

THE LOSS OF THE SOVIET SUBMARINE 'KOMSOMOLETS'

BY

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ABSTRACT

The Soviet nuclear submarine *Komsomolets* was lost as a result of fire. This article, which originally appeared in the Soviet open press, discusses weaknesses in design, construction and management that have affected surface ships and submarines.

Introductory Note (by Technical Intelligence Navy, London)

The growing openness of Soviet society has provided a new insight into the problems facing the Soviet Navy. Many aspects of their vessels, such as the comprehensive nature of the electronic fit, the range and power of the weapons, the speed and diving depth of the submarines, evoke a feeling of envy. However the Soviet Navy is facing many problems—some familiar to us in type if not in extent; the following article provides some examples triggered by an alleged attempt by the Press to blame the Commanding Officer and crew for the loss of the MIKE Class submarine Komsomolets (FIG. 1). The senior survivor and main signatory to the letter to Krasnaya Zvezda, Captain 1st Rank Kolyada, was the Deputy Squadron Commander, and sea riding at the time of the accident. The letter and accompanying article by Captain Bystrov were published in Krasnaya Zvezda of 15 March 1990.

The style of writing may strike the reader as curious, and it certainly would not rate a high mark for a Staff Course student; nevertheless it has been left as a fair translation of the original Russian to give an appropriate flavour to the article.

There is, perhaps, much comment here for submarine designers and shipbuilders to ponder upon.

Dear Editors,

We are compelled to turn to you, the military newspaper, as we have found that, in the period of glasnost', by no means everyone gets glasnost'. We became convinced of this after writing to *Komsomol'skaya Pravda*, which, having undertaken to defend the interest of submariners in connection with the loss of the nuclear submarine *Komsomolets*, is in fact misleading its readers and attempting to foist the blame for all that happened to our submarine onto its crew, the late commander and the Navy.

Almost everything *Komsomol'skaya Pravda* has published on this subject errs not only in being ill-informed, not only in the lack of any attempt to go thoroughly into the heart of the matter, but also in blatant factual errors, totally baseless inventions, and in the citing of former and serving naval officers, who have only an indirect idea of the accident.

It is hard to believe that we, the surviving submariners, are forced to defend ourselves and our dead fellow-sailors, who did their duty honourably. Against whom? Against journalists, who present this tragedy in the light of their personal attitude not only to the matter in hand, but also to the country's Armed Forces as a whole.

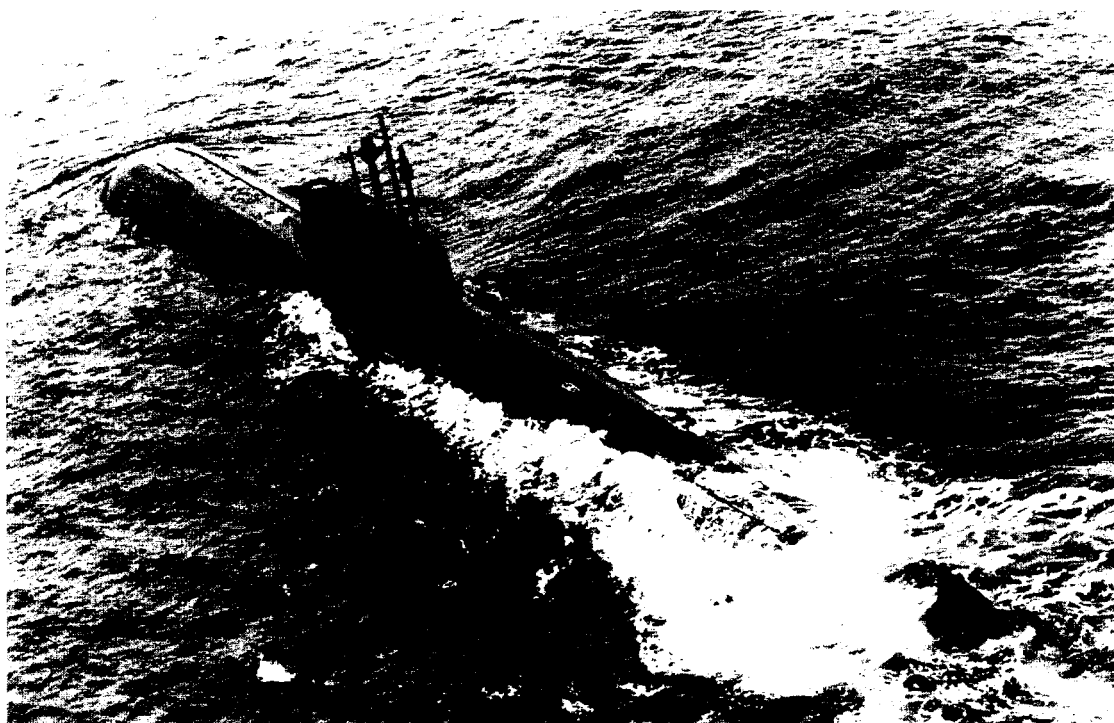


FIG. 1—THE SOVIET NUCLEAR SUBMARINE 'KOMSOOLETS'

Thus, we tried to defend ourselves in a letter sent to *Komsomol'skaya Pravda* after the publication of an interview by its correspondent V. Yunisov with A. Gorbachev under the headline 'Eight months after' (17 Dec 89). The letter was printed on 8 Feb in a shortened, emasculated form, and alongside it, on the rest of the page, the paper presented yet another 'point of view' (by A. Yemel'yanenkov, now deputy chief editor of the weekly, *Sobesednik*), which literally crushed the reader under the weight of the new surmises, inventions and opinions.

We are increasingly coming to the conclusion that *Komsomol'skaya Pravda* is deliberately trying to place pressure on public opinion without waiting for the conclusions of the Government Commission, but rather forestalling them.

On behalf of the surviving members of the crew of the *Komsomolets*,

Capt 1st Rank B. Kolyada
 Capts 3rd Rank S. Dvorov, A. Verezhov
 Capt-Lt I. Orlov
 Sr Lt A. Zaytsev

Underwater Currents

One cannot help concurring with the heading under which *Komsomol'skaya Pravda* once again, on 8 February, commented on the *Komsomolets* tragedy: 'Underwater Currents: today they are preventing the true causes of accidents to our submarines from being established'. Clearly, there are indeed 'underwater currents'; and an attempt needs to be made to investigate them.

The loss of the *Komsomolets*, which for the first time was made public immediately, in itself evoked a furore in the media and, through them, in public opinion. As happens in such cases a lot of erroneous, false and unchecked details appeared alongside valid information. This is quite explicable: not everyone was able initially to obtain exhaustive details of the occurrence.

Ultimately a great number of questions were disposed of. However, questions about the specific reasons leading to the accident on this nuclear submarine and about the current incidence of accidents in the Navy as a whole remained and still remain acute. It is the job of the State Commission looking into the accident on the *Komsomolets* to dot all the 'i's. At the present time no-one can offer a more complete, objective and thorough investigation.

At the session of the State Commission at which the interim results of the work of its sections were reported and to which journalists were invited, proposals were voiced that the press should refrain from publishing anything until the final conclusions were drawn. This would no doubt only have helped to ensure the appearance of more circumstantial and objective articles, but *Komsomol'skaya Pravda* saw fit to express its point of view once again: this ultimately comes down to a belief that an inadequately trained crew and Navy were to blame for the tragedy.

A. Yemel'yanenkov cites the utterances of many people in support of his view. 'Briefly, the essence of their demands was that the investigation should move forward from half-confessions to establishing a true picture of how the accident and the actions of the crew developed in the "crisis situation"', sums up the author. Likewise briefly, it must be said that all these people who helped shape *Komsomol'skaya Pravda's* point of view belong to the same self-interested side and, alas, a side that stands in opposition to the Navy. D. Romanov was the deputy chief designer of the *Komsomolets*, V. Chuvakin the agent responsible for the handover of the project, and E. Leonov the handover mechanic, who went out on the trials of the submarine together with Chuvakin. Capt 1st Rank D. Zelenskiy was the commander of the first crew of the *Komsomolets*, who took over the submarine from industry and was therefore also responsible for its quality. Capt 1st Rank Ye. Selivanov was formerly commander of a nuclear submarine which caught fire through his fault in 1984 and he was called to strict account for it.

Just one person, Rear Adm O. Yerofeyev, is mentioned as holding an opposing view, but not only are his arguments not cited, they are devalued *a priori*.

With forces arrayed in the readers' eyes in this way, can one talk of a comprehensive and objective investigation on the part of the author, who, in his own words, had been seeking to sort out this extremely complex situation for over six months?

Even so, A. Yemel'yanenkov was compelled to say the following, albeit in passing: 'Then, from the other end of the table', (this refers to a meeting at the Central Committee to which those who had designed the first deep-diving submarine, built it, sailed in her and been on her last patrol were all invited) 'reproaches rained down on the designers and builders—they had failed to take account of this, they had overlooked that. The result had been, not a fighting ship but defect upon defect . . . Nuclear submarine commanders spoke of this and there was some truth in their words. Design faults and equipment failures on submarines have made themselves felt ever more frequently . . .'

What sailors are sailing in

The truth of the submarine commanders' words merits closer examination. A. Yemel'yanenkov touched on this problem in passing, pursuing *Komsomol'skaya Pravda's* line of accusing personnel of inadequate standards of training. However, fairness demands the lifting of the curtain from another aspect of the matter—the design and technical shortcomings of equipment,

which underlay both the cause of the accident and the course of its subsequent development.

Not merely recently, but for a long time, the Navy has been receiving ships that fail to live up to the image, entrenched in our notions, of sophisticated, flawless, top-class combat equipment.

This is a suitable point to quote the words of Academician A. Aleksandrov, who in my presence gave an account of the development of the first Soviet nuclear submarine, later named *Leninskiy Komsomol*. 'We agreed that we would not simply hand over the submarine to the Navy [in the normal way], but hand it over for experimental operation. It took frightful wrangling to find a formula under which the Navy would agree to accept the first submarine.' The C-in-C Navy, Admiral of the Fleet V. N. Chernavin, who was taking part in this conversation, remarked, 'Anatoliy Petrovich, your introducing that formula, "experimental operation", would seem to have been a clever move. That way of handing over ships exists to this day. Our worst ships are handed over like that. When the builders are short of time to fulfil the plan. Everyone goes back to that term.'

Here are some examples for 1985–89:

- One nuclear submarine spent more than half of its guarantee period undergoing repair or modifications. It was the subject of an overall complaint, and the State Arbitration Committee found for the Navy in its suit against the USSR Ministry of the Ship-Building Industry [Minsudprom]. It was not alone in its fate.
- In 1989 the operation of two submarines was totally banned in order to prevent accidents due to the non-compliance of certain elements of submarine's electrical equipment with specifications.

During these years 529 complaints, involving enforced fines totalling over 3 million roubles were made against Minsudprom enterprises for supplying sub-standard equipment.

Every fault that occurs on a ship is a potential forerunner to an accident. In such cases our—as *Komsomol'skaya Pravda* would have it—ill-trained sailors are placed in non-standard situations, i.e. situations unforeseen in operating instructions.

Thus, on one submarine under guarantee a defect in the system controlling the main turbines led to their unauthorized development of speed, as a result of which the submarine went aground.

The Navy failed to inform the press of this, as also of another incident that happened to another submarine during mooring for the same reason. The submarine was returning to base from a yard at which the main turbine control system had been undergoing modification. Thanks to the skill of the commander the submarine escaped with minor damage, covered by a fine of some 900,000 roubles. The Navy fails to inform the press of its problems for two reasons, first because such occurrences have long been regarded as commonplace, and secondly because for some reason it is not done for sailors to complain aloud about industry, despite the constant acute contradictions.

But now, since the *Komsomolets* is the subject of controversy, it makes sense to cite some observations by submarine commanders, who have some notion of the technical reliability of the craft.

The bulkhead on the *Komsomolets* failed to ensure a seal between the three end compartments in respect of the oil system and the main shaft line bulkhead stuffing box while the submarine was under way. But even when the shaft line between the last two compartments was stationary, it was impossible to achieve a seal when pressure in the compartments was more than 1.4 kg/cm²—and the pressure in the seventh compartment was about ten times greater.

The main tanks lacked kingston valves, which in itself reduced the submarine's reserve buoyancy in disturbed seas or in the event of a loss of trim in an emergency.

The LOKh fire-extinguishing system on this craft lacked centralized control, which was a step backward in the design of submarine fire-extinguishing systems. Moreover, freon is ineffective as a fire-extinguishing agent in fierce fires, since it catches fire itself at temperatures above 580°C.

Polyamide seals instead of copper ones were used in the submarine's air systems, and even in local fires these lead to a loss of tightness in high pressure air fittings.

The lack of an information system and the unreliability of the submarine's internal communications equipment stopped the main control station from gaining the reliable data on the true state of the compartments that it needed in order to make the necessary decisions.

Certain electrical circuits proved to be unprotected against short circuit currents; this led to the outbreak of fire in other compartments and the loss of the ability to monitor the submarine's general systems, and considerably complicated damage control efforts.

The ShDA [breathing] system, instead of saving the lives of the submariners in the fume-filled compartment, proved the death of those who used it for its proper function.

The list of shortcomings could be continued. But taken together they are all nothing other than an increased risk factor, and with the occurrence of the accident they helped to create those very rare situations for which personnel had not prepared and should not have needed to prepare. Men can only be trained for what can be predicted.

Why fires occur

Briefly, they occur for two reasons: through the fault of personnel, and not through their fault.

In 1984, in the submarine commanded by Capt 1st Rank Ye. Selivanov, a fire occurred through the fault of personnel. In the electrical compartment an unauthorized electric grinder had been fitted to the RDU [electrolyser] unit, which enriches the air in the compartment with oxygen. It was used to make souvenirs from metal and ebonite. The commander knew this and gave it his blessing. He was also well aware that there is an increased oxygen content around the RDU. And the ebonite dust flying up from the emery could easily ignite in an oxygen environment. In the end a fire occurred.

The submarine was saved, but 13 men died from asphyxiation in the stricken compartment. The commander of the submarine has been trying for a long time to prove that areas with high oxygen contents that supposedly occur in submarines provide the prerequisites for spontaneous fires. His hypothesis has as yet not been confirmed in practical investigations, but the Navy is continuing to test it. If Selivanov's theory is confirmed, it will benefit the navy, since appropriate steps will be taken. But this still does not mitigate the commander's guilt.

Yet Selivanov declares in *Komsomol'skaya Pravda*, 'A man who is unable to grasp in a minute what is happening in the submarine has no place in the submarine fleet'.

Regrettably, he lacks the whole right approach to realize that they were just asking for fire in his submarine.

Statistics show that personnel are considerably less often directly to blame for fires than other causes. Every submariner is aware of the threat that fire poses to him personally and to the crew. Unfortunately, we will not succeed in establishing why fire broke out on the *Komsomolets*. (The Commission has

determined the most likely cause—a short circuit in the electrical equipment in the seventh compartment.) The sole witness of the outbreak of fire, Sr Sailor N. Bukhnikashvili, the man on watch in the seventh compartment, had no time even to report anything and apparently died instantly.

Yes, there were enough reasons for the loss of the *Komsomolets*. But there was one primary reason—the outbreak of fire. Everything else is secondary.

Why do fires occur in submarines? An analysis of 16 fires in nuclear submarines in recent years shows that they are associated with short circuits in main switchboards, and caused by manufacturing defects in automatic circuit-breakers (due to poor standards of assembly). However, in practice they are also due to many other technical causes. I twice took part in patrols by nuclear submarines under the Arctic ice and on the second patrol had the opportunity to observe such an outbreak of fire.

Why do these outbreaks turn into conflagrations? In contravention of the requirements of the relevant documents numerous inflammable materials are used in the construction of nuclear submarines. Existing fire-fighting systems are not efficient enough. There are no effective means of extinguishing fires in electrical equipment that is under load. During a fire it is virtually impossible to cut off power to boards and panels. There is no system for early warning, announcing accidents, and monitoring the progress of fires . . .

Can the Navy and industry be blamed for this? Yes and no. Resources—large resources—are needed in order to develop the necessary systems for reliability. Even the very much richer Americans do not have enough. An analysis of accidents in the US Navy from 1985 to 1989 by American military experts shows that the main causes, *inter alia*, are oversights in the design, production and installation of equipment. During this period 37 accidents occurred in submarines owing to fires, the breakdown of power plant and other equipment, and other causes.

The Navy pays thrice

For what? For the weapons and equipment supplied to it. And three times is the minimum. First it pays for, say, a ship, then for its servicing and repair, and then for the rectification of design and production defects.

In the cruiser *Baku* the boiler pipes began to fail while it was still on state trials. Now the ship has come into service the need has arisen to replace the pipes. For several months now the commander of the cruiser and the Navy have been involved in litigation with the director of the yard—and this during the guarantee period.

Our first nuclear missile cruiser, the *Kirov*, has suffered much in this respect. After ten years' operation her main reduction gear failed, a mechanism which usually outlasts the ship. Since it is made as a hermetically sealed unit its premature failure could not be put down to the servicing personnel

No provision is made for repair of the main reduction gear and so none is made for its removal from the ship. The cruiser was placed in dock, her bottom cut off, the reduction gear taken out, loaded onto a railway flat wagon, sent to the yard, repaired, brought back, the ship was put in dock once more, her bottom cut out again (since it had been welded back), and the reduction gear installed. Money is one thing, but the unplanned use of the dock meant that it could not be used for the planned docking of an entire formation of submarines.

While *Komsomol'skaya Pravda* was giving currency to rumours about political agitation among the crew of the *Kirov*, the cruiser's crew was actually agitated by its preparation for a long patrol. In the port nuclear steam-generating plant (SGP) the primary circuit, which was supposed to go

on serving for a long, long time, had sprung a leak. Once more it meant expensive work. It was done. The cruiser headed off into the Mediterranean, only to cut short its patrol by two thirds and return to base. The primary circuit of the starboard SGP had begun to leak. The entire bother was due to one cause—the poor standard of equipment.

But what was the cost to the Navy and the State? That is truly something that no resources are great enough to cover. And if only the *Kirov* were a rare exception.

There are more than enough facts and examples in this respect. The Navy reports them to the proper quarters. Decisions are taken to make modifications and improve quality and reliability but who knows how decisions are carried out nowadays, especially if they are not backed up with economic measures?

It is natural to ask why the Navy accepts such ships. I shall cite just one, now historic, episode connected with this problem. Admiral of the Fleet N. Sergeyev, Chief of Navy Main Staff from 1964 to 1977, once recalled it in conversation with me.

‘D. F. Ustinov, as a Secretary of the Central Committee, summoned me to a meeting and began to scold me for giving instructions not to sign the acceptance certificate for a number of ships at the end of the year.’

‘Dmitriy Fedorovich’, I replied, ‘I know which ship you have in mind. Permit me to inform you that its guns don’t fire.’

‘But what about the working class who’ve been working day and night, making the hull, making the engines, making the electronics, what about the working class?! Do you mean the men are to get no bonuses and they are to be left in such a difficult position? They won’t work so hard again next year!’

‘Dmitriy Fedorovich, why don’t you just issue a resolution that so-and-so and so-and-so are to be given bonuses for such-and-such a thing? Everything will be all right. We can even endorse it. For the hull, for the engines, for everything else. But we can’t for the guns or for the ship.’

‘Look here, you just tell Gorshkov—I can’t get him on the phone—you tell him what I’m demanding. You can’t do that, d’you here. You can’t do that! You’re a communist, d’you understand!’

‘I told Gorshkov’, Sergey Georgiyevich said, ‘On no account sign. On no account’

‘But later on it was signed retrospectively, all the same. That’s how they get their way through pressure.’

We all know how the [ship-]builders get their way through pressure. They pressure the clients, they pressure the military representatives, they pressure the commanders of the ships. What commander of a ship being built hasn’t felt it?

‘The doves of peace’

In future the situation with the handover of ships cannot but change. Our foreign policy has changed. It has become not merely different, but realistic, and it requires a realistic view both of the entire Armed Forces and of the Navy.

It seems staggering now, but incomplete vessels came into service with the Navy with the knowledge and approval of the highest authorities. And, strange though it may seem, there was a sort of sense in this. In this connection account also has to be taken of the peculiarities of the ship-building industry. It takes up to 10 years to design and build the first of a

new class of ship. And designers, with the assent of the top Navy authorities, seek to fit out the ship not only with the latest existing equipment, weaponry and hardware, but also with what as yet only exists on paper or in ideas. Otherwise obsolescence may overtake the physical development of the ship. Of course, this entails a great deal of risk, and alas, the situation in which a ship is built but something is not ready in time is no rarity.

What should be done? Let us assume acceptance is refused. Then the ship has to stay at the yard for nobody knows how much longer. Equipment is not used, the crew do not gain practice, and everything quietly goes to pieces. Is that a good thing? The other option is for the ship to be accepted with the appropriate commitments from industry to bring her up to scratch within defined deadlines. In this instance the ship comes into service, she sails and the crew practise combat training missions, maintaining a certain degree of combat efficiency.

Which option to choose depended on many specific factors and was decided at the very highest levels, for in doing so account was taken not only of the genuine improvement of the Navy's combat readiness, but also of political prestige and the attainment of strategic parity.

Of course, it would be so much better if the ship-building programme were carried out properly from the start. The Navy cannot and will not look at this in any other way, and that is its function. But political aims can to some extent be satisfied even by a rough job with subsequent 'fixes'. And thus it was that a whole series of ships appeared, nicknamed 'the doves of peace' in the Navy, because they were accepted with 'non-firing guns'.

It was the Navy that lost most of all from these compromises, paying for them both in combat readiness and materially, transferring to industry in payments and surplus payments the lion's share of the resources allocated to it from the State budget and economizing perforce on everything else.

Restructuring of the military-economic complex (without which the restructuring of the Army and Navy is impossible) can help provide an effective solution to a wide range of hitherto intractable problems if it changes the mechanism for spending the resources allocated for defence. Quality should be made paramount in industry's economic interests. The enormous energy, persistence and inventiveness that industry sometimes shows in 'legitimizing' sub-standard products promise benefits to all if they are applied to the pursuit of quality.

Naturally, it would be wrong to think that the buck stops with the enterprises of Minsudprom. Their complex work subsumes an enormous amount of simple work by innumerable enterprises, including those of other ministries. And if someone supplies even one unreliable component it means a loss of quality for the entire enormously complex 'article' that is a ship. Everyone knows that. But why do the measures taken to improve quality, which are usually expressed in directive and binding documents, fail to produce the desired result? Because mechanisms exist that release executors from responsibility or reduce it.

Above all, there is the guarantee period. If a ship is built with the intention that she will operate for, say, 25 years, what sense is there in fixing a guarantee of just 2.5 years? There should be not symbolic but genuine responsibility, whereby unreliability becomes disadvantageous to those responsible. As yet unreliability is disadvantageous only to the Navy. It will not get more than its allocated resources and so has to tighten its belt to cover unforeseen expenditure. Monopolism is likewise only beneficial to the shipyards. The Navy is deprived of choice and so has to accept everything it is given.

The loss of the *Komsomolets* has laid bare the contradiction between the Navy and industry and laid it bare for all to see. Accordingly, the question

of blame goes beyond the framework of interdepartmental relations and quarrels. And public opinion demands clarity.

The revelations of the mass media about the accident rate in the Navy sound very impressive. Moreover, the Navy is incriminated by the simple fact that it used to conceal its accidents. But, strange though it may seem it had less of an interest in this than industry. From my 22 years of experience in the military press I know that at a pinch one could 'winkle out' information about an accident caused by personnel, but on no account could one do this for an accident that was industry's fault. For a tenet existed that our equipment was the very best and the most reliable, and it could not break down. What a good life industry had behind the curtain of silence! The loss of the *Komsomolets* ripped that curtain.

Is the skill of sailors great?

It certainly leaves something to be desired. This cannot be denied, nor is it in the Navy's interests to conceal this, for otherwise no progress can be achieved in solving the problem.

So what prevents the standard of training of sailors in the Navy from being raised? First of all, limited resources. If one were to do a time study of their duty activities, our nuclear submariners, like our surface vessel men, are engaged in their professional training episodically rather than systematically. They are compelled to be jacks of all trades, looking after their own needs, since in the name of paying for and maintaining weapons and equipment the Navy has to economize on infrastructure.

Yes, the professional training of naval seamen does require major improvement. Yes, the Navy still does have potential that is far from always used effectively. But merely to blame sailors from insufficient skill without reflecting that this takes resources, money and time is to indulge in idle prating. (Incidentally, the surviving crew members of the *Komsomolets* were questioned in meticulous detail by the Government Commission, which included representatives of design bureaux and industry. Everyone was unanimous in noting the high level of the submariners' specialist knowledge.)

However, the standard of training of personnel cannot be determined without comparisons. In his article A. Yemel'yanenkov quotes V. Chuvakin, the agent responsible for the handover of the *Komsomolets*, as saying. 'But if a fire occurs you need to know how to fight it . . . fires in submarines aren't our scourge alone—the Americans suffer the same problems . . .' So it is interesting to compare our sailors with the Americans.

In 1989 alone over 20 major accidents occurred in US Navy submarines and surface ships, killing over 60 men and injuring some 90. The most significant were fires. Because of the spate of accidents the US Navy Chief of Staff, Admiral C. Trost, decided on 6 Oct 1989 to suspend operational activity by naval forces for 48 hours.

At the end of last year US Navy experts framed proposals, the implementation of which, in their view, would help to lower the accident rate. The principal ones were raising the standard of theoretical training of personnel, improving servicemen's practical skills in servicing combat equipment, introducing computer-based trainers into the training process, and tightening up Navy monitoring of fighting ship building and repair.

The sequence of priorities in this list deserves attention: the problems of improving personnel's standard of training occupy the first three places, and this is in the professional US Navy. Our conscript sailors have not allowed as many accidents to happen as the American professionals. However, the thing that for the Americans occupies last place as a factor influencing the accident rate, namely equipment reliability, occupies the first place with us.

However, the merits of our industry are undeniable, and this in a situation where, like our entire economy and country, it is experiencing considerable difficulties. And the point now is not to thrust the blame onto someone, but to examine everything objectively and take effective, economically backed-up and justified measures. Above all, this means *improving the design, technical reliability and quality of our ships and raising the standard of training of personnel*. Each of these items, put into practice, would mean enormous changes. It is no doubt time to talk about them at the parliamentary level, because hitherto all good intentions at various levels have come to naught for want of proper economic and financial back-up.

Many million of roubles will be needed to solve the essential problems of improving the quality and reliability of the Navy. The problem is where to find them, and today it is a very acute problem. Of course, the simplest path would be to take them from the resources allocated to the Navy, but with the current unequal relationship with industry this would mean fresh restrictions in areas where the Navy is already in difficulties—in the comprehensive support of the activities of fighting ships, the improvement of bases and in social matters. So the simplest solution can scarcely be called a good quality solution. Poor quality always has to be paid for, and it is the Navy that will pay again—in money, poor conditions and lives.