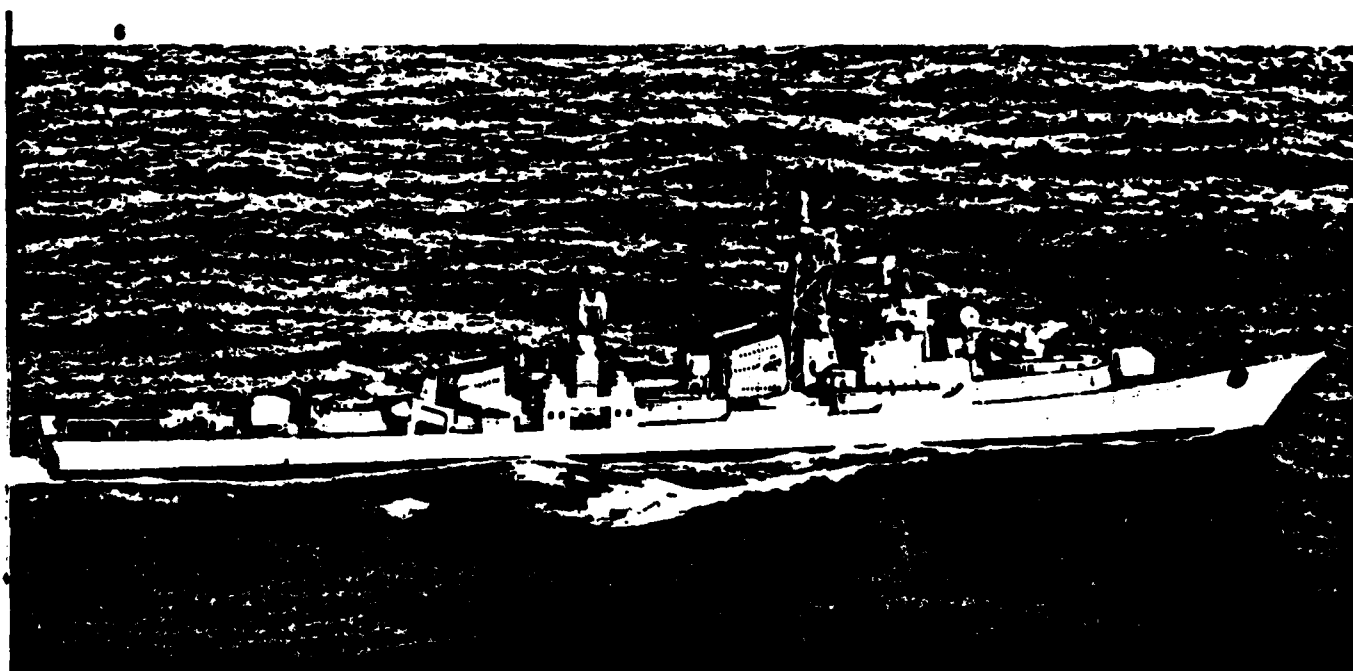
\*OTVAZHNY sank as result of an internal explosion on 30. Aug. 1974 in the Black Sea with heavy loss of personnel (ca. 300 fatal casualties)

The addition "MOD" after the name of the ship indicates that this ship is now assigned to the KASHIN-MOD Class by NATO.

Assignment code: B = Baltic Fleet. N = Northern Fleet, SM = Black Sea Fleet, P = Pacific Fleet.

The forwarded mast was shortened by 2 meters and has on its terminal cross-tree still only the IFF-lattice topmast and a DON KAY navigation radar. The bridgehouse has been modified almost exactly according to the plan of the KASHIN-MOD Class, and in front of the forward mast on both sides a cube-shaped deckhouse is installed, on whose outer faces two chaff dispenser boxes are mounted; from these one fires on the beam and the other in the forward direction. This special equipment intended for EW-operations could be an indication that PROVORNY is now serving as a combat unit and no longer (or only to a very limited degree) as a weapons trials ship.

Another conspicuous feature of the PROVORNY are the newly installed FRONT DOME radar fire control systems, which in external form are very similar to the AA-fire control DRUM TILT and BASS TILT radars, and which were first observed on the the new guided missile destroyer SOVREMENNY, which is also equipped with the SA-NX-7 ship-to-air guided missile system. On PROVORNY the eight devices are arranged in pairs on the forward mast, the newly installed tower mast, on the front edge of the bridge superstructure and on the newly installed consoles (brackets) on both sides of the after stack pair.



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Fig. 6: STROYNY, the sixth and to date last representative of the converted KASHIN-MOD Class, returned from the Black Sea area at the beginning of 1981, where its conversion had been performed. ■ Fig. 7: Although its conversion had already been completed in 1979, PROVORNY left the Black Sea first in the summer of 1981 and transferred to the Northern Fleet. On the trip there PROVORNY attached itself as an observer to the NATO fleet maneuver MAGIC NORTH SWORD.

6. At this point the the three units of the KASHIN-MOD Class should /150  
be mentioned, which were built to a modified design for the Indian Navy. These ships can be regarded as belonging to the original KASHIN-MOD Class on the basis of their differentiated features. Despite similarity to their models (KASHIN-MOD Class) the ships built for India have considerable differences:

▲ In place of the after 76 mm twin turret they have in front of the VDS-chamber - whose roof is used as a helicopter platform - a hangar for the on-board helicopter, which is loaded into the hangar by means of a lifting platform.

▲ The four SS-N-20 starters are located on both sides of the bridge and fire in the forward direction. In almost all other details they correspond to the original KASHIN-MOD Class.

Within the parameters of a total evaluation it can be determined: The KASHIN-MOD retrofit program appears to be limited to the six units mentioned, because apparently no other units are being converted. The same would probably apply for the variants created with the PROVORNY. Therefore, the mass of the KASHIN Class destroyers - a total of twelve units - is still waiting for measures which would extended their operational life. These ships now have an average operational life of ca. 14 years and with some degree of certainty are so worn and exhausted, that - if the intent is to keep them in service for a corresponding period of time - the Soviets can scarcely avoid having to perform a comprehensive "midlife conversion" to make such additional service possible. Certainly in such a conversion the intent would not merely be to replaced exhausted materiel and to stop signs of wear, but the combat potential would have to be adapted to current conditions. What the guided missile destroyers of the KASHIN Class lack - which are designated in the Soviet Navy as BPK = "Bolshoy Protivolodochnyy Korab'1 (Large ASW Ships) - is an ASW helicopter component. No surface combat ship - certainly not in the size of the KASHIN Class - can be imagined any longer today, which does not have such helicopters. This factor has certainly been recognized by the Soviet naval authorities, and it should be considered as a possibility in a "midlife conversion" of these ships that they will be provided with a helicopter component. The systems utilized in the three KASHIN destroyers built for India could be indicative. □