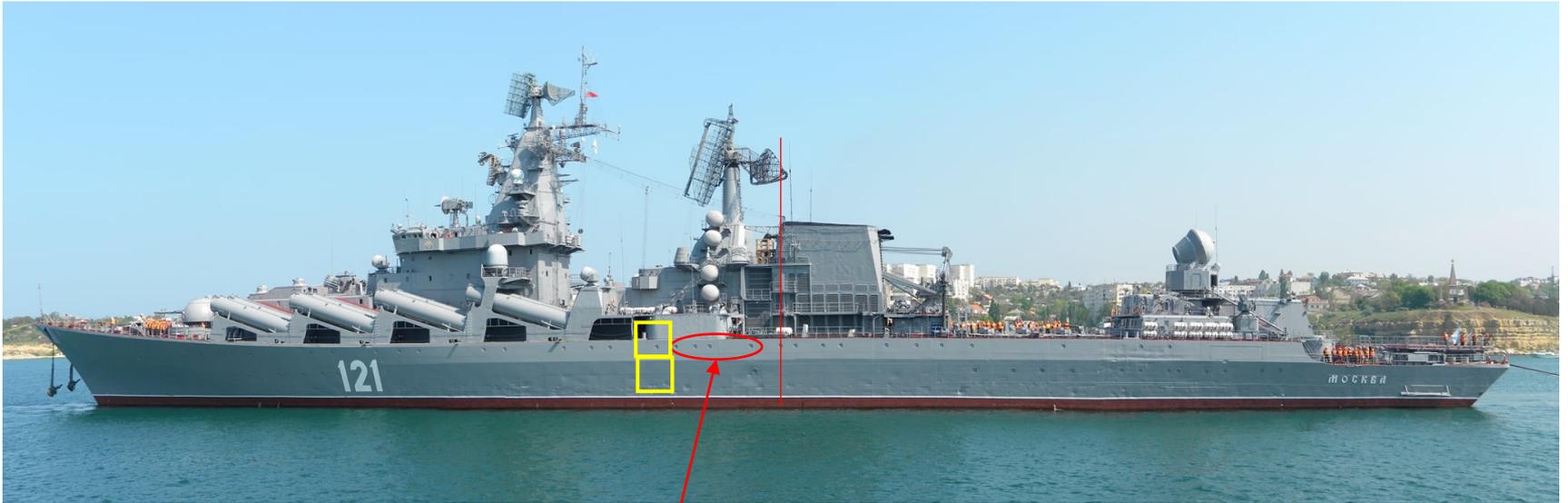
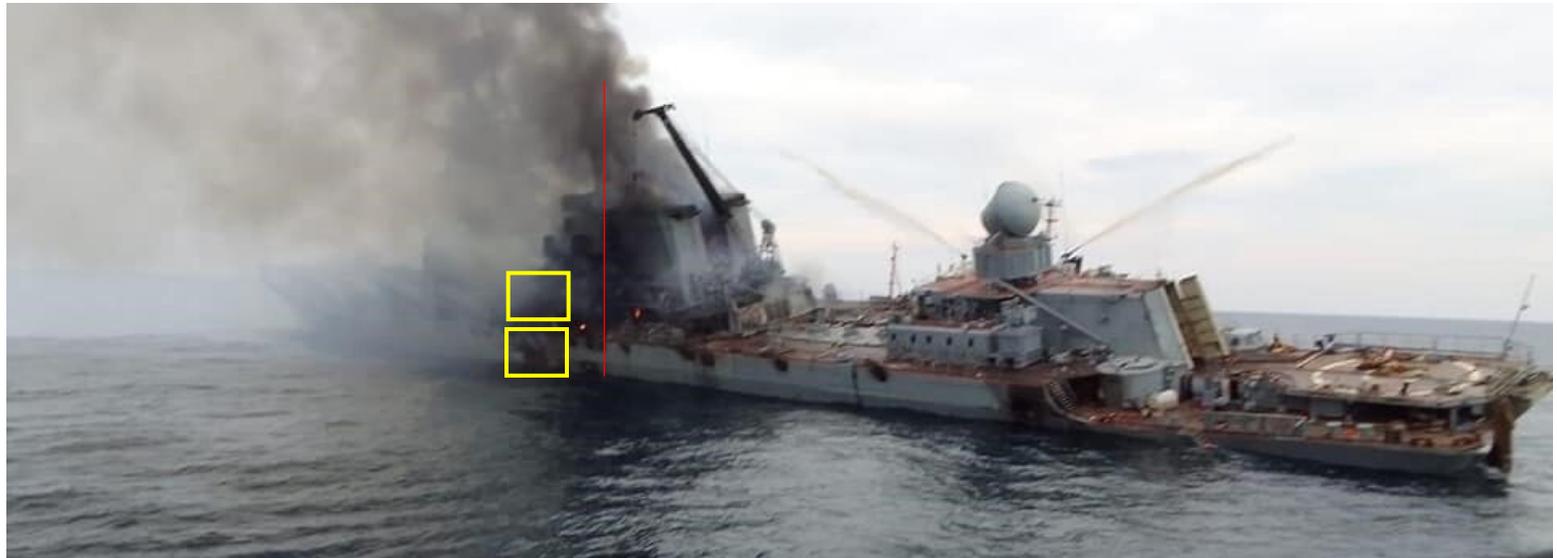
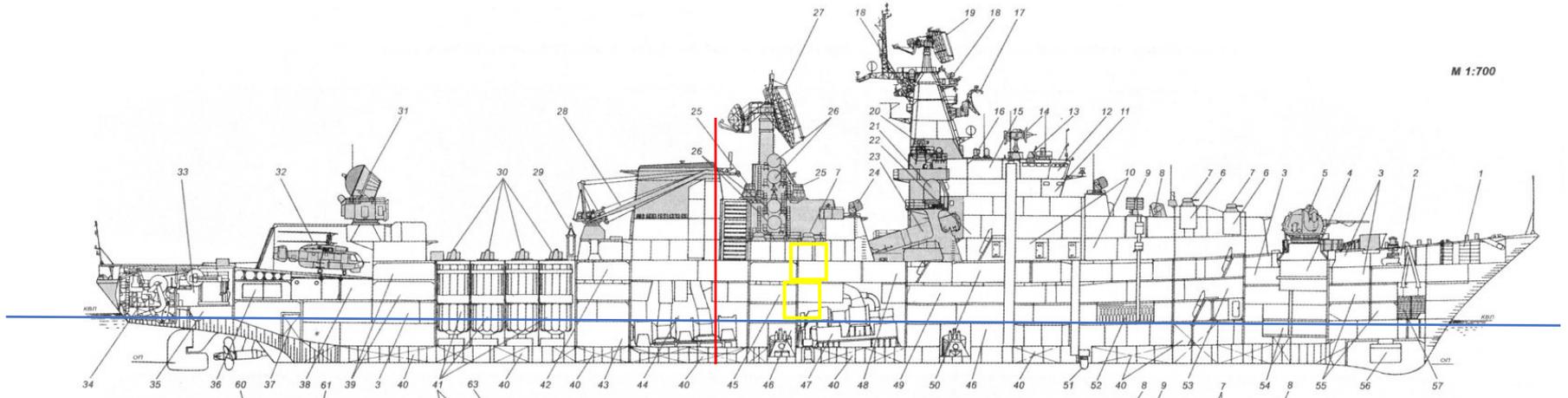


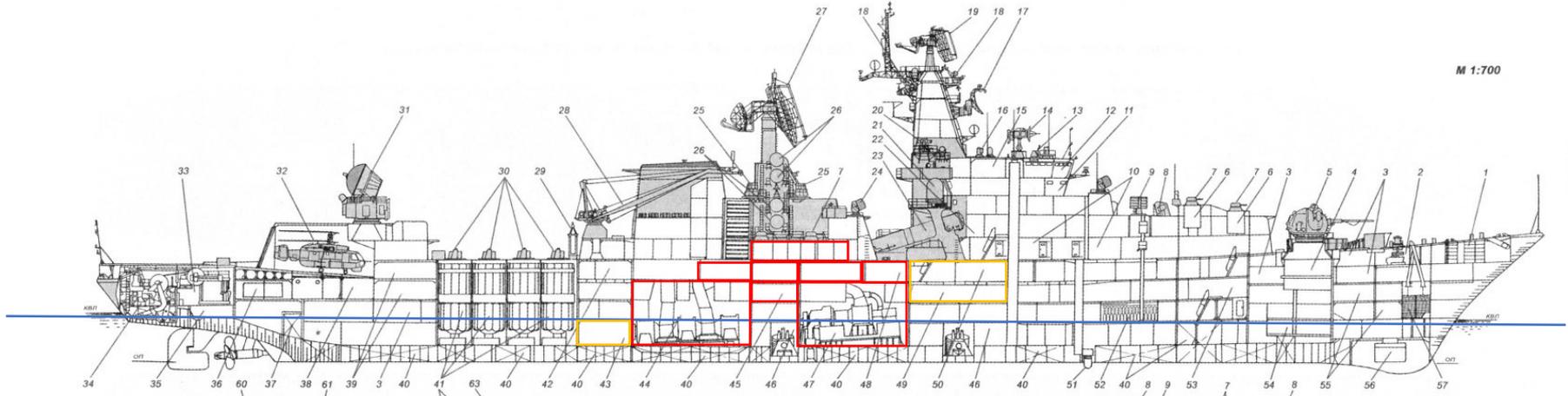
# *Moskva Hit Location*



# *Moskva Hit Location*



# Moskva Missile Damage



There is reasonable evidence to say two Neptune ASCMs hit Moskva, impacting the hull close to each other.

The missile impact just at the waterline could have exploded in space #45 or #47. Either way both locations would have suffered considerable damage and would have had major fire from the remaining fuel in the missile. This assumes a max missile range of 151 nmi (280 km) with only 65 nmi of fuel consumed. Adjoining compartments could have experienced serious damage as well. If the missile exploded in space #45, then both engine rooms would have likely been seriously damaged and on fire.

Space #45 is also very important as it is the room from which all types of energy are distributed on the ship and control is carried out in the fight for the survivability of its combat and technical means. PEJ is equipped with means of information about the operation of mechanisms, diagrams, electronic computing devices, means of communication and remote control of systems fire extinguishing, dehumidification of premises (take this as dewatering of flooded compartments), ship straightening (list control), etc. (Russian Naval Dictionary).

43 - энерго отсек

44 - кормовое МО (форсажные ГТД)

45 – пост энергетики и живучести ПЭЖ

47 – носовая МО (маршевые ГТД)

48 - носовая электростанция

49 - боевой информационный пост БИП

50 - главный командный пункт ГКП

energy compartment

stern MO (afterburner gas turbine engines)

post of energy and survivability PEJ

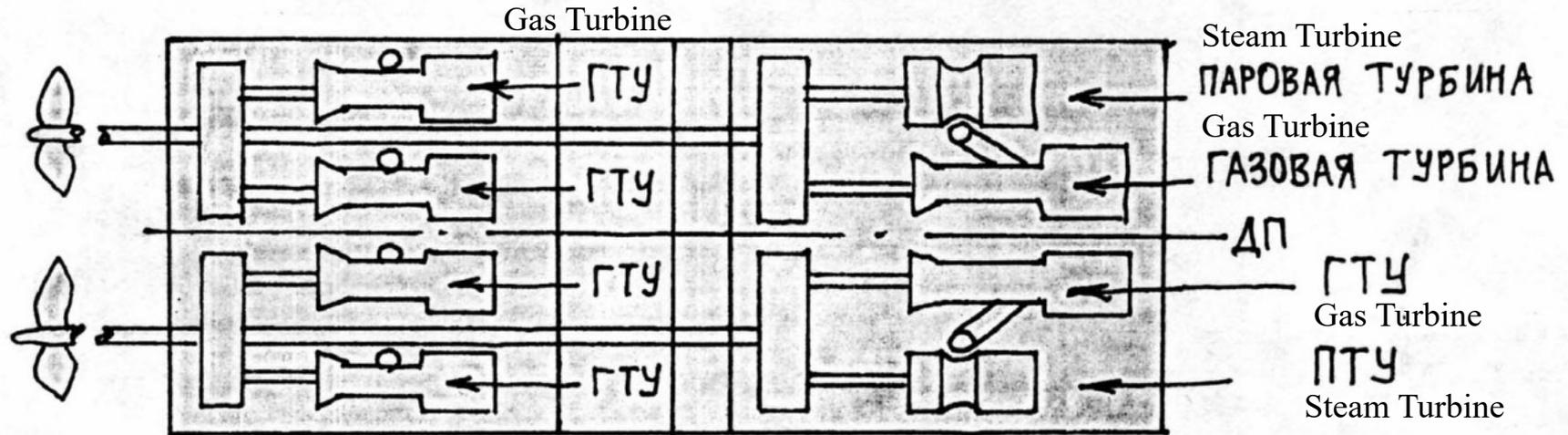
bow MO (marching gas turbine engines)

bow power plant

combat information post BIP

main command post GCP

# Moskva Missile Damage



47 – носовая МО (маршевые ГТД)

bow MO (marching gas turbine engines)

This is the forward engine room with two M-70 cruise gas turbines (10,000 hp each) and the steam turbines (2,500 hp each) that use waste heat from the gas turbines to produce steam in a heat recovery circuit (TUK).

44 - кормовое МО (форсажные ГТД)

stern MO (afterburner gas turbine engines)

This is the after engine room with four M-8KF boost gas turbines (22,500 hp each). Total maximum propulsion power is 115,000 hp.

48 - носовая электростанция

bow power plant

43 - энерго отсек

energy compartment

These are potentially two of the three compartments that generate electrical power. Each compartment has two gas turbine generators, one with a power rating of 1,500 kW and another with a power rating of 1,250 kW. Total electrical power generation capacity is 8,250 kW. There is also a diesel-generator to provide power for emergency lighting. The electric plant is controlled from, the main command post (#50), the post of energy and survivability (#45), and an unidentified emergency control room.

A missile hit in the forward engine room would very likely cause significant damage to the cruise gas turbines and steam turbines and could potentially distort the main shaft sufficiently to cause damage to the reduction gears of the boost turbines.

Heavy damage in the post of energy and survivability (#45) compartment could cause a loss of all electrical power, as well as potentially disabling the ship's automated damage control capability.

# *Moskva SAM Directors*



There is no indication *Moskva's* air defense missile systems were ready for action as both the 3R41 Volna [Top Dome] and the 4R-33A/MPZ-301 Baza director/scanning radar combination [Pop Group] are trained aft in their typical stow position.



# *Moskva Damage Summary*

- 1) Two missiles, possibly three, hit the cruiser dang near amidships.
- 2) The missile that struck near the waterline on the port side either exploded in the forward engine room that housed the cruising gas turbines and steam turbines (#47) or it detonated in a compartment that is their main damage control space (#45). This compartment also is a major node in the ship's electrical distribution system. The worst case would be if the missile exploded in #45 as this would have taken out both engine rooms and the central damage control with a single hit.
- 3) The second missile appears to have struck the ship a bit higher and could have detonated in the 30mm AK-630 magazines. If rounds started cooking off, they could have caused considerable secondary damage and casualties.
- 4) It's possible one of the three electrical generating compartments was also damaged (#48).
- 5) It is probable that the lower missile hit caused a complete loss of propulsion and electrical power and disabled their damage control capability. Basically, this ship suffered an immediate mission kill. With the loss of all electrical power and DC central in severe disarray the fire wasn't contained and it spread aft. Not sure how far back the fire boundary went, but smoke clearly propagated aft along what looks like passageways outboard of the S-300 [SA-N-6] magazine. Flooding also occurred in at least the forward engine room. With the damage control space severely damaged, the  $\approx 15^\circ$  list to port could not be easily corrected and this only allowed more water into the ship. Regardless of whether or not she sank, *Moskva* would need to be towed back to port.
- 6) I toured *Moskva's* sister ship, *Marshal Ustinov*, back in 1989 and I was amazed with the lack of damage control gear I saw on the main deck and immediately inside the ship's superstructure. I vividly recall seeing few fire fighting connections. I only found three double hose connections on each side and they were smaller than our standard 2.5-inch hose. There may have been another double connection further forward, I couldn't go very far past the 130mm gun mount. One double hose connection was under the second set of P-1000 [SS-N-12 Mod 1] launch tubes!
- 7) All three SAM directors (3R41 Volna [Top Dome] and the two 4R-33/MPZ-301 director/scanning radar combination [Pop Group] for the OSA-MA [SA-N-4]) were facing aft in their normal stow position. This indicates the air defense systems were either not manned or in stand by. BTW, the Pop Group has a dedicated scanning antenna on top, this is the MPZ-301 Baza system, that conducts a dedicated low altitude air search for the Osa-MA to improve its reaction time.

I'm not ready to call it a golden BB shot - Russian ship design philosophy may have a lot to do with how badly the lower missile hit hurt *Moskva* - but the crew's training for combat and damage control leaves much to be desired.

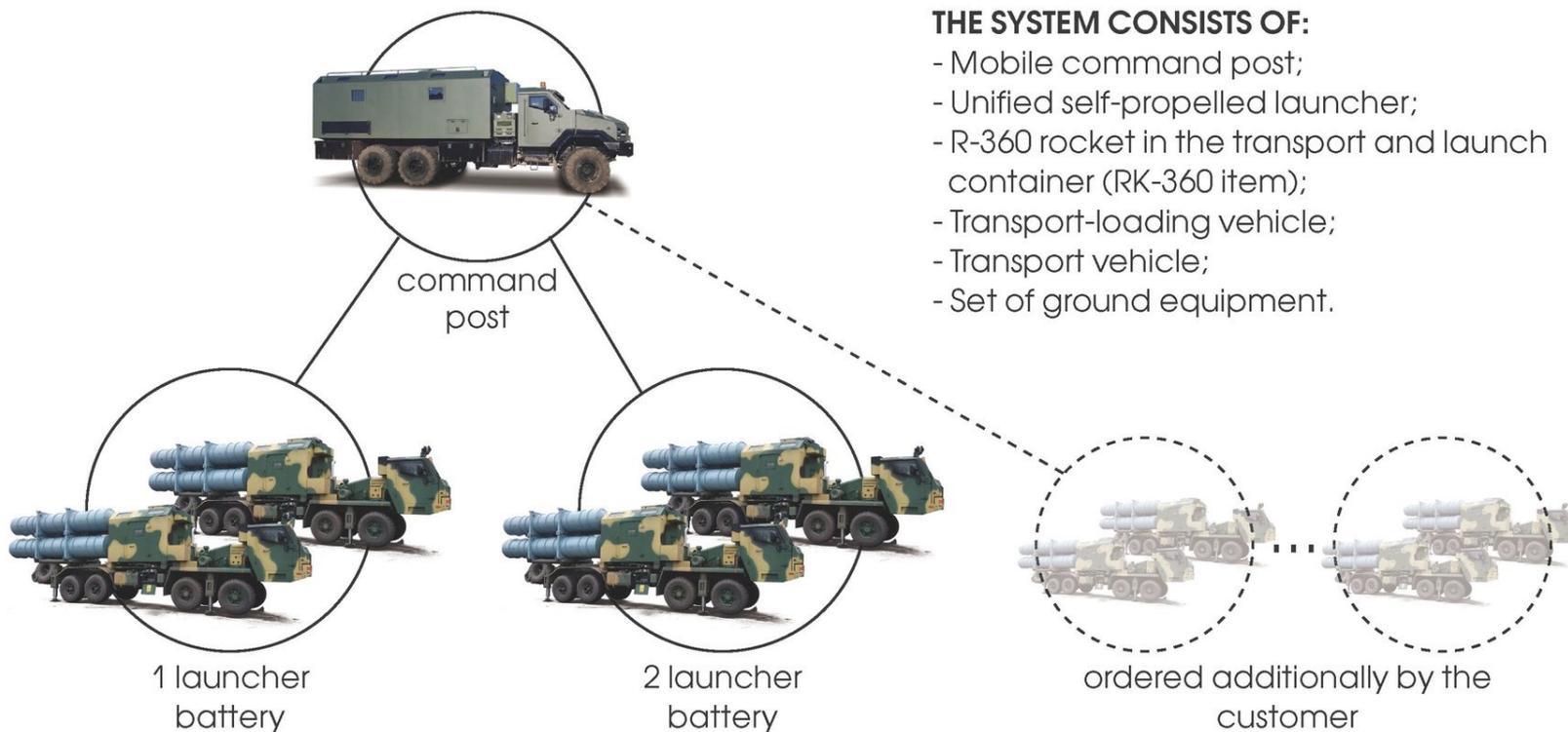


# NEPTUNE

360 MTs ROCKET SYSTEM



# STRUCTURE AND COMPOSITION OF THE SYSTEM



## THE SYSTEM CONSISTS OF:

- Mobile command post;
- Unified self-propelled launcher;
- R-360 rocket in the transport and launch container (RK-360 item);
- Transport-loading vehicle;
- Transport vehicle;
- Set of ground equipment.



Mobile command post – 1 pcs.



RK-360 – 48 pcs.



Transport vehicles – 4 pcs.



Launchers – 4 pcs.



Transport-Loading Vehicles – 4 pcs.



Set of ground equipment – 1 set.

# PURPOSE

“NEPTUNE” 360 MTs ROCKET SYSTEM is a land-based cruise rocket system with anti-ship rockets is intended to defeat warships such as cruiser, destroyer, frigate, corvette, airborne, tank landing ships and vehicles, which operate both independently and as part of the ship groups and amphibious groups, and coastal radio-contrast targets in visual and adverse meteorological conditions, at any time of the day and year, at active fire and electronic countermeasures of the enemy.

## MAIN SPECIFICATIONS

|  |                  |
|--|------------------|
| Firing range, km   | up to 280        |
| Remoteness of the firing position from the coastal strip, km                             | not more than 25 |
| Maximum ammunition reserve, pcs.   | 72               |
| Maximum quantity of rockets in salvo<br>from 4 launchers, pcs.                           | 16               |
| Firing interval in salvo, s  | from 3 to 5      |
| Maximum speed, km/h:<br>- on highway<br>- on dirt road                                   | 70<br>20         |
| Time of deployment of a system in the new position, min                                  | up to 15         |
| Rockets flight altitude range above the wave crest<br>on the final part of trajectory, m | from 3 to 10     |