

DELTA-CLASS SSBN

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General

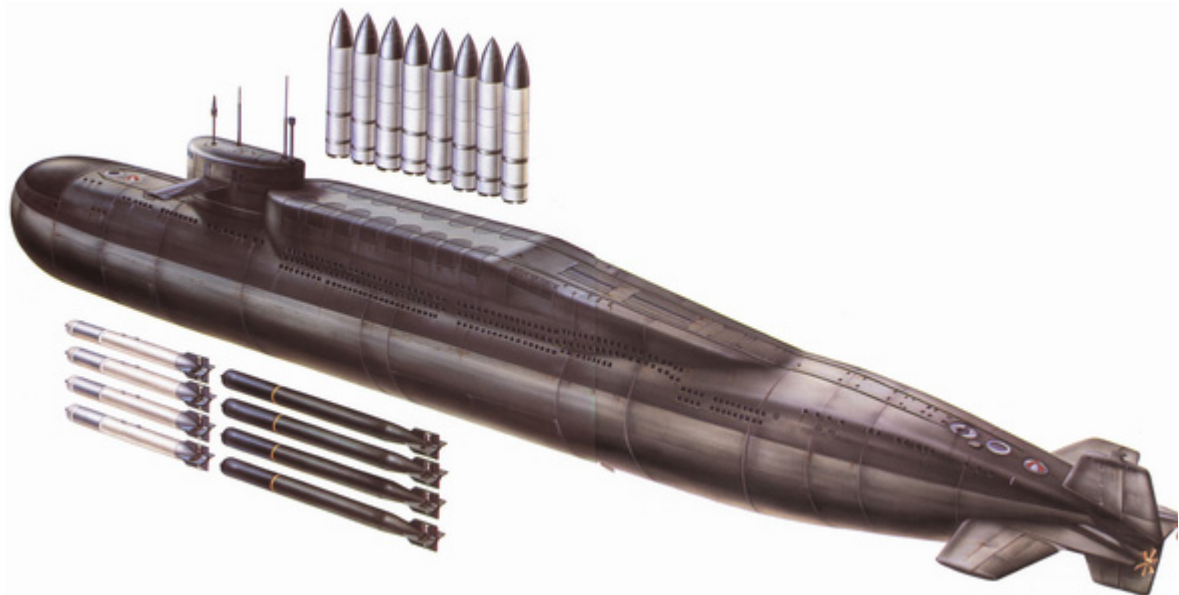
Users: USSR/Russia

Roles & Mission: The availability of the new R-29 (SS-N-8) SLBM from the early 70s onwards signalled a major shift on the operational deployment of the Soviet Navy's SSBNs. Until that time, the navy's most capable SSBNs (the Yankees), being limited by the short range of their missiles, had to transit the GIUK Gap and cross most of the Atlantic (or alternatively the Pacific) before reaching their firing positions close to the US coast. This was a limitation that had been fully exploited by NATO: SOSUS arrays (both around the US coasts and in other strategic choke points), ASW aircraft and a series of ASW-oriented submarines had been combined into a force that made the SSBN patrols a particularly hazardous duty if war did break out. The R-29 and the Project 667B (Delta-class) submarines, specifically designed to carry the new missile, changed this scene radically.



The development of the Pr. 667B **Delta I** submarine was authorized in 1965, with the Rubin Central Design Bureau for Marine Engineering was in charge of the program. The first Delta I submarine "K-279" was built at the Northern machine-building enterprise in Severodvinsk and was incorporated into the Northern fleet on 22 December 1972. Between 1972 and 1977 18 Delta I submarines were launched, 10 in Severodvinsk and 8 in Komsomol Na Amur.

For the first time, Soviet SSBNs did not have to approach the continental US or even pass any of the NATO-monitored areas. They could literally fire their SLBMs while still tied to their piers (in fact, from the mid-70s they started training to do exactly that). As the piers themselves were a high-payoff target for nuclear attack however, a more practical alternative for the protection of the submarines was sought. Thus the concept of the bastion, a closely guarded sea area within which the SSBNs would patrol, was materialized. Bastion patrols by Delta I submarines commenced in the mid-70s, and the protection of these patrol areas gradually became the highest-priority mission of the Soviet Navy, absorbing the bulk of the surface, sub-surface and ASW-oriented air assets of the two main Fleets. A bastion area would typically be surrounded by multiple mine belts, with attack submarines patrolling both sides of the "fence", larger surface ships coordinating small patrol craft (including border-guard units)¹ in regular patrol sweeps and air assets filling the gaps as required. The SSBNs themselves should be expected to have additional subs as close escorts.



¹ An indication of the importance that the Soviet Navy placed on the bastion-support duty is the operational role of its impressive capital units in the 70s & 80s, the Kiev-class carriers and the Kirov-class battlecruisers. Originally these vessels were thought to be the centerpieces of SAGs/CVBGs that would try to break out of the "traditional" confines of the Soviet Navy in both the Atlantic and Pacific and engage NATO forces in open waters. We now know however, that both these classes were primarily intended to function as the command & coordination "afloat HQs" for the bastion-patrol forces.

While having caused such a drastic shift in Soviet naval thinking (and, needless to mention, new tremendous headaches for NATO ASW planners), the Delta I class in itself was technically unimpressive. An evolution of the Project 667 (Yankee-class) submarines, the Delta had a greater displacement and larger external dimensions. The pressure hull consisted of ten compartments. The 667B submarines were equipped with the D-9 launch systems and 12 R-29 missiles.

The Delta-class submarines regularly deployed on alert patrols in the marginal ice seas of the Soviet arctic littoral, including the Norwegian and Barents seas. The submerged firing of the missiles could be conducted in a single salvo while the submarine was moving at a speed of 5 knots. A high degree of automation allowed a significant reduction in the time required for pre-launch preparations in comparison with the Yankee class. To improve the accuracy of the missiles, the Delta I submarines were equipped with the "Tobol-B" navigation system and the "Cyclone-B" satellite navigation system. In 1991 nine Delta I submarines still served in the Northern and Pacific Fleet. They were all retired and scrapped or put in prolonged reserve during the 1990s.



The **Delta-II** (Project 667BD) was an improved version of the Delta I, primarily developed to increase the number of available SLBMs to sixteen. The pressure hull was lengthened by 16 meters in the area of the fourth and fifth compartments, where four additional missile tubes were plugged-in. The displacement increased by 1,500 tons, and the full speed decreased by 1 knot. A modified D-9D launch system was installed, with 16 R-29DD missiles. During development, several measures were applied to decrease the noise levels of the submarine. The steam turbines were

connected to a two-spool system of shock-absorbers, the pipelines and other hydraulic equipment were isolated from the hull, and a new sound-absorbing coating was applied.

The **Delta III** (Project 667BDR) was a further improvement of the Delta design, and was important in several respects. It was the first submarine that could fire any number of missiles in a single salvo (instead of firing one missile at a time). Furthermore, its missile, the R-29R (SS-N-18 Stingray) was the first Soviet MIRVed SLBM. This class was equipped with the integrated "Almaz-BDR" combat system, which reportedly allowed the firing of torpedoes in deep water. It was also fitted with the "Bumblebee" hydroacoustic navigational system to determine its position through hydroacoustic buoys.

The **Delta IV** class (Project 667BDRM) represents the final evolution of the Delta family, and was constructed in parallel to the Typhoon class. While it was widely believed that the Delta IV served as a backup project to the much more radical (and expensive) Typhoon, it now appears that the class was in fact developed on its own merit and would have gone ahead even if the Typhoons had proven an extraordinary success (which they didn't). The first submarine of the class was launched in January 1985 and was commissioned on December 1985 with the Northern fleet.

In comparison with the Delta III, the diameter of the pressure hull was increased and the bow was lengthened. As a result the displacement of the submarine was increased by 1,200 tons and it was 12 meters longer. To increase the reliability of the pressure hull, the tip and inner cut-off bulkheads were made of specially processed steel.

The Delta IV carries 16 R-29RM (SS-N-23 Skiff) liquid-fueled missiles which carry four multiple independently targetable reentry vehicles. Unlike previous mods, this class is able to fire missiles in any direction from a constant course in a circular sector (which would be typical in a bastion patrol). The underwater firing of the ballistic missiles can be conducted at a depth of 55 meters while cruising at a speed of 6-7 knots. All the missiles can be fired in a single salvo.

The Delta IV class is also fitted with the "Omnibus-BDRM" combat system controls. The "Shlyuz" navigation system is capable of providing stellar navigation data when at periscope depth. The same system also employs two floating antenna buoys to receive radio-messages, target destination data and satellite navigation signals at great depth. The submarine is also equipped with the "Skat-BDRM" (Shark Gill) sonar suite, which includes a towed array.

Additional silencing measures were taken to increase the survivability of the class. The reduction gears and equipment are located on a common raft isolated from the pressure hull, and the power compartments are similarly isolated. A new anechoic coating was installed on both the inner and outer hull, and a new five-bladed propeller of reduced noise was fitted.

Strengths: The main positive aspect of this class was its relative simplicity. This enabled relatively rapid construction and allowed the Soviet Navy to quickly build up a sizable long-range SLBM force. The basic design also proved itself adaptable to a wide range of modifications (witness the numerous variations of the Yankee-class, on which the Delta was firmly based). The Delta-IV also has drastically reduced noise levels and sports respectable sensors and some interesting self-defence weapons. A Delta can also normally be expected to have a very strong protective escort, although that is a result of the bastion principle rather than an inherent strength of the design.

Weaknesses: The Delta inherited most of the drawbacks of the Yankee-class design. Noise levels were too high, the sensors were ancient and further degraded by self-noise, the weapons (other than the SLBMs) were nothing to boast about, and the speed was inadequate to outrun a trailer or a weapon. The successive versions (particularly the Delta IV) improved upon these weaknesses but could only compensate so much for a fundamentally outdated design. A Delta-I, II or III skipper would have a very hard time surviving against a contemporary NATO boomer-hunter, and would primarily count on outside help rather than his own boat's capabilities.



Deployment & Scenario Use:

All versions: The Delta is primarily a bastion-dweller and is rarely encountered outside one (and then probably on transit to or from it). Main patrol areas would include the Barents Sea, the White Sea, and the Sea of Okhotsk. An illustration in the 1985 edition of DoD's "Soviet Military Power" depicts a Delta-IV surfacing through the Arctic ice to fire its missiles, however this under-ice capability does not seem to be part of the design (in contrast to the Typhoon class) and has not been confirmed from other sources.

Delta I: In 1973 the Delta Is were incorporated into a division of strategic submarines of the Northern fleet based at Yagelnaya bay. The formation of the 41st division of strategic submarines consisting of Delta I

submarines was completed the same year. In 1974 the division was incorporated into the 11th flotilla of submarines. The Delta I submarines which belonged to the Pacific fleet formed the 25th division of strategic submarines and were based on Kamchatka (Petropavlovsk). In the early 1990s the submarines were transferred to the Pavlovsk base in Primorye.

The zones of patrol of the Northern fleet submarines were located in the area around Greenland and the Barents Sea, two or three days away from the submarine bases. The Delta I submarines that served in the Pacific fleet began patrols in 1976.

Delta II: The first Delta-II entered service on 30 September 1975. Between 1973 and 1975 four submarines of this project were constructed at the Northern machine-building enterprise in Severodvinsk. The 667BD submarines formed part of the 3rd flotilla of submarines of the Northern fleet based in the Yagelnaya bay. In 1996 one submarine was removed from operational status.

Delta III: The first Delta III SSBN entered service in 1976, and by 1982 a total of fourteen submarines were commissioned. All of them were built at Severodvinsk. The operational lifetime of these submarines is estimated to be 20-25 years. The Delta III submarines which served in the Northern fleet formed a division and were based in the port of Sayda in the Yagelnaya bay and in the Olenya port. In the early 90s the ballistic missile submarines were transferred to Yagelnaya. The Delta III that served in the Pacific Fleet formed a division of SSBNs which was (is?) based on Kamchatka.

When the START treaty was signed in 1991, five Delta IIIs still served in the Northern (3 - in Yagelnaya, 2 - in Olenya) and nine in the Pacific Fleet. One Delta III submarine of the Northern fleet was decommissioned in 1994.

Delta IV: Between 1985 and 1990 seven Delta-IVs were constructed. Initially all were based with the Northern Fleet at Olenya. All the submarines of this class serve in the 3rd flotilla of strategic submarines of the Northern fleet, which has recently relocated to Yagelnaya.

The four-year repair works on the first Delta-IV (K-51) submarine were completed in November 1999. The submarine was expected to operate from its home base in Gadzhievo at the Kola Peninsula for 5-7 more years.

Game stats:

Max Speed: 24kts
 Length: 140m
 Displacement: 8700t
 Crew: 120
 Max Depth: 300m
 Damage Points: 125

Equipment – PLARB-667B Delta I (1980s) - DB2000 v6.3.2
Radar

Name	Max Range	Abilities	Notes
Snoop Tray (MRP-25)	20nm	Surface Search Range Information Bearing Information	

Electronic Warfare

Name	Max Range	Abilities	Notes
Park Lamp	600nm	Surface Search Air Search Bearing Information	Passive RWR/ESM/ELINT
Brick Pulp	100nm	Surface Search Air Search Bearing Information Classification	Passive RWR/ESM/ELINT

Sonar

Name	Max Range	Abilities	Notes
Shark Teeth (MGK-100 Kerch)	15nm	Sub Search Range Information Bearing Information	Active/Passive sonar
Mouse Roar (MG-519 Arfa)	3nm	Sub Search Range Information Bearing Information	Active-only sonar

Mounts

Mount	Properties	Weapons (per mount)
2x Signal Ejector	ROF: 1 Capacity: 2 Armor: None	1x White Noise Decoy (max. 1) 1x Ensonification Bubbler (max. 1)
1x SS-N-8 VL SLBM	ROF: 15 Capacity: 12 Armor: Light	12x SS-N-8 (2) Sawfly (max. 12)
4x 533mm TT (1980/SSBN/SET-65M/Old)	ROF: 5 Capacity: 1 Armor: Light	1x SET-65M (1972/ET-80A[76]/Sub/11n) (max. 1)
2x 400mm TT (1980s/SSBN/Old)	ROF: 5 Capacity: 1 Armor: None	1x SAET-40 (6nm) (max. 1)

Magazines:

Magazine	Properties	Stores
Delta I-II 400mm (1980s)	ROF: 60 Capacity: 4 Armor: None	4x SAET-40 (6nm) (max. 4)

Delta I-II 533mm (1980s)	ROF: 300 Capacity: 14 Armor: None	14x SET-65M (1972/ET-80A[76]/Sub/11n) (max. 14)
Torpedo Decoys	ROF: 60 Capacity: 20 Armor: None	10x Ensonification Bubbler (max. 20) 10x White Noise Decoy (max. 20)

Versions (H3-DB2000)

- **PLARB-667B Delta I (1980s)**: As described.
- **PLARB-667BD Delta II (1980s)**: Elongated, four extra SS-N-8 VLS tubes added. Equipment as Delta I.
- **PLARB-667BDR Delta III (1980s)**: Reduced noise levels, plus significant modifications:
 - New VLS for 16 SS-N-18 SLBMs
 - Two 400mm TTs added, each 1x MG-44 torpedo decoy
 - New weapons & decoys (fired from 533mm TTs):
 - VA-111 Shkval
 - SS-N-15 Starfish
 - SS-N-15 Nuclear Starfish
 - MG-74 Korund Torpedo Decoy
 - Additional sonar equipment:
 - Palamida towed array
 - Shark Hide flank array
- **PLARB-667BDR Delta III|1991**: SET-65 and nuclear-tipped SS-N-15 removed.
- **PLARB-667BDR Delta III|2000s**: No changes in equipment.
- **PLARB-667BDRM Delta IV|1980s**: Significant noise reduction, plus:
 - New VLS for 16 SS-N-23 SLBMs
 - Mounts, weapons, radar & EW sets as Delta III
 - Sonar set as Delta III plus Shark Gill (bow-mounted)
- **PLARB-667BDRM Delta IV|1991**: SET-65 and nuclear-tipped SS-N-15 removed.
- **PLARB-667BDRM Delta IV|2000s**: No changes in equipment.

Current service

All Delta I/II boats have been retired during the 1990s. Most have been scrapped, while other have been put on "permanent storage" (typically a waiting queue for the scrap yards). The same fate awaits most of the Delta IIIs; however, 4-5 boats of this class (K-496, K-506, K-211, K-180 and probably K-129) are still operational and likely to be modernized and maintained for future service.

With the reduction of the Typhoon class to only 3 operational vessels, the Delta IV remains the backbone of the Russian SSBN force. All but one of the 7 constructed submarines remain operational (K-51, K-84, K-64, K-117, K-18, K-407) and are certain to be upgraded for further operational service until replaced by either the Borey class or (more probably) a new SSBN design.