

COASTAL DEFENCE SYSTEMS FROM TYPHOON JSC

The Kaluga-based Typhoon instrument plant, which is a joint stock company, is a major Russian defence contractor in the field of sophisticated radio technical systems to fit ships in various classes. It also is the developer and manufacturer of the Bal-E coastal defence missile system and Monolith-B coastal defence surface and airspace surveillance radar system.

The **Monolith-B** system is designed to provide target designation to land-based anti-ship missile systems. The Monolith-B comprises two identical stations, each mounted on high-mobility wheeled chassis.

The Monolith-B combined the capabilities of both surveillance gear and target designation equipment directly incorporated into the antiship missile control loop.

The system gathers information on the surface situation from various detection devices, including its own passive and active radar surveillance capabilities, and external remote sources, e.g. ships, observation posts, surveillance aircraft, etc. The system then processes the data, identifies targets and feeds the resultant data and target designation to the missiles and higher HQs.

The information system of the Monolith-B system allows pooling ships and missiles systems equipped with similar data processing and radio communications systems into single task forces.

The system's purpose, composition and features are as follows:

- the two identical combat vehicles fitted with active and passive surveillance radars designate targets in emission control mode, using their passive radars in the triangulation manner, with the vehicles spaced at a distance of about 30 km. The process includes high-speed automated data exchange, covering surface situation at a long range off shore, and command data exchange between the vehicles via a secure radio relay channel. To enhance the accuracy of the target designa-

tion provided by the passive radars, the vehicles rely on the low-power active radars featuring a high degree of covert operation capability owing to the low-power big bandwidth-duration product radar signals used;

- owing to its responsive automated information system and landline and radio communication channels operating in various radio-frequency bands, the Monolith-B system serves an integrated tactical control solution;



Vehicles of the Monolith-B system





SELF-PROPELLED COMMAND CONTROL AND COMMUNICATION CENTRE
САМОХОДНЫЙ КОМАНДНЫЙ ПУНКТ УПРАВЛЕНИЯ И СВЯЗИ



TRANSPORTER-RELOADER VEHICLE
ТРАНСПОРТНО-ПЕРЕГРУЗОЧНАЯ МАШИНА



SELF-PROPELLED LAUNCHER
САМОХОДНАЯ ПУСКОВАЯ УСТАНОВКА

- simultaneous automated 200-target data processing capability has been ensured, which allows efficient planning of the missiles of a naval task force in conjunction with coastal defence missile systems within a single information environment;

- the Monolith-B features high mobility owing to its hardware being mounted on two high-mobility wheeled chasses. Command data exchange is performed in full on the move both between the combat vehicles and between them and higher HQs and adjacent missile systems;

- a support and maintenance system has been developed and introduced for the Monolith-B. Training is provided to personnel of foreign customers, and relevant infrastructure is created.

Overall, the above capabilities of the Monolith-B system indicate a new qualitative change in the missile control loop, which sets the Monolith-B radically apart from older systems designed for the same application.

The Bal-E system equipped with Kh-35E antiship missiles is designed to control territorial waters and

straits, defend sea lines of communication, strategic coastal installations and naval bases and wrestle maritime preponderance within the range of its missiles.

The system's hardware is housed by shielded stations mounted on high-mobility chasses, which affords its components mobility and enables the Bal-E to fight in coastal areas of all regions in all weather (rain, snowfall, fog), in any season, round the clock within a wide ambient temperature bracket and on a nuclear, chemical or bacteriological battlefield.

The night vision devices and navigational, survey and alignment gear on each vehicle enables the system to displace from its firing or reloading position quickly in any weather after having accomplished its mission and to redeploy to a different area of operations in a dispersed manner.

The baseline Bal-E delivery set comprises the following:

- self-propelled command post – up to two;
- self-propelled launcher – up to four (eight missiles per launcher);

- transporter-loader – up to four (eight missiles per transporter-loader);

- overall unit of fire – up to 64 missiles.

The maximal distance to the coastline is 10 km.

The range of the system's missiles is between 5 and 260 km, depending on a missile version.

The delivery set may also include the following:

- Bal-E training simulator;
- alert duty support vehicle;
- integrated maintenance vehicles;
- system component models and mockups;
- spares and tools for setting up a repair facility.

The centralized fire control is ensured via the use of the a self-propelled command post generating and feeding target designation data and performing target distribution among the launchers depending on their preparedness and location in position. The high-precision active and passive target acquisition radars allow a responsive target acquisition strategy, including covert acquisition. Provision also has been made for getting operational data from higher command posts and outside target acquisition and designation assets by both the self-contained command post and individual launchers.

The system can both launch individual missiles and fire in salvos using one or several self-propelled launchers.

The availability of the complete antiship missile unit of fire on the transporter-launchers allows a repeated salvo, which enhanced the firepower and tactical effectiveness of the system.



Monolith-B's modus operandi for target acquisition and target designation for friendly missiles



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