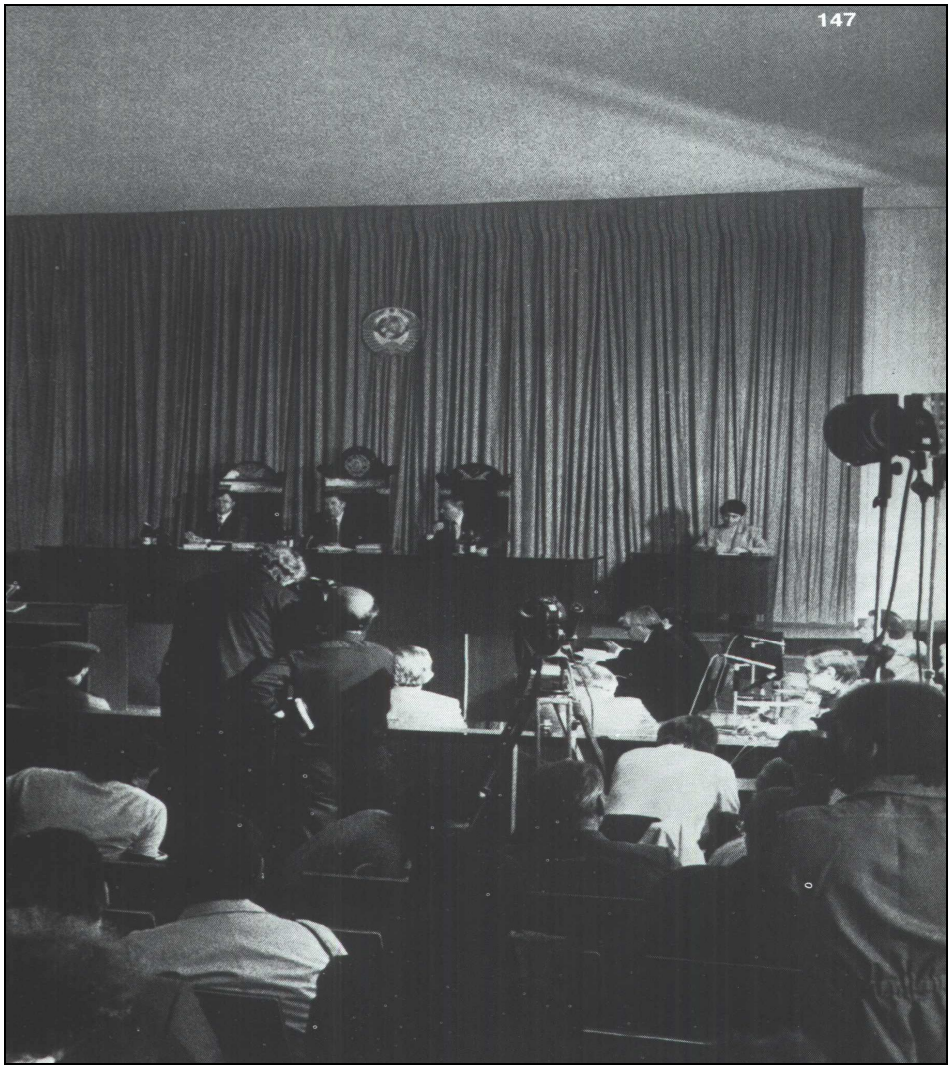
Trial at Chernobyl Disaster



Karpan N.V.

Kiev. Year 2001

Trial at Chernobyl Disaster

Outline after records of trial of the Chernobyl NPP personnel

7.07 – 29.07.1987

Chernobyl town was chosen as a place for trial of people accused in Chernobyl disaster because according to Soviet Law, which was in force those days, the trial must be held close to the scene of crime. The town is located 12 kilometers from the nuclear power plant, so all of its citizens were evacuated at the beginning of the May of 1986. It was no trouble to declare hearing of the case public, whereas entrance to the zone was possible only through special permission.

After the disaster this town was decontaminated on repeated occasions. The center of the town was refurbished, new paint laid on renovated paving and by the July of 1987 the administrative centre of accident area was quite ready to hold demonstrative "Chernobyl trial".

The Cultural center chosen for trial was refurbished exemplarily. The perfect view was spoiled only by grates hanged on windows and a small courtyard annexed to the building in which a car with defendants entered.

There were guests at hearing — 60 people, soviet and foreign journalists. Rest seats were occupied by Chernobyl NPP personnel, 30-km zone personnel and participants.

The first trial session was set on the July 7, 1987. Only the first and the last sessions were opened for journalists, so they could hear an indictment (on the first day) and a verdict. Details and circumstances of the disaster were discussed at work sessions, access to which was restricted.

The trial was held during 18 days, excluding days off. Sessions began at 11 o'clock in the morning and ended at 19 o'clock. During the sessions 40 witnesses, 9 complainants and 2 victims were heard. Many people expected that records of court would become public so everyone who wanted to know the truth about the disaster would be given this opportunity. But the press and television supplied the community only with short messages about hot weather in Chernobyl and progress in battle for harvest. In this way one more informational gap was created in a judicial part of history of the Chernobyl disaster.

Those days I was on my duty at the Chernobyl NPP so I missed some of the sessions. That is why not all of the sessions were recorded and included in my report.

INITIAL ARRAIGNMENT

7. 07. 87

Session 1

Participants:

Chairman of the panel of judges – **Raymond Brize**, the member of Supreme Court of the USSR.

Assessors — **Konstantin Amosov** and **Alexander Zaslavsky**. Reserved assessor — **T. Galka**.

Government lawyer — **Yuri Shadrin**, counselor of justice second class, senior aide of General attorney of the USSR.

Experts — The staff of forensic technical expert group, assigned by the September 15, 1986, resolution approved by Potemkin U. A., the head of inquiry group, senior aide of General Prosecutor of the USSR, counselor of justice third class. (Criminal case 19-73, p. 31-38 volume 38):

Dolgov V. V. — the head of laboratory in the MFEI, candidate of technical science.
Krushelnitsky V. N. — the head of the administration-2 of the Gosatomenergonadzor (the State Atomic Supervision Agency of the USSR).
Martinovchenko L. I. — the head of the inspection board of South district in Kursk NPP.
Minayev E. V. — the deputy head of Glavgosekspertiza of Gosstroy of the USSR.
Michan V. I. — the department head of the NIKIET, candidate of technical science.
Neshumov F. S. — the department head of the Glavgosekspertiza of Gosstroy of the USSR.
Nigmatulin B. I. — the department head of the VNIIAES, doctor of technical science
Protsenko A. N. — the laboratory head in the Institute of Atomic Energy, doctor of technical science.
Solonin V. I. — professor of the chair of energetic machines and mountings in Moscow Technical University, doctor of technical science.
Stenbok I. A. — — the deputy department head of the NIKIET
Chromov V. V. the head of chair of Moscow Engineering Physics Institute, doctor of phisico-mathematical science.

Accused —
Bruchanov V. P., the director of Chernobyl NPP, 52 years old
Fomin N. M., the chief engineer of Chernobyl NPP, 50 years old
Diatlov A. S., the deputy chief engineer of Chernobyl NPP, 56 years old
Kovalenko A. P., the chief reactor hall-2, 45 years old
Laushkin U. A., the inspector of *Gosatomenergonadzor* in Chernobyl NPP
Rogozkin B. V., the station shift supervisor, 53 years old

Attorneys —
Three from Moscow and three from Kiev

The beginning.

Yuri Shadrin, the government lawyer, announced [1] that defendants are accused of crime described in the clause 220, part 2, of the Criminal Code of Ukrainian SSR, which implies

responsibility for breaking the accident prevention rules in highly explosive plants that led to serious consequences and human sacrifices. Furthermore, accusations were brought on the basis of clauses 165 and 167 of the Criminal Code of Ukrainian SSR, for abuse of power, prevarication and irresponsibility during course of duty.

Then R. K. Brize, the chairman, proceeded to identification of defendants. They in turn stood up and told their biographies.

It took two hours for a criminal clerk to read the indictment.

The director of Ch NPP (Chernobyl Nuclear Power Plant) and the others were accused of crime consisting in neglecting duties and approving a technically and scientifically improper experiment in an electric power station that led to the catastrophe. As a result, 4-th power-generating unit was destroyed, the environment around electric power station was polluted with radioactive fallout, 116 thousands people were evacuated, including citizens of two towns, Chernobyl and Pripyat. 30 people died, including two people at the time of explosion, several hundreds were taken ill with radiation sickness of different degrees due to exposure to radiation.

Immediately after the accident, the accused did not take appropriate measures to minimize consequences for personnel of the station and citizens living nearby. Rescue operations were not provided in time and besides, people were sent to work in dangerous area where level of radiation was not estimated.

Some attempts were made to falsify the information about real dangerous of the accident.

For example, in the morning of the April 26, V. Bruchanov, the director, reported that a level of radiation measured in station site and nearby was 3-6 roentgens per hour, whereas he had been informed by the chief of the **staff of civil defense**, that in some places a levels of radiation achieved 200 roentgens per hour.

It was also stated in the indictment that accidents happened in Chernobyl NPP before the April 26, 1986, usually were not analyzed and even not registered. It was mentioned that the top-management of Chernobyl NPP did not provide professional training for the staff and did not control work discipline properly.

WORK SESSIONS

8. 07. 87.

Session 2

Beginning at 11:00 am

Evidence of Bruchanov V. P., ex-director of Chernobyl NPP [2]:

"Some words concerning the indictment. On the August13, when the indictment was brought against me, I wrote my objections and disagreements regarding the charge counts. I don't agree with them. As a manager I am guilty of failure to see something, insufficient care on my part, inability to organize. I understand that accident is severe, but everyone has its own share of guilt in it."

Then V. P. Bruchanov told the story of his coming to Ch NPP, the history of the station and the city construction. Launching of the power-units: 1 unit – 1977, 2 unit – 1978, 3 unit – 1982, 4 unit – 1983.

"It was easier to put into operation a power-unit than a laundromat. In response to demands, the contractors used to say — if we do not suit you, look for others."

"Difficulties:

1) It was not until 1983 or 1984 that we were allowed (by Central Committee of the CPSU and government regulation) to employ up to 30% of personnel two years prior to launch of a power-unit;

2) We had no training unit; personnel had no practical skills to act in emergency situations. Even now the Smolensk' Training Center has not been put into operation. During two years we struggled for our own training center, but we were permitted to build up only a training unit."

"I pressed for funds to buy a computer, an automatic telephone system office, a display station"

The power-units worked properly, but during 5 years 100 failures occurred. That is, 5 failures per unit in a year, 33 of them were caused by personnel (2 failures per unit in a year).

There were serious drawbacks, sometimes accidents happened. We were punished severely for it. But numbers say nothing without analysis.

To consider and analyze causes of accidents the group of two people worked in Chernobyl NPP. Nazarovsky was the head of this group.

The indictment says that some accidents had been concealed from public. I know nothing about it. In my opinion there is no way to conceal such occurrences. There are displays in the network control office and in the Ministry of Energy showing a current load of each station. Every power loss is recorded immediately.

The operation of station was controlled by many inspecting organizations on regular basis. There were lots of directives. Sometimes we couldn't manage to eliminate drawbacks in prescribed terms and asked them to prolong. As a rule, we obtained permissions. Maybe at the time of the disaster something was no prolonged. I'm not asserting that everything was fine".

***Court chairman (Raimond Brize)** — Have you become familiar with the indictment? Which of the facts you disagree with? If you agree with all charge counts, why do you tell these general words?*

***Bruchanov** — A director of a nuclear power plant, a chief engineer and their deputies work hard. Each of them has its own obligations but overall responsibility still exists. I am charged with violation of points 5.1-5.3 of Nuclear Safety Regulations. I knew that scheduled preventive repair was planned for the unit-4. I knew that no special tests were planned. I didn't see that test program. If I had seen it I would have taken some steps to coordinate it with General designer, Gosatomenergonadzor, and so on. I'm not going to speculate upon technical problems, there is a competent expert report. There are papers, which were submitted to IAEA (International Atomic Energy Agency) by Soviet Government. I'm not going to discuss them over, they are correct.*

***The chairman** — Did you know about existing of the program? You approved putting the power-unit into operation after construction without carrying out this test, didn't you? Don't you remember it? Did you see the program?*

Bruchanov *— No, I did not. I couldn't know everything, it's impossible. I can't remember the requirement to carry out this program in launching series. There were work committees; they submitted their reports to the State committee. As a deputy chief of the State Committee, I approved putting the 4-th power-unit into operation because all required works had been done.*

Bruchanov *— As for clause 165 (my actions as a chief of civil defense unit). The indictment says that I had to launch a plan for personnel and population protection. Formally, I didn't do it. When I arrived to work on the April 26, I gathered technical management and civil defense officials, entrusted them with tasks.*

I learned about the accident from the ***chief of the chemical department****. The* ***station shift supervisor*** *and the telephone operator on duty didn't call me. There was no warning message. I asked the telephone operator: "Why it is not issued?" She replied she didn't know which of the records had to be set. I told her to set "general accident". Having arrived to the NPP I couldn't find the* ***station shift supervisor****. I asked Sorokin,* ***the shift supervisor of the electric department****, to find the* ***station shift supervisor*** *and tell him to warn everyone about the accident immediately.*

When I was passing by 4-th power-unit, I saw damaged constructions and surmised the worst. Having arrived to the NPP I ordered the guard to open the shelter. Then I entered my office and tried to call the ***station shift supervisor****. He didn't answer. Then I ran to the site and approached the* ***balloon emergency core cooling system****. The system was damaged. I returned to my office. My second attempt to call the* ***station shift supervisor*** *also failed. That moment Voloshko (the head of the Town' Executive Committee), Parashin, the deputy director for regulation, came into my office. I can't remember what I told them. Then we went to the shelter. I gathered management of all departments and services. I informed them about accident. I told them: "I know very few details about the accident yet, but some measures should be provided to evacuate the personnel out of the station site. Minimum people should stay." I gave tasks to Krasnodgen, the head of* ***department of accident prevention and labor protection****, and Korobenikov, the head of the* ***laboratory of external dosimetry****.*

The communication department manager informed me that the telephone line is ready and I started to report to the head of central directorate: "The accident happened, 4-th power-unit is destroyed, I don't know details yet". I told Vorobyev to keep in touch with the ***regional office of civil defense****. Then I telephoned to the Party Regional Committee, asked for the 1-st secretary, but they switched me to the 2-d secretary. In a while I reported to the 1-st secretary. At that time I called Veretennikov, the head of the central directorate, again. Then I received reports from our engineers. The information from Krasnodgen arrived.*

The ***station shift supervisor*** *called and said: "There was an explosion; we're trying to feed the reactor with water." He also didn't know details of the accident.*

We, power engineers, understood that the worst case with a reactor is a fuel melting. As far as there was no water in dram separators, it was the worst.

I can't manage to link all events with time points. I arrived to the NPP at the latest 2 a.m. I remember that.

Then Parashin and Belichenko, the head of Regional Committee department, approached to me. I told them what I knew. Belichenko said that 2-d secretary of Party Regional Committee was on his way to the station and asked me to prepare a report for him. Parashin volunteered to manage it. He said he and Belichenko would prepare a report and show it to me. The level of radiation was 1000 micro-roentgens per hour on the site and 2-4 micro-roentgens per hour in the city.

I ordered Rakitin (the head of the 1-st department of Ch NPP) to print a report. He asked: "who would be an executor?"

I replied: "Show it to the chief engineer. If he agrees, assign him." I don't know whether he showed the report to Fomin or not. In a while he brought me a printed report and I signed it.

In the building of the Executive Committee of the City, Voloshko gathered managers of Pripiat city's enterprises and briefly informed them about the accident. Then I went to the Ch NPP. Later I was requested to go to the Executive Committee of the City again. The minister and Semenov, his deputy, were there. They entrusted me, Konvis and someone I don't remember, to make a plan of measures intended to reconstruct the 4-th power-unit. We were busy with this task for some time. We moved to the NPP and back to the city.

There were lots of messages. The government commission went to Chernobyl, I stayed in Pripiat and then moved to a pioneer camp named "Skazochny".

I was not going to hide something. I used the information supplied by Krasnodgen and Korobeinikov. Latter I learned that the same information was in the City's Committee office. I have no idea who sent it there.

(interruption 12:30 – 12:45)

***Bruchanov**: I believe I managed to organize radiation reconnaissance. Krasnodgen was ordered to stay on site and prevent people from entering "unreachable places" (word for word). The level of radiation, as I was informed, was up to 1000 micro-roentgens per second.*

Vorobyev told me about 30-35 and 40-50 roentgens per hour. It's true. I visited the west and the north sites of Ch NPP and measured a level of radiation personally. I registered levels up to 200 roentgens per hours. Those were registered in line-of-sight coverage. In the Ch NPP there were served, half-served and not-served premises... It was clear that a level of radiation close to the destroyed reactor was much higher.

*As a director I couldn't provide everyone with estimating equipment. These were stored in the **department of accident prevention and labor protection**, **laboratory of external dosimetry**, and in the **staff of civil defense**. They were in work.*

According to the register of civil defense, we were completely equipped. It is shown in all documents.

I am accused of that protective facilities were not ready. It's not true. Shelters had been built completely. Furthermore, trainings were provided. It is true that the the shelter-2 was used as a storage for equipment belonged to the civil defense staff. But this was not forbidden. Besides, the shelter-2 was very close to destroyed reactor. Therefore it could not be used for people.

As for the shelter-3, I have no idea why the department chief didn't give a command to use it.

I told the department chiefs to minimize the number of people in site so I don't know why the new shift arrived with its full complement of employees.

*As to evacuation. Formally I didn't launch the plan of evacuation. But I made particular steps according to the plan informally. I ordered to issue a warning, notified the **staff of civil defense**. The arrival of government commission confirms it.*

*Notification and evacuation of citizens was outside my competence. I couldn't do it. Besides, the chief of the **staff of civil defense** can decide to evacuate people when overall dose achieves 200 roentgens, but on 26 of April a dose was no more than 0.64 roentgens.*

I have nothing to say more.

The chairman - *Does the public prosecutor have questions?*

The public prosecutor *– Yes.*

The public prosecutor *– Did you follow instructions of the "Recommended practices for working with personnel" precisely?*

Bruchanov *– Yes.*

The public prosecutor *– What prevented you from building a training center? Why didn't you create it while you were the director of Ch NPP?*

Bruchanov keeps silence.

The public prosecutor *– I see. So you didn't raise such questions.*

Bruchanov *– I did. In the Ministry and in the Central Directorate.*

The public prosecutor *– You said that the personnel were not prepared to work in emergency situations, that is, the personnel were not trained well.*

Bruchanov *– No. The personnel were trained according to the "Recommended practices" completely.*

The public prosecutor *– Why accepting for work (and for understudy) was executed by department managers instead of managers of the NPP?*

Bruchanov *– A unit shift supervisor and shift supervisors are governed by station management, deputy chief engineers and a chief engineer of the station. The others are left for work by management of department.*

The public prosecutor *– This is violation.*

The public prosecutor *– According to the "Recommended practices" you had to walk around the workplaces. Did you do it?*

Bruchanov *–These are so-called "night walk-around inspections". In 1986 I couldn't do it because I was very busy. But in the daytime I inspected the turbine hall, modular control board and so on.*

The public prosecutor *– There are rules according to which you had to keep log of walk-around inspections. Your last entry in the log was made in 1978. In 1986 you issued an edict in which you planned to carry out walk-around inspections two or three times a year. Who allowed you to violate the recommended practices?*

Bruchanov *– I can't remember such an edict.*

The public prosecutor *– You issued it in 1986.*

The public prosecutor *– As to examinations. Only a director and a chief engineer are referred to as top management. But deputy chief engineers worked in the capacity of chairmen in examining boards. This was violation.*

Bruchanov *– But they examined only their own personnel.*

The public prosecutor *– The "Recommended practices" say unambiguously that the plant is managed by the director and the chief engineer.*

The public prosecutor *– Did you carry investigations of accidents strictly according to the requirements? Have all accidents been investigated completely?*

Bruchanov *– In some cases the investigating commission couldn't find origins.*

The public prosecutor *– I can show you a list of accidents which were not investigated at all. It's in the case papers. And know it well. Do you deny the matter?*

Bruchanov *– No. I don't.*

The public prosecutor *– In the first quarter of 1986 the protection and blocking systems were inactivated 6 times (from the 6 of February to the 26 of April — entry in the log of deputy chief of the* ***thermal automatics and measuring department****.) These were done without approval from superior bodies. These were violations.*

Bruchanov *– I didn't know it, but I can explain. It is unreasonable to stop a power-unit because of trivial reasons.*

The public prosecutor *– This is at variance with the rules.*

The public prosecutor *– Did you sign the acceptance certificate of the 4-th power-unit without the run down test program carried out?*

Bruchanov *– Yes, I did.*

The public prosecutor *– Then you had to complete the power-unit according to the project. This program had been carried out in 1982 on the power-unit-3 (before the 4-th unit was put into operation) and in 1995. Did you know about it?*

Bruchanov *– No, I didn't.*

The public prosecutor *– Let's talk about civil defense. The report of the civil defense commission (January 1986) says that the shelter 3 was not ready to use.*

Bruchanov *– From my point of view the shelter was ready.*

The public prosecutor *– Did you see that report?*

Bruchanov *– Maybe I saw it.*

The public prosecutor *– The employees said that accident preventing training was bad.*

Bruchanov says no word.

The public prosecutor *– The employees said that accident warning message was propagated spontaneously. What you had to do?*

Bruchanov *— I believe I fulfilled all the requirements.*

The public prosecutor *– By 3:00 in the morning of the April 26 you had already knew that a level of radiation nearby the 4-th power-unit was 200 roentgens per hour. Did you understand that the situation might get worse?*

Bruchanov *— I knew that the dose rate was mainly determined by isotopic iodine radiation in the atmosphere so I was sure the dose rate would decrease. As for 200 roentgens per hour, it was registered only within the field of vision.*

The public prosecutor *– Then why didn't you evacuate people from the dangerous zone?*

Bruchanov *— I ordered to evacuate redundant personnel, but the reactor had to be observed.*

The public prosecutor *– Why didn't you notice about 200 roentgens per hour in the report sent to the soviet and party authorities?*

Bruchanov *— I looked through the letter carelessly. Of course, I had to add this information.*

The public prosecutor *– But that was the main point. Why didn't you do that?*

Bruchanov says no word.

The public prosecutor *– At the meeting of the Executive Committee of the City, Voloshko was saying whatever he wanted. Why didn't you tell the truth? You were the most informed man by that time.*

Bruchanov *—Sure. I had to stand up and say...*

The deputy public prosecutor *– Did you know that engineers from Kharkov planned to carry out vibration measurements of the turbo-generator?*

Bruchanov *— I knew, it was common practice. We always did so.*

The deputy public prosecutor *– During several years you attempted to conduct run-down test of the turbo-generator. All these tests failed. Didn't you know about it, did you?*

Bruchanov *—No, I didn't.*

The deputy public prosecutor *– Weren't you interested in working process?*

Bruchanov *—I was very much interested, but I couldn't know everything. There were technical engineers for that.*

The deputy public prosecutor *– What does "General accident", refer to?*

Bruchanov *— It refers to an accident within a station territory with releasing of radiation.*

The deputy public prosecutor *– About 2 o'clock in the morning you commanded the telephone operator to issue a warning. Why didn't you repeat your order during a day?*

Bruchanov *— Officially I didn't do it.*

The deputy public prosecutor *– Didn't you see a fire while you were going to the NPP.*

Bruchanov *— Only a weak glow. It was at night-time. At the day time we flied around the reactor by helicopter. There were only two craters there.*

The deputy public prosecutor *– What did you do after you were suspended from duty and read out of the Party?*

Bruchanov *— I resumed working in August.*

The deputy public prosecutor *– We have information that you had a rest in Yalta.*

Bruchanov *— I stood working until I was dismissed. Then I joined my family.*

The public prosecutor *– What do you think about the test program and the accident?*

Bruchanov *— As for the test program, I think, it was badly planned. It was not coordinated with Gosatomenergonadzor, General designer, Science guide and Projector. The behavior of the personnel was not prescribed strictly, especially in redundant steam dumping procedures. As to inactivation of protecting system, I don't see the point. This operation, from my point of view, had to be executed on stopped reactor.*

The expert *— Who approved the complex plan of new equipment development?*

Bruchanov *— I can't remember.*

The expert — *What was the goal of the test program? Was it intended for investigation or routine maintenance?*

Bruchanov *— In my opinion, the purpose of the test program was to define the maximum load of generator in run-down mode.*

The expert — *Did you ask the telephone operator to issue a "General accident warning" personally?*

Bruchanov *— Through the* ***shift supervisor of the electric department****.*

The expert — *But one hour ago you were telling quite different.*

The expert *— In prejudicial inquiry you testified that you met Vorobiyev and Solovyev at the dining building located close to the 4-th power-unit. They deny it categorically.*

Bruchanov *— Perhaps I've been there with Korobeinikov. I can't remember.*

The expert *— Why did you feed the reactor with water while you knew that it was destroyed?*

Bruchanov *— We did it only during the 26 of April, but on the 27 we dealt with water.*

The expert *— We have information that Kaplun, the head of the* ***department of accident prevention and labor protection****, didn't know what to do? Why didn't you provide him with instructions?*

Bruchanov *— But I did.*

The expert *— How many reports did you sent to the City Committee?*

Bruchanov *— Only one. This report was signed by me and Korobeinikov, the chief of laboratory of external dosimetry.*

The expert *— Do you believe that you and the others of the station management are enough educated to draw a conclusion about the disaster?*

Bruchanov *— I'm really not an expert in this field. But we had expert-physicists.*

The expert *— Did they discuss possible consequences of the accident?*

Bruchanov — *In my presence they didn't.*

The expert *— Didn't you feel ill? Have you been diagnosed?*

Bruchanov — *No I was in good health.*

The expert *— Then why did you go to the South?*

Bruchanov — *Doctors recommended me to go to Baltic. But Bultic's weather is too cold for me. I was exhausted.*

The chairman *— Who has questions?*

Sitnikova *(a wife of late A. Sitnicov, the deputy chief engineer of the station, who died because of acute radiation syndrome) — Bruchanov, who had to issue a warning by radio and why it was not done?*

Bruchanov *— I believe it was in competence of Committee of the City.*

Sitnikova *— Did you tell them to do it?*

Bruchanov *— I can't remember.*

Sitnikova *— When you arrived to the station you had already knew the situation. Then why did you send my husband to the 4-th power-unit?*

Bruchanov — *I sent Sitnikov and Chugunov to the 4-th power-unit for bringing Diatlov back. That was the only task. Chugunov may confirm it.*

(V. Chugunov [1] – The director and the secretary of Party Committee entrusted me and A. Sitnicov the following:

- first – check out the functionality of the emergency cooling system;

- second – help in finding for missing people (at that time six people were missing);

- third – define the bounds of destruction and the ways of accident localization.

(one hour interval from 14:00 to15:00)

Bruchanov is questioned by the attorneys

The attorney for Bruchanov *— On the basis of item 2.2 of the "Recommended practices for personnel management" you are accused of poor training of the shift personnel. Explain, please, how do you understand it?*

Bruchanov *— A newcomer couldn't be left for work without training. Understudy was managed by* ***the deputy chief engineer of the station*** *and* ***the station shift supervisor****. Every individual was approached personally.*

The attorney for Bruchanov *— Why didn't you conduct walk-around inspections of workplaces?*

Bruchanov *— I inspected workplaces, but I didn't notify the inspector, who stored the log. Suggestions and remarks I expressed in operational meetings verbally. Major remarks I issured through my orders.*

The attorney for Bruchanov *— What did you do to investigate origins of accidents in the Ch NPP?*

Bruchanov *— Accidents were investigated by committees of inquiry and reports were drawn up.*

The public prosecutor *– Some of the accidents had not investigated. This fact was mentioned in the technical expert report. Do you agree with this statement?*

Bruchanov *— This document mentioned a number of accidents happened during a year. There is no more specific information, so I can't answer your question explicitly.*

The public prosecutor *– In that case I'll read the whole document.*

The attorney for Bruchanov *— How did your guidance responded upon conclusions of accident investigating experts.*

Bruchanov *— Differently. In some cases accidents were reconsidered.*

The attorney for Bruchanov *— As to the test program. Was it possible in 1983, before putting the reactor into operation, to make a remark in documents that this test program was not carried out?*

Bruchanov *— It was possible. Besides, it was allowed not to run this test. But in that case all works would have to be done without assistance.*

The attorney for Bruchanov *— Does the project of the power-unit specify the accident on such a scale? Were the employees trained to handle such an accident?*

Bruchanov *— No.*

The attorney for Bruchanov *— If the special training was provided for the personnel, would it help in this accident?*

Bruchanov *— Yes.*

The attorney for Bruchanov *— Does the "Plan of measures for personnel and citizens protection" specify behavior of officials; how many people must stay on site, where families have to be evacuated?*

Bruchanov *— Yes, all of these questions were prescribed in detail.*

The attorney for Bruchanov *— So, you need not to specify the tasks for the department managers?*

Bruchanov *— I believe, there was no need in it.*

The attorney for Bruchanov *— As for radiation situation. Did you have enough information from specialists to estimate the situation objectively?*

Bruchanov *— I believe yes. They telephoned me. Besides, I was supplied with schemes, charts, hand-written documents, notes with free-hand drawings, reports about radiation rate.*

The attorney for Bruchanov *— When did the military and civil defense troops arrive? What kind of information did they give you?*

Bruchanov *— I can't remember exactly. They came approximately at noon, but they didn't supply me with information.*

The attorney for Bruchanov *— Did you have enough information to launch the "Plan of measures"?*

Bruchanov *— I believe yes. I had enough information to do so.*

The attorney for Bruchanov *— Was the information, you sent in your note to the Regional Committee, impartial?*

Bruchanov *— By that time in some places more intensive radiation was registered, but I read the note carelessly and didn't add more precise information.*

The attorney for Fomin *— Did Fomin take a part in preparation of this note?*

Bruchanov *— No, he didn't.*

The attorney for Fomin *— Then why did you name him as if he was among executors?*

Bruchanov *— I have already told how it happened.*

The attorney for Fomin *— Rakitin, the chief of the first department, asserted that you unambiguously ordered him to place in the Fomin's name.*

Bruchanov says no word.

The attorney for Fomin *—When did you see Fomin?*

Bruchanov *— I can't remember exactly, in the morning.*

The attorney for Fomin *— Did you talk about levels of radiation? Were you the only person why received information?*

Bruchanov *— No, we didn't. I was the only receiver of information.*

The attorney for Fomin *— Did you have enough information to start evacuation in time?*

Bruchanov *— On the base of the article written by Blochin, the Member of the Academy, published in the "Soviet Ukraine" newspaper, I understood that evacuation was performed at the proper time.*

The attorney for Diatlov *—When did you see Diatlov?*

Bruchanov *— I saw him in the underground shelter about 6 o'clock in the morning. I asked him: "What happened?" He shrugged his shoulders and replied: "I don't know how to explain it". Then he handed me records from four continuous recorders. Then I told him to go to the hospital.*

The attorney for Diatlov *—How Diatlov looked?*

Bruchanov *— He was pale. He felt sick.*

The attorney for Kovalenko *— Was the test program experimental or general?*

Bruchanov *— Rather general, I think.*

Kovalenko *— Were the power-units and Ch NPP highly explosive? Which documents regulate it?*

Bruchanov *— The answer is expounded in the case papers.*

The attorney for Rogozkin *— Who had to inform you about accident?*

Bruchanov *— The telephone operator and the station shift supervisor.*

The chairman *— Rogozkin, do you have a question to Bruchanov?*

Rogozkin — *No, I don't.*

The attorney for Laushkin *— Did the inspector of Gosatomenergonadzor participate the working meeting on the 25 of April?*

Bruchanov *— No.*

The attorney for Laushkin *— Did you receive directions from Laushkin?*

Bruchanov *— I dealt with Frolovsky and Elagina.*

The attorney for Laushkin *— Did you receive directions from the Gosatomenergonadzor?*

Bruchanov *— Yes, I did. I received them often.*

The attorney for Laushkin *— Did Laushkin take a part in investigations of the accidents?*

Bruchanov *— His name was in reports, but I don't know for sure.*

The chairman *— Laushkin, do you have a question to Bruchanov?*

Laushkin — *No, I don't have any.*

The chairman *— Bruchanov, after the charge was brought against you, we asked you: "Do you plead guilty?" And you said yes. And now you are telling us that you're not guilty.*

Bruchanov *— I am guilty of negligence on my part, as a manager. But as to these charge counts, I don't understand them.*

The chairman *— Not you're telling us that everything was fine, you did everything properly, that is, you don't plead guilty. You had difficulties with plant simulator, you didn't know about test program, and you signed the acceptance certificate of the power-unit being unaware that the test program was not executed. Define you guilt as you perceive it? We want to know your position.*

Bruchanov *— I am guilty of defects, dereliction of duty.*

The chairman *— Define exactly, what were your errors?*

Bruchanov *— The answer is in the case documents.*

The chairman *— You were questioned by the expert about the test program. From your point of view, what violations in testing were committed by the personnel?*

Bruchanov *— Disagreements. Switching four MCPs (main coolant pumps) into the cooling system on each side. It is unclear, how to dump the redundant steam.*

The public prosecutor — *The program was approved while you were managing the Ch NPP. You just enumerated all its shortfalls. How on earth the program was approved?*

Bruchanov *— It is uneasy for me to answer this question. I knew that the* ***chief engineer of the station*** *was a very exacting and qualified engineer.*

The chairman — *Who was responsible for security management in the Ch NPP and for other subjects of safety engineering?*

Bruchanov *— A director provides general management.*

The chairman — *As far as I understand, general management is closely coupled with general supervision, isn't it?*

Bruchanov *— I can't deny it.*

The public prosecutor — *You are familiar with the facts of the case. Do you have any remarks as to how the testing program was executed?*

Bruchanov *— The low power level, 200 MW (thermal) instead of 700-1000 MW (thermal), insufficient effective equivalent (1.9 rods MC at the moment of the accident). Besides, the reactor power dropped down to zero point (Toptunov). Why did they switch additional pumps into the cooling circuit, I don't understand. Furthermore, since they rescheduled the test, they should have activated the emergency core cooling system.*

The chairman — *It was during the April 25. What about the April 26?*

Bruchanov *— After the reactor power dropped down to zero, they should have conducted the reactor through the . And they shouldn't have inactivated the emergency protection system AZ-5.*

The chairman — *Can you explain why your personnel committed these violations? You promoted Fomin, Diatlov, didn't you?*

Bruchanov keeps silence.

The chairman — *Were they rewarded for introduction of new equipment? Did they receive bonuses?*

Bruchanov *— I can't remember now.*

The public prosecutors *— You used to say that training of personnel was provided properly but, on the other hand, you have given negative characteristic as for activities of personnel. How can you explain it?*

Bruchanov *— To all appearance, these were my faults.*

The public prosecutors *— Insufficient competence of personnel was mentioned in reports on repeated occasions. Is that true?*

Bruchanov *— It's probably true.*

The public prosecutors *— The experts assert that measures taken to eliminate drawbacks were insufficient and formal. The real situation didn't change and violations of engineering process continued. Why didn't you take effective measures?*

Bruchanov *— We pressed all our efforts towards extirpation of drawbacks, but we couldn't do everything in proper time.*

The public prosecutors *— Shouldn't you have had a teaching and training council to deal with training of personnel.*

Bruchanov *— I don't know.*

The public prosecutors *— You have no idea of many things we asked about. Tell us, did you feel yourself competence in the capacity of the director?*

Bruchanov *— Absolutely.*

The chairman — *Evidently this self-reliance put you on the spot.*

The chairman — *Shouldn't you have had trainer-simulators?*

Bruchanov *—No simulators were planned in the project of Ch NPP.*

The chairman — *When did you learn that the level of radiation excided 200 roentgens per hour? Indictment says you were informed about three o'clock in the morning. Do you confirm this fact?*

Bruchanov *— I do confirm.*

The chairman — *What time did you sign the report to the Party Committee?*

Bruchanov *— About 11:00 am.*

The chairman *— Why didn't you report about true rate of radiation?*

Bruchanov *— I didn't think of it when I was signing the report.*

The public prosecutor *— Did you trust information collected by Vorobiev and Soloviev?*

Bruchanov *— I did.*

The public prosecutor *— Then why did you prohibit them to publish this information.*

Bruchanov *— There were many calls from different people. I wanted to prevent unqualified interpretation of the information.*

The public prosecutor *— Vorobyev and Solovyev, the engineers, testified that you didn't want to listen to them. How can you explain it?*

Bruchanov *— I told them to keep in touch with the* ***staff of Civil Defense****. Not to call to other organizations.*

The assessor *— How did you control implementation of your orders?*

Bruchanov *— By means of the MIMAS (Measures Implementation Monitoring Automatic System). Besides, at the end of each month the heads of departments made reports.*

The assessor *— Who is guilty of the disaster from your point of view?*

Bruchanov *— This will be decision of the court.*

The public prosecutor *— Do you believe that you're guilty of the accident?*

Bruchanov *— I believe the operating shift is guilty. Rogozin, Diatlov, and Fomin personally.*

The assessor *— What about you, as a chief manager?*

Bruchanov *— Me, too.*

The assessor *— Did you have a system of radiation registering sensors in the NPP?*

Bruchanov *— Yes, the system named "GORBACH".*

The assessor *— Did any of the monitoring instruments register levels of* ***exposure dose of radiation*** *higher then 200 roentgens per hour?*

Bruchanov *— Only the equipment installed within the NPP. In the city and in the plant site the laboratory of external dosimetry worked.*

The assessor *— What kind of registering system should have been deployed all around the region?*

Bruchanov *— I believe it was not needed. This would be very expensive.*

The assessor *— You knew the truth about radiation. Many human sacrifices weigh on your conscience. Why didn't you command to evacuate people from the station at least?*

Bruchanov *— I couldn't deal with personnel evacuation in isolation from evacuation of the city.*

The public prosecutor *— Everyone was waiting for a signal from you while you were waiting a signal from others.*

Bruchanov *— I had no means to accomplish it.*

The attorney — Would the accident happen if the program was executed properly?

Bruchanov *— No, it wouldn't.*

(interruption 16:30 – 16:45)

<…>

WITNESS EVIDENCES

11. 06. 87

Session 5

Tregub U. U. (the unit shift supervisor) [1]:

- The engineers of different department started to gather at the control board-4 about midnight on the April 26. Palamarchuk and Shashenok of the Chernobyl commissioning enterprise approached. Kabanov of the turbine plant, Metlenko of the Dontechenergo, came. I also saw Kudriavtsev, Proskuriakov, Kirshenbaum, Toptunov, and Stoliarchuk there. Orlenko and the deputy chief of the electrical department were also requested to come.

I took a place at the turbine control board next to the panel of the turbo-generator-8.

About 0:05 – 0:15 I heard a conversation between Akimov and Diatlov. The point was in that Diatlov suggested operating the reactor at 200 MW (thermal). Akimov protested against it holding the program specification in his hand, argued (as I could judge from his look). That is why I thought that decreasing of power level was made by Diatlov command though I did not hear his order explicitly. Then I heard a signal warning of decreasing the feeding water flow. This signal put me in guard and I came nearer to the reactor operator. Then I heard how Akimov commanded: "Hold the power level, hold the power level!".

Toptunov actually failed to hold the power in transition from automatic to manual control. I heard it. But later he made right steps to increase a power level. Akimov helped him. The chief engineer of reactor control was mainly busy with rods. Actually, the modular control board was very big and inconvenient to work with. Withdrawing the rods required special care and attention. Absorbents should be drawn out with the same rate. I told Toptunov witch of the rods to withdraw better. He did as he knew.

I noticed Diatlov was staying behind us. When the power level was maintained at 200 MW (thermal), I stepped back to the turbine control board. Last time when I looked at the power density distribution map, about half of the rods were draw out entirely and the others were withdrawn partly (about two meters). So the effective equivalent was about 19 control rods inserted into the core.

The automatic protecting system AZ-5 was blocked in my presence. I saw how quickly the emergency button AZ-5 was mounted. I saw Metlenko with a handset.

The chairman *— Who deactivated the emergency protecting system?*

Tregub *— Such a command is usually issued by the unit shift supervisor. But permission of the station shift supervisor is required. I don't know how the command was received in that case.*

Diatlov *— Must a unit shift supervisor obtain a permission if inactivation of the protecting system conducted according to the Regulations?*

Tregub *— Inactivation of some of the protecting systems requires a special permission to be obtained.*

The public prosecutor *— It follows from what you said that Akimov received a command from Diatlov to maintain the power level at 200 MW (thermal).*

Tregub keeps silence.

The public prosecutor *— Read out the confrontation protocol. (The confrontation protocol is being read).*

U. Tregub answers a similar question:

"I finished my work at midnight. At 00:15 I stood near the Akimov's desk. Diatlov commanded to decrease a power level down to 200 MW (thermal). Akimov protested against it."

The chairman *— Is this correct?*

Tregub *— Yes. It was at the latest 00:15.*

The chairman *— Where Diatlov stood when fall in power occurred?*

Tregub *— I saw him staying next to me when it happened.*

The chairman *— Who gave a command to shut down the reactor?*

Tregub *— I heard how Akimov commanded: "Operator, shut-down the reactor!" I also heard how the operator answered: "The reactor has shut down". But this happened after the experiment.*

(Rest from 14:00 to 15:00)

M. Lutov is questioned by the court [2]:

The expert *— Had calculations been made for reactivity proving the beginning of the test at most favorable moment? Had a calculation been made for dynamic of reactivity under decreasing of power level from 1600 to 200 MW (thermal)?*

Lutov *— Apparently the schedule had not been considered well.*

The expert *— What is bad in 200 MW (thermal) in comparison with 700 MW (thermal)?*

Lutov *— The positive void coefficient becomes greatly apparent at 200 MW (t).*

The expert *— Did you know that a run-down test for TG-8 had been planned?*

Lutov *— No, I did not. I was informed only about the shut-down. I had learned about the experiment from Kovalenko after the disaster.*

The expert *— Did you receive a command to conceal from public the results of spectrometric rapid analysis obtained by your engineers?*

Lutov *— No, I did not.*

The layer for Bruchanov *— What duties did you carry out according to the plan of civil defense?*

Lutov *— The chief of the spare (field) staff.*

Bruchanov *— Who approved the first criticality program?*

Lutov *— The head of the State commission.*

Bruchanov *— Who examined the personnel before the first criticality?*

Lutov *— The commission guided by NIKIET.*

Bruchanov *— Did you have any additional duties in the staff of civil defense?*

Lutov *— No, I did not.*

Bruchanov *— I entrusted you with the task to investigate why releases into the atmosphere occurred during shut-down of unit-3 and unit-4 even when the activity suppression system worked.*

Lutov *— No, I can't remember.*

The attorney for Fomin *— Why a representative of the nuclear safety department was not present at program execution?*

Lutov *— I approved no program so did the nuclear safety department.*

Fomin *— Who of the Ch NPP management was responsible for nuclear safety?*

Lutov *— I was.*

Fomin *— Did you learn and approve the schedule of shut-down on the April 25, where all of the experiments were listed?*

Lutov *— I can't remember exactly. Perhaps, yes. But the electrical department was set as a responsible party.*

Fomin *— In 1985 when you were in capacity of the chief engineer of the station, you approved a program without obtaining an approval from the nuclear safety department.*

Lutov *— Yes. I had a right to do it because I also held a position of the chief engineer for science. Besides, that time the program was executed after a scheduled preventive repair, with a great reserve of the operative reactivity margin.*

Fomin *— The power-unit shut-down procedure took more then 24 hours. Why nobody of the nuclear safety department came?*

Lutov *— Engineer Chernyshev was there at the beginning, then he's gone. He should have been called for a night shift.*

Fomin *— Why special invitation? There is an order. The engineer in rest has to call and ask what time he should arrive.*

Diatlov *— The Operating policy requires the chief of the nuclear safety department or his deputy to be presented at launch or shut-down of reactor.*

Lutov *— I did not know about it.*

(For some time the court is busy with clarification whether or not such an order was issued. It was proved that the order was really issued).

Fomin *— I just want to show that on the April 26 the nuclear safety department did nothing special to provide safety.*

Diatlov *— Were you a member of the first criticality commission?*

Lutov *— Yes.*

Diatlov *— How come the first criticality commission approved putting into operation the power-unit while insertion of some of the rods showed positive reactivity and insertion of the other rods showed zero reactivity (15-17 control rods)?*

Lutov — *The effects were estimated. Those could be neglected.*

Diatlov *— Who allowed application of these results for burn-out core?*

Lutov — *The only reason of accident was deviation in program execution:*

- *insufficient effective equivalent;*

- low rate of feeding water flow;

- high rate of water flow in the circuit of forced multiply circulation.

Diatlov *— Did you explained to the personnel how dangerous these were?*

Lutov keeps silence.

The attorney for Rogozkin *— Did you know on the April 25 that the effective equivalent was fewer then 15 control rods?*

Lutov *— Now I know, but on the April 25 I did not.*

The attorney for Laushkin *— Did you receive instructions from Laushkin?*

Lutov *— Yes, I did.*

The attorney for Laushkin *— Were there essential ones among them?*

Lutov *— Yes.*

The attorney for Laushkin *— Did Laushkin control implementation of his instructions?*

Lutov *— Yes, he did.*

The expert *— According to the director's order you has been appointed commander of the design-analytical group. What did you do exactly?*

Lutov *— I gathered engineers and entrusted them with tasks. We estimated the depthof the power-unit-4 subcritical state, and so on.*

Lisyuk Grigory Vasilievich *(born in 1949).*

- Before the accident I worked as a senior foreman of the electrical department. I became acknowledged with the program draft one week before execution. I was to provide duplication for one of the output of the ***design basic accident unit****. Our equipment was switched into the circuit at the end of the April 24.*

During preparation for the test on the April 26 I stayed some distance away and watched. Then the instruction was provided. As far as I understood Metlenko, the command "Oscillographs - go" should have preceded the command "Press the ***emergency button AZ-5"****. Actually, he gave only one command. Then he looked at me saying no words. I waited for a while and pressed. The delay was as long as 1-3 seconds. This was registered by the oscillograph.*

Then I heard a calm conversation about shutting-down. In a little while the senior engineer of reactor control exclaimed that reactor power was rising rapidly. Akimov gave a command : "AZ-5". He tore down a paper label from one of the button and either he or Toptunov pressed the button. An explosion occurred. The sound of the explosion was heard during 1-3 seconds. Then I saw Diatlov approaching the center of the modular control board. He commanded everybody to go to the spare control board. Nobody moved. Akimov exclaimed: "Diesels!" and started to switch on the cooling pumps of emergency and non-emergency systems.

There were reports about fire in the turbine hall, feeding pump area, and other places. Akimov attempted to call for firefighters but telephone line was damaged.

One thing more. A meter man blocked an exit of the administrative office-2. About 40 or 50 people were inside. He told us that the level of radiation outside was up to 40 thousand betta-particles.

The chairman *— Give us more specific information about the situation before program execution.*

Lisyuk *— Some nervousness was seen in connection with vibration tests.*

The chairman *— Did Akimov gave a command "Press the AZ-5 button" before or after the explosion?*

Lisyuk *— Before the explosion.*

The public prosecutor *— Did you hear exclamation "reactor power was rising rapidly" before the AZ-5 button was pressed?*

Lisyuk *— Yes.*

Diatlov *— Where did Akimov stay after the emergency regulating valves was closed but before AZ-5 button was pressed?*

Lisyuk *— I did not see him during this period.*

Rogozkin *— When did you leave the control board?*

Lisyuk *— In 5 or 10 minutes.*

Rogozkin *— Did you hear emergency notification?*

Lisyuk *— Somewhere in the transition gallery I heard "Emergency situation in the power-unit-4".*

The chairman *— Who coordinated execution of all tests?*

Lisyuk *— Metlenko was the technical manager. He worked in contact with Diatlov all the time (word-for-word N.K).*

The chairman *— Did Diatlov stay at the modular control board all the time?*

Lisyuk *— For some time he was absent. I can't remember how long.*

The chairman *— What do you know about radiation levels?*

Lisyuk *— I know that levels were high. Meter men said that situation was dangerous.*

Sergey Gazin *(born in 1958) worked as a senior engineer of turbine control from 1982*

- On the April 25 I worked from 16:00 to 24:00. After shift changing I stayed to watch the experiment. We stayed there as observers.

About one o'clock in the morning I noticed that something wrong happened with the reactor. It was obvious that the reactor was losing its power. At first, operator Toptunov tried to increase the power level on his own. He pressed buttons very quickly. In a while engineers gathered at the control board.

The pressure in drum-separators decreased, one by one the pressure regulators closed. In a while the turbo-generator started to rotate and produce electricity. Then two additional circulating pumps were switched into the cooling system.

The actual rundown test began. The ***emergency button*** *was intended to imitate the emergency situation.*

Site briefing was provided. Metlenko announced commands which he was going to give. As far as I understood him, the ***emergency button*** *should have been pressed with a command "Start" and then the reactor should have been shut-down. Later I learned that the reactor was shut-down by AZ-5 button instead of* ***emergency button****, and it happened after closing of the emergency regulating valves.*

I kept thinking about slowing of turbo-generator rotation after closing of the emergency regulating valves. First strike occurred when rotation rate was 2400 revolutions per minute. The strike was strong. I took a look at the reactor operator's control board. Toptunov was telling something to Akimov. Then I heard Akimov commanded: "muff power supply".

The signal of losing water in pressure basin was received from unit-3.

As to radiation situation. Samoilenko said that the dose rate exceeded 1000 micro roentgens per second.

***The chairman** — Did you observe decreasing in power at the beginning of the shift?*

***Gazin** — Yes, I did.*

***The chairman** — Can you give us more precise information?*

***Gazin** — During decreasing of power level Akimov, Diatlov and Tregub approached Toptunov and helped him. The power almost dropped to zero. Then it rose up to 200 MW (thermal).*

***The public prosecutor** — You said that you observed opening of main safety valves before the accident.*

***Gazin** — I did not see it for myself. Stoliarchuk told me.*

***The expert** — What did Kirshenbaum do while you were staying next to him?*

***Gazin** — He was busy with maintaining of pressure in the circuit of forced multiply circulation.*

***Expert Martinovchenko** — Who guided the experiment?*

***Gazin** — Most critical points in the program were defined by Metlenko. Diatlov also took a part.*

***The expert** — When did you leave the power-unit?*

***Gazin** — We stayed outside the unit during two hours, then we moved to the administrative office-1. We stayed there for 40 minutes, moved to the underground shelter and then left the station for home.*

***Fomin** — Could you manage 50 MW (electrical) in the Turbo-generator-8 if the reactor power would be maintained at 700-1000 MW (thermal)?*

***Gazin** — Of course. We could dump redundant steam into turbine condensers through the steam dumping system.*

***The attorney for Diatlov** — Which of Diatlov's commands you can remember?*

***Gazin** — I can remember only one command he gave – "switch additional circulating pumps into the cooling system."*

The attorney for Rogozkin *— Can you remember switching of emergency illumination?*

Gazin *— Yes. Emergency illumination was turned on after switching on the cooling pumps of emergency and non-emergency systems (though manual controls were locked).*

Vladimir Babichev *(born in 1939, the shift supervisor of power-unit-4)*

In the morning of the April 26 I was awaked by telephone ring. It was 4:45 A.M. I was informed about the accident. I telephoned Rogozkin, the station shift supervisor and he told me that a bus to the station will leave the city bus stop at 5:15.

When we were approaching the Ch NPP, outlines of the unit-4 seemed indistinct. At the bottom level some illumination was seen.

I found Diatlov in the underground shelter. He ordered to substitute Akimov, the unit shift supervisor. He also wanted me to switch additional couple cooling pumps of non-emergency system. On the way to the unit, I met Krasnogen, the chief of accident prevention and labor protection department. He told me nothing about danger.

At the modular control board I saw Fomin, Sitnikov, Chugunov, Orlov, Akimov, Toptunov, unit and turbine operators. Akimov was reporting Fomin about what happened. Then they discussed how to provide the core with water to cool it down. Fomin was of opinion that feeding the core with water was an essential task.

At 6:00 o'clock I said to Akimov: "You may go. Let's make an entry in the log". Actually, we could not find the log.

Some time later Lutov arrived and confirmed that the core must be fed with water. Fomin made the same orders. Several times Lutov and I visited the spare control board to observe the unit.

At 7:30 Smagin arrived. He and I considered whether feeding the core with water was really needed. As far as we had no other orders, we decided to continue this without doubts.

I also examined the reactor hall with Kovalenko of reactor-hall-2. Even possibility of reactor destruction frightened us, nevertheless this had happened.

At 11:30 Vodolazko called and ordered me to go and provide forming of personnel groups.

I did not learn the program specification.

The public prosecutor *— Was it right decision to flood the core with water?*

Babichev *— I don't know exactly. I can ask you in the same way, was it right to throw lead on the damaged core.*

The public prosecutor *— Did Rogozkin coordinate activities of the shift personnel?*

Babichev *— I did my work without contact with him.*

A. Uvchenko (the senior mechanical engineer of reactor hall-2)

I was in the mechanic's room when explosions occurred. It seemed to me that the explosive force caused one meter thick walls to bend. The door was thrown out by blast wave. The telephone line was damaged. In some time we received a signal from unit-3. They asked for stretcher to evacuate a wounded person. I ran out to corridor and saw Degtiarenko there. I hardly recognized him – he was burnt with steam. He told me that operator Hodemchuk had left at the main circulating pump.

We rushed to find him. The left hand of the forced multiply circulation system was almost untouched. However, the right hand of the system was entirely destroyed. I saw Rusanovsky there. He was in shock. He pointed at a collapse and repeatedly said: "Valery Hodemchuk is there!". The main circulating pumps collapsed down into a hole.

I saw a meter man with a respirator on his face. He mumbled that all measuring devises were overswinging.

The chairman *— How happened that Degtiarnko got burns?*

Uvchenko *— He and I had been in the hospital for almost a year. We should have been notified before switching of main circulating pumps. Akimov gave a command. Hodemchuk and Degtiarenko were staying at the main circulating pumps. I did not know about switching on additional pumps. Akimov gave a command to operators but the operators did not report to their chiefs.*

Extract from the book "Chernobyl. How it happened. A view from inside"

(A. Vozniak, C. Troitsky. Moskow, LIBRIS, 1993)

Orlenko *(the shift supervisor of the electrical department)*

My task during the experiment was to observe deviations in the electric field of rotor. I was looking at the ammeter when I noticed that frequency started to decrease. Approximately in 30 seconds the vibration began.

Turbine engineers needed some extra time. They did not complete their measurements. Either Akimov or Diatlov had a conversation with Davletbaev. They discussed ways to finish vibration tests before shut-down of the reactor.

R. Davletbaev *(the deputy chief of turbine hall):*

- Diatlov was at the control board when a drop in reactor power occurred. As a representative of the turbine department I stayed there to provide help for engineers of Kcharkov turbine plant. They wanted to measure vibration levels during run-down. The permission from Diatlov was obtained. I know that a drop in power level occurred, but it then had been increased in order to complete the tests... And one more thing I have to tell. At the control board before program execution some nervousness was seen. Diatlov repeatedly told Akimov: "Do not procrastinate".

A. Kabanov *(engineer of Kcharkov turbine plant):*

By 15:00 on the April 25 everything was ready to carry out tests. We had to check vibration at different rotation rate of a turbine. Engineers of Dontechenergo were preparing to their tests. Their activities did not hinder us from our work.

Witness G. Dik, *the station shift supervisor:*

A local critical mass created in the reactor caused fast-neutron excursion of the reactor. The fuel channel damaged. Hot vapor filled the core and blew up the scheme "E" (a top plate of the reactor). After that a hydrogen explosion occurred. The Government commission came to conclusion that the accident was a result of personnel fault. I don't agree with it...

The chairman *(interrupting):*

You were requested to come here not as an expert in Government commission conclusions.

The witness *(switches to another subject but then returns back):*

- The reactor was prepared for explosion by previous operation period. I believe the personnel couldn't know that operation at low power level shifts a reactor into nuclear hazardous condition. It was not mentioned in the regulations that working with the effective equivalent fewer then 15 control rods shifts a reactor into nuclear hazardous condition.

We thought that reactor physics was safe. Nobody knew that operation at low power level was dangerous. If one knows nothing about dangerous, he will carry out a program up to the end.

The public prosecutor:

Was it specified in the regulations that reactor must be shut-down if the effective equivalent fewer then 15 control rods registered?

The witness:

- I have forgotten the old regulation and have not learner the new one issued after the accident.

The public prosecutor:

What a training! (astonishing)

The expert:

You said that a local critical mass was created in the core. Do you know any facts proving it?

Witness Dik:

- The RBMK-type reactor was designed with violations of nuclear safety requirements. It has positive void coefficient which caused reactor power excursion. The positive void coefficient is a mistake of the design.

The expert:

- Would a critical mass be created If the local automatic regulators (LARs) worked properly.

The witness:

That's neither here not there. The LARs are located above the core. The steam effect was always in the reactor. But when the rods were moving down, they shifted a neutron field and critical mass was created at the bottom.

Witness I. Kazachkov, *the former unit-4 shift supervisor:*

- We did not know that operation with the effective equivalent fewer then 15 control rods shifts a reactor into nuclear hazardous condition.

The public prosecutor:

Would the accident happen if the personnel followed the instructions of regulations?

The witness:

- Apparently yes. The reactor could explore even if all the requirements were met. This is because positive void coefficient. Even damage of the circuit could lead to explosion.

The expert:

Can you say that investigation of the accident have exposed origins completely?

The witness:

- Actually, the investigation has been carried out but the matter has not been cleared up. I believe that a reactor of such type should have exploded sooner or later. This is a volumetric-positive reactor type that never been used in the world.

The chairman:

- But this reactor had worked for many years.

The witness:

Additional measures have been provided by now. The positive void coefficient has been decreased... Until recently the possibility of explosion in Ch NPP, Smolensk NPP, Kursk NPP and Leningrad NPP existed all the time because of positive void coefficient.

Witness S. Parashin, *the former secretary of party committee in the Ch NPP:*

I have a feeling that all foreign media will report and all soviet community will learn that the accident happened as a consequence of mistake committed by personnel. Of course, the personnel are guilty of the disaster but not in the scope defined by the court. We worked with nuclear hazardous reactors. We had no idea that the reactors were highly explosive.

G. Reyhtman, *the former shift supervisor of the reactor hall-2.*

- Let me tell you what my first impression was about the RBMK-type reactors when I arrived to the Ch NPP. Theretofore I worked with other different nuclear installations...

The chairman *(interrupting):*

- We are not interested in your impression about the RBMK.

G. Reyhtman *(for some time tells about other things but then switches to the matter):*

- The most dangerous feature of the RBMK-type reactor is nuclear hazardous. In the preliminary investigation I pointed out six reasons which could lead to catastrophe.

Witness A. Kriat *(the head of the nuclear-physical laboratory in the Ch NPP):*

I became acquainted with the schedule of reactor discharge and power level decreasing from 1600 MW to 300-200 MW (thermal). This was a draft document. I said that I would not approve the level of 300-200 MW (thermal). 1000-700 MW (thermal) was required because operation of the reactor at less then 700 MW (thermal) leads to loss of reactivity. This mode is also inadmissible for the PRIZMA system intended to control a reactor physical condition. I raised my voice against this in the work meeting guided by Diatlov. I said that operation at 200 MW (thermal) leads to loss of control.

We issued the instruction for training of reactor control senior engineers. The 120-130 pages document was intended for one month course with final examination. This instruction tells a lot about reactivity.

Defendant A. Kovalenko:

- Then why the nuclear safety department did not include instructions into the regulations which show how it dangerous to operate the reactor with low reactivity?

A. Kriat:

- Apparently, this was a mistake of all our science. The latest instructions specify that working with less then 30 control rods switches a reactor to nuclear hazardous condition. Unfortunately, the reactor had such features that an explosion should have happened sooner or later.

The witness N. Shteinberg, *the former station chief engineer (after the accident the deputy head of Gosatomenergonadzor of the USSR):*

- We knew that we dealt with reactor designed with drawbacks. We had learned how to control the reactor and adapted ourselves to intricacy and unpleasantness of control. But we did not know that some of operation modes had never been learned out and proved to be safe.

Advocate:

Did the reactors of such type have design lacks?

N. Shteinberg:

- Yes.

***The attorney for Bruchanov** — What do you think of Bruchanov as a director [2]?*

***N. Shteinberg** — He is a great engineer. I really mean it.*

***Witness N. Karpan,** the deputy chief engineer of the Ch NPP [2].*

***The chairman** — How and when did you learn about the accident?*

***N. Karpan** — During a week before the accident I was on my business trip in Moscow. The goal of my mission was to coordinate a creation of spare control board for the first-stage power units. I returned back in the morning of April 25. I made a phone call to Gobov Alexander, my chief (the nuclear safety department), and asked him if I had to go to work. He told me that experiments in unit-4 would be completed during a daytime on the April 25. The shut down of the reactor would be executed in presence of physicist A. Chernyshov, our engineer.*

I spent all day (April 25) at home with my son (3 year old) and my daughter (1 year old). At 4 o'clock in the morning my sister in law, lived in Chernobyl, telephoned. According to her words, two of her neighbors arrived from the Chernobyl NPP (night shift) and roused all house. They worked at the station site and saw the explosion. Immediately I dialed numbers of the unit-4. Nobody answered. Yuri Bagdasarov, the unit-3 shift supervisor could tell me that accident happened and unit-4 no more existed. Konstantin Rudia, the unit-2 reactor operator even told me his own opinion about origins of the accident. He thought that thermal explosion occurred because of fast neutron reactor runaway in connection with a steam effect.

I took my bicycle (I had no other transportation) and went to work. I could not manage my way to the station directly. Militia check points were already on the roads. They prevented everybody from going to the station.

I returned back to home and started to dial numbers of station management. To my astonishment, A. Gobov, the chief of nuclear safety department, was at his home. He and A. Kriat, the head of the nuclear physical laboratory were not even informed about the accident. I came to Gobov and we managed to telephone Bruchanov, the director. He had already sent a car for Alexandrov, the chief of Chernobyl commissioning enterprise. So, we were picked up. On the way to the station we picked up A. Kriat. In that way the four of us arrived to the Ch. NPP at eight o'clock in the morning. Then we went to the underground shelter where the civil defense staff was located. All the station management was there — the director, the chief engineer, the secretary of party organization, the deputy chief engineer for science and managers of different departments.

***The chairman** — What did you learn about the accident when you arrived to the station?*

***N. Karpan** — The station management provided us neither with technical information about the accident nor with information about radiation situation. We had learned only what was obvious — collapse of the unit-4 central hall. We did not obtain any information from reports of people who had been in damaged unit-4.*

Vitaly Perminov, the head of spectrometry laboratory of nuclear safety department arrived to the station with a morning shift to take samples of water and smears of falls for

spectrometric analysis. Only by midnight he had given us some information. The spectrometric analysis showed that specimens contained fission products of nuclear fuel and 17 percents of activity was contributed by neptunium, which unambiguously proved damage of the core and release of radioactivity into the atmosphere. All samples contained particles of nuclear fuel. The activity of water flowing from the unit-4 was 10^{-3} curies per liter. The results of spectrometric analysis were reported to Lutov, Bruchanov and Parashin.

Radioactive water made a great harm to people who had a contact with it. Some people were not provided with information about radioactivity and they were not given a chance to take a shower and change their clothes, so they were doomed to radiation burn and acute radiation syndrome.

***The chairman** — What kind of tasks you were entrusted with and what did you do exactly on the April 26?*

***N. Karpan** — I wouldn't enumerate all the tasks I was entrusted with that morning. If I had done everything blindly, I would not have survived.*

The essential two tasks were:

- *Estimate, whether or not the air-cooling was enough (as long as the core was collapsed and we did not know whether the core was reached by cooling water) to cool-down the core without additional damage of fuel assemblies due to residual heat-segregation of a fuel;*

- *Estimate of reactor subcritical condition.*

With Anatoly Kriat (the head of nuclear-physical laboratory of nuclear safety department) I entered the contamination control area. To calculate the air-cooling impact on the RBMK reactor we needed some design procedure documents. On the way to our office we stopped by the control boards in order to get more precise information about the accident from the shift staff. By that time they had already knew that the rods of the control and protecting system did not reach their bottom ends.

Having returned to the administrative office, we proceeded to calculations. It was obvious that there was no point to feed the core with water. In six hours after the accident the air-cooling was quite enough to prevent subsequent damage of fuel assemblies due to residual heat-segregation.

The calculations we made showed that by 19:00 o'clock we could expect emerging of a chain reaction and resumption of fire because of iodine and xenon poisoning. The likelihood of consecutive chain reaction was 100 % because the control roads did not reach their bottom ends and the reactor was loaded with 50 critical masses.

My report to Fomin, the chief engineer, and Lutov, his deputy, was short:

- *feeding the reactor with water must be stopped, because in 6 hours after shut-down the air-cooling is enough, taking into account that the core is opened;*

- *approximately by 19:00 the reactor will be poisoned, hence emergency measures are required to complete shut-down. This operation could be done with boron. We need at least*

one ton of boric acid dissolved in water. The core should be fed with this solution through fire-hoses (using hydraulic motor of fire engine);

- *we need a helicopter. The station photographer should take photos of damaged reactor from a helicopter. This will help us to understand the scale of destruction;*

- *an armored car is needed to create a radiation measuring mobile station which will be used to register rates of gamma, beta and neutron radiation in several reference points near the unit-4. This will let us estimate the accident progression rate during reactor poisoning process, register the rate and direction of radiation propagation in time. This objective information is needed to make a decision whether evacuation of Pripyat town is required.*

After reporting I took a radiation estimator DP-5 and started to examine the unit-4 by myself. I passed around the unit. From the north-side I saw damaged premises of drum-separators, broken pipes from which water flew out. This water apparently did not reach the core of the reactor. The rate of gamma-radiation in 35-40 meters from the unit measured in the morning of April 26 did not exceed 50 roentgens per hour. In the turbine hall I passed up to the 8-th turbine. Between the 7-th and 8-th turbines I registered level of 50-70 roentgens per hour. At the turbo-generator-8 the level of radiation was up to 200 roentgens per hour. I did not encounter graphite or parts of fuel assembly. There were only pieces of ceiling panels, soot, fly ash, and so on.

To be sure that the control rods were inserted partly into the core, I went to the modular control board-4. I did everything quickly so I did not write down readings of the synchro-indicators. That very day all of instrumentation indications were recorded by Eduard Petrenko, the senior engineer of the thermal automatic and measuring department. Using this information Kriat and I made a new report in which we showed catastrophic accident progression if the suggested measures to complete the reactor shut-down would not be provided. The critical layer in the reactor was less then 1 meter high, hence the lower part of the core (not reached by the control rods), contained approximately 7 critical mass, had become a delayed-action bomb.

During the all day Kriat, Gobov and I repeatedly told Lutov and Fomin about this danger. Bruchanov was also informed through S. Parashin, the secretary of party committee. According to his words, the director had made a request for boric acid but it had not been delivered to the station by the end of the April 26.

What was done and what was not:

- The reactor was fed with water all day long at central directorate urgent request;

- Complete shut down of the reactor was not provided because boron-containing material was not delivered in time;

- I was on my duty in site when a helicopter arrived, so I was not taken on board. Polushkin K. of the NIKIET and station photographer Anatoly Rasskazov were requested for flying around the damaged reactor. Rasskazov took pictures of damaged unit this very day but we were not given a chance to see them;

- We were given an armored car. Every two hours together with Yuri Abramov, the shift supervisor of the accident prevention department, we moved around the unit measuring the radiation level in the same reference points. There were 5 or 6 such points. We had equipment to measure levels of gamma, beta and neutron radiation.

When we were moving around the unit we saw water flowing from damaged pipes. This water then became saturated with fission products and fuel particles and flew across the site to the other power-units thereby polluting different premises. The day-shift workers then pumped-out this water. During the April 26 about 10,000 m^3 of water was pumped into the reactor. The fact that this water did not reach the core was known to the station management. This was in reports of many people dealing with damage estimation, including U. Udin, the deputy head of the department of centralized maintenance, V. Babichev, the unit shift supervisor, V. Smagin, A. Kriat and the others.

The fuel had poisoned by estimated time. About 20:00 o'clock we registered emerging of fire inside the power-unit. At first the top of the unit was illuminated by ruby light, then sparks and flashes of fire started to burst from inside the unit. These sparks came irregularly and some of them achieved the top of the ventilation pipe. It seemed that they gained additional energy when coming out from the destroyed reactor (like water of geyser). We registered different levels of fire in different areas of the central hall. The sound of burning in different areas also differed in power and tone, from loud rumbling to thunder, like in a volcano. The fire was so powerful, that it could not be extinguished with human strength. It was not possible to approach the inflamed area and actually nobody attempted to extinguish it.

With fire beginning the release of radiation from the unit increased rapidly. We registered it in the reference points. It was about midnight when we made our last measuring of radiation (four hours before the fire). We registered more then 10 times increasing of gamma-radiation and for the first time Abramov registered neutrons at end points of our route, at the north side of the unit-4.

After measuring we used to return to the underground shelter where we reported to Bruchanov and Fomin. Then they called and reported to members of the Government commission in Pripyat.

About one o'clock in the morning we had finished our work and returned to Pripyat. All following days the engineers of our department were busy with switching all the reactors to nuclear safe condition. After work we returned back to our homes. These tasks had been done only by the May 4 and then we moved to the "Skazochny" camp.

***The chairman** — What position did you hold before the accident?*

***N. Karpan** — I worked in capacity of deputy head of the nuclear-physics laboratory in the nuclear safety department. At the time of the accident I fulfilled the duties of deputy head of physics department (he was on his vacation).*

The duties of the deputy head of the nuclear-physics laboratory were extensive but only in scope of reactor and nuclear safety systems. The main duties — nuclear fuel reloading (all calculations), monitoring of energy release in the reactor, providing nuclear safety in transition modes (when the power level is changed), carrying out experiments with a reactor in order to measure its physical characteristics.

***The chairman** — Have you ever registered incorrectness in function of the emergency protecting system or other deviations in reactor operation?*

***N. Karpan** — In 1983 while the unit-4 was putting into operation (first criticality) we registered introducing of positive reactivity during first seconds of control road inserting into the*

core. This fact was noted in the first criticality log of the unit. Such an effect could be obtained also in working reactor when distribution of neutron field in height is abnormal.

***The chairman** — These were experiments but I asked you about normal operation. Have you ever registered abnormal behavior of the automatic protection system?*

***N. Karpan** — We have never registered abnormal behavior of the automatic protection system while normal operation.*

***The public prosecutor** — Why the nuclear safety department did not prevent operation with the effective equivalent fewer then 15 control rods and why nobody of your department was on duty on the April 26?*

***N. Karpan** — There was a program for calculation of the operative reactivity margin (the effective equivalent) in the core according to deviation in the power level. We used this program in every test, choosing the optimal power deviation mode (in respect to core poisoning) in order to prevent operation with the effective equivalent fewer then 15 control rods. This task was carried out by physicists of the nuclear-physics laboratory working on a twenty-four hour basis until the entire shut down of the reactor. They always were on duty providing safety during shutdown for scheduled preventive repair and putting into operation after repair. On the April 25 Anatoly Chernyshev should have worked (a very experienced reactor operator in the past) and he was ready. But the shut-down of the reactor was rescheduled for the April 26. When Chernyshev called to the station on the April 25 he was said that all test-programs had been finished and he might not go to work. This proves that the program-managers did not provide us with exact information. Hence this question is not for me.*

***Diatlov** — Who is guilty of the accident - the shift personnel, the nuclear safety department or the reactor itself?*

***N. Karpan** — The RBMK - type reactor operated at low power level is as dangerous as a big jet flying at low altitude. This mode proved to be unreliable in control. Actually, operation of the reactor at low power level was not well investigated. I believe that personnel had no strong comprehension about dangerous of this operation mode. If everyone had followed the program instructions strictly, the accident would not have happened.*

EXPERT SPEECHES

The experts express their opinions about origins of the disaster (entirely from [1]).

What conclusions were presented to the court by highly-qualified experts? The experts confirmed the casual relationship between activities of the personnel and the accident. They also confirmed that the program did not provide for measures of nuclear safety.

All accusations brought against defendants were found reasonable. The serious finding was made: "The level of labor and technological discipline in the Chernobyl NPP did not meet demands made for NPP operation". Facts of hiding information about emerging shutdowns were confirmed.

One more very important conclusion: "When the power-unit-4 was putting into operation it was known that the design solution of run-down system had not been implemented. Hence, the power-unit should not have been put into operation."

At the same time the experts confirmed conclusions made by the Government commission about design shortfalls of RBMK-type reactors. Though it was said that if the reactor was operated properly, the accident would not happen.

The expert did not confirm one point in the conclusion of the Government commission which asserted that the power level of the reactor before the experiment dropped to 30-35 MW (thermal). Actually, the power level dropped to zero.

Very important conclusion of the experts was in that that RBMK-type reactor was not nuclear hazardous.

Witness K. Polushkin, *one of the designers of RBMK-1000, the representative of the NIKIET:*

- This reactor could be operated safely. But the operation has to be correct. The regulations say that the reactor has negative void coefficient as a rule. But in case of positive void coefficient, special measures should be provided. The emergency system provides safety operation. Inserting of AZ-control rods into the core provides safe shut-down of the reactor.

Diatlov:

- Which of the regulating documents describes measures needed in case of positive void coefficient?

Polushkin:

In the documents. All questions concerning positive void coefficient were considered in special calculations.

Rogozkin:

Why the effectiveness of the emergency system depends on the operative reactivity margin?

Polushkin:

- It is difficult to eliminate this dependence technically.

Rogozkin:

Who can answer whether or not the RBMK-type reactor was highly explosive?

Polushkin:

- The reactor was not highly explosive under correct operation.

Question of the court:

- Do the experts confirm conclusions about shortfalls of the reactor listed in the report of the Government commission?

Answer of the experts:

- The experts confirm existence of some shortfalls in the reactor design. First of all — the positive void coefficient. At the same time, it was not specified how personnel should have behaved in such a situation. Design deficiency of the control and protection system is confirmed. But these shortfalls could lead to the accident only along with mistakes made by operating personnel.

Question of the court:

- Was it safe to operate the reactor according to the operation regulations?

Answer of the experts:

- The operation regulations provided safety of reactor operation in all modes, including transferring modes. As to this very case, the accident happened because of the chain of mistakes made by personnel.

Question of the court:

Could the shortfalls of the reactor lead to the accident?

Answer of the experts:

The RBMK-type reactor is not nuclear hazardous while at least 15 control rods are inserted into the core. 30 control rods provide protection of the reactor from unauthorized activities of the personnel.

Question of the court:

Is the reactor safe in operation?

Answer of the experts:

26-30 control rods inserted into the core compensate the positive effective equivalent. The RBMK-type reactors could be referred to as safe.

Question of the court:

Why the designers of the RBMK did not issued a physic-technical justification of impossibility to operate the reactor at the power level lower then 750 MW (thermal) with less then 15 control rods in the core?

Answer of the experts:

- This justification was not needed otherwise the operating regulation would become inflated.

Question of the court:

Which of the regulating documents forbid withdrawing of the control rods from the core?

The main document specifying a minimum number of control rods in the core — "The standard technical regulation of RBMK operation". This tells that if the number of control rods in the core less then 15, the reactor should have been shut-down.

Question of Diatlov:

Did the reactor meet the requirements of nuclear safety?

Answer of the experts:

- Yes, All the design solutions provide protection against accidents. No nuclear power plant could foresee of what happened.

The civil defense expert, in the rank of colonel, came to his own conclusions [1]. He confirmed all the conclusions made by the Government commission in this case. He also noticed that after the disaster, the instructions and recommendations for personnel and community protection against radioactive emission were not implemented. He pointed out that the Chernobyl NPP had enough of radiation estimating devises and protection facilities in the storage. But these were not used to the right degree. Had the measures developed in advance for the station personnel and city citizens been implemented, they would have provided effective protection.

The expert was asked by the court with the following question:

- Should Bruchanov have evacuated the personnel out of the NPP, and their families out of the Pripiat city? The expert answered unambiguously:

- Yes, he should have to.

Bruchanov remarked:

- The situation with radiation in the Pripyat city did not require evacuation of its citizens.

PLEADING

23. 07. 1987

Yuri Shadrin, the government lawyer, took the floor (entirely from [1]). His speech was very hard, sometimes abruptly. In the beginning of his speech he said that the accident in the Ch NPP was most severe that ever happened. The behavior of Bruchanov, Fomin, Laushkin, could be referred to as "example of irresponsibility". The program, carried out in the night-time, was characterized as "dramatically incorrect in its design". The **emergency button AZ-5** installed before the test was called "self-made product".

Giving characteristics to individuals Shadrin said:

"**Toptunov** was not well trained. Very few reactor operators would commit such a drop in power".

Akimov — experienced engineer, but he was lenient and indecisive."

In regard to **Diatlov**: "experienced, but unorganized and careless. Harsh. Akimov was rather afraid of Diatlov". Conclusion: "Criminal self-activities of Diatlov". And again: "His fraud posed as scientific theory".

About **Rogozkin**: "His guilt is not in actions but rather in inaction". He is ill with the normative nihilism."

Accusation for the director: "There is no evidence to believe that Bruchanov did not know the truth about radiation". The final harsh statement: "All what had happened was a result of Bruchanov's moral fall as a manager and as an individual".

The next conclusion is very close to a previous one: "Diatlov thoughtlessly had broken canons and commandments of nuclear safety"

We have already noticed that accused denied relevancy of application of the Criminal Code clause - safety instructions violation in a highly explosive plant. At last, the government layer explains relevancy of this clause application. As it turned out, the corresponding definition of highly explosive plant was not in the documents intended for NPP engineers but in one of the resolutions of plenary session of the USSR Supreme Court.

Only one charge against Fomin was dismissed by Shadrin, (presently the deputy General prosecutor of the USSR). The former chief engineer was not accused in crime described in the clause 165 part 2 – "sending an official report to higher echelons with false information about radiation". Fomin had no deal with this report really.

Let's keep citing the speech of the accuser: "Someone had to stop uncontrolled experimentalists".

The prosecutor "stroked" hard, giving no chance for acquittal. At the same time he described the matter technically correctly and represented the chain of events in great detail. But this part of the matter we have already expounded. Now we are interested in emotional characteristic of the accusation.

In summary the prosecutor asked the court to assess the penalty for the accused. For Bruchanov, for example, he suggested punishment of 10 years in a general-security camp – according to the clause 220 part 2, and 5 years in a general-security camp – according to the clause 165. Accumulative sentence - 10 years in a general-security camp.

After such a severe accusation it was not easy for attorneys to do their job. We represent some fragments of their speeches.

The attorney for Bruchanov:

The attorney started his speech emphasizing on that it is difficult to provide protection from non-precise accusation. What was before the accident? The Chernobyl NPP was considered to be

one of the safest nuclear power plants. The station was examined many times and no inspector sounded the alarm about its operation.

Bruchanov personally did not commit violation of the nuclear safety regulations, though he did not provide proper management of the Ch NPP. Director's activities did not cause the accident. Bruchanov takes the blame upon himself as an honest man. Actually, Bruchanov did not participate in preparation and running of the experiment.

Bruchanov did not send people to extremely-dangerous area but instead he sent two managers to investigate situation in power-unit-4 and evacuate redundant staff. He learned about radiation level from reports of Krasnodgen and Korobeinikov. The court did not confirm deliberate crime in director's actions. There was no evidence to claim that director was guilty of harm to people.

In the person of Bruchanov we deal with unfortunate man rather then guilty person.

The attorney for Fomin:

No objection was raised against accusation on the basis of the clause 220 part 2. Fomin pleaded guilty and felt remorse. As to accusation in abuse of power, on the basis of the clause 165 part 2, the attorney raised objections. He asked the court to take into account incompetence of Fomin in nuclear power engineering. The attorney also pointed out that designation of Fomin on position of a chief engineer was a mistake of Power Engineering Ministry of the USSR. In his work Fomin relied on Lutov and Diatlov, his deputies. His ignorance of technical shortfalls of RBMK construction led him to think that this type of reactors was technically perfect. His attempts to change the structure of NPP management were not supported in the Ministry. His long-term serious illness before the accident should also be taken onto account. That situation required him to apply for resignation. He should not be accused of administrative excess on the basis of clause 165. Fomin did not send people to work in radioactive area but instead he ordered to remove people from highly dangerous zones.

The attorney for Datlov:

It was the attorney's opinion that committee of inquiry had exaggerated guilt of Diatlov. They had exposed the matter partly. Some aspects of Diatlov's behavior had not been proved in the trial. The attorney said that estimation of guilty requires psychological investigation of the situation. During the trial Diatlov himself were trying to understand what he was guilty of? He did not break the laws directly. Moreover, he was not trying to avoid responsibility, but instead, he wanted to understand how come that the accident happened.

The truth was always a principle of life for Diatlov. All his background proves it. The committee of inquiry exposed no facts when a former deputy chief engineer incited somebody to break rules of the regulations. All accusations brought against him have actually no background. Which of the rules did he break exactly? When? Many of the accusations are inconsistent with code of practice, so they should be dismissed.

Let's consider the program specification? Who developed it? Diatlov? No. He signed it, yes. But his sign on the document was not the principal one. The nuclear safety department was informed about the experiment but did nothing to provide safety in its performance.

We have not been informed yet who had inactivated the automatic protecting system AZ-5. There is no evidence to claim that this was done by Diatlov. Having governed by the law we can't turn supposition into fact.

The attorney was sure that the former deputy chief engineer actually knew nothing about dropping of power level because at that moment Diatlov was far from the modular control board.

The defendant blames himself for he approved operation of the reactor at 200 MW (thermal). This was actually his fault. But as a matter of fact he did not know that the power level had dropped down to zero. He learned this fact only during the trial. Diatlov also should not be accused of forcing the people to work in extremely radioactive zone. Neither Akimov nor Toptunov was entrusted with tasks by Diatlov. They made decisions collectively.

In fact, when the serious matter is being considered whether a defendant is guilty or not, first of all we have to take into account his individuality. A person can't change his individuality at once, the attorney continued. He had excellent reference from his former place of work. And suddenly, upon his arrival to Chernobyl, he had become grim and turned into adventurer. This couldn't be the truth.

The amenability for the accident first of all lies with people responsible for nuclear safety in the NPP. We also have to take into account that Diatlov gained a very high dose of ionizing radiation and by now he is a disabled person (second group).

The attorney for Rogozkin:

The attorney made an attempt to convince the court that there was no direct causal relationship between the accident and actions made by the station shift supervisor. The operative personnel did not even notify him about drop in power occurred while the experiment. In fact, using monitoring devices available at the central control board he could not register that drop in power. Actually, the central control board was not equipped with display showing a number of control rods inserted into the core. As to the accusation that notification of the accident was done with a great delay, the attorney managed to prove that Rogozkin did it in time. The job description did not imply personal report of the station shift supervisor. This was a duty of the telephone operator.

The attorney disproved all the accusation brought against Rogozkin and asked the court to bring in an acquittal because of absence of components of crime.

The attorney for Kovalenko:

Disproving all the accusation brought against the defendant, the attorney came to final conclusion:

I believe that all points of the charge have not been proved in the trial.

The attorney also pointed out that Kovalenko spend plenty of time in a hospital due to high dose of radiation he gained and according to the medical report he can't keep working in the NPP.

The attorney for Laushkin:

The attorney claimed that the acquittal of Laushkin has to be brought in. All the accusations brought against Laushkin were groundless. There was no reason to bring a "guilty" verdict.

VERDICT

29. 07.1987

Criminal actions of accused were in the following [3].

The training of the station personnel was not provided properly according to the "Recommended practices for working with personnel" approved on the 16 of April 1982. This was through inadvertence of V. Bruchanor, the director of the NPP and N. Fomin, the chief engineer. The teaching and training council was not created in the Ch NPP. According to the point 1.6 of the "Recommended practices ..." this council should have been created to deal with advanced training of engineers, consider many important questions concerning management of personnel training, develop new training methods used in theoretical and practical training, as well as address others questions to improve the professional skills of engineers in the NPP. The training center or training point in the Chernobyl NPP had not been created as well. Violating the points 2.2.22 and 2.2.24 of the "Recommended practices ..." the station management did not make a list of work posts for training, probation and self-working required for engineers that start working in position of department shift supervisors, unit shift supervisors or their deputies. The examination commissions in the station were not competent enough. Moreover, by the special order of Bruchanov, these commissions were guided by engineers that did not belong to the top-management of the station. The requirement of point 7.2 of the "Recommended practices ..." was not fulfilled in the station as well. According to this requirement the top-management had to provide monitoring of workplaces through walk-around inspections every month or more often. The results of every inspection should have been recorded in the special log. Bruchanov, Fomin and Diatlov kept themselves aloof from this duty. All of these contributed to relaxation of labor discipline in the Ch NPP. The personnel were not trained well. As a result shift personnel made technological violations repeatedly resulting in accidents and emergency shut-downs of the power-unit occurred before the 26 of April 1986.

Violating requirements of the "Instruction for accident investigation" approved on the 17 of September 1975 and updated on the 1 of September 1983 by the Department of Energy of the USSR, Bruchanov, Fomin and Laushkin did not provide proper technical investigation of the accidents occurred in the Chernobyl NPP. The origins of the accidents were not determined. In some cases the investigating commission did not define persons guilty of violations; sometimes origins led to violation and violation itself were concealed from public.

In the directions issued by the Gosatomenergonadzor the management of the station was requested to follow all norms of technological discipline and instructions of nuclear safety. These reports also exposed insufficient training of the personnel in the station. However, accused did not provide proper measures to eliminate defects. Accused Laushkin had been working in the Chernobyl NPP as the state inspector of Gosatomenergonadzor since 1982. There was criminal negligence in the work of him. He did not provide proper control of implementation all norms and rules of safety regulations in working with highly explosive energetic installations. The inspections he conducted were very short and superficial. He visited workplaces rarely and overlooked many violations committed by personnel. Laushkin shut his eyes to insufficient level of technological discipline, non-compliance with the regulations and nuclear safety requirements from the direction of the management and personnel of the station. As a result of mentioned above, the atmosphere of control absence and irresponsibility was created in the Chernobyl NPP. This atmosphere

contributed to gross violations of the nuclear safety regulation. Over a period of time from the January 17 to the February 2 in 1986 the automatic protecting system of the reactor-4 was inactivated without getting permission from the chief engineer of the station that was contrary with rules of the Operating Policy of Chernobyl NPP (Chapter 3). As an inspector responsible for nuclear safety in the Ch NPP, Laushkin did not react upon these violations.

Irresponsibility of Laushkin and criminal negligence of the station management in conjunction with poor training of the personnel worked with complex energy equipment, in the end, led to the April 26, 1986 disaster.

Despite the fact that required tests of turbo-generators in the power-unit-4 had not been carried out, on the December 31, 1983, Bruchanot signed the certificate of putting the unit-4 into operation as if it was completely tested and ready for operation. In attempt to adjust all the protecting systems to required state, in 1982-1985, according to agreement with the "Dontechenergo", run-down tests of the turbo-generator were carried out. These tests of turbo-generators were executed in joint run-down mode under auxiliary load. All of these tests had not been completed successfully. Nevertheless, on the October 30, 1985, Fomin, Kovalenko and Diatlov made a technical decision on putting the run-down unit into trial operation in the power-unit-4. Moreover, the higher organs were not informed about forthcoming tests in the unit-4 planned along with scheduled shut-down for preventive repair. The shut-down of the unit-4 was scheduled to be done on the April 25, 1986 for 40-days preventive repair. It was decided to execute some experiments before the shut-down.

Among other tests, joint run-down of the TG-8 (TG stands for turbo-generator) under auxiliary load was planned to be implemented. The work program of the test was drawn by Metlenko G. P., the brigade engineer of the Dontechenergo, who did not have necessary knowledge and experience in operation of nuclear reactors. In spite of the fact that this program had a lot of drawbacks and did not meet requirements of the Station Operating Policy, it had not been worked over by Bruchanov, Fomin, Diatlov and Kovalenko. All of these drawbacks did not prevent Fomin, Diatlov and Kovalenko from approving the program. The execution of this program on the April 26, 1986, had resulted in nuclear accident. The point 19.4.1 of the "Instruction for operation of RBMK-1000-type reactor" requested the presence of a nuclear safety department engineer in the experiment. However, this was not provided.

The program should have been approved by the Science guide, Main designer, Main projector, Gosatomenergonadzor, and the deputy chief engineer of the Chernobyl NPP for science. This approval had not been obtained.

The program approved by Fomin, Diatlov and Kovalenko did not specify synchronization of program execution start and shut-down of the reactor. This fact allowed the personnel to disable triggering of the emergency protecting system AZ-5 from stop of two turbines. The thermal power of the core and electric power of the generator were not interfaced in the program. The program also did not specify the way of redundant steam dumping. The measures allowing manual or automatic compensation of rapid change in reactivity were not provided as well. Going against the requirements of the point 1.10 of the Regulations and without technical justification and permission, Fomin, Diatlov and Kovalenko allowed to install on the modular control board the off-design control, so-called "**the emergency button AZ-5**". This changed the regular scheme intended to provide nuclear safety during the experiment. As a result the safety of nuclear reactor operation was significantly decreased. Bruchanov, Fomin and Laushkin did not provide proper

control of preparation works for the experiment. They were not presented in the program execution.

Diatlov, who was responsible for the experiment, assigned a test execution to Toptunov, inexperienced reactor operator, and Akimov, the unit shift supervisor. Rogozkin, the station shift supervisor, did not provide control of executed experiment. Going against the requirements of points 5.3; 5.4; 5.8 of his job description, Rogozkin did not even learn the program specification, although he was informed that a run-down test of TG-8 in the unit-4 was scheduled for the April 26, 1986. In spite of all mentioned above, and ignoring the fact that the measurement for nuclear safety were not provided in the program, Rogozkin approved it. Moreover, he did not check for readiness of the personnel and did not monitor execution of the program.

Rescheduling of program execution contributed to haste in personnel work. As a result it was decided to carry the experiment during "night shift". On the April 25, 1986, at 23:10 the station personnel started execution of the program and proceeded to lowering of reactor power. On the April 26 at 00:28 the personnel attempted to maintain the power at level fewer the minimum required (700 MW thermal). While transferring from the local automatic regulators to the automatic regulating system, the operator failed to maintain the power at required level. The fall in power occurred, which dropped to 0 for several minutes. By 1:06 the operator had managed to raise the power up to 200 MW (thermal) instead of 700 MW (thermal) as was specified in the program. At that time a minimum required effective equivalent of control rods remained in the core. As a result it was difficult to control the reactor and the efficiency of the protecting system was decreased significantly. In that case the reactor should have been shut-down, but it was not done. At the beginning of the test the Emergency Core Cooling System (ECCS) was isolated due to errors of personnel behavior. At 01:23:04 the turbine feed valves were closed to start turbine coasting. This was the beginning of the actual run-down test.

Steam generation increased; reactivity rose. Operation of the reactor became instable. Pipes and equipment started to vibrate. In this connection at 01:23:40 the personnel activated the emergency protecting system manually. At this time the positive reactivity in the core rapidly increased which resulted in reactor power excursion — increase in power, fuel heating up, and thermal explosion. As a result the core was damaged. It took more then two hours to extinguish a conflagration caused by the explosion. The explosion and resulting conflagration took loves of V. Chodemchuk, the chief operator, and V. Shashenok, the adjuster.

In addition to enumerated above violations of the Regulations and other instructions for nuclear reactor operation committed by Bruchanov, Fomin, Diatlov, Kovalenko, Rogozkin, and Laushkin, accused Diatlov, who worked in capacity of a program manager, made several other violations that directly contributed to accident evolution. As a responsible manager of the program, he had to acquaint the personnel, involved in the program, with program description and schedule of works. He did not do it properly and did not specify personnel operating procedure. The experiment he managed was carried out in a hurry, in the presence of unnecessary previous shift personnel.

Redundant steam dumping from the reactor was not provided properly. Besides, Diatlov did not obtain permission from the deputy chief engineer for science that was required in case of switching in all circulating pumps. By his order, on the April 25 at 14:00, the emergency core cooling system was isolated. This was done against the requirements of the Operating policy (section 30.5) and the Regulations (point 2.10.5 and chapter 3). Ignoring the fact that at 1:00 am on the April 26 the reactor was operated with the effective equivalent fewer then 26 control rods, and going against the requirements of chapter 3 of the Regulations, Diatlov did nothing to normalize the operative reactivity margin. In the presence of Diatlov, operator Toptunov, due to lack of

experience, failed to maintain power at required level. This let to an unexpected fall in power, which rapidly dropped to zero. As a result the reactor was "poisoned" by xenon. If that's the case, the reactor should have been shut down (requirement of the Regulations). Going against requirements of the Regulations, Diatlov ordered to increase a power while the effective equivalent in the core was not provided. Approximately in 10 minutes one more gross violation of the Regulations was committed by Diatlov's order — the shift personnel inactivated a part of the emergency protecting system AZ-5.

Going contrary to point 2.1 of the program, Diatlov gave an order to carry the experiment at 200 MW (thermal) instead of 700-1000 MW (thermal) required for safe operation.

The decision of the experts says that cumulative violations listed above led to intensive steam generation in the core, increasing in positive reactivity, and uncontrolled fast-neutron breeding in the reactor that resulted in explosion of the power-unit-4.

Realizing the scale and consequences of the disaster happened on the April 26, 1986, Rogozkin, who worked in capacity of the station shift supervisor, had to implement the "Plan of measures for protection the station personnel and population of adjacent area" (point 3.2.3) which required the "accident notification system" to be activated. Going against the requirements of chapters 8.11, 49.16, and 49.18 of the Operating policy, Rogozkin did not provide management of accident elimination and coordination of activities of the personnel and special services. As a result, the firefighters were not informed about level of radiation. Having known nothing about radiation exposure intensivity and without any protection, they started to extinguish the fire very close to collapsed reactor. Firefighters Pravik, Kibenuk, Tishura, Ignatenko, Vaschuk and Titenok had been exposed with high dose of radiation that caused acute radiation syndrome and death. Though the fault of Rogozkin the shift personnel was not evacuated in time from dangerous area. Consequently, many employees were exposed to radiation. Director Bruchanov, who arrived to the station about 2 o'clock in the morning, did not implement the Plan of measurement for protection of the station personnel although he knew exactly that levels of radiation were pretty high.

At 8 o'clock in the morning on the April 26, despite the dangerous radiation situation, Bruchanov allowed the new shift personnel to arrive to the station with its full complement. This actually was not needed. Being informed that the level of radiation in some areas exceeded 200 roentgens per hour, Bruchanov, for private gain, deliberately hided this fact (in attempt to show that everything is OK). Abusing his position, Bruchanov sent a report to higher organs with deliberately understated estimates of radiation levels. Hiding of true information about the accident resulted in radiation exposure of the station personnel and population of the region. In addition to Chodemchuk and Shashenko, perished in the accident, during the May and June of 1986, 28 people died due to acute radiation syndrome. Many people exposed to radiation had had different injuries. Accused Bruchanov, Fomin and Diatlov pleaded guilty partly; Rogozkin, Kovalenko and Laushkin pleaded no guilty.

The disaster happened mainly because of flagrant violations of safety rules and regulations accepted for operation of potentially highly explosive installation — a nuclear power plant. These violations were committed by Bruchanov V. P., the director of the Chernobyl NPP, Fomin N. M., the chief engineer, Diatlov A. S., the deputy chief engineer for the second stage building exploitation, Kovalenko A. I., the chief of the reactor hall, Rogozkin B. V., the station shift supervisor, and others.

Laushkin U.A., the Government inspector of Gosatomenergonadzor in the Ch NPP, performed his duty with criminal negligence and did not provide proper control of personnel

activity according to requirements of the Regulations. He also did not take necessary measures to prevent violations of safety rules and regulations.

The technical-legal expertise came to conclusion that nuclear reactors of RBMK-1000-type become potentially highly explosive if operated with violation of rules and regulations.

The panel of judges ascertained that the information given by competent expert-physicists, findings of the Government commission and technical-legal expertise about origins of the disaster match. Their scientific justification and accuracy are beyond question.

The guilt of Bruchanov, Fomin, Diatlov, Rogozkin and Kovalenko in violation of safety rules accepted in highly explosive installation — a nuclear power plant, which led to human sacrifices and other serious consequences, was established. Besides, documents and evidence of witnesses, attached to the case record, also prove their guilt.

The fact that on the April 25 and 26 the reactor-4 was operated with the effective equivalent fewer then 26 control rods has been proved in the trial and confirmed by the records in the shift supervisor log and the reactor operator log. The records of the central monitoring system "Skala" proves that on the April 26, 1986, at 01:22:30, the reactor was operated with the effective equivalent of 6-8 control rods. The records of the other monitoring system (SFKRE) show that on the April 26, 1986, at 00:28 the reactor power dropped to zero and then rose approximately to 180-200 MW (thermal). This was done with violation of point 6.2 of the Regulations, without passing through the "iodine pit" and without minimum required reactivity margin in the core.

Records in the log of the reactor operator and his evidence show that Diatlov, Rogozking and the others went against the requirements of the Regulations while executing the program. In his records the reactor operator testifies that after a shift change he was ordered to decrease a power level, but he failed to maintain the power at required level and a fall in power occurred. In a while he managed to raise it up to 200 MW (thermal). Akimov also made a record in the log which proves isolation of the automatic protecting system AZ-5.

In preliminary investigation accused Diatlov claimed that the main reasons that led to the accident were shortfalls in design of RBMK-1000 reactor and imperfection of its protecting system. This statement goes against conclusions of the technical-legal expertise, Government commission and proves enumerated above. For example, Kriat and Karpan, engineers of the nuclear safety department, testified that before the accident they never registered deviations in operation of RBMK-reactor and its protecting system AZ-5.

Compliance with requirements of the Regulations provides safety in reactor operation. Witnesses Polushkin and Gavrilov, the key experts, came to the same conclusion.

It was realized in the trial that RBMK-type reactor has some imperfection in its design. The legal proceedings against officials, who had to take well-timed measures in order to eliminate the design defects, have been instituted as a separate criminal case.

Taking into account what was mentioned above, the Panel of judges find accused Bruchanov, Fomin, Diatlov, Rogozkin, and Kovalenko guilty of crime described in clause 220, part 2 of the criminal code of the Ukrainian SSR, that is, violation of the Technological and Operating policy, Nuclear Safety Regulations in the highly explosive plant that led to human sacrifices and other serious consequences. The Panel of judges find accused Laushkin guilty of crime described in clause 167 of the criminal code of the Ukrainian SSR, that is, improper performance of duty, carelessness that caused serious harm to people and public interests.

On the base of obtained evidences (report of witness and Bruchanov's avowal in which he confirmed that the Plan was not implemented) Bruchanov is found guilty of abusing his power; Rogozkin is found guilty of criminal carelessness.

Being informed about real radiation situation, Bruchanov abusing his power (for private gain and in attempt to show that accident was not very serious) sent a report to Kiev Region Party Committee with deliberately false, understated estimates of radiation levels. That is, it was stated in the report that maximum radiation level did not exceed 1000 micro-roentgens per second (3.6 roentgens per hour) within the station and 2 - 4 micro-roentgens per second in Pripyat city.

It was the guilt of Bruchanov and Rogozkin in that the station personnel and population of the region were not evacuated in time and protecting measures were not provided. This statement has been proved in the report of the technical expertise for civil defense.

The panel of judges considers these consequences as very serious.

Taking into account what was mentioned above, the Panel of judges find Bruchanov guilty of crime described in clause 165, part 2 of the criminal code of the Ukrainian SSR, that is, abuse of power caused serious consequences. Laushkin is found guilty of crime described in clause 167 of the criminal code of the Ukrainian SSR, that is, improper performance of duty, carelessness that caused serious harm to people and public interests.

In infliction of penalty the panel of judges was governed by the clause 39 of the criminal code of the Ukrainian SSR. The panel of judges also took into account that consequences caused by violations of the operating policy and nuclear safety rules committed by Bruchanov, Fomin, Diatlov, Rogozkin, and Kovalenko could be referred to as catastrophic.

Bruchanov is found guilty of crime described in the clause 220 part 2 and clause 165 part 2 of the criminal code of the Ukrainian SSR. Fomin, Diatlov, and Kovalenko are found guilty of crime described in the clause 220 part 2 of the criminal code of the Ukrainian SSR. Rogozkin is found guilty of crime described in the clause 220 part 2 and clause 167 of the criminal code of the Ukrainian SSR. Laushkin is found guilty of crime described in the clause 167 of the criminal code of the Ukrainian SSR.

(The verdict was approved by Soroka O. V., the deputy general prosecutor of the USSR.)

SUMMARY

The official report of the "Political Bureau of the Central Committee of the CPSU" published in "Pravda" newspaper on the July 20, 1986, said [1]:

For faults and weak points in work that led to the accident with serious consequences, Kulov, the head of Gosatomenergonadzor, Shasharin, the deputy Minister of Energetics and Electrification of the USSR, Meshkov, the deputy Minister of Engineering Industry, Emelianov, the deputy director of the Scientific Research and Design Institute, are dismissed. They also

received severe party punishments. Bruchanov, the former director of the Chernobyl NPP is read out of the Party.

Liability of executive managers of different ministries and departments for the accident in the Chernobyl NPP was considered in the special cession of the Party Control Committee.

It was ascertained that member of the Communist Party Veretennikov G. A., the Head of "Souzatomenergo", and member of the Communist Party Kulikov E. V., the Head of Central Directorate of the "Minsredmash", did not take necessary measures in order to provide safe operation of the nuclear power plant. They also committed serious mistakes in work with personnel. The Party Control Committee of Central Committee of the C.P.S.U. decided to read Veretennikov G. A. and Kulikov E. V. out of the Communist Party.

Some responsible persons received severe party reprimands.

SOURCES

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2. Стенограмма судебных заседаний. Чернобыль, 1987 г., Карпан Н.В.

3. Выписка из уголовного дела № 19 -73 (том 50, л.д.352-360).

APPENDIX

Expert Trusov A. I., Ph.D. in science of law, colonel of justice [1].

THE ANALYSIS OF THE 'CRIMINAL CASE 19-73' RECORDS

On the April 26, 1986, the Kiev Region Public Prosecutor's office instituted Criminal Case No 19-73 on the fact of the accident with serious consequences occurred at night-time in the Chernobyl NPP on the April 26, 1986. The criminal case was instituted according the article 220 part 2 of the Criminal Code of the Ukrainian SSR (Violation of safety rules in highly explosive plants or highly explosive installations").

On the April 27, 1986, Potebenko M. A., the Deputy General Prosecutor of the Ukrainian SSR, founded the committee of inquiry to investigate this very complicated case. In addition to investigators of the Public Prosecutor Office this committee included State Security investigators

and officers of Department of the Interior. In Moscow, on the same very day, Soroka O. V., the Deputy General Prosecutor of the SSSR, taking into account complexity of the case, founded the investigative commission that included representatives of the General Prosecutor's office and the State Security. The structure of the commission was changed several times mainly due to including of new representatives of the KGB and the Special Public Prosecutor's office.

Until the May 5, 1986, the investigative commission was guided by Ivanov P. N., the representative of the Public Prosecutor's Office of the Ukrainian SSR. From then and up to July 14, 1986, the investigative commission was guided by Voskovtsev N. P., the representative of the Public Prosecutor's Office of the USSR. Since the July 14, 1986, Rekunov A., the General Prosecutor of the USSR, assigned his senior aide Potemkin U. A. to head the commission. By his guidance, the commission had completed investigation of the accident and drew up the indictment by the January 18, 1987.

The hearing of the case was held in Chernobyl city on July, 1987. The Panel of Judges was headed by Brize R. K., the member of Supreme Court of the USSR. The indictment was brought in by government lawyer Shadrin U. N, the senior aide of General Prosecutor of the USSR. On the July 29, 1987, the verdict was brought in. According to the verdict, six people of Ch NPP personnel were sentenced to imprisonment for long terms (from 5 to 10 years).

Let's consider how the facts of accident was investigated in preliminary investigation and then in the court.

During first days after the accident the facts were investigated by the inter-departmental commission which included experts of the Minenergo and Minsredmash (NPO "Energia", "VNIIAES", VPO "Souzatomenergo", "Gidroproject" NIKIET, Kurchatov's Institute of Atomic Energy) and Fomin, the chief engineer of Ch NPP. The commission's decision signed on the May 5, 1986, says that the program of turbo-generator test was designed with drawbacks. While conducting the experiment, the station personnel committed gross violations of the Rules OPB-82 and the Regulations. It was also said that reactor RBMK-1000 is proved to be sensitive to operator faulty actions. At the same time, the commission recommended the "Minsredmash" and "Minenergo" to check the conformance of RBMK-1000 to the requirements of point 2.3.7 of the Rules OPB-82 and develop necessary measures to eliminate design defects of reactors that are in operation or under construction(volume 34, p.11).

Immediately after the accident the Government Commission headed by Scherbina B. E., the Deputy Head of Council of Ministers, was created. This commission included experts of different departments and organization (Minenergo, Minsredmash, Kurchatov Institute of Atomic Energy, and others). High-ranking officials of Ministry of Internal Affairs, KGB, and General Prosecutor Office also formed a part of this commission. Office of Public Prosecutor of the USSR was represented by Soroka O. V., the Deputy General Prosecutor, who also carried out supervision for legality in preliminary investigation. The report of the commission was signed by Rekunkov A., the General Prosecutor of the USSR.

The report of the Government commission named persons responsible for the accident (director Bruchanov, chief engineer Fomin, deputy chief engineer Diatlov). According to the report, "they committed serious mistakes in station operation and did not provide safety". The mistakes committed by personnel were called "reasons of the accident occurred in power-unit-4 of the Chernobyl NPP" (volume 34, p.62).

The conclusion made by the Government Commission also exposed defects in functioning of the Energy and Electrification Ministry (several persons of top-management were mentioned in

passing for "They allowed faulty practice to conduct experiments and maintaining works at night-time and did not provide proper control". "They tolerated physic-technical defects in RBMK-design and did not press for eliminating imperfection and increasing reliability from the Main designer and Science guide". "They did not provide proper training for the personnel". The defects in functioning of the Mechanical Engineering Ministry were also mentioned (several persons of top-management were mentioned in passing as well: Slavsky of the Ministry, Dollezal and Emelianov of the "Main designer", Alexandrov of the "Science guide"). As it was said, "they did not take opportune measures to improve the design and increase reliability of the RBMK-reactor in accordance to the requirements of the 'General Provisions for providing safety in design, installation and operation of atomic station'". The commission also came to conclusion that "the design of RBMK-reactor does not include complete engineering solution to provide safe operation of the reactor" (volume 34, pp 64-66).

Some responsibility was imposed on the Committee of Gosatomenergonadzor, which "did not provide proper control for observance of nuclear safety rules and norms". Kulikov and Sidorenko, the top-managers of Gosatomenergonadzor, working hesitatingly, did not prevent violation of safety rules and norms from officers of different ministries, atomic stations, vendors supplying the equipment" (volume 34, p 67).

Having announced that the disaster happened because of mistakes committed by operating personnel, the Government commission also exposed many serious defects in the design of RBMK and their contribution to the accident. The report said that in the situation when operating personnel made mistakes the Emergency Reactor Protecting System failed. The following defects of the RBMK design contributed to the accident resulted in collapse of the reactor:

- presence of positive void coefficient of reactivity because of uranium-graphite proportion in the reactor design;

- phenomenon of positive fast power coefficient of reactivity, which should be negative in all emergency situations. The project did not include engineering solution to prevent such effects;

- defects in design of control rods of the Control and Protecting System (CPS). The rods can introduce positive reactivity as they begin entering the core. The design of the reactor doesn't include a device estimating the operative reactivity margin, so approaching to dangerous threshold is not indicated (volume 34, pp 63-64).

As it was shown, the conclusion of the Government commission contains actual acknowledgement: reactor RBMK-1000, Chernobyl Unit-4, had serious defects in design which actually caused the accident with all following catastrophic consequences. There is no reason to throw discredit upon this conclusion of experts. Hence, analysis of defects in design of RBMK-1000 and their contribution to the accident and all following catastrophic consequences has become essential for the investigation according to articles 14, 15, 55-57 of the "Basics of legal proceedings in the USSR and Union republics". It is not possible to get to the truth and bring a fair decision in without providing of impartial and comprehensive analysis of real origins of the accident. Particularly, without such analysis it is not possible to provide proper measures to secure millions of people against new "Chernobyls".

Unfortunately, committee of inquiry, the Public Prosecutor Office, and then the Court took different way. Attention of the pre-trial investigators and judges in the trial was concentrated on investigation of mistakes committed by operating personnel. Serious mistakes in RBMK-1000 design, their role in accident development and contribution to catastrophic consequences actually had attracted very little attention of legal investigators and judges. The pre-trial investigators and

the panel of judges took strange and contradictory position in respect of conclusion of the Government commission which unambiguously exposed the defects in RBMK design. Indeed, on the one hand no discredits was thrown upon conclusions of the Government commission report. It was mentioned in the verdict (volume 50, p 360) that a separate criminal case were instituted in order to investigate defects in RBMK design and their contribution to the accident (volume 47, pp 222-226) On the other hand, the investigation committee and the judges considered these defects in the reactor design and their role in the accident differently then they were exposed in the Government commission report. The indictment (volume 48, p 102) referred these defects to as "some particularities and shortfalls peculiar to the reactor" which played "their role" (!?) and contributed to the accident "in some way" (?). These defects also were mentioned in the verdict as "some shortfalls in the design" (volume 50, p. 360).

In the criminal case records the strange and contradictory attitude towards the Government Commission Report from the side of the prosecutor and judges is found. The committee of inquiry and the panel of judges in their documents constantly appeal to the Government commission report as to indisputable document which proves operating personnel guilty of improper operation of the reactor. Although the trial did not throw discredit upon conclusions contained in the Government commission report, which exposed very serious defects in design of RBMK-reactor and explained their role in accident development, the judges did not take these conclusions into account. At the same time, the essential points of the Government commission report had been either veiled or misrepresented in the trial records.

As may be seen from the trial records, the key role in hiding of true information and distributing of misrepresented ideas about origins of the Chernobyl catastrophe had played our monopoly institutions, departments and organizations which deal with scientific research, development, and production of nuclear reactors.

The Kurchatov Institute of Atomic Energy (the Science guide of the RBMK reactors) in June 1986 held two important conferences of nuclear physicists under guidance of academician A.P. Alexandrov. We do not know for sure whether or not the report of the Government commission had been issued by that time. The records of the trial say nothing about it. However, these conferences attempted to bury the truth about real origins of the disaster and bring in the idea that the accident happened mainly because of mistakes of operating personnel. It was said that the defects in design of RBMK contributed to the accident insignificantly (volume 34, pp. 80-96). Then the group of expert was formed to prepare documents for the IAEA conference which was scheduled for the end of August 1986. This group was created under guidance of the Gosatomenergonadzor, the most interested party in hiding of actual causes of the accident. There were 23 people in the group (half of them were representatives of the Kurchatov Institute of Atomic Energy). The report for the IAEA conference was prepared on the base of the information obtained from these very interested parties: The "Kurchatov Institute of Atomic Energy" (the Science guide of RBMK as we have already mentioned), The "NIKIET" (the Main developer of RBMK), the "Gidroproject" Institute (the Main designer of RBMK), and the "VNIIAES" Institute (dealt with processing of results of the reactor operation history).

Of course, the reported presented at the IAEA conference was quite favorable for these monopoly organizations. It was said in the report that "the prime cause of the accident was highly improbable combination of mistakes in reactor operation committed by the personnel. The catastrophic consequences of the disaster were caused by switching the reactor into impermissible state in which the influence of the positive void coefficient on the power rising had became essential". It was also said that design of the reactor "included protection against such faults. The physical characteristics of the reactor including the positive void coefficient were taken into account in the protecting system design" (volume 35, pp. 207-248).

Apparently, according to this theory the responsibility for the Chernobyl accident was imposed on the operating personnel. The actual role of the defects in the RBMK design, which were exposed in the Government commission report, was reduced to 'zero'. This theory then was repeatedly bandied about by different experts in the preliminary investigation (volume 38, p 78) and in the trial (volume 49, pp 135-154). During the trial this theory played a role of important inculpatory evidence of operating personnel guilt. This very theory then was turned into the legal expert report and eventually was assumed as a basis of the severe verdict (volume 50, pp 359-360).

Frankly speaking, conclusions of the experts which testified in the preliminary investigation and then in the trial were quite predictable. Some of these experts were interested in confirmation of ideas stated in the official report which was presented at the IAEA conference. Actually these experts were the authors of the report. The other experts apparently were forced to concur with weighty opinions of "well-known scholars". As may be seen from the records of case, the peculiar zeal in defending of this theory was demonstrated by candidate of technical science Michan V. I., the head of a department of the NIKIET (NIKIET — the Main developer of RBMK) (volume 50, p 268).

Despite the assiduity demonstrated by the experts this theory had not been substantiated clearly in the trial. First, the obvious contradiction with the Government commission report that exposed serious defects in the reactor design had not been resolved. In reality, the experts did not attempt to disprove the facts contained in the Government commission report which unambiguously shoved that the defects of reactor design played a primary role in the accident development. These facts were either hushed up or misrepresented. Second, the conclusions of the experts apparently showed self-contradiction, especially in attempts to substantiate answers to a range of critical questions. For example, the question to the experts: "Do you confirm conclusions of leading specialists that the reactor was nuclear hazardous?" (The case in point is the conclusions of specialists contained in volume 38, pp 198-199). The answer was apparently evasive. As a matter of fact, the experts in the answer came into conflict with their own theory. They said: "The 26.04.86 Chernobyl accident should be referred to as hypothetical, that is, technical measures providing safe operation of the reactor under such condition were not provided..." (volume 50, p. 152). Despite the attempts to defend their theory, the experts confirmed that reactor RBMK-1000 was "potentially hazardous". (volume 38, p. 89 and volume 49, pp.135-154). Had the reactor been declared hazardous, the experts should have confirmed that the RBMK-project did not meet the requirements of the Nuclear Safety Regulations and other regulating documents. (Actually, the reactor could not be not hazardous.) Besides, this answer of the experts actually confirms conclusions of the Government commission in that that the Core Protecting System had proved to be inefficient, therefore, official theory is groundless in reality.

However, some scholars of authority (Professor Dubovsky B. G. and Academician Legasov in his thesis published after his death) came up with an idea that RBMK reactor had no proper protecting system. Moreover, Council of Ministers secret resolution 665-210 (July 14, 1983) says that the RBMK reactors "do not meet in full measure the requirements of the Nuclear Safety Regulations and other regulating documents currently in force in the USSR". In addition, the Government committee for safe operation in nuclear power engineering field repeatedly appealed to the Government with proposals to mothball all reactors of RBMK-type because of "accident high probability".

Little by little the experts of the Kurchatov Institute of Atomic Energy and the NIKIET are stepping back from their so-called "official theory". For example, on the March 20, 1991, in Paris they presented report called "Present conceptions of the origins and development of Chernobyl nuclear disaster".

All what was mentioned above proves obvious groundlessness of the verdict on the case 19-73.

No doubts, the operating personnel guilty of Station Operating Policy violation had been proved in the trial. However, how serious these violations were? For example, the group of leading specialists from Obninsk (headed by professor Dubovsky B. G.) investigated this case and came to conclusion that: "had the reactor RBMK-1000 had the efficient protecting system, the violations committed by personnel would have resulted in one week downtime at the most". Hence, the most serious accusation that could be brought against the personnel was "criminal negligence", that is, the crime described in the clause 167 of the Criminal Code of the Ukrainian SSR. Conviction of Bruchanow, the former director of the Chernobyl NPP, on the clause 165 of the Criminal Code of the Ukrainian SSR (abuse of power) also could not be referred to as well-grounded. He received a guilty verdict of hiding information about real level of radiation and sending the staff to radioactive zone without providing them with special protecting means. First, the case records contain information that just after the accident many "commanders" arrived to the station and ordered "not to give way to panic". Second, as far as we can judge, most unlikely that Bruchanov, the director of Ch NPP, had precise information about real radiation level. (This idea was corroborated in memoirs of academician Legasov V. A.) Sending of unprotected people to work in radioactive zone in that situation could be considered as absolute necessity.

As to the heaviest accusation and following conviction of five people on the base of the clause 220, part 2, of the Criminal Code of the Ukrainian SSR, this was groundless not only because of the facts, but also for some different reasons.

Imputation of catastrophic consequences of the Chernobyl accident required intensive study of reliability of the reactor protecting system in respect to its corresponding to the Nuclear Safety Regulations (ПБЯ-74 and ОПБ-82). This was done neither in preliminary investigation nor in the trial. However, both the case records (we have mentioned it) and the following investigations carried out by independent experts (Obninsk VTK, guided by professor Dubovsky and Minsk VTK, guided by professor Sharovarov) confirm the fact that the reactor protecting system did not meet the requirements of the Regulations (ПБЯ-74 and ОПБ-82).

Of course, definite relation between personnel activity and the accident with its catastrophic consequences is seen. However, according to the laws in force, imputation of catastrophic consequences requires confirmation of the fact that people, committing violations, in that situation were able to foresee such consequences. However, the case records say (volume 34, p. 205; volume 50, p. 150) that the regulating documents available that time, did not provide the personnel with complete information about reactor design features. The same conclusion was drawn by the experts guided by professors Dubovsky B. G. and Tarasenko V. M. after examination of the regulating documents. By the way, there was no attempt to investigate this problem in the preliminary investigation and then in the trial. During the trial the defendants and their layers raised such questions several times but all their attempts were rejected. Obviously, the interests of defense were impaired.

Conclusions and suggestions:

1. The key papers of the case 19-73 (the indictment, the trial records, the verdict, results of scientific and technical investigation, the technical expertise reports and so on) should be published. They have to become available for public and for specialists. This is essential for following research and understanding of real causes of the disaster in order to prevent such situations in others nuclear power plants.

2. It is necessary to apply to General Prosecutors of both Russia and Ukraine for bringing in a notice of opposition to the Plenum of Supreme Court of the Ukraine in order to correct wrongful sentence. The group of independent experts came to conclusion that five people of Chernobyl NPP personnel (Bruchanov, Fomin, Diatlov, Kovalenko, and Rogozkin) were accused in crime described in the clause 220, part 2, of the Criminal Code of the Ukrainian SSR wrongfully, hence they received the guilty verdict unlawfully.

3. As far as we know, there was a decision to investigate some facts of the criminal case 19-73 within separate criminal case which was instituted in 1991 and resumed in 1992.

It is necessary to apply to the General Prosecutor of Russia for providing fair and impartial investigation of origins which actually led to the accident and caused catastrophic consequences. In this connection, it is necessary to redefine personal responsibility of different departments, institutions and official for the accident consequences.

4. It is necessary to provide normative and legal regulation of nuclear power plant staff, that is, it's needed to set highest priority of nuclear safety norms over others regulating norms.

5. Investigation of the 19-73 criminal case records had exposed the problem of independent expert deficiency in the country. Actually, this was one of the reasons why the truth about the accident had not been established.

In this connection the actual independent institution for preliminary investigations, that would be governed only by the Law, must be created. This task could not be completed only by reorganizing of existing law machinery or creating of so-called law-enforcement departments (in form of special investigating committee). This problem requires a new approach. First of all, we need to create the united system of judicature that would be independent from legislature and executive departments. The new judicature should be governed only by the Law. This new system would unite courts, office of public prosecutor, preliminary investigation agencies, notary system, and all subsidiary institutions of justice. The worth-while experience of 1922-1924 yy. Judicial reform and the world experience should be taken into account as well. The State power division principal, declared in the Commonwealth of Independent States, into legislature, executive, and judicature has to be implemented so that all these branches, working in cooperation with each other, could provide effective mutual control of each other.

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Brief author's commentary

Many people, who attended the trial sessions or who read the case records after the trial, came to conclusion that the result of Chernobyl accident investigation was made 'on demand' prior to the trial. The list of questions below could serve as a proof of this theory.

1. Why the forensic-technical expert group included representatives of organizations which designed a nuclear hazardous reactor?

Experts — The staff of forensic technical expert group, assigned by the September 15, 1986, resolution approved by Potemkin U. A., the head of inquiry group, senior aide of General Prosecutor of the USSR, counselor of justice third class. (Criminal case 19-73, p. 31-38 volume 38):

Dolgov V. V. — the head of laboratory in the MFEI, candidate of technical science

Krushelnitsky V. N. — the head of the administration-2 of the Gosatomenergonadzor (the State Atomic Supervision Agency of the USSR).

Martinovchenko L. I. — the head of the inspection board of South district in Kursk NPP.

Minayev E. V. — the deputy head of Glavgosekspertiza of Gosstroy of the USSR.

Michan V. I. — the department head of the NIKIET, candidate of technical science

Neshumov F. S. — the department head of the Glavgosekspertiza of Gosstroy of the USSR.

Nigmatulin B. I. — the department head of the VNIIAES, doctor of technical science

Protsenko A. N. — the laboratory head in the Institute of Atomic Energy, doctor of technical science

Solonin V. I. — professor of the chair of energetic machines and mountings in Moscow Technical University, doctor of technical science

Stenbok I. A. — — the deputy department head of the NIKIET

Chromov V. V. the head of chair of Moscow Engineering Physics Institute, doctor of phisico-mathematical science

Comment: Solonin V. I. at that time also worked as a deputy head of the chair E-7 in the Bauman Moscow Technical University. This chair was headed by Dollegal N. A.. Expert Michan V. I also worked as a professor at this very chair.

So, these three experts were representatives of the Main designer and one expert, Protsenko A. N., was representative of the Science guide. In the trial they were taken for competent specialists in no way concerned with the Chernobyl disaster.

2. Why the forensic-technical expert group did not included representatives of organizations which dealt with operation of RBMK reactors?

It was very strange for informed people to learn that Nigmatulin B. I., the department head of the VNIIAES, was taken for a representative of operating organization.

We can take Shasharin G.A., the deputy minister of engineering industry, for a real representative of operating organization. On the May 5, 1986, the inter-departmental commission, headed by Shasharin, issued a report about causes of the accident. The experienced and qualified specialist of this commission had come to conclusion that the RBMK reactor was nuclear hazardous. On the July 20, 1986, Shasharin received a reward — he was discharged.

(published in the "Pravda" newspaper): "... for faults and mistakes in work, that leaded to the accident with serious consequences, Shasharin G.A., , the first deputy minister of engineering industry has discharged ..."

It was not only Shasharin, who dared to tell the truth. He has told about political jugglings during investigation of accident in such way (« Chernobyl: a duty and courage », the collection, volume 1, Moscow, 2001): «there where three specialist who did not sign the Act about the reason of the accident : me, Abagjan A.A, a director of the All-Union scientific research institute on operation of the atomic power station, and Prushinskiy B.J., a chief engineer of VPO "SOJYZATOMENERGO" who was responsible for operation of atomic power stations by that time .

At that same time I headed the commission of Ministry for the Power Generating Industry of the USSR. We have signed another act. It was classified as secret and hasn't been discussed publicly. This act qualitatively showed, may not be clear in details, that the main reasons of the accident were in lack of a construction of control rods (system of CUS) and calculation mistakes of the steam effect in project.

Certainly, such conclusions changed emphasis in who was really guilty of the accident, though that time neither me nor operators did not think about who was guilty. Actually, everyone related to the nuclear power industry was guilty but operational personnel. On my deep belief, nobody is guilty of criminal offence, and if someone wants to blame somebody it shouldn't be operators. Operators were punished severely and quickly. The court examination was fast, and witnesses were invited only those who agreed with the official point of view about the reasons of the accident .

At the beginning, before I have been discharged, I tried to show the truth in the report, but it was not allowed. I have already been fired. Reading this report later, I was shamed, because it was clear, that given calculations and explanations did not expose a scope of the accident in any way. And the juggling of the data was clear to any expert in this field.

I wrote to N.I. Ryzhkov, the prime minister and a chairman of the commission of the Political bureau of a Central Committee of the CPSU, (the letter was classified as secret) that real causes of the accident should not be kept in secret because it's a crime. Sooner or later the truth will emerge.

3. Why the forensic-technical experts found the reactor highly explosive (with reservations) while it was built and mounted using ordinary (not explosive equipment)?

"In some operating modes the reactors of all kinds become highly explosive if operated wrongly". If this the case, the power level increases rapidly and soon becomes uncontrolled.

Unbalance between generation and extraction of the steam in the core leads to overheating of the coolant, fuel pallets and reactor internal elements and then if the chain reaction could not be taken under control, a thermal explosion may occur.

If described above is the case, it is impossible to stop releasing of energy by technical means of expedient protecting systems. That is why all steam generating systems (RBMK, VVER and BN type) have to be referred to as potentially explosive.

Inside the nuclear reactor the process of hydrogen formation takes place. The concentration of hydrogen has to be strictly controlled because exceeding of the critical threshold can result in explosion. A reactor is a very complex plant consisting of many high pressure systems and equipments. The risk of explosion is highly increased if the pressure of the coolant is boosted up.

Thereby, the nuclear reactors and nuclear power plants are potentially highly explosive, especially if deviation from the regulating norms is the case.

(See page 84) ***Rogozkin:***

Who can answer whether or not the RBMK-type reactor was highly explosive?

Polushkin:

- The reactor was not highly explosive under correct operation.

The experts did not say explicitly and unambiguously that "RBMK reactor was dangerously explosive", even after the accident had happened. What prevented them from doing so? Actually, had they confirmed the fact that the reactor was dangerously explosive, they would have had to confirm unavailability of the reactor with the requirements of the nuclear safety regulations. Had

they confirmed the fact that the reactor did not meet safety requirements they would have had to mention responsible organizations for defects in the reactor design. That is, accept responsibility for the accident. Instead, they invented a tricky formula *"The reactor is not highly explosive as long as correct operation is provided"*. At the same time the experts held back the fact that the regulating documents and instructions available to the operating personnel said nothing about highly dangerous operation modes of RBMK reactor.

4. Why the forensic-technical experts did not find the reactor nuclear hazardous despite the fact that fast neurons breeding reaction in the reactor had occurred?

(See page 83)"A very important conclusion was in that that ... the reactor of RBMK-type was not nuclear hazardous"

Witness K. Polushkin, *one of the designers of RBMK-1000, the representative of the NIKIET:*

- This reactor could be operated safely. But the operation has to be correct. The regulations say that the reactor has negative void coefficient as a rule. But in case of positive void coefficient, special measures should be provided. The emergency system provides safety operation. Inserting of AZ-control rods into the core provides safe shut-down of the reactor.

Question of the court:

- Do the experts confirm conclusions about shortfalls of the reactor listed in the report of the Government commission?

Answer of the experts:

- The experts confirm existence of some shortfalls in the reactor design. First of all — the positive void coefficient. At the same time, it was not specified how personnel should have behaved in such a situation. Design deficiency of the control and protection system is confirmed. But these shortfalls could lead to the accident only along with mistakes made by operating personnel.

Question of the court:

Could the shortfalls of the reactor lead to the accident?

Answer of the experts:

The RBMK-type reactor is not nuclear hazardous while at least 15 control rods are inserted in the core. 30 control rods provide protection of the reactor from unauthorized activities of the personnel.

Question of the court:

Is the reactor safe in operation?

Answer of the experts:

26-30 control rods inserted in the core compensate the positive effective equivalent. The RBMK-type reactors could be referred to as safe.

Question of the court:

Why the designers of the RBMK did not issued a physico-technical justification of impossibility to operate the reactor at the power level lower then 750 MW (thermal) with less then 15 control rods in the core?

Answer of the experts:

- This justification was not needed otherwise the operating regulation would become inflated.

Question of Diatlov:

Did the reactor meet the requirements of nuclear safety?

Answer of the experts:

- Yes, All the design solutions provide protection against accidents. No nuclear power plant could foresee of what happened.

In fact, the Main designer and the Science guide did not provide protection in the RBMK design for different emergency situations including those emerging in change of the load. When the operation of the reactor exposed dangerous deviations in physical features of the RBMK, the developers did not provide measures to make the reactor operation safe. The experts (representatives of the Main designer and the Science guide) did not say that the RBMK reactor was nuclear hazardous. Had they did so, they would have had to confess their own guilt.

Summary

According to requirements of the Nuclear Safety Regulations, accepted in the USSR, the reactor RBMK had to be developed, built and put into operation in 100 percent safe condition. The Institute of Atomic Energy (Main designer) and the NIKIET (Science guide) had been asserting that the RBMK reactor was absolute safe in operation. After the accident caused by fast neuron breeding reaction in the core, representatives of these institutions kept asserting that the reactor was not nuclear hazardous in operation, but has some "specific features".

Before the Chernobyl accident the RBMK project referred to as successful without any reservations. The accident localizing system of RBMK was designed so it contained only high pressure cooling pipes (the circuit of forced multiply circulation). The designers decided to locate the core of the reactor outside the reinforced leaktight compartment. Everyone was assured — the RBMK reactor was safe in operation hence there was no point to include the core into the accident localizing system. National money had been used sparingly. The designers did not see any points to waste national money, if "*the excursion in power can't be taken under control by technical means of expedient protecting systems*". As a result, the explosion in the Chernobyl-4 destroyed the core of the reactor while the localizing systems, intended to prevent radioactive elements from releasing into the atmosphere, remained almost untouched. Because of this drawback in design, no less then 80 percents of radioactive elements had been released into the atmosphere (instead of 3-5 % if the core was included into the reinforced leaktight compartment that could prevent releasing of radioactive materials except for volatile and gaseous materials).

So, on the April 26, 1986, the unit-4 operating personnel committed short-term impermissible deviation in one parameter — the operative reactivity margin (the effective equivalent). It being

known that this parameter had not been referred to as critical in the specifications issued by the Institute of Atomic Energy before the accident. For this reason the Main designer did not provide constant monitoring of the effective equivalent in the core as the Nuclear Safety Regulations required. When the emergency button (AZ-5) was pressed by the operator in attempt to shut the reactor down, the accident had happened. The RBMK project did not even specify such a situation. That is why the experts qualified the accident as absolutely impossible, "beyond hypothetical". As far as the court qualified the accident as "improbable", the Main designer and Science guide bear no responsibility for the consequences. Besides, the money saved on the reactor protecting systems came in handy for rebuilding of destroyed station. As it turned out the developers of RBMK reactor were not punished but rewarded instead (for spiritual injury). They were awarder for elimination of the accident which they designed.

The destiny of operating personnel is a horse of a different color. What preceded the explosion? – Pressing of the emergency button (AZ-5).

Who pressed it? — The operator on his own initiative.

The court decided – people who at the moment of explosion stayed at the "electricity generating bomb" are guilty of the accident.

In attempt to "safe face" in front of the world community, contaminated with radiation, the subsequent decisions of Soviet Government continued this logic sequence. The station management was convicted. The rests of the personnel were blamed for good. Those, who were discordant with this approach, received discharge. Those who passed away were magnanimously forgiven.

Karpan N.V. Kiev. Year 2001