## Tape 3 Side A

With my own eyes, I saw how the crew commanders, officers loaded the sandbags, attached them to the helicopters, flew to the target, dropped them, returned and did it all over again. So, on the 27th and 28th of April, neither the Ministry of Energy nor the local authorities could fully and precisely organize the work to supply materials that had to be dropped into the crater of the reactor. Around the 29th, a system for this was put in place. Quarries were prepared, the lead started to come in. People were assigned stations and then things went more smoothly.

Around this time, the helicopter people found a very effective way of operating by setting up an observation post on the roof of the Pripyat party committee building. From there, they monitored the crews that were above the 4th block. I must say that this work was not safe because the pilot had to hover above the reactor, drop a considerably large load, and then leave quickly so as to not get an excessive dose of radiation and most importantly, drop exactly on target.

All this was well-coordinated, and if memory serves me correctly, then the numbers were as follows: tens of tonnes were dropped on the first day, then hundreds on the second and third day. And eventually, Major Antoshkin reported to us in the Government Commission's evening meeting that on that day, they had dropped 1100 tonnes of materials. All in all, this quick and diligent work of the people that were delivering the materials resulted in the reactor being plugged around the 2nd of May. From that day on, the generation of radionuclides (of any considerable amount) from the crater reduced. Simultaneously, the military continued to do all the necessary recon operations.


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The work of the Government Commission (GC) during the first days was as follows. Early in the morning, Boris Eudokimovich Scherbina would gather the members of the GC. All people responsible for the various operations would be invited. The meeting usually began with General Pekalov's report presenting the radiation conditions within the station and the surrounding areas. Of course, the conditions were worsening every day. The already-scouted areas were showing higher radiation levels, and the number of such areas was increasing. The number was increasing because the scouts were visiting more and more new areas, while the old areas were receiving more and

more radionuclide fallout. Overall, the situation was getting so complicated that it became clear that the scale of the operation had to be increased.

The first decontamination efforts began even while the conglomeration processes inside the 4th block were ongoing. But what did they boil down to? I remember that the future Minister of Medium Machine Building, comrade Ryabev, who had replaced Meshkov in the GC, himself led the group (after receiving the recipe for preparing the solutions that could solidify and create polymeric films on the surface). He organized a team in one of the industrial areas of Pripyat that would prepare these solutions. They then themselves went to the most contaminated areas and covered them with these solutions. At the same time, the group that I had called, led by comrade Schupak Aleksander Fyodorovich from our institute, was researching ways to inject these components into the soil in order to absorb the most mobile radionuclides, Caesium being one of them.

Then the phosphate solutions appeared. A group of scientists from Novosibirsk telegraphed me that it was necessary to use more tuff and Celite. So we organized a supply of these materials from our Armenian and Transcarpathian deposits and shipped them in by trains. Using such Celite-containing materials was very beneficial: both when put into the soil for holding radionuclides, and also when mixed into the bodies of dams that were being built on small and large rivers.

I must say that, of course, there were many senseless things done in the course of this work. Not every work progress was documented, whether it had been completed or not. The commands were issued; however, the checks on how precisely they had been fulfilled were at times delayed. For example, when I visited the site after some time, I found out that the sorbents had been simply poured around the storm sewer when it would have been better to make a sort of pallet that could be quickly replaced after the sorbents became saturated with radionuclides. Lev Alekseyevich Voronin, who was in charge of the GC at that time, quickly understood me. He told me that he had issued appropriate orders, but I think those never got executed.

In addition, the intermittent changes in the composition of the GC led to a constantly changing plan of work. One GC would order a train of certain materials, then after the switch, the new one would order another train with different materials. Because of this many loaded train cars accumulated on transport routes.

Logistical issues started to arise and a separation register was made. According to that register, all the materials that had been tested would be handed over to the Army to use in decontamination tasks. On the other hand, the materials that needed testing were sent to the departments of the Ministry of Medium Machine Building. They were required to test the materials and create a report, and only after that they could be given to the Army to use on a large scale.

A lot of materials were used, our own Soviet were offered. But in the end, it all came down to the fact that the most effective measure was dust suppression, which in most contaminated areas meant just plain mechanical removal of the most contaminated debris. This mechanical removal was also done by robots that were acquired from, for example, the German Federal Republic. However, the use of robots was not successful because all the robots that were tested initially were either mechanically unable to operate among the wreckage, or they simply could not overcome the obstacles on large irregular surfaces. When on an even surface but inside strong radiation fields, their electronics, usually the control modules, failed making them inoperable*. That's why in the end, the most reliable method was to use radio-controlled bulldozers or just simple scraper bulldozers, our ordinary vehicles, cabins of which were reliably covered with lead to protect the driver. During the first stages, this was the most effective way where by using ordinary vehicles but with proper crew protection, it became possible to collect and dispose of the most contaminated debris, the most dangerous contaminations.

* - there is a myth [citation needed] relating to the famous "Joker" robot (actual name MF-2, MF-3 was also there), where it is said that became inoperable because "bureaucrats" have lowered radiation requirements when ordering it. This is only a myth, because that robot was built in 1974 and was working in laboratories. Later in 1982 it has undergone modernization and was sent as is to Chernobyl in 1986. The reason it failed was because it had control circuits on its bottom, but the

roof surface of 3rd block was covered with graphite particles which had melted inside it, so most radiation was from underneath the machine where it was most vulnerable.

The next operation was applying a special layer to the already-cleared ground and concreting it. This operation was carried out. Powerful vacuum cleaners were used before the concreting; they cleaned up a lot of contaminated dust. Concreting, removing various , which sometimes appeared to be unsuccessful. Then came the chemical solutions. The most interesting ones were those proposed by academy member Viktor Aleksandrovich Kabanov, preliminarily tested in the dust storm-prone regions of Central Asia. These solutions were meant to bond the dust particles together, but at the same time let moisture through, thus allowing the subsoil to exist normally. All the solutions that we tested appeared to be successful. V.A.Kabanov, with the help of the heads of the Ministry of Chemical Industry managed to organize production in Dzerzhinsk that was sufficient for our needs. These solutions were used extensively.

The most trivial cleaning methods also had a big effect: regular cleaning of roads, setting up points for decontamination of vehicles and people - all this became more and more organized and sophisticated as time passed.

Earlier I had started to talk about how the work in the Government Commission (GC) was organized. The work would start very early; at around seven or eight in the morning, the first meeting would be held. It was led by the chairman. Dosimetric conditions in the various parts of the district would be reported. Assignments would be issued, and the completed ones checked. After this, all the specialists would begin work on their assigned tasks; and in the late evening—at least when Scherbina was the chairman, around 10 in the evening—a summary was reported. Radiation conditions were evaluated, work status of dam construction, well construction, about acquiring appropriate equipment and vehicles, about the construction of the sarcophagus...all this information was heard, and operational decisions were made immediately. Regularly, several times a day, the leaders of the GC spoke to comrades Dolgikh Vladimir Ivanovich, Rizhkov Nikolai Ivanovich. All this was mandatory every day.

After Rizhkov and Ligachev arrived on the site, as I have already said but I will repeat myself, the original GC left. It was announced that it would be the permanent commision, and it would be replaced by a stand-in. However, Sidorenko and I stayed behind to finish the decontamination work while Sidorenko continued to investigate the role of Gosatomenergonadzor (USSR State Committee on Supervision of Safe Conduct of Work in Atomic Energy) in what had happened and what was going on now.

Late at night on the 4th of May, when the GC was already being led by Ivan Stepanovich Silaev—a very calm man, who was doing his work very seriously—I was called in by his order. It appeared that I had been summoned to Moscow to take part in the Politburo meeting that would take place on the 5th of May. I took the first available flight.

After I arrived at the institute, they met me, washed me, cleaned me as much as it was possible. Then I dropped by home, met my wife, who was of course very upset, and by 10 a.m. arrived at the Politburo, where in turns, I reported to Scherbina and comrade Ryzhkov about what was happening. The chairman of the Politburo, M.S.Gorbachev immediately warned me that, at that moment, he was not interested in the culpability and causality of the accident. He was interested in the current status of work, and the measures required from the government to resolve the situation faster.

At the end of the Politburo meeting, Mikhail Sergeyevich [Gorbachev] addressed heaven knows who, but apparently the ministers Brezhnev and Chazov who were at the meeting, asking them to return to the site and continue the work. After the meeting, I went to the office of B.E.Scherbina and asked whether this request was also addressed to me, or should I stay here in Moscow with the other GC to continue my current work? He replied: “Yes, you will stay here and continue your work”. So I went to the institute;but before I reached, rang and one of Scherbina’s subordinates told me that as per a request by Silaev to the General Secretary, I needed to go back to Chernobyl because Velikhov’s unilateral actions were, for some reason, worrying Ivan Stepanovich. So on the same day at 4 p.m., I flew out of Chkalovsk and once again arrived at Chernobyl where I continued my work.

The work went on as had been planned before, that is in three aspects: one, monitoring the state of the 4th block, because the material drops had ended. Various probes had been put inside, thanks to which the temperature, radiation fields, radionuclide movements could be measured; two, cleaning the area of the ChNPP itself; three, construction of the tunnel under the foundation of the 4th block, and creating the perimeter of the 30-kilometer zone; continuing the dosimetric work and starting the decontamination tasks.

At this time, both the Army and the regional organisations allocated builders for the construction of villages in which the evacuees could live. This was an enormous task that required moving masses of people, creating the necessary control systems and quickly planning the logistics and work.

Sometime around the 9th of May, it seemed to us that the 4th block had stopped living, breathing, burning. It was calm on the outside, and we wanted to solemnly celebrate our Victory Day late in the evening on the 9th. But unfortunately on that day, a small but very bright crimson spot was discovered inside the 4th block. This was evidence that the temperatures were still high there. It was difficult to determine if they were the parachutes burning that had been used to drop the lead and other materials. In my opinion, it was unlikely. Most likely, it was a hot mass — as I understood it later — a mass of sand, clay and all the other things that had been dropped. We were of course upset. The 9th of May celebrations were ruined and we decided to drop another 80 tons of lead inside the crater. After that, the glowing stopped and the 9th of May was celebrated on the 10th of May in a calm and normal atmosphere.

I cannot leave unmentioned the huge role that Marshal Aganov played along with his engineering troops. Every time there was a need to get from one place to another, or to lay a hose, it was necessary to punch holes. And each time we needed a hole, they did the calculations before using military engineering tools — that is, shoot using a gun of the appropriate caliber—because there was a risk of the entire structure collapsing. It was imperative to make proper estimates and calculations. All this work was done by Marshal Aganov and his team with excellent precision and good organisation.

Even then, during those difficult days, despite everything we were, it may seem paradoxically, in good spirits. It was, of course, not because we were taking part in liquidation of the consequences of such a tragic event. The tragedy, of course, was the primary background against which everything was going on. But what caused the good spirits was the way the people had been working; how quickly they responded to our requests, how quickly various engineering scenarios were evaluated. And we had already begun, on the site, to consider the first options for constructing a dome over the destroyed block. Later, that work was assigned to comrade Batalin, the Deputy Chairman of the

Council of Ministers. He took the leadership of the construction project in his hands. And subsequently the construction itself was assigned to the Ministry of Medium Machine Building.


Around the 9-10th of May, M.S.Gorbachev in a telephone call asked me personally to give him some sort of chronology of the events, a description of what was happening, because he was preparing to speak on the Central Television to the entire Soviet Union. So I started preparing a note in which I described all that was known by that time: how the events had developed, how the destruction of the 4th block had happened, what work had already been done, and what work was yet to be performed. I handed this note to E.P.Velikhov and I.S.Silaev. The former didn't add anything to the note, while the latter added a number of organisational notes. After that, all three of us signed that note and sent it to Gorbachev. It was partially used in his [TEXT UNAVAILABLE IN SOURCE].

what I am saying is that the institute, for the first time, managed to assemble a group of experts who looked at nuclear energy as a system, all elements of which should be equally efficient, equally safe and reliable; and depending on the size of one or the other element in the system, the quality of the entire nuclear energy system should be more or less optimum.

This work had only now begun. I have always thought that this is the correct approach. Figure out, together with the Energy Commission headed by Anatoly Petrovich, what percentage of energy should be in the form of nuclear energy in a given task. After that, evaluate what type of energy must be replaced with nuclear energy, then assess which regions are the most appropriate for it, and then define the requirements for the devices that will optimally fit the tasks that stemmed from the fuel and energy balance of the country. And then, after selecting appropriate devices, engineer them to comply with all the international safety standards.

These were the questions that I had.... well… I was involved in, at least during the statement of the problem and in the development of these works. It began quite successfully. But with the illness of

Aleksander Sergeyevich Kochinov and after the subsequent events, everything has changed. Now once again, solely an engineering approach is used when one device is compared to another. Every specialist who invents either an upgrade for an existing system or an entirely new system must prove the benefits of such innovation. There is no standardised system of evaluation. Maybe someone is trying to create it now. In the last few months, I don't know what is going on because after I formed the group, I was excluded from this work. It is hard for me to say what is going on there. At the end of the day, this group of course is made up of intelligent specialists, and maybe everything will fall into place.

For example, at the meeting on the 14th of June, Nikolai Ivanovich Ryzhkov said in his speech that this disaster did not seem accidental to him; that nuclear energy with a degree of inevitability was heading towards such a tragic event. I was shocked by the accuracy of these words. Although I had not been able to describe the issue in such a way, he did.

I really do want to understand these numerous cases. For example, at the Kola NPP when the main pipeline, the most important pipeline, was welded in such a way where the welders, instead of doing it normally, just put an electrode inside and lightly welded it from above. This could have resulted in a terrible disaster - the rupture of a large pipeline of the VVER device. This is the worst-case scenario leading to a complete loss of coolant and a meltdown of the core. Luckily, as I was later told by the director of the Kola NPP Volkov Aleksander Petrovich, the personnel were properly trained and very cautious. The operator had detected the first crack [defect in metal] despite the fact that it could not be seen with the naked eye. It is a noisy place; one can miss some auditory signals. Nevertheless the operator was so attentive that he spotted the anomaly on the main weld bead. An investigation was started. It was discovered that this was simply a hack job. The important pipeline had been carelessly quality-assured. They checked the documentation - all the signatures were in place. During the check, it turned out that not only had the welder signed that he had done the welding properly, but also gamma-flaw detector who had checked this weld bead, the weld bead that didn't even exist. Of course, all this was done in the name of productivity. To weld more. And this hack job was just mind-boggling for us.

All this was rechecked at other stations—the same spots, the same weld beads—and not all was perfect. Frequent device stoppages, frequent cracks inside crucial structures, imperfect operation of gate valves, malfunctioning channels inside the RBMK reactors—all this was happening every year. A decade of talking about simulators, which are increasingly effective and are becoming commonplace in the West, and we still don't have them in the Soviet Union. For at least five years, there have been long talks about creating diagnostic systems for the most critical equipment... nothing has been done.

I remember that the quality of engineers and other personnel running the stations was falling. But additionally, any person that had been on an NPP construction site was surprised at the potential of work being done so carelessly, even on such an important project. All these instances were in our heads as individual episodes. But when N.I.Ryzhkov said that nuclear energy was heading towards it, then this picture, created over multiple years, emerged before my eyes. I remembered that experts from my own institute were already used to what was happening during the construction of the nuclear power plants. I also remembered the Ministry with its strange concerns. This wasn't a leader that led us, it was a leader that was just making ends meet, getting money, sending information up to the levels above, sending people to launches or acceptances.

As I recall, there is not one person, or group, who leads focused work on analyzing the situation in the nuclear energy industry—about how to change the usual practices of building stations, of supplying equipment—despite the fact that such individual episodes have been happening. For example, the many-years-long struggle of Viktor Alekseyevich Sidorenko, that was supported by academician Aleksandrov, resulted in a government resolution for the creation of , representatives of which should be present at every station, and every enterprise that manufactures critical equipment for nuclear power stations. These representatives should grant permissions or stop the work depending on its quality. The same Gosatomenergonadzor should thoroughly review all the regulatory documents and improve them, while also verifying that all the regulatory requirements are met in practice. So this issue was somewhat resolved. But it was resolved in a very odd manner.

You know, similar to our current state quality control, a lot of ‘specialists’ appeared that were not involved in engineering or scientific activities. They gathered at the table and doled out houses and posts to themselves. But as is evident from the Chernobyl disaster, this organisational superstructure couldn’t actually improve the state of the nuclear energy industry because its authority was not defined properly. And the requirements they created were not ideal, not the ones that had to be created to make nuclear energy safer, but rather they were coming from the current situation that we had here, and from some Western experiences. This was a sort of combination of the Western experience with our own, with the level of the machine-building industry in the Soviet Union—which cannot fulfill certain requirements. All this left an impression of a sort of eclectic image—not coherent, not complex.

Many of the regulations, requirements and rules were complicated and very confusing; in some parts, contradictory. Maybe, at a glance, to figure out a contradiction one had to do additional work. Normally, everything would be stored on a single personal computer, in one or two disks, located next to the operator so that he could at any moment clarify something. In reality, all this was stored in old and used books. The operator had to go and search for them. This left a rather wretched impression. But it seemed to me that this wretchedness was not recognized by many... I had very few supporters.

Once a magazine called “Business Week” fell into my hands. This was, I think, in 1985. In it was an article criticizing the French for their active cooperation (an attempt of cooperation) with the Soviet Union in the field of nuclear technology. It was about a deal where we would increase the supply of natural gas to France while they would provide us with nuclear technologies: robots for repair works, loading and unloading operations, some diagnostic systems, a range of devices to make the technology of the construction and operation of a reactor more modern. But the author of this article, an American, criticized the French, said that they shouldn’t be doing it (for political reasons, economic reasons). But the article stated very precisely that: firstly, the Soviet Union has developed the physical fundamentals of nuclear energy on the same level as the rest of the world, but the technology gap to implementing those physical fundamentals is huge, and the French should not help the Russians in overcoming this gap. And above that article, there was a lousy illustration, in which in front of a half-wrecked cooling tower, a young moustached Frenchman is trying to explain to a Russian bear how to build those cooling towers, while the bear has put a finger in his mouth and hardly understands that the quality of the cooling tower is as essential to the quality of a nuclear station as the reactor itself. A very mean caricature it was. And I remember running around with this caricature, showing it to Meshkov, Slavsky, Aleksandrov; presenting it as a question that was very serious. The question of the gap between the physical concepts of what the reactor should be, and

the poor-quality production of fuel, and the whole range of technological operations, many of which seem insignificant, and which are practiced at our stations.

You know, I was not met with understanding anywhere. Rather, A.P.Alexandrov called Kokoshin, the Deputy Director of the Institute for USA and Canada (he had a doctorate, a very interesting young man), and asked him to write a counter-article debunking the author, that things are nothing like that, and that Soviet nuclear energy is at par with the West, etc. However, that American article did say that although Soviet nuclear industry in terms of input capacity is not at the world-class level, the reactor concepts adopted in the Soviet Union are physically correct and sound, and that the Soviet reactor construction specialists are good. However, the technological support for this complex cycle is outdated. That's why more staff is needed to operate our stations, there are many poor devices, many imprecisions in the operating systems that service the station. So this was indeed true, but nevertheless Anatoly Petrovich insisted that Kokoshin must write an article refuting these views. Luckily, Kokoshin had enough wisdom, or not enough time, to not write that article. For if it had appeared, it would have appeared in the Chernobyl days.

I want to emphasize that I was possibly the only one, among the people I spoke to, who acutely felt this concern. Others, who possibly knew the situation at the nuclear power plants much better, were sort of very calm about it. I once heard** from Ponomaryev-Stepnoy Nikolai Nikolaevich (he was a Deputy Director of Nuclear Energy, now the First Deputy). He was working on a helium-cooled high-temperature reactor, and we considered this reactor as having the best technological capabilities for our national economy. It had high temperatures which meant that we could use it in metallurgy, chemistry and oil refining. That is, we considered it not as a competitor to nuclear energy but as an addition to it. But then, in a conversation, he said that RBMK reactors are very dangerous. And that is true. So in this sense, not an addition but actually an

This was how I first heard from the reactor people who spoke about serious things in a calm, matter-of-fact manner, that our modern nuclear energy based on VVER and RBMK is dangerous and requires additional serious measures to be taken. As is my nature, I started to research this question and be more active in certain situations, to speak about the necessity of the next generation of reactors to be safer; say TTER reactors or liquid salt reactors that I was trying to present as the next steps towards safer reactors. But this caused a storm in the Ministry. A storm of indignation. Especially from Minister Slavsky who was literally stomping his feet, saying that these are different things, and that I am illiterate, that I don't mind my own business, and that it is wrong to compare one reactor to another of a different type. This was a difficult environment.

Slowly, work progressed on alternative reactors. Slowly, we upgraded the existing reactors. But sadly, no proper scientific analysis of the actual situation took place to analyze all the possible problems and find ways to avoid them. I tried to set up a safety measures laboratory. It later became part of the Nuclear Energy Safety Department. But since Sidorenko was put in charge of this laboratory (the whole department), everything was routed towards developing documents, procedures and standards to make things better on existing nuclear power stations. And things never came to serious theory, to serious analysis, to serious strategies, which, all in all, was quite alarming.

The more nuclear power stations were built, the more real became the danger of something happening at some point in time. People had started sensing that. But the fight against these dangers was being fought on a case-by-case basis. Say, a steam generator breaks down at some station, and

they start to think about how to change its design, and, of course, come up with a solution that improves the situation. Then something else happens. An RBMK channel bursts, so they start researching why this happened; is Zirconium to blame, or the operating state, or something else? And the quality of produced Zirconium becomes better, as well as of the pipes made out of it, or else the operating states become better, and everyone calms down until the next thing happens.

It seemed to me that this was not a scientific approach to solve the safety-related problems of nuclear energy. But because my professional occupation was in a different area, I was an observer integrating all this information that was entirely impossible to discuss in the ministry; because they were used to having very specific engineering discussions, such as how to replace one kind of steel with another, how to modify a technological system. All conceptual talks, all attempts at adopting a scientific, consistent approach towards this problem, they did not accept at all. This is how the situation was developing before the Chernobyl events.

Moreover, the number of enterprises who were involved in the production of various equipment for a nuclear power plant had also increased. The construction of Atommash had begun. Many young people arrived. As our press reported, the factory was built very poorly. The quality of specialists, that had yet to master their professions, left much to be desired. This was obvious and Komsomol themselves wrote many papers about it. They were helping to organize the headquarters under the Central Committee to help the development of the nuclear energy.

This also was visible at the stations. I was particularly disappointed after I visited several western stations. Especially after I saw the Loviisa station in Finland which was built according to our principles; it was basically our station. Only it was built by Finnish builders. Only they had discarded all of our automatic control systems and put in Canadian ones. A number of technological instruments had been replaced with either Swedish or their own, and ours had been taken out of operation. The procedures established at this station were sharply different from ours. Starting from the entrance to the station, its external signage, personnel training. This station had a proper training simulator where everyone had to undergo regular training, and the various situations that could arise at a reactor were simulated.

I was struck by the time this station put into carrying out a refueling. Very interestingly, the station staff consisted of 45 people, if I recall correctly, who had to plan the reloading operation; that is they planned who, of the people that didn't work at the station, had to participate in the reloading. They selected people, agreed on the time, arranged the needed tools, and decided the sequence of carrying out the procedure. This very thorough preparation for the refueling procedure took around half a year's time. But the refueling itself took only 18-19 days, while for us it takes around a month and a half, and upto two months at times. But the operational staff there is considerably smaller than in our stations. Outer cleanliness of the station, the number of equipment in the station laboratories, all this differed strikingly from our stations in the Soviet Union.

Yes, and I also wanted to talk about the administrative systems. As one remembers how our nuclear energy sector was structured: our Ministry of Energy with its directors, the Ministry of Medium Machine Building with its directors, the chief engineer, the science supervisor. Any expert from any level (from the laboratory supervisor to the director of the institute) could request information, interfere in the work of a station, write reports, propose something. There were countless industry councils where something was discussed. And all this was not very coherent, not orderly, and did not present to me as a unified, smooth work process. Instead, each time it was a response to some

technical proposal, or to some accident, or to some pre-accident situation. This left an impression of disorder, and a widespread movement towards disorganized work in the field of nuclear energy.

This, by the way, I felt less keenly, because my own functions as a member of the Energy Commission were to determine the rate of commissioning nuclear power stations, the chronology of tasks, and the structure of nuclear energy. All these were prospective questions. As for ongoing activities, I was involved with them only indirectly because it was not my speciality, and they were never assigned to me. However, the more I learned about what was happening there, the more anxious I became. And when Nikolai Ivanovich Rizhkov in a politburo meeting spoke his words about how nuclear energy was inevitably moving towards a grave accident, immediately all these facts, accumulated over many years, somehow aligned in my mind, and his words highlighted that it really was so.

And in general, all the experts, scientists, at least at different times and from different platforms, talking about individual parts, said that we are on the road to a bad accident; Anatoly Pavlovich Aleksandrov said it, repeatedly citing striking examples of carelessness in the construction of nuclear power plants; Sidorenko said it, speaking about disorders in operation and documentation; the young specialists said it; the material scientists said it.

An unexpected problem occurred with, for example, specimens lowered into the Finnish station Loviisa. They showed that the reactor housing may not last for 30-40 years per the project parameters, but may function for substantially lesser time. Immediately desperate research began, that resulted in proposals on how to deal with the situation
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and prolong the life of the reactor housing.