Sources for Maritime Crime and Security

This section of the Journal reviews, in context, primary source articles or books likely to be of use to the Maritime Crime and Security Community, concentrating on specialist sources unlikely to be generally available and, where relevant, translating or summarising their contents. Readers are invited to submit suitable review articles relating to their specialist fields, and especially, though not by any means exclusively, non-English language sources.

Review article: Russian and Soviet Submarine Training up to 2005 and implications

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On 1 July 2019 the Russian Navy suffered a tragic disaster when the top-secret deep-sea diving, nuclear powered submarine (or submersible) *Losharik* (probably AS 31, although also sometimes referred to as AS 12), was swept by fire, its lithium batteries overheating. This killed fourteen of what are now, according to the varying reports, the 19 men, all officers, some very distinguished, aboard the submerged sub. The four surviving crew and one civilian specialist managed to surface the sub, shut down the nuclear reactor and get off on to the modified Ballistic Missile firing Submarine (SSBN) that served as its mothership. Before the surviving crew left, they were, allegedly, ordered to flood all compartments, to ensure that there was no further fire or explosion. The Russian Defence Ministry said it would get the *Losharik* back in service, but they are still studying the damage and getting estimates of how long repairs would take and how much it would cost (Submarines 2019, Kofman 2019).

'AS' stands for *Atomnaya stantsiya* – Nuclear station. '*Submarines*' are usually defined as operating autonomously, whilst *submersibles* usually require an umbilical cord to a mother ship or submarine located on, or relatively near, the surface. *Losharik*, named after a 1970s cartoon horse, made from small balls, was, therefore, appropriately named because its construction is believed to involve, within an outer shell, six or seven titanium spheres which can withstand the huge pressures of operating at great depths. She does appear to have had a 'mother ship', a massive Ballistic missile firing submarine (SSBN), although speculation about the latter's name has been indecisive.

However, if the 'sub' is a *submersible*, why is it nuclear powered? Why should it be? The Russians will obviously not disclose the details – and absolutely rightly – but analysts believe *Losharik* could operate as deep as – estimates vary - 8,200 feet (3,000 metres). Obviously and quite rightly the tragic Russian disaster is shrouded from public and media view, but both the Western and the Russian media have taken great interest in it. *Losharik* was, and still is, an absolutely top secret asset and its ability to dive to great depths -normal submarines can only descend to about 600 metres, or maybe 1,000 at the most - has led to informed speculation that one of its roles may be to monitor and 'hack' deep-sea cables and/or, also, to cut them, as well as to recover items from the sea bed (submarines 2019). It has also been reliably suggested that *Losharik* may have been used to plant the titanium Russian flag on the floor of the Arctic Ocean at the North Pole in 2007. (Evans 2019, Parfitt 2007).

This tragic disaster cost the lives of at least 14 Russian senior and distinguished Naval Officers. They included seven Captains First Rank, of whom two were Heroes of the Russian Federation. They were assigned to Unit 45707 of the Main Deep-Sea Research Directorate – *Glavnoye Upravleniye Glubokovodnogo Issledovaniya (GUGI)*, based in St Petersburg. *GUGI* is a small, officer heavy service reporting directly to the Ministry of Defence and not actually part of the Navy. The two captains first

rank – Filin and Dolonskiy (the latter the captain of the vessel), who held Hero of the Russian Federation honours earned them as part of earlier research missions in the Arctic and Antarctic (Kofman 2019). However, the large number of senior captains suggests *Losharik* was conducting some sort of important research mission or test.

The disaster has raised questions about *Losharik*'s role but also about the training and career development of Russian submariners. The source examined in this article is *Higher Officers' Classes of the Russian Navy (Academy of Additional Professional Education) of the Russian Navy (Vysshiye ofitserskiye klassy voyenno-morskogo flota Rossii* (VSOK VMF) *(Academiya dopolnitel'nogo professional'nogo obrazovaniya) Voyenno-Morskogo flota Rossii),* (St Petersburg: Izdatel'stvo VSOK VMF (VSOK VMF Publishing House), 2005. 240 pp., illustrations)

Note: for Russian, the *Journal* uses the Nato STANAG transliteration which is the same as the US Board on Geographical names.

This 270-page book, published in unclassified form in 2005, by the VSOK VMF (Navy Higher Officers' Courses) publishing House in St Petersburg, was first drawn to the author's attention as part of a recent research project undertaken by David Parry, a retired Royal Navy submarine captain. Although it is thin on the specifics and details of Soviet and Russian submarine training, particularly the practical side, it provides a useful framework on how the Russians go about it, and presents useful parallels with – and differences from – US, UK, German and other Nato submarine commanders' training.

The book covers all higher naval officer training, but this review article concentrates on submarine officer training and, in particular, that of commanders of SSBNs ('bombers').

The chapter on the origins of the Russian submarine fleet is authored by PhD candidate Captain First Rank A V Onuchin. The first Russian submarine crew began training on board the submarine *Del'fin* (Dolphin) in 1904. The first regular submarine training detachment was set up at Libava (now Libau) on the Baltic on 27 March 1906. Submarine training remained confined to the Baltic until 7 December 1937 when a Pacific Fleet submarine commanders' course was set up. Submarine officer training remained with the Baltic Fleet until 1953 when it was transferred to Naval (VMF) headquarters. In 1955 62 submarine commanders graduated and in 1956 there were 75 in the newly formed Command Submarine Faculty (*komandny podvodny fakultyet* This trained submarine commanders and deputy commanders. In 1963 a faculty of vessel commanders – COs – was created, to train captains of both submarines and surface ships. Then, in 1969 a class (course) for SSBN commanders was started (right column 4th para from bottom). (VSOK 2005: 21-23).

Signal and communications specialists (sic.) and weapons officers completed corresponding courses at the S M Kirov KUOPP *Krasnoznamenny uchebny otryad podvodnogo plavaniya* - Red Banner Submarine Training Detachment)- advanced training courses for officer personnel. Most interestingly, Captain Onuchkin then reveals that 'until *the present* [2005] more than *6,000 submarine commanders have graduated since 1969, of whom more than a thousand have been commanders of rocket armed submarines of the Strategic Nuclear Command. (rplSN)*'. The acronym stands for (rocket-armed (r)submarines (pl) Strategic Nuclear (SN)). (VSOK 2005: 23 penultimate paragraph). This very high number of SSBN commanders is explained because the Soviets, and now the Russians, have a continuous at sea deterrent, as we do.

On page 80 the book returns to submarine commander training ('The story of the chair (Department) of tactics of the Navy') (*U istokov podgotovki komandirov korablyey (istoriya kafedry taktiki VMF*). From 1954 to 1960 the chair (kafedra) of tactics of the Navy (VMF) was merged (sliyaniye) with the chair of tactics of submarines. VMF (Soviet Navy) General Staff OMU/3/ 1138c of 29 July 1963 established the final structure of courses under two faculties: the faculty of submarine commanders (250 students) and the faculty of armaments and anti-submarine defence (135 students). A multi-disciplinary faculty chair of Naval tactics was also introduced, which certainly existed up to 2005.

The authors of this chapter provide an insight into life in academic institutions in the Soviet period and expresses some nostalgia for what had been lost.

'A chair (*kafedra*)('Department') is a principal scientific-academic sub-unit (*nauchno-uchebnoye podrazdeleniye*), of a higher academic institution (*zavedeniya*). But it is also a collective [collegial], a group of closely linked people, spending much time together. Therefore, it is impossible to present the chair's work without social life and without formal contact. Up to the end of the 1980s, the centre of such work was the Party organisation of the Chair (Department). In the post-revolutionary era, the Communist Party 'controlled and directed the force of Soviet Society'. With the throwing away of Party dominance in the state, and analysis of the role of the original Party organisations, their huge role in moral 'normativity' [my inverted commas – *normativnos*t'] and in modern daily collective life, have become clear. There was no exclusive and Party organisation, to whom the bosses of Chairs (Departments), and officers reported with their professional and life experience. Party organisation was occupied with ideological work,

organising Chairs' (Departments') holidays, and helping appoint young teachers. Generally speaking, when the teacher's administrative resources were inadequate, the collective was dependent on the Party organisation. The tradition of the collegial collective continues to this day [2005].' (VSOK 2005: 81)

In the period from 1967-1969 the Navy (VMF) Tactics Department worked on:

- Instruction(s) (*Natstavleniye,* singular, *nastavleniya* – plural)) on combat (*boyevoy*) activity of minehunters.
- Instruction(s) on combat activity of rocket ships (lit. = missile carrying ships).
- Instruction(s) on combat activity of above water mine and network barriers (*setevykh zagraditelyey*)
- Instruction(s) on combat activity of anti-submarine ships. '
- In 1969 the General Staff (equivalent to the modern British and US Defence Staff) began to consider arrangements for closer cooperation (DGSh VMF No 29661cc 21.01. 1969) 9VSOK 2005: 81).
- From 1978-1990, the *kafedra*, worked on:
- Tactical direction of Naval gunfire.
- Tactical direction of ships' rocket fire.
- Tactical direction of amphibious ships (*desantnykh korablyey*).
- Tactical direction of anti-submarine ships.
- Tactical direction of mine and sweeping ships.
- Tactical direction of small rocket-firing ships and craft.'

The Department continued to work on the development of tactical submarine command with publications in 1969, 1978, 1990, 1997 and 2004.' (VSOK 2005: 82)

By a decision of the Navy Main Staff (*glavnogo shtaba VMF) No 296611c of* 21 January 1969 the VSOOLK VMF became the head organisation in the area of scientific research for the tactics of using Navy surface ships and those coming into service.

From 1961 to 1993 the Faculty was also responsible for training Naval Reserve officers numbering between 60 and 400 per year. The biggest contingent was in 1974/75 when 1855 people went through including commanders of shock and search shock groups, brigade chiefs of staff [naval infantry, presumably] and vessel commanders. This may be because of the expansion of the Soviet navy and the introduction of helicopter carriers, the first of which, the *Moskva*, entered service in 1967.

In 2005 the Faculty trained students on 37 courses (literally 'profiles' or 'sections'), as follows: 31 ten-month courses, two four-month courses, four two-month courses. The command Department has 14 courses. Five – for submarine commanders, seven for commanders of surface ships, two for deputy ship [surface]commanders. The armament Department had 23 courses to train flagship (*flagman*) specialists and commanders of ship armed units.

From May 1945, immediately after victory in Europe, the Faculty began to play an active role in training specialists from what became, ten years later, Warsaw Pact countries and countries of socialist orientation. The first country was Yugoslavia, 11 of whose students graduated in 1946. Then Stalin and Tito fell out.

The first output of other countries' officers was:

Bulgaria	1949	15 students
Rumania	1950	4
Poland	1952	8
China	1952	38
Korea (North, presumably)	1953	4
German Democratic Republic	1956	12

Albania	1957	2

These courses lasted 12 to 15 months and comprised two phases. The first, lasting 3-6 months, was preparatory (general) and the second – special to arm. The list of specialisms and precise nature of the training were discussed with the country concerned. Those officers from foreign countries trained were usually:

- Submarine commanders
- Navigators *(shturmany)*
- Gunnery specialists
- Mine and mine countermeasures specialists
- Radio-technical and communications specialists

These courses ran to 1960 training a total of 337 specialists. They started again in 2002. In 2002 and 2003 the Department trained 'military sailors' from the Algerian People's Democratic Republic and the Vietnamese People's Democratic Republic.

Simulator building (*trenazherostroyeniye*) began in the 1960s. Simulators appeared in the Naval tactics Department. In 1962 for the first-time programme 'Ataka' (attack) began development to train submarine commanders in torpedo attack. Three surface ships and two submarines modelled the engagement between surface ships and enemy submarines. Combat with anti-submarine aircraft and helicopters was also modelled. One training control point established and equipped and the scope of the teaching was widened by organising interworking with simulators in other Departments. Thus, in 1974, the Department put into operation the electronic-tactical simulator ETT Ataka.

Head of Department Rear Admiral A S Berzin and the laboratory director Cpt 3d rank (Lt Cdr) A V Taranov using the simulator Ataka (VSOK 2005: 84).

The Russians have always been good at exploiting other people's technology and in 1974 the Faculty obtained a navigational trainer of British manufacture [!] 'Solarton' designed for training crews of merchant ships [*sudov*]) to avoid navigational hazards. Laboratory head Lt Cdr S L Brandt converted it into a simulator to train commanders in the military use of rocket weapons, permitting rocket battles to be modelled. These two simulators (trainers) were kept going for nearly 40 and 30 years, respectively. And then, being obsolete, they were scrapped in 2003.

In 1997 Personal Computers *(PEVM- Personal'naya elektronno-vychislitel'naya mashina*) were introduced into the Department's teaching process. Department engineers A I Goncharov and V V Protasov under the direction of RAdm V N Dobzhenko worked out a complex of programs *Preodoleniye* ('Overcoming'} designed to train the submarine commanders' group to overcome opposition from enemy anti-submarine forces –submarines, anti-submarine ships and aircraft. This significantly increased the amount of training received by each student. From 1998 students and teachers at the Department played an active part in establishing in the VSOK VMF (Navy Higher Specialist Officer Classes) a tactical-specialist training simulator complex under the general codename 'Komandor'. Scientific Research work (NIR) and experimental construction work (OKR) was carried out on the methodology for using new information technology in the teaching process.

From the middle of the 1970s the Department played an active part in calculating the scores of the competitions conducted in classes for torpedo and missile calculations of officers of the watch and senior deputy commanders of vessels.

The chapter on 'Commanders for Naval Strategic Assets' begins on page 96 and only covers two-and-a-half pages. It is written by Candidate (probably equivalent to a PhD) of Military Sciences Professor Rear Admiral of Reserve V N Dovzhenko.

According to Dovzhenko.

'The history of naval strategic nuclear forces [in SU/Russia] began on 16 September 1955 with the launch of rocket (*raket* – we would say missile) R-11FM from submarine B-67, previously B-611. Almost a year later, on 30 June 1956, she was commissioned. Her commander was Captain 2nd Rank (Commander) I I Gusev. From 1957 to 1962 (the year when training of submarine commanders and navigator specialists for rocket weapons began), *MSYaS* – (*Morskiye Strategicheskiye Yadernye Sily* – Naval Strategic Nuclear Forces) followed a glorious path. The first in a series of submarines with ballistic missiles (BR – literally Ballistic Rockets) came into service with AB-611; the beginning of construction of a series of diesel submarines with ballistic missiles (BR) was Special Project 629, armed with R 13 missiles; That was the first launch from a submarine from below water … Then nuclear submarines came into service– No. 658 – armed with BR (nuclear missile) R 21s, able to be fired from below water (Rocket complex D4).' (VSOK 2005: 96)

Only in 1962 was officer training for SSBN operations organised in the Higher Specialist Officer Classes (VSOK VMF Leningrad) in connexion with a decision by the Military Soviet. On the basis of this decision, on 25 January 1962 a programme of two-month training courses for formation commanders (squadron, flotilla), ship commanders and and formation staff officers in the discipline of 'Military use of rocket weapons from submarines' was organised. For development of rocket weapons 94 hours of teaching time were allocated. Including explanation of ballistic missiles under the heading of 'Military use of guided ballistic missiles on shore targets. The programme on the technological component of ballistic missiles envisaged the use of BM (ballistic missile) R-13. In the tactical submarine program, for submarines armed with missiles [i.e., strategic], principal attention was paid to forseeing enemy forces' and means' retaliation (anti-submarine aviation, surface ships, submarines and mines).

In 1961 and 1962 the Navy VOLSOK (Higher Order of Lenin Military Classes) ran 10-month courses and 1350 students went through them on 'senior assistants to submarines' commanders' courses. Some 7.3

percent of teaching time was spent on ballistic missiles and their military use. From 1963 to 1969 VOLSOK VMF training of officers in the specialism of submarine commander became a regular programme. 7.7 percent of teaching time was devoted to questions of the military employment of ballistic missiles including the particular problems of tactics of SSBNs … 1.1%.the use of guided ballistic missiles (UBR) from submarines – 3.7% and the construction of guided missiles and rocket armament complexes – 2.9 percent... '

In 1969 a decision was taken to divide training of submarine commanders from that of those of surface ships. Study groups were set up [separately] for 100 commanders of nuclear powered ballistic missile firing submarines – rplSN - (Group 100)(SSBN); Cruise Missile firing submarines, (Group 101) (SSGN), Commanders of nuclear attack submarines (torpedo-firing) (Group 102)(SSN), and– commanders of diesel submarines, (Group 103) (SSK). The divided training took place from 1970, using the plans and programmes [thus] worked out in 1969. The structure of the officers' training course for the SSBN commander specialism is shown below:

No.	Name of discipline	Percent of course time and ratio theory/practice	Head of Department (*kafedra*)
1	Scientific communism	0.060 All theory	Cand Hist Scis Capt 1st rank O F Chemesov
2	SSBN tactics	o.168 29/71 Note 71 percent practical	Dr mil-nav scis Prof Capt 1st rank L an Emelyanov
3	Military use of ballistic missiles from submarines	0.158 37/63	PhD can Engineer-Captain 1st rank V G Perlin
4	Military use of torpedoes and anti-ship missiles from submarines	0.125 38/62	Cand mil-nav scis, PhD cand, Captain 1st rank L Ya Lontsikh
5	Submarine command and service organisation	0.123 45/55	RAdm Yu S Russin
6	Navigation	0.061 45/55	PhD cand Capt 1st rank E P Solomatin
7	Rocket weapons	0.045 67/33	PhD Cand Engr Capt 1st rank M I Levin
8	Torpedo and anti-ship weapons	0.030 63/67	Capt 1st rank P G Yavon
9	Military use of submarine radio-technical forces (RTV)	0.079 65/35	Cand technical sciences PhD Cand Capt 1st rank V Yu Rall'
10	Military use of submarine communications	0.030 57/43	Capt 1st rank M T Zadvoronov
11	International Naval Law (Law of the Sea)	0.018 83/17	Colonel of Justice I F Tarkanov
12	Submarine physical environment and the world ocean	0.030 75/25	Engr Captain 1st rank F B Baranovskiy
13	Physical Training	0.080 70/30	Major A V Mikhaylov

It is not clear whether the 'practical' component of the training represents work on simulators or something even more practical like sea training. The fact that 70 percent of 'Physical Training' is

theoretical suggests that submarine commanders were being instructed in how to ensure that their crews stayed healthy. (VSOK 2005: 96).

38 percent of teaching time was devoted to the specific questions of using SSBN weaponry. Until 1981 the principal question was the construction of the missiles. Little time (13 percent of the time devoted to studying rocket armament) was devoted to security measures when loading and unloading missiles and survivability in the event of missile complex accidents (*avariya* – crashes, failures). These questions became dominant after the loss of the Northern Fleet SSBN K-219. In the modern [2005] programme the construction of ballistic missiles gets 12 percent of the time and guaranteeing the survivability of rocket weapon complexes – 88 percent.

Over 35 years the SSBN commanders' course went through seven iterations. There were no substantive changes to the allocation of teaching time the number of disciplines changed and a number of them were combined (see table 2) From the very first programme practical exercises were used. They comprised 58 percent [aha!] of the teaching time. 15 percent of all teaching time was on simulators [aha!]. Of this simulator time, 48 percent was on the discipline 'SSBN tactics' and 21 percent on 'military use of submarine weapons.

Over 20 years (1971-1991) the courses ran divided into t wo groups with 20 students in each. In all, from 1971 to 2000 VSOK VMF trained 946 officers as SSBN commanders. (Table 3) This was not coincidence. Strategic missile submarines (rplSN) were the only class of submarines in the Navy deployed 'cyclically' [in other words – continuous deterrent patrols]. That means – 'military service' [ie deterrent patrol] 2.5 months, then inter-patrol refit and replen – w ith the ship returning and coming back out again – 3 months. And then another patrol. SSBNs of the second and third generations (projects 667A, 667AU, 667B, 667BD, 667BDR, 667BDRM, 941) made some 1200 patrols from 1968 to 2002. The submarines (the Russians refer to these as 'ships', interestingly] of 21 Submarine Squadron (*divizion*) – four SSBNs of the Pacific Fleet – in the 18 years of its existence (1978 to 1996) made 86 patrols, not counting military duty [being on stand-by] in base. Certain facts about MSYaS are given in the tables below.

Here, there follows a list of SSBN commanders who later became admirals. Interestingly, if you commanded a bomber you seem to have got Hero of the Soviet Union automatically.

No	Name of discipline	Share of overall course time theory/practice
1	SSBN tactics	0.180 36/64
2	Military use of submarine weapons	0.293 42/58
3	Military preparation and direction of a submarine	0.157 55/45
4	Radioelectronic guaranteeing (security) of submarines and military use of signals (jamming/Ew)	0.117 49/51
5	Navigation and law of the sea	0.102 41/59
6	Problems of sociology, politology, military psychology, pedagogy and law	0.096 43/57
7	Physical training	0.055 89/19 [sic. I think it should be 11]

Project	Ship type/number in series	First Commander	Years of construction	General number of BS (Boyevaya sluzhba – military service – presumably personnel)	Personnel on board Missile Submarines of Strategic Designation (rplSN): years of service on SSBNs
AV 611	B-67/5	F N Kozlov	1955-1957		
629, 679A	K-96 (SF – Northern Fleet) K- 126 (TOF-Pacific Fleet) /22	R B Radushkevich K D Podol'skiy	1959-1963		
658	K-19/8	N V Zateyev	1963-1967		
667, 667 AU	K-137/35	V L Berezovskiy	1967-1974	590	17.4/0.6
667B	K-279	V N Frolov	1972-1982	321	17.8/0.74
667BD	K182/4	V V Naumov	1975-1982	83	20.7/0.98
667BDR	K-441/14	B L Zhukov	1972-1982	428	30.6/1.4
667B/RDM	K-51/7	G N Rusanov	1983-1990	46	6.5/0.5
941	TK-208	A V Ol'khyvokikov	1981-1990	43	7/ 0.46

Note that the terms of service of SSBN crews became palpably shorter, from17.4 to 17.8 years in the late 1960s and 1970s, and 20.72 to thirty years years in the late 1970s and early 1980s, on the K-441 class, to seven in the 1980s.

A final table shows the number of graduates from the VSOK VMF (Higher Specialist Offer Classes – Navy). This appears at the end of the SSBN commanders' Chapter and, although not specifically explained in the text may relate to SSBN commanders.

year	Number of graduates (*vypusk)*
1971	29
1972	37
1973	36
1974	31
1975	38
1976	50
1977	35
1978	40
1979	39
1980	39
1981	38
1982	41
1983	43
1984	42
1985	40
1986	36
1987	45
1988	40
1989	40
1990	36
1991	36

1992	29
1993	20
1994	13
1995	12
1996	14
1997	15
1998	17
1999	13
2000	11
2001	14
2002	16
2003	15
2004	10

From the above, it can be seen that there was a gradual drop in the numbers of SSBN commanders trained after the end of the Soviet Union in 1991, through the Yeltsin years, and reaching its nadir in 2004. However, given Putin's appearance from 2000, it may have picked up since then.

During the 1970s the Soviet Navy, led by Admiral Sergey Gorshkov, began worldwide deployments and the Soviet Union introduced the Kirov class of rocket cruisers Changes in the structure of the courses reflected these developments. From 1979, the Faculty began a new course for training commanders of RZKs (Anti-aircraft missile cruisers, including the Kirov). And there was increased signficance attached to amphibious operations with the introduction of amphibious assault ships, 1st and 2nd class, for which commanders' training courses began in 1980. Whereas before 1980 there had been courses for SSBN commanders and courses for commanders all the other types of submarines, in 1980 the latter were split up: commanders of SSGNs, commanders of SSNs and commanders of SSKs.

Interestingly in 1979 a Faculty of Intelligence was created. This may have owed something to the Soviet development of Reflexive Control, the origin of what we now call cyber warfare.

Although it only takes the story up to 2005, the book is therefore a fascinating insight into the way Russian naval commanders are educated and trained and to the development of the Russian Navy and the employment of its officers. As noted, GUGI is not part of the naval command but is a specialist intelligence and experimental unit directly subordinated to the Ministry of Defence, but it employs naval officers. The book is also a very useful insight into Russian terms and acronyms. The Russian military is as fond of acronyms as the British and American!

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