

September 11, 1957

**Protocol No. 1 of the Joint Meeting of the
Delegations of the Soviet Ministry of Defense
Industry and Representatives of the Chinese
People's Republic**

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Summary:

Minutes from a meeting on Sino-Soviet efforts at defense planning and collaboration. Chinese defense officials looked for Russian help in the production of guided missiles, and the document illustrate their efforts to collaborate in the education and preparation of specialists, the staffing of military research institutes, the construction of defense-related factories, and the sharing of technology.

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Protocol No. 1

Of the Joint Meeting of Members of the Delegations of the Ministry of Defense Industry and the Chinese People's Republic of 11 September 1957

Present:

1. c. Domrachev Deputy of the Ministry of Defense Industry
2. c. Zverev Deputy of the Ministry of Defense Industry
3. c. Rudnev Deputy of the Ministry of Defense Industry
4. c. Vladimirkii Deputy of the Ministry of Radio Technology Industry
5. c. Shokin Deputy of the Ministry of Radio Technology Industry
6. c. Iuroshev Representative of the Ministry of Defense
7. c. Chervikov Representative of the Ministry of Defense
8. c. Grishin Commander of the Main Administration of the Ministry of Defense Industry
9. c. Sharshavin Commander of the Main Administration of the Ministry of Defense Industry
10. c. Myshkov Commander of the Administration of External Ties of the Ministry of Defense Industry
11. c. Titenkov Main Engineer, GSPI-7
12. c. Martynov Committee on External Ties
13. c. Trunov Committee on External Ties
14. c. Nekhonov Representative of the Ministry of Defense - translator

Representatives of the Chinese People's Republic:

- c. Qian Xuesen Leader of the delegation
- c. Sun Junzhen Commander of the technical department in PLA communications
- c. Wang Yi Commander of administration of the PLA General Military Staff
- c. Ling Shuang Commander of NII-5 of the Ministry of Defense
- c. Li Qiang Deputy Commander of NII-5 in the Ministry of Defense
- c. Tu Shou Commander of construction research department in NII-5
- c. Wang Jian Commander of communications administration, PLA
- c. Liu Yingfu Deputy minister of the Second Ministry of Machine Building
- c. Chang Lusheng Translator
- c. Li Shinei Translator

Cde. Domrachev: Presents the members of the Soviet side.

Cde. Qian Xuesen: Presents the members of the Chinese side.

Cde. DOMRACHEV:

Yesterday the commission under the leadership of Marshal Konev looked over the basic problems relating to the transfer of models to the Chinese People's Republic. We would like to know if any additional questions have arisen in connection with these issues from the members of the Chinese delegation.

Cde. QIAN XUESEN:

Regarding today's schedule: above all [we will] acquaint you with the situation regarding the research and organization of the production of guided missiles in China. In addition to the preceding conversation, I will address only several of the basic issues in general terms. If you are interested, the comrades present can acquaint you in further detail with the state of our work.

The organ which studies the planning and research of guided missiles in China is scientific research institute No. 5 of the Ministry of Defense.

I already informed you, at the first meeting, that the staff at the NII-5 technical research institute is more than 500 people, and of these approximately 400 have finished university this year and the past year. The rest of them, including 60 people of the mid-level technical staff, graduated from the university and already have 3-4 years of experience.

Institute No. 5 has the following staff:

1. Department of Complex Planning of Guided Missiles, or a Construction Bureau
2. Department of Aero-dynamic Research
3. Department of Basic Construction
4. Department of Engines
5. Department of Fuel and Related issues
6. Department of Guided systems generally
7. Department of Elements, designed for a guided missile system
8. Department of Radio Technology, designed only for a guided missile system
9. Department of Electronic Accounting
10. Department of Physics and Technology, necessary for a guided missile system

Last year our main work was the preparation and working out of the tasks of external aerodynamics and the plan for an aerodynamic funnel. One of the aerodynamic funnels was ordered from the German Democratic Republic. (0.6-1.2 stroke, section of aerodynamic funnel 6.3 x 7.5 cm). This funnel will be finished next year.

Besides this funnel, which has been ordered from [East] Germany, we are working on an aero-dynamic funnel for a temporary reservoir (section 40 x 40 cm., stroke 3.5-4.5).

The plan provides for the blueprints for an aerodynamic funnel of high-level supersonic speed (section 40 x 40 cm, number M - from 5 to 10).

Besides this, we have planned for the construction of still more powerful aerodynamic funnels, but we will not share details on this right now.

A shock wave funnel has been planned, with the quality of an impulse aero-dynamic funnel. We are considering the construction of an aero-dynamic funnel with rarefied gas.

But we still do not have high-level aerodynamic funnels which have been completely built.

Besides this, we are developing plans for a laboratory for research into durable construction.

We are planning an engine stand with thrust capacity of 50 tons for experiments, and an engine stand with thrust capacity of 2 tons.

Soon will begin the construction of factories for the production of oxygen, of a firm powder.

In the area of guided missiles our primary attention is concentrated on the construction of models for the airplane testing of guided missiles. For construction on our own, it seems, we need 2 years. Of course, the construction of such a model is connected to research into electronic accounting machines.

We are also making progress in research in the department of accounting machines. We have a model of the MT-9.

Work on the construction of accounting machines goes forward constantly.

Work on Institute No. 5 of the Ministry of Defense is at the beginning stages.

In our plan of work we are considering the construction of a factory for the experienced issue of guided missiles. By the end of next year (1958) the factory for the production of guided missiles will have around 1000 people.

Regarding the polygon. Right now it is in the planning stage.

I spoke briefly about the situation with institute No. 5.

Planning and researching this on our own, that is, relying on the strengths of the institute itself, is difficult, and therefore we are trying to use the help of other similar institutes in China.

We are in close contact and work with the institute for mechanical research, the institute of accounting technology, the institute of research into electronics, the institute of applied physics research, and the institute of research into automechanics and tele-mechanics.

The Academy of Sciences of China is devoting a significant amount of attention to guided missiles research, as well as the Second Institute of the Second Ministry of Machine Building, the Third Institute of the Second Ministry of Machine Construction, the Sixth Institute of Aviation Materials, the Institute for the Research of Technology Organization and Production, which is being created now, the Tenth Institute – the institute of communications, the Eleventh Institute of Elements, the Twelfth Institute of Vacuum Technology, the Thirteenth Institute for the Research on the introduction of materials in sub-tropical conditions, and the Fourteenth Institute of Wireless Radio Technology. Of course, we have technological collaboration with the scientific-research institute of electronics in the PLA, and therefore we can straightforwardly say, that our government is devoting significant attention to the research, planning, and production of guided missiles.

We believe that the technical strengths of our country in guided missiles research lags significantly behind international levels.

Last year our government established such a course—this is necessary, as over the last 12 years our basic areas of science and technology have gotten closer to the international level. The government has shown that it is necessary not only to catch

up but to surpass the international level, and therefore the government considers it necessary to mobilize all its strengths for the research of this problem and especially in regard to getting closer to and overtaking the international level. The very process of this work has [led to] the growth of our technological capabilities.

Experience shows that this work is very complicated organizational work, as it corresponds to limitations depending on the importance of the work, but we believe that such complicated organizational work is worth doing, as only thanks to such complicated organizational work are we able to fulfill the tasks before us.

I will now address the situation regarding the preparation of cadres.

1. The Beijing Aviation Institute is preparing cadres, and every year prepares some 1000 specialists. It is worth noting that the Beijing Aviation Institute conducts work on guided missiles. These specialists are prepared with the help of Soviet specialists, and for this we are deeply grateful.

2. The Xi'an Aviation Institute. This institute prepares yearly some 800 specialists.

3. The Nanjing Aviation Institute yearly produces approximately 400 people.

4. The Chengdu Institute of Communications. This institute can yearly produce approximately 1000 people.

5. The Beijing Polytechnical Institute yearly produces the following specialists – in artillery, missiles, tanks, radiotechnology chemistry and implements – approximately 1000 people per year.

6. The Polytechnical Institute of North China, where there are specialists in torpedoes and mines, yearly produces 60 people.

7. The Military-Engineering Academy, which is closely related to the research of guided missiles, yearly produces 1000 people.

8. The Engineering Academy of Communications produces approximately 300 people yearly, including wireless radio [specialists].

Besides the previously accounted for institutes or educational institutions, there are other institutes of higher education where there are specialists indispensable to our work, including the following:

1. Qinghua University, where there are departments in radio, chemical engineering, physical engineering, automation and kinetics, and accounting devices.

2. The University in Jiaotong has a department [dedicated to] radio.

3. Harbin University has departments in automation and tele-mechanics.

These cadres can be used for the conducting of research.

I will return to matters relating to guided missiles research.

Our government has placed the task before us to conduct research into the

organization and production of guided missiles which can reach the Filipino Islands or Japan. That is the first requirement.

Second – for [defense against an] invasion by water.

Third – the defense of our cities from the invasion of hostile airplanes with nuclear and atomic bombs. This task is complicated and important. We must dedicate all our strength so that in the next 3-4 years so we can resolve this problem, therefore we turn to you for help in order to achieve this goal. These tasks can be resolved with the help of the Soviet Union. To solve these problems you are interested in industry and in the first place the state of aviation. A different comrade will acquaint you with the state of production of the aviation industry.

Cde. DOMRACHEV:

Thanks [Qian Xuesen] for the information about the state of scientific research work and suggests [the group] be provided with information about the state of preparation in industry.

(from the floor: Yes)

Liu Yin:

By statute of the government our enterprises in aviation industry are to address the task of the production of guided missiles.

I will acquaint you with the state of production of the aviation industry.

Right now we have four factories in all that produce airplanes and four factories [that produce] engines; six factories have been planned by the Soviet Union.

Three factories produce aviation implements. One of these has been planned by the Soviet Union, but has still not been built.

Three factories for the production of electro-mechanical equipment. Three factories produce reinforced steel-frame aviation [equipment]. One factory is for parachutes.

Thirteen factories are for the production of the chassis, and of them twelve produce devices for wireless radios, and one for implements for the administration of PUAZO.

Three factories issue the gear apparatus, of these two are old, and one is being planned by the Soviet Union, and its construction will begin soon.

Eight factories for the production of implements for vacuum technology, and of them two for radio-lamps, [and] three for the production of regular radio-lamps.

Two factories perform detail work, one of which has been planned by Germany [GDR], and the second one, by the Soviet Union.

The factory of ceramic-physics isolation, and two factories for special radio equipment. A factory of standard technological equipment.

You are already familiar with the institutes; therefore I will not repeat [this

information].

From the above mentioned factories there are three radiogram factories, one of which is old, the second of which has been planned by the Ministry of Defense Industry, the third – by the Ministry of Radio Industry.

We have also several planned objectives – a factory for the issue of radio lamps, a factory for the production of radio stations, and a crystal pezoquartz.

In the area of aviation industry we are planning to construct two radio locator factories: one for destroyers, and a second for bombers. They are still not constructed, and much there depends on the negotiations.

Wang Jun:

The radio locator, which guides the missiles, is currently produced at three radio locator factories.

The task of the Nanjing radio locator factory is the preparation of ground radio locators, an artillery making station of SON, and a radio locator for long distance display. The radio locator equipment, which is necessary for the research of guided missiles at institute No. 5, is provided on the basis of the test production of the institute itself, from the three factories [mentioned above], as well as [support from] other factories.

The difficulties in this matter are the following: in the production of miniature thermo stable-vibrating radio lamps. Now we have experience in production from an old radio lamp factory.

The factory for the production of gyroscopes for the guidance of missiles will be built later. We need to prepare a factory to provide for research work. This task belongs to the Second Ministry of Machine Building and to the fourth administration of the Ministry of Aviation Industry.

Work on the preparation and research of special radio lamps is at the organizational stage. The test production of several examples is being organized by the Academy of Sciences.

Question:

As I understand it, there are 500 people in institute no. 5.

Answer:

There are 541 today.

Question:

The experienced factories will have 1000 men by the end of the year?

Answer:

This figure will be achieved by the end of next year.

Question:

Won't there be, probably, more than 1000 people? From our experience one can say that for each worker in the institute you need two workers in the factory in order to proceed normally. Much equipment must be prepared in the laboratory of the institute for a testing factory for the preparation of models [to function].

Cde. Rudnev:

Are you conducting tests in the laboratory?

Answer:

The basic task of this department is the planning of an aero-dynamic funnel.

Cde. Rudnev:

Which foreign examples of guided missiles are you working with? Which ones are you familiar with?

Answer:

We have a model provided by the Soviet Union. Another guided missile system that we are working on is the Swedish "Errikon." What information do you have about the American missile "Motad"?

Question:

What is your physics department studying?

Answer:

The first task there is the production of blueprints, for the planning of the missiles.

The second task is the plan for the engines, which are designated for anti-aircraft guided missiles.

Besides this, we are designing accelerators for anti-aircraft guided missiles.

Question:

You informed us of the number of prepared engineers. These are in what specialization?

Answer:

That's in general.

Question:

Of these engineers how many are specialized in radio technology?

Answer:

Next year Beijing Aviation Institute will prepare some 120 people, and the year after still 180, and after that 250.

Question:

Some 10-12% will be dedicated to radio. Did I understand that correctly?

Answer:

Yes.

Cde. Rudnev:

How do you intend to arrange the connections between the Academy of Sciences and the institutes? Who will have the leading role – the Chinese Academy of Sciences or NII-5?

Answer:

NII-5 of the Ministry of Defense.

Cde. Zverev:

At the enterprises of radio-technology industry which study ground radio-technical apparatuses, do you have a construction bureau and a scientific research laboratory?

Answer:

In several factories, for example, the radio locator has such a construction bureau, but on a large scale.

Question:

Approximately when will the polygon [be constructed]?

Answer:

It will be completely done in 1961.

Question:

How are you organizing the matter of the preparation of military cadres at the polygon? To whom will the polygon be subordinate – to industry or to the Army?

Answer:

The polygon is subordinate to the Army. The artillery workers are responsible for its construction. Regarding the preparation of cadres? They will be prepared by the military-engineers artillery academy. The polygon will be subordinate to this organ.

Wang Yi:

The basic goal of today's discussion has been the study of the following questions: first, the study of the state of research and the conditions of production in China of guided missiles.

Do the conditions exist, as the General of the army suggested yesterday, for us to produce a guided missile capable of reaching a distance of 1000 [kilometers?] I hope that Your serious attention will be devoted to this matter.

Now I want to consider the question which requires the "Land-Land" for 1000 kilometers with an atomic missile. Thanks to the help of the Soviet Union there is a foundation for such a weapon (airplane and artillery). But if you compare our weapons with the weapons of the adversary—Americanism imperialism or Japanese militarism—the aviation naval forces are comparatively more [developed]. In order to change this correspondence of forces in aviation and the navy, it is necessary to catch up to the imperialist countries. And we have not been able to catch up in the past few years and won't for another fifty years.

In regard to rocket technology and missile guidance systems. Based on the development of global science and technology, in particular based on the achievements in the Soviet Union, if we mobilize all our forces, and thanks to the help of the Soviet Union, in 3 to 5 to 15 years we can in this regard surpass the imperialist countries.

Having the missile "Land-Land" will allow us to protect ourselves and contest American imperialism on the Japanese islands, [where they have military bases]. The issue here is not only distance, of course, which is important, but also in addition we must have the atomic missile, and it is necessary to combine the atomic missile with the distance of a flight. This is the basic theme which we discussed yesterday. Yesterday Marshal Konev communicated that it is necessary to consult with specialists. Of course, in this regard many difficulties remain, such as the weakness of industry and China's technological level.

Based on the R-2 missile such issues can be addressed, as it is necessary that the guided missile be able to reach a distance (Japan, Philippines) and to strike with an atomic load. The second requirement has not been met, in the opinion of the delegation.

We think that there are many other difficulties, and that it is necessary to find a different route.

The best alternative: to develop a guided missile at a distance of 1000 km [which can carry] an atomic load.

The second best alternative: provide us with a guided missile that is closer to being ready. Based on this missile provide us with equipment and specialists, so that we can bring it closer to conclusion. And for the past 3-4 years fulfill this task.

As this is our main goal, all our work in research, planning, and production is directed to the resolution of this problem. Strengthening the military forces of the camp of socialism and democracy, led by the Soviet Union, as yesterday said the general of

the Army, only [in such circumstances] will the missile be the true helper of the Soviet army in the next war.

Are there any personal ideas and views? This is the basic goal of our meeting. I ask you to think about how to help us. If the conditions are right, it will be the best way to develop a guided missile; if the conditions are not right, then help us in planning, testing, and research, so that in the end such guided missiles can be created. Yesterday Marshal Konev said that a third commission is consulting on these questions.

From my very heart I ask you to think about the views of the Chinese delegation, and I also ask for your support.

Cde. Domrachev:

We understand the goal of the Chinese: to create a powerful armed force that can hold its own against the terror of the enemy. However practical problems in this area will be decided by a new commission—on this commission will be Cde. Konev and M.... Comrade Konev said that we will return to this matter, and look over and make recommendations at a meeting of the first session and therefore before the resolutions of the first commission the main administration cannot decide these questions.

What questions would the Chinese comrades like to discuss at the next meeting of our commission?

The Chinese delegation suggests a discussion of the following:

1. Based on what the Chinese delegation has presented, [we would like] to hear the opinions of Soviet comrades on the setup that we have in China for the fulfillment of these problems.
2. Resolve the question of the transfer of the models of the R-2 rocket.

Cde. DOMRACHEV:

Suggests agreement with the proposals of the Chinese delegation regarding the first part and beyond this informs the Chinese delegation what scientific research work and experimental-constructive work is necessary for the "Land-Land" and "Land-Air" system.

The Chinese delegation agrees with the suggestions of representative of the Soviet Union c. Domrachev.

The next meeting will be held 13 September 1957.