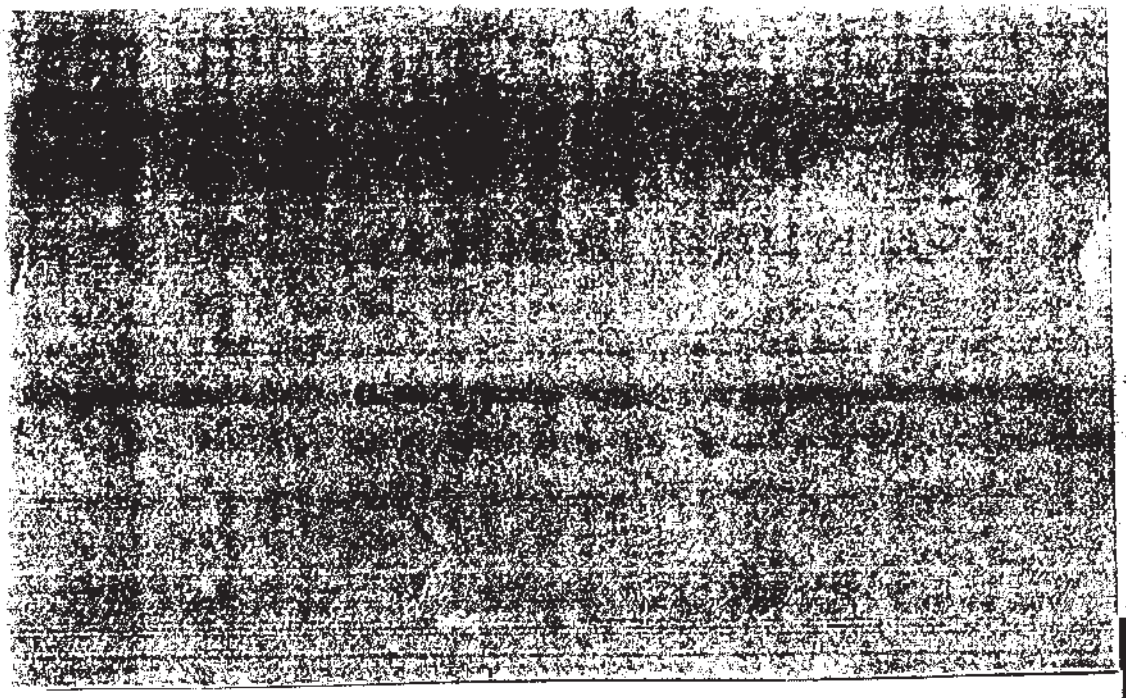

TYPE 22

by

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Published by TALENT COMPUTER SYSTEMS

Introduction

TYPE 22 is possibly one of the largest (170K including data), in-depth naval simulations currently available on the Sinclair QL.

It is a simulation of a Royal Navy Type 22 frigate. The object of the program is to stay afloat for as long as possible, shoot down enemy aircraft and sink enemy shipping. You are subject to attacks from enemy aircraft, missiles, submarines and surface ships which means that you may have to deal with over 20 separate targets at the same time!

The program uses a comprehensive, well-thought-out scoring system to gauge your performance accurately. The military data used is accurate and true to life throughout.

TYPE 22 is a program which requires a little effort to learn to use effectively. Once you understand it, the program will present a continual challenge; no two games are ever the same.

When learning to play, don't be too preoccupied with all the different types of ships, weapons and aircraft which are used by the program as these will soon become familiar.

Good luck! Remember to use the glossary at the end if you don't understand the terms used in this manual.

Loading

You are advised to make backup copies of both microdrives before starting to load and run the program. To do this, place a blank formatted cartridge in drive two and the original in drive one and copy the files across using the SuperBASIC COPY command.

To load the program, place cartridge A in mdv1_ and cartridge B in mdv2_. The press F1 or F2. The program will load, ask you to enter the time in the format, hour/min/sec, then begin.

If you have a Qflash RAM disk in EPROM and 192K or over, the program will detect this and call all its files from RAM disk. This substantially increases the speed of some parts of the program. As programs in external memory run faster, TYPE 22 will slow itself down in order to run at real time on expanded machines.

It is possible to use a RAM disk other than Qflash in EPROM. Insert the backup of A in mdv1_ and type:

```
delete mdv_boot: copy mdv1_boot2 to mdv1_boot <ENTER>
```

The program can then be run as normal but remember to load your RAM disk before you load TYPE 22.

DO NOT REMOVE THE MICRODRIVES AFTER THE GAME HAS LOADED

The Screen Displays

After loading, the screen is separated into five distinct areas:

Naval: This display has a 56km range and plots all surface vessels up to 56km, submarines within sonar range (see note under MOVEMENT) and the ship's Lynx helicopter if it is in flight. Shipping is shown in green and the Lynx in white. Torpedoes do not appear on sonar.

Radar: The radar screen displays all known aircraft and the larger enemy missiles used. The air search radar has two modes, NORMAL (55km) for early warning use and ZOOM-IN (11.6km) for close-in use with the Sea Wolf surface-to-air missile system. The current radar mode is shown on the indicator panel beside the radar screen.

Incoming aircraft are plotted in white, outgoing aircraft in green and missiles in red. In most cases one red dot represents two missiles because they fly so close together.

Aircraft flying at low level do not appear on radar until they come over the horizon (33km). Even after the horizon line, however, some aircraft may jam radar so that they do not appear until they are 10-3km from you. Watch out for surprise attacks!

Command Selector: The command selector shows the command options together with a red cursor box. This should be moved over the desired option using either the cursor keys or a joystick in CTL1. Then SPACE or fire is pressed to engage the option.

Information: The information window shows details about the command optioon currently in use.

Telex: The telex window provides information on what is happening around you with regard mainly to weapons systems. The main message types are as follows:

Enemy Weapon launches - shown as either an AIR ATTACK WARNING followed by target bearing or a MISSILE/SSM (surface to surface missile) /TORPEDO LAUNCH warning with both a range and a bearing.

The prefix 'MULTIPLE' may appear in warnings to indicate that more than one launch has been detected. In this case the red dot produced on the radar screen will represent two missiles. These messages are accompanied by a warning siren.

Enemy Hits - shown as follows:-

HIT AT (bearing) (no. of hits)/(misses) DAMAGE IDX: (damage %)

The damage index is not shown if there are no hits or you are in training mode. Nor is any audible alert signal given.

Helicopter Information - Messages are generated if the Lynx is shot down or if it lands back on the ship.

Exocet/Torpedo Hits - A telex showing the target range, type and class is displayed. No telex is shown for a weapon which misses its target.

The Keys

TYPE 22 has been made as easy as possible to control. To this end, many of the command options use similar keys. To begin with, the function key F1 may be pressed at any time to stop the program. It may be started again by pressing R to resume or Q to quit and start a new game.

In training mode F1 is used to end training and begin a normal game. The ESC key always aborts the command being executed and SPACE always selects an option or fires a weapon.

Training

To help you to learn to play TYPE 22, a training mode is provided. When the program loads, you are offered a full game or a training session. Training is just like the real game, except that you are not damaged when hit. You can therefore play for as long as you want in order to get the hang of the controls.

Training is aborted by pressing F1 for a full game.

The Command Options

The command options are used to control the ship and its weapons systems. The command selector box on the screen shows the command options together with a red cursor box. This red box should be moved over the desired option using either the cursor keys or a joystick and then SPACE or Fire pressed to engage the option.

The command list is as follows:-

ALT SPD : Alters ship's speed (in knots) using LEFT/RIGHT. The maximum speed is displayed and will be 29 knots until damage exceeds 50%; maximum speed is then reduced.

CHAFF : Chaff basically consists of lengths of aluminium foil that can be fired to produce a decoy radar target which may decoy radar homing missiles away from the ship. The duration of the chaff cloud depends on the ship's speed and varies from 2 - 33 secs.

When chaff is being used, your own radar is partially blinded by it. Therefore it is possible for some low-flying aircraft, such as the Su-24 or MiG-27, to penetrate your air defences to within 3km before they appear on radar. This makes it unwise to use chaff when you don't have to as it is very hard to engage targets so close to the ship.

EXOCET : Exocet is a surface-skimming surface to surface missile which can be fired within 30 of the ship's heading. The version installed on Type 22 frigates is the earlier MM38 which is not an over-the-horizon weapon and thus has a maximum range of around 33km and a minimum range of 7km.

Only four of the ship's eight missiles can be loaded at any time and about 3 minutes are needed to reload. Exocet inflicts between 70-90 points of damage but it cannot be used against submarines.

EXOC_LOAD : Re-load Exocet SSM system. The operation takes about 3 minutes and all four launchers must have been fired prior to re-loading.

HEAD : Alters ship's heading using LEFT and RIGHT to move clockwise/anti-clockwise. SPACE sets the new heading.

LOOK : Calls up the ship's on-board naval database on Soviet ships. LEFT/RIGHT select the ship to be examined when SPACE is pressed. The data given is self-explanatory except for the STRUCTURE.

The structure is a number which represents how much damage the ship can take before sinking. It is given as a percentage of the ship's structure compared to a Type 22 frigate - i.e. a ship with 160% structure is 1.6 times larger than you are and can therefore take 1.6 times as much damage.

The data stays on screen until any key is pressed. It is then replaced with range and damage information for the ship's main weapon systems.

More information on Soviet weapons is given at the end of this manual.

LYNX_MOVE : This command either moves the Lynx helicopter in flight or causes it to take off. The heading is input using LEFT and RIGHT to select and SPACE to set. Height is input as follows: -

LEFT - down 1m
RIGHT - up 1 m
SPACE - set
SHIFT - 10x movement
CTRL - 50x movement

The helicopter's altitude ceiling is 1750m.

LYNX_OP : Selecting this command brings up a menu with 5 options:

1. Sit-rep - Situation report. This shows speed, bearing, number of torpedoes left, height, range and map position.

2. Abort mission - Sets quickest course to ship, lands and re-arms Lynx. A telex gives confirmation of the Lynx's landing.

3. Fire Tigerfish - A flashing red circle appears around one of the enemy vessels. It may be moved to the next target, using LEFT/RIGHT and SPACE to fire one of the two torpedoes on the Lynx. It does not work if the Lynx is flying above 10m, the target range is greater than 20km or if there are no torpedoes left. Target range is printed in red if the target is within range.

4. Guide Exocet - This provides over-the-horizon guidance data for Exocet, effectively giving the Lynx remote control of the ship's missiles. The Lynx must be flying above 90m and within 26km of the target to fire. The missile might not hit if the Lynx is shot down or it falls to below 90m while the missile(s) is still in flight. Target range is printed in red if the target is within range.

SHP_DAT : Naval version of TA_LOCK with the same commands. This is used to identify ships so that an attack strategy can be decided.

SW_FIRE : Fires Sea Wolf surface to air missile system.

A 5.5km range circle is drawn on the radar screen and a target line appears pointing to 0 . This line should be moved over the target using LEFT/RIGHT or UP/DOWN (180 movement) and SPACE pressed to launch. The line must be within 1 on the target's bearing to fire and also the range must be below 6km. Height must be taken into consideration as well. This means that Tu-95s, which always fly above 30000ft, can never be hit and that some other high-flying aircraft can only be hit within 2km as seen on radar. There is a base 80% chance of hitting an aircraft with Sea Wolf which may be modified by factors dependent on the target's size, electronic counter measures (ECM) and speed. The base chance of hitting an incoming surface-skimming missile is 20%.

SW_LOAD : There are 96 missiles but only 12 (6 per launcher) are loaded at the start. When these are fired, the system must be reloaded using this command. You do not have to fire all 12 missiles before you can reload.

SYST_STAT : System statistics, showing the ship's present heading, speed, damage percentage and map position (the ship starts at position 0,0).

TA_LOCK : Air Target lock-on, not available when air search radar is in ZOOM-IN mode. It is designed to identify hostile aircraft and provide a speed, height and bearing for a target.
The cursor range and bearing are shown and a green cursor box appears on the radar screen. The box should be moved over the target aircraft and SPACE pressed to reveal a graphic view of the aircraft, together with its speed, altitude, heading and possible weapon load.

The controls are:
- LEFT - moves cursor box anti-clockwise 1
- RIGHT - moves clockwise 1
- UP - moves out 1km
- DOWN - moves in 1km
- SPACE - attempt lock-on
- ENTER - rotates cursor box 180
- SHIFT - faster movement

TT_FIRE : The sequence for firing Mk32 torpedoes is the same as that for Sea Wolf missiles, but these have a maximum range of 40km.

Torpedoes take a fair amount of time - 8 secs. per km - to travel to their target. They inflict 45-55 points of damage each and have a base hit chance of 90%. The ETA (estimated time of arrival) of the torpedo is shown when it is fired.

The torpedoes in TYPE 22 travel much faster than real Mk32 torpedoes, otherwise the game would be too slow.

WEA_STAT : Displays the current number of Mk32 torpedoes, Exocets, Sea Wolf missiles and the status of the helicopter.

ZOOM : Selects or deselects radar zoom mode i.e. 11.6 or 56km range. The current status is shown on the indicator panel beside the radar screen.

PLAYING THE GAME

TYPE 22 is far removed from the standard arcade game. It requires a strategy in giving priority to certain more dangerous targets and in the use of chaff and the ship's speed to fool missiles. The player should also always bear in mind the restrictions of his own weapon system and that of the enemy.

Chaff

Chaff should be active only when missiles are within 12km of the ship i.e. they appear on radar while in ZOOM-IN mode. Keeping chaff up the whole time may seem like a good idea but it allows low-level fighters to evade detection by radar until they are dangerously close to the ship.

Also, when the ship is moving at full speed, chaff may only stay active for about 2 secs. The ship leaves the chaff cloud behind it (at 29kts, the cloud will be 180 feet aft after 4 secs.)

Another way to avoid enemy missiles (and other weapons as well) is to face either directly towards or away from them. This presents less of a target to the missile's radar and may lessen the missile's chance of hitting you by 15%.

Torpedoes

First, firing torpedoes at a ship does not mean its instant destruction. Torpedoes travel fairly slowly and at maximum range may take 4-5 minutes to close on a target. However, when they do close range, they are very likely to hit as they cannot be dstroyed by rapid-fire cannon, missile systems or chaff, unlike surface-skimming missiles.

This problem of destroying torpedoes means that your only defence is to face directly into the target and present less of a target to home in on.

Exocets

Exocets have the advantage in that you can fire one or two and be almost certain of destroying the target in a matter of seconds. The main disadvantages of the system are that it takes about 3 minutes to reload, it must be fired within 30 of the ship's heading and it cannot be used against submarine targets.

Lynx ASW Helicopter

The Lynx has one main function - to destroy submarines. Used properly it is good at its job but it is very vulnerable to missile attacks.

The Lynx carries two Tigerfish torpedoes which have a range of 20km. They can be used on both surface and sub-surface targets.

The Lynx can also be used to provide over-the-horizon guidance data to remote control Exocet missiles, as described in the command LYNX_OP. This function is very useful against targets which would normally fire their weapons before you can hit them, such as Nanuchas, Kievs and Kyndas.

Now we come to the big problem. Below about 100m, the Lynx is liable to be shot at by any missile-carrying fighters. The only AAM used is the Aphid so if you are within an 8km kill zone of an enemy aircraft carrying it your chances are pretty slim. Also, below 200m, low-level air defence systems on ships will be active to a maximum range of 9km.

So the answer is simple - fly above 100m. Wrong - this is a bad idea. You

THE SCORING SYSTEM

TYPE 22 allocates points based on proficiency with the weapons systems, the manner in which damage is taken, use of the ship's resources and time afloat. The major categories are:-

Sea Wolf

Points are awarded for shooting down enemy planes or missiles. Each aircraft scores a value as shown in the aircraft reference section. Only half the points are awarded if the aircraft is shot down after it has fired at the ship.

Shooting down an incoming enemy missile scores 250 points. Six points are lost for any missile that misses its target.

Anti-shipping activities

Points are gained here by sinking or damaging enemy shipping. The score is roughly proportional to the size of the ship and is independent of the weapons systems used to sink it.

Damage

Damage points are subtracted from the final score and represent the total damage taken in conjunction with use of the chaff launcher. Damage points taken from non-radar guided weapons are ten times the amount of damage inflicted.

Points taken from radar-guided missiles are ten times the damage done unless chaff was active at the time of impact, in which case the points equal the damage inflicted. It pays to keep chaff active - even if you are hit, your score won't drop as far.

Self Defence

Over-use of chaff is penalised. If old chaff is still active when new chaff is deployed, then points equal to the time in seconds before the old chaff was due to expire will be deducted.

Any missile deflected from the ship using chaff scores 100 points.

Helicopter use

If the Lynx detects a submarine using sonar, 200 points are awarded. 25 points are lost if the Lynx is shot down.

If the Lynx is airborne when the ship sinks, 25 points are awarded. Each torpedo which hits and every Exocet guided gains 100 points.

Simulation duration

Points accumulate at a rate of one per ten seconds.

SOVIET WEAPONRY

This is a list of the weaponry used in the program. Damage is calculated as a percentage of your ship's total structural value (i.e. you can take 100% damage points before sinking). Indicated damage will

cannot use your sonar and torpedoes at that height and above 100m ships can use their high-level air defences with kill ranges of over 30km!

The best idea is to fly low and climb if enemy planes get too near. Only Forger Ds and some MiG-27s carry AAMs so use TA_LOCK to find these and avoid them. Other aircraft will ignore you.

The following table lists the air defence avoidance radii for Soviet surface ships; (they can also be found on the program's LOOK-up command file):-

Surface Type	Low range (km)	High Altitude Range (km)
Kiev	9	30
Kara	9	30
Kynda	3	30
Kresta II	3	30
Krivak II	9	9
Kashin	3	30
Nanuchka	9	9
Kotlin	3	2
Grisha II	3	2
OSA II	3	2

Obviously submarines are not a threat to the helicopter.

Movement

Basically your top speed is less than most of the surface ships so you cannot out-distance them. What you can do is to close on certain targets in order to get within weapon range sooner or try to hold your distance from a target so that the Lynx can call Exocet on to it before it can fire at you.

You should also remember that at high speed chaff will remain active for a very short time and that your on-board sonar's range will drop 500m for every knot of speed. It varies between 19km when stationary to only 4.5km at 29kts.

Sea Wolf

Sea Wolf is the naval version of the Rapier missile system and it has a 5.5km interception range. For the purposes of the game, it is assumed that one hit will either knock out the target aircraft or prevent it from attacking.

As you have only 96 missiles, your target priorities should be:-

1 - Incoming missiles
2 - Attacking aircraft which have not yet fired
3 - Aircraft which have fired

Soviet Aircraft

This list shows the different types of aircraft used in TYPE 22. You should be aware that aircraft flying above 5500m are out of missile range.

Tupolev Tu-95 / Bear H - Maritime Reccon / Missile Platform
Attack height: 10000m - 18500m Score: flies too high to be shot at

Tupolev Tu-16 / Badger G - Maritime Reccon / Bomber / Missile Platform
Attack height: 2000m - 4000m Score: 380

Tupolev Tu-26 / Backfire C - Maritime Reccon / Missile Platform
Attack height: 2000m - 4000m Score: 450

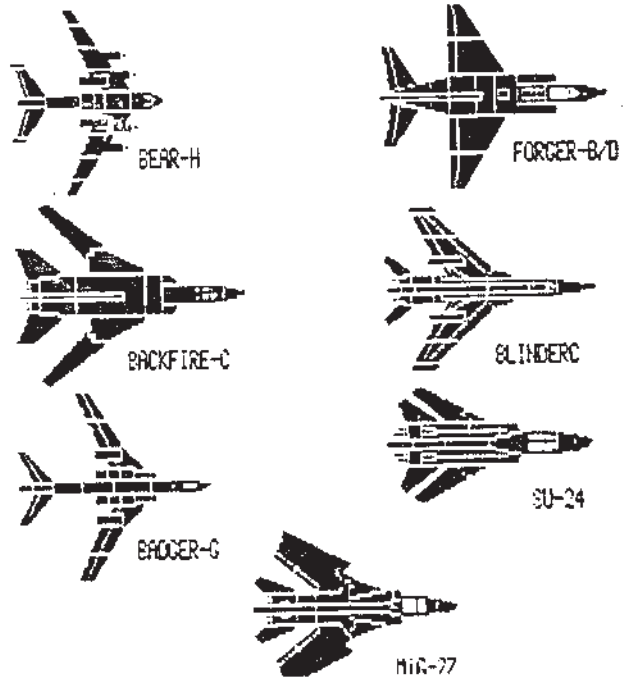
Tupolev Tu-22 / Blinder C - Bomber / Missile Platform
Attack height: 230m - 2000m Score: 300

Sukhoi Su-24 / Fencer - Multi-role strike fighter
Attack height: 12m - 30m Score: 125 or 150

Mikoyan - Gurevich MiG-27 / Flogger D - Multi-role fighter
Attack Height: 12m - 30m Score: 120 or 200

Yakovlev Yak-36 / Forger B/D - V/STOL attack fighter
Attack height: 12m - 30m Score: 100 or 110 or 120

AIRCRAFT IN TYPE 22



vary by approximately 10%.

Most of these weapons are fired in either volleys or pairs.

The weapon list is only included so that you know what a ship or aircraft is carrying when you look it up with the LOOK or TA LOCK command. It is not essential to know it though it may help if you do.

Weapon	Damage	Range	
AS-15 - "Hotel" cruise missile	40%	40	*
AS-6 - "Kingfish" air to surface missile	27%	32	*
AS-7 - "Kerry" air to surface missile	5%	8	*
HE-GP - high explosive bomb	1%	1	
FAE - fuel air explosive bomb	2%	1	
UV-16-57 - 16 rocket, 57mm rocket pod	.125% each	4	
MBU-2500A - 18 rocket, rocket launcher	.6% each	7	
MBU-4500A - 12 rocket, rocket launcher	.6% each	7	
533mm TT - homing torpedo	30%	22	
76/100/130mm DP - naval deck gun	.5% each	12-8	
SS-N-2 - surface to surface missile	20%	31	*
SS-N-3 - surface to surface missile	30%	40	*
SS-N-9 - surface to surface missile	30%	40	*
SS-N-12 - surface to surface missile	45%	50	*
SS-N-14 - surface to surface missile	18%	31	*
GSh-23 - 23mm Gattling cannon		3	
AA-8 - 'Aphid' air to air missile		10	
SA-N-1/3 - surface to air missile		30	
SA-N-4 - low-level surface to air missile		9	

* Weapon may be drawn off target by using chaff.

Soviet Shipping

The following is a list of the different Soviet naval vessels that you will meet. The ship's computer will display them when asked by the command SHP_DAT. LOOK will give all this information and more during play, so this section is only included for reference.

The term 'structure' shows how big the ship is compared to you - i.e. 50% means half your size, therefore it can be sunk fairly easily.

Charlie 1 Attack submarine

Maximum speed : 27 Kts
Structure : 55%
Armament : 6/533mm TT

November Attack submarine

Maximum speed : 30 Kts
Structure : 52%
Armament : 8/533mm TT, 4/400mm ASW TT (aft)

Echo II Surface to Surface Missile Attack submarine

Maximum speed : 25 Kts
Structure : 50%
Armament : 8/533mm TT, 8/SS-N-3 & 4/400mm TT (aft)

Kiev VTOL aircraft carrier

Maximum speed : 30 Kts
Structure : 160%
Armament : 8/SS-N-12, 4/SA-N-3, 4/SA-N-4, 4/76mm DP, 8/GSh-23, 10/533mm TT, 2/MBU-2500A, 10 Forgers & 15 Hormone A/B ASW and missile guidance helicopters.

Kara Guided missile cruiser

Maximum speed : 30 Kts
Structure : 110%
Armament : 8/SS-N-14, 4/SA-N-3, 2/SA-N-4, 4/76mm DP, 4/GSh-23, 2/MBU-2500A, 10/533mm TT, 1 Hormone A

Kresta II Guided missile cruiser

Maximum speed : 34 Kts
Structure : 105%
Armament : 8/SS-N-14, 4/SA-N-3, 4/57mm AA, 2/MBU-2500A, 2/MBU-4500A, 10/533mm TT, 4 GSh-23, 1 Hormone A/B

Kynda Guided missile cruiser

Maximum speed : 34 Kts
Structure : 96%
Armament : 8/SS-N-3, 2/SA-N-1, 4/76mm AA, 2/MBU-2500A, 6/533mm TT,

Kashin Guided missile destroyer

Maximum speed : 36 Kts
Structure : 100%
Armament : 4/SA-N-1, 4/76mm DP, 2/MBU-4500A, 2/MBU-2500A, 5/533mm TT

Krivak II Guided missile destroyer

Maximum speed : 31 Kts
Structure : 88%
Armament : 4/SS-N-14, 4/SA-N-4, 2/85mm DP, 2/MBU-2500A, 8/533mm TT

Kotlin Destroyer

Maximum speed : 34 Kts
Structure : 80%
Armament : 4/130mm DP, 16/45mm AA, 10/533mm TT, mines

Nanuchka Guided missile corvette

Maximum speed : 34 Kts
Structure : 80%
Armament : 6/SS-N-9, 2/SA-N-4, 2/57mm AA

Grisha II corvette

Maximum speed : 33 Kts
Structure : 40%
Armament : 2/SA-N-4, 2/57mm AA, 2/MBU-2500A, 4/533mm TT, mines

OSA II Guided missile patrol boat

Maximum speed : 36 Kts
Structure : 31%
Armament : 4/SS-N-2, 4/GSh-23

GLOSSARY OF TERMS USED IN TYPE 22

AA - anti-aircraft
AAM - air to air missile
ASM - air to surface missile
DP - naval deck gun
ETA - estimated time of arrival
FAE - fuel air explosive
GP - general purpose bomb
HE - high explosive
Kts - Knot. A knot is 1.8 km or about 1.1 miles
SAM - surface to air missile
SSM - surface to surface missile
Tigerfish - air-dropped torpedo used by Lynx helicopters
VTOL - Vertical Take Off and Landing aircraft