CENTRAL INTELLIGENCE AGENCY

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MANAGEMENT AT INSTITUTE 160

Organizational Features

1. Institute 160, located at the workers' settlement of Fryazino near Moscow, was engaged in the development and production of high-frequency vacuum tubes. An enterprise of the Ministry of Communications Equipment (MCEI), it was directly supervised by the Chief Administration for Vacuum Techniques within that ministry. Other administrative units within this ministry included a main administration for Electrical Parts under the direction of a certain [redacted] Popov, a Chief Administration for Television, and a main administration for Guided Missile Steering Techniques. The existence of the last two main administrations is an assumption based on the knowledge that German specialists in these fields of endeavor were under the supervision of the MCEI. 25X1 25X1

2. [redacted] Fryazino in 1946, the MCEI, the Radar Committee, and a ministry engaged in the construction of large electrical generators and power transmission systems were separate entities. These three organizations were merged into one ministry sometime in 1947 and 1948. Therefore, there must also be several main directorates within the MCEI concerned with the production of electrical generators and power transmission systems. 25X1

3. Institute 160 was directly supervised by the Chief Administration for Vacuum Techniques. There was no intermediate supervisory agency. Inasmuch as the Chief Engineer of the Chief Administration was the ministerial official most directly concerned with operations at Institute 160, relations between the Institute and the ministry were largely determined by the personality of the individual occupying this post. In all, four persons occupied the position of Chief Engineer at Fryazino; in chronological order: [redacted], [redacted], a third person [redacted] and [redacted], formerly Chief Engineer at Institute 160. 25X1 25X1

4. Institute 160 consisted of two major divisions, the research institute proper, engaged in the development of vacuum tubes, and the plant which produced these tubes on a serial basis. The Chief Director of Institute 160 was over-all supervisor of operations there. His main assistants were the Chief Engineer, who directly supervised the operation of the production plant, and the Scientific Director, who was in charge of the research institute. The Business Director (der kaufmaennische Leiter) and the personnel Chief of the Institute reported directly to the Chief Director and were responsible for activities in both the research institute and the plant. Although the Personnel Chief and his section were evidently under the administrative control of the Chief Director of the institute, they were under the functional, de facto control of the MVD.

5. Similarly, the Business Director and his department were under the functional control of the Ministry of Finance. This department, [redacted] call it a Rechnungsabteilung in Germany, was responsible for all financial affairs of the institute. The Ministry of Finance also supervised all 25X1

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construction work at Institute 160 as well as its transportation pool.

Planning Procedures

6. The research institute was divided into sections consisting of two to four laboratories; laboratories made up of two to four groups; and groups usually consisting of a senior engineer, three or four assistant engineers, and a large number of technicians. The original annual plan for the Crystal Detector Laboratory was drawn up in about August of each year. The institute had already received orders from the MCEI, usually originating with military agencies, which predetermined the general outline of the work each laboratory was expected to carry out. At this time, the laboratory chief called together two or three of his best engineers and together they drew up the annual plan. This plan was reviewed and approved by the section leader, the Scientific Director, and, finally, the Chief Director of the institute. It was seldom altered by these deliberations.

7. The plan was incorporated in the institute's over-all annual plan and was forwarded to the ministry for action and approval.

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8. Incidentally, there were few qualified Soviet personnel at Institute 160 during early years there. As a result, Zuzmanokskiy, Dr. Steimel generally drew up the plans for the entire institute during this period. 25X1

9. It is noteworthy that plans drawn up by a section chief always contained a certain margin of error for him. He allotted more time for the completion of individual projects than was actually necessary. In this way, a section chief was always able to report that projects under his supervision were completed ahead of schedule or, if anything went wrong, were at least completed on time. However, the plans issued to individual engineers were not the same as drawn up and reported by the section chief. Time schedules for projects assigned to individuals conformed to realistic estimates, whereas the same projects contained in plans on the section level were based on inflated estimates of time required.

10. Control of plan fulfillment within the institute was primarily carried out by means of monthly reports which section and laboratory chiefs were required to submit to their superiors. Political advisors in sections and laboratories, the zamnachalniki and dispechery, apparently were also held responsible for checking up on the fulfillment of research plans. Neither the Party Committee at the institute nor the Planning Office had any direct plan-control functions. /See section below on MVD-MGB activities for further information on this point./

Activities of Party Committee

11. The conducting of meetings on the laboratory, section, and institute levels for the purpose of discussing both political

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topics and institute affairs was the primary function of the local Party Committee. Institute-wide meetings began at 1700 hours (one-half hour before the end of the work day) and sometimes lasted as long as three hours. Apparently all Soviet workers and employees were required to attend these meetings, as only the German specialists were allowed to leave the institute grounds on such occasions. The content of the meetings and the manner in which they were conducted were all but unknown , as German specialists were not allowed to attend them. Apparently some workers were influenced by these lectures, as they discussed in the laboratory the following day political topics which had been presented there.

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12. The Party Committee was also wholly or partially responsible for conducting political courses, production improvement campaigns, and State loan drives. It is possible that the Zavkom also played a role in the latter two activities. It was difficult to determine which of the two organizations had primary responsibility, as directives regarding such matters were issued over the signature of the institute director, the Party Secretary, and the chairman of the Zavkom.

13. Production improvement campaigns had little effect on our research activities. In one campaign, research engineers and technicians were encouraged to submit suggestions concerning technical innovations. Even in such matters, it appeared that each laboratory had its norm to fulfill and was required to submit a certain number of suggestions. However, these demands were not too difficult to meet. It was a simple matter to lift an idea out of an American technical journal, to point up its applicability to Soviet conditions, and to submit this as a suggestion.

14. The Party committee evidently had little influence in managerial matters except in the question of establishing fines and other disciplinary measures. These questions were evidently decided by the Party Committee and not by the Zavkom. The Zavkom enjoyed far less prestige and influences at Institute 160 than the Party Committee. The former committee was considered important only in matters referring to annual and sick leave.

15. Only a relatively small percentage of the Soviet engineers and workers at Institute 160 were members of the Communist Party. As is true in all other countries, Soviet scientists and engineers were little interested in politics. Even many Soviet engineers in leading positions at Institute 160 were not Party members. However, if he aspired to become head of an institute or to occupy a post of similar responsibility, it was certainly necessary for an individual to be a Party member. It was also true that a Party member would always be given the nod for a particular job if he possessed technical qualifications equal to his nearest competitor who was not a member of the Party. Furthermore, a few Soviets at the institute utilized their Party membership to obtain positions beyond their technical capacity. However, they were quickly relieved, if necessary, by non-Party members, if they could not meet the requirements of the job.

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MVD-MGB Offices and Activities

16. In referring to the Soviet security police, the Soviet employees of Institute 160 always spoke of the "MVD". [redacted] 25X1

17. There were several MVD offices at Institute 160. First, it was evident that the personnel chief as well as the entire personnel section came under the jurisdiction of the MVD. This office was responsible for the security of the institute, except for documents, as well as for some personnel duties. It certainly maintained detailed dossiers on all personnel. Other personnel functions, the calculation and distribution of payrolls, came under the authority of the institute's Business Director.

18. It is interesting to note that the Personnel Chief accompanied a group of German specialists [redacted] 25X1 He personally travelled with [redacted] personnel files and presumably turned them over to some office in Berlin. He was also present at the Berlin Oberspreewerk when these German specialists were interviewed there for jobs.

19. In addition, there must have been an MVD office which supervised the activities of informer networks within the institute. However, this office was evidently independent of the personnel section and probably functioned independently of the entire institute. [redacted] German informers reported to Soviet agents who operated somewhere outside of Institute 160. 25X1

20. Finally, the institute's Consultation Office (Betreuungsbuero), which was supposed to provide services for the German specialists, was also an MVD office, apparently subordinate to the Personnel Chief. Indicative of this chain of command was the fact that when a German specialist unsuccessfully lodged a complaint with the Consultation Office, the next higher place of appeal was the chief of the Personnel Section.

21. It was the primary function of the Consultation Office to accompany German specialists when they went on sightseeing or shopping tours to Moscow and neighboring towns. [redacted] 25X1 at Fryazino, [redacted] allowed to travel alone to Moscow, probably because of a shortage of personnel. Later, [redacted] required to travel with a guard when on such trips. The consultation office also issued ration cards to the German specialists prior to the currency reform, ordered tickets for cultural activities in Moscow, and performed other minor services.

22. A political advisor was assigned to almost every section or large laboratory. These employees were called zamnachalnik (deputy chief) when assigned to a section and dispecher (dispatcher) when assigned to a laboratory. These individuals had very little understanding of technical problems and simply carried out minor administrative duties. They checked attendance, calculated percentages of plan fulfillment, et cetera. They also reported to their superiors when morale was low in their sections and noted sources of dissatisfaction. However, they primarily served as political

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commissars. In all likelihood, their main function was to spy upon, to observe the activities and conversations of, other employees in an effort to weed out political unreliables. In line with their political duties, they were also required to hold brief political lectures after working hours. These lectures were anything but inspiring, as they consisted of nothing more than a verbal rendition of the latest Pravda editorial. Most of these men were too stupid for more ambitious efforts.

23. The control of plan fulfillment apparently fell within their range of duties, although such activities on their part were not conspicuously significant. They simply collected monthly reports from individual engineers and calculated percentages of plan fulfillment.

24. These individuals most likely were MVD agents, although it is possible that the positions were filled by Party functionaries. It is worthy of note that one zamnachalnik accompanied our group back to Germany, a task normally assigned only to MVD employees. Furthermore, the zamnachalniki associated closely with the Personnel Chief of the institute.

25. Section 1, the security section, was responsible for safeguarding classified documents at Institute 160. In all likelihood, this office was under the jurisdiction of the MCEI, although it is possible that it too was controlled by the MVD.

26. German specialists were denied access to some classified documents at Institute 160, which presumably reported on research work carried out in the field of electronics elsewhere in the Soviet Union. [redacted] 25X1

[redacted]

Soviet research workers were not encouraged to communicate with one another and facilities providing for the exchange of information were limited. Even within Institute 160, not all Soviet research workers were allowed free access to all sections in the Institute. Furthermore, the German specialists would have undoubtedly received second-hand information regarding classified documents if they were widely circulated among the Soviet specialists at the institute.

27. Police controls at Institute 160 had no apparent direct effect on operations there. However, the police-State system produced some strong, indirect negative effects. First, it encouraged Soviet engineers and scientists to avoid responsibility, to "pass the buck". And, secondly, it discouraged them from undertaking projects which could possibly fail.

28. The explanation is quite simple. Soviet technicians feared failure above all, as an unsuccessful project could easily result in a loss of job and status or even arrest as a saboteur. It was almost amusing to observe Soviet scientists or engineers discussing for days on end the pros and cons and "ins and outs" of a project. They wanted to be very sure of themselves. And even after these hours of talk, they would often fail to reach a decision among themselves but would settle the matter by referring to a precedent

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described in an American technical journal. In such cases, they eagerly accepted American practices as a defense against direct personal responsibility in the event that things went wrong.

GENERAL COMMENTS ON SOVIET SCIENCE AND INDUSTRY

Positive Factors Affecting Soviet Technical Efficiency

29. [redacted] there are several features of Soviet research and industry which have a positive effect on its over-all efficiency. First, the Soviet Government has developed a system to force people to work and to work hard. The average Soviet [redacted] is innately lazy and not prone to hard work but the Soviet authorities have met this problem with Draconian measures. They force workers to be present at work at the required hours by meeting infractions with harsh punishment. Soviet workers are forced to work hard by means of the incentive-forming norm system. And, finally, they are kept working by continual propaganda calling for increased and better production efforts.

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30. The Soviet Government's thrifty policy of conserving its own natural resources is another positive factor in Soviet industry. Soviet authorities think twice before exporting raw materials abroad which might be needed by their own industries in two years or so. They prefer to import raw materials at relatively high prices rather than reduce their own natural resources.

31. A further positive side of Soviet industry (although probably not affecting efficiency) is the virtual absence of unemployment in the Soviet Union. Full employment and the numerous activities which fill the non-working hours of Soviet workers engage their attention and resources to such an extent as to hinder the development of dangerous political ideas.

Negative Factors Affecting Soviet Technical Efficiency

32. Soviet planning procedures have negative as well as positive effects on industrial efficiency. One striking feature of Soviet planning methods is the fact that quantity and not cost was the factor which determined the production of strategically important industrial products. Once Soviet planners established that it was necessary to produce, for example, 100,000 vacuum tubes per year, this number was produced no matter what the cost may have been. This policy had both obvious advantages and disadvantages. One disadvantage was the waste of man-power which resulted from it.

33. The poorly functioning distribution system of Soviet industry was both an example and a cause of inefficiency. The most casual foreign observer in the Soviet Union quickly noted that consumer goods, for example, matches, might be plentiful in every shop for a period of ten months and then, inexplicably, were nowhere to be found. Soviet industry faced the same problem in procuring raw materials and unfinished products. This problem was caused by faulty distribution due to misplanning. The parts which were needed for

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a particular production may have already been produced but they lay gathering dust in a warehouse and never arrived at the spot where they were needed. This compelled many industrial enterprises to strive for self-sufficiency, which in turn bred further inefficiency.

34. Another important problem affecting industrial efficiency was a distinct shortage of skilled workers and engineers in the Soviet Union. Any country going through a period of rapid industrialization would be faced with this problem. there was a greater shortage of skilled workers in the Moscow area than in Leningrad. Leningrad possessed a pool of skilled workers, who had a professional tradition of several generations' standing. 25X1

Soviet Dependence on Electronics Developments in the West

35. Information contained in American and British technical journals was of decisive importance in the development of the Soviet electronics industry. No Soviet scientist has put forth any work in the field of electronics which can be characterized as real research. Their activities have been almost entirely limited to copying or improving prototypes produced in the United States and Western European countries.

36. All American and British technical journals were available at Institute 160, both in the institute's library and in the Moscow library All American scientific and technical journals were available, even Popular Mechanics. It is noteworthy that Popular Mechanics and Popular Science were not on hand in these libraries during the last few years at Fryazino. These publications were probably withdrawn because they enabled Soviet readers to compare their living conditions with those in the United States. At any rate, it was certainly true that they were the two American magazines most sought out by Soviet employees of Institute 160. It is also logical to assume that their interest in American life was the primary reason for reading these magazines, as the technical knowledge contained in them was of negligible importance. It is also interesting to note that any editorials as well as the biographies of Soviet -born or Soviet -educated contributors had been deleted from the purely scientific American journals prior to their appearance in the institute's library. 25X1 25X1

37. No American journals were available for a period of three months in 1951. The normal flow of these publications resumed after this brief lapse. It was generally assumed by German specialists at Institute 160 that the United States Government had hindered the procurement of these publications by Soviet agencies during this period.

38. the Soviet readers of these scientific journals were not influenced in any way other than by the technical knowledge which they obtained from them. These individuals undoubtedly recognized that, if it were necessary to obtain information regarding technical developments in the United States, American technology was leading in the field of electronics. doubt if this factor increased their 25X1 25X1

admiration of the United States or strengthened any feeling regarding the universality of science and men of science.

39. It is doubtful that the Soviet electronics industry based its operations on information received from covert intelligence sources in the United States. Even more indicative is the fact that the development of transistors was the most important American contribution to electronics in recent years. One day, a Soviet engineer at Institute 160 approached with the first American publication of this development It undoubtedly was an extremely important innovation in the field of electronics, the Soviet engineer submitted an application to the MCEI requesting permission to carry out research in this field. Institute 160 received not only approval of this request from the ministry but an order to begin such work as soon as possible. Here, the initiative came from an individual reading an overt publication and not from any intelligence source.

Campaign for Closer Science-Industry Ties

40. A campaign to promote the more rapid application of scientific discoveries to industrial purposes was the object of much talk at Institute 160. Soviet scientists felt themselves to be hindered by such measures.

41. As a possible explanation of this policy, the Soviet Government realized that Soviet scientists were bringing forth few new ideas in comparison with American scientists. It is entirely possible that Soviet scientists, in attempting to defend themselves, introduced the idea that the practical application of their ideas and not the paucity of their discoveries was to blame for the relative backwardness of Soviet science.

Capabilities of Soviet Electrical Engineers

42. the shortage of trained personnel, both scientists and engineers, was the primary limitation on the further development of the Soviet electronics industry. In particular, there was a great shortage of engineers in the age group of 35 to 45; engineers who had the necessary experience to supervise the efforts of younger colleagues. Furthermore, there were hardly any engineers from 28 to 35 years of age at Institute 160. War losses were probably to blame for this situation.

43. On the other hand, a large number of electrical engineers up to the age of 28 were graduating from Soviet universities and educational institutes in recent years. There were some very intelligent and gifted specialists in this age group employed at Institute 160. Engineering was one profession favored with relatively good wages in the Soviet Union, a factor which attracted many gifted students to this field.

44. the Soviet electronics industry will no longer

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be confronted by this personnel problem after ten years or so have passed, and this new generation has acquired the necessary experience. It is quite possible that the Soviet electronics industry might then possess the finest group of engineers in the world.

45. The Soviet education system provided engineering students with a very good knowledge of theoretical mathematics. In fact, Soviet engineers on the whole were better mathematicians than German engineers with similar educational backgrounds. Excellence in mathematics was the most favorable professional characteristic of Soviet engineers.

46. However, Soviet engineers lacked adequate training in general physics and general engineering. Their engineering training was too highly specialized. This was their most serious drawback, as the various engineering specialities frequently overlapped in practice. Practical work does not conform to the rather arbitrary categories defined by educational institutions. For example, the Soviet specialists in klystrons at Institute 160 were unable to handle any problem involving the use of measuring instruments but had to call in a radio expert from Moscow to deal with this matter. It is taken for granted in Germany that a klystron specialist knows enough about measuring instruments to deal with the problem himself. One can draw an apt parallel with the Soviet medical education system. Medical training there was highly specialized and most Soviet doctors were specialists of one sort or another. As a result, it was impossible to find a good diagnostician who was able to refer you to the correct specialist.

47. [redacted]

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Stalin Prizes

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48. [redacted] no specific information concerning the manner in which Stalin Prizes were awarded. However, it is interesting to note that, on two separate occasions, Soviet engineers and technicians were granted Stalin Prizes for work [redacted] performed. In one case, the Soviet director [redacted] as well as the Soviet engineer who handled the technical, (as opposed to the theoretical) side of the problem received Stalin Prizes for [redacted] crystal rectifier detectors. KRASILOV, the laboratory director, received the largest prize. In addition to this monetary bonus, he was granted a vacation in Crimea or the Caucasus for himself and his entire family.

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WORKING CONDITIONS AT INSTITUTE 160

Salaries and Wages

49. In addition to their normal salaries, both Soviet and German engineers at Institute 160 were occasionally allowed to work according to a form of contract work (Akkordarbeit), referred to in Russian as "naryad". Engineers were occasionally able to earn in this manner an additional amount of money equivalent to 50 per cent of their monthly salaries. These contracts and the additional pay involved were theoretically granted only when the contractee carried out a special project in addition to his normal monthly planned assignments. That is, a naryad applied only to work over and above a monthly quota. However, this was not always the case in reality. It was quite possible for an engineer to accomplish his naryad work as well as his normal work within the customary hours of work.

50. Naryad assignments were very easy to obtain before the currency reform, when prices were high. An engineer simply approached his section chief, asked for and was granted such a special assignment. The only effort required was to put his signature to a contract pledging himself to carry out an additional task. In recent years these contracts were generally awarded only when special priority projects were received from the ministry which had to be completed in a certain specified time.

51. German employees at Institute 160 seldom received bonuses. They were frequently distributed to Soviet engineers, but generally only to laboratory chiefs and to persons occupying positions of greater responsibility. These leading personnel received bonuses every month which on the average amounted to 30 per cent to 50 per cent of their basic monthly salaries.

52. Bonuses were distributed when the various laboratories and sections completed research or production plans on time or ahead of schedule. A stipulated amount of money was presumably set aside for bonus payments in the contract drawn up between Institute 160 and the MCEI, which originally set forth the planned project. This money was released as the various stages within the project were completed on time.

53. This bonus system did not bring about more efficient operations but simply encouraged responsible individuals in the institute to draw up plans in such a way as to guarantee their fulfillment. Work operations would have been performed more efficiently if the amount of money set aside for bonuses had been included in basic salaries and if the ministry itself had drawn up sensible plans corresponding to the time actually required for their completion.

54. The basic salaries of engineers, research scientists, and other responsible personnel were determined according to two criteria: the position occupied by an individual, and the academic degree which he held. Although engineers in leading administrative positions received higher salaries than other engineers with the same academic degree, salary differences were mainly determined by academic standing. A Soviet engineer, who held the degree of kandidat, received a higher salary than the section chief who supervised him if the

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section chief had a lower degree. However, there were some Soviet engineers at Institute 160 who were employed under special conditions. These individuals, because of their unusual experience or abilities, were paid salaries normally given only to persons having higher academic titles.

55. The chief director of Institute 160 received a basic salary of 6,000 rubles per month. It was rumored that bonuses which he received added another 4,000 rubles to this sum. The chief engineer and the scientific director of the institute were paid approximately the same salary. Engineers with the degree of kandidat were paid basic salaries ranging from 3,000 to 4,000 rubles per month, depending on their age and experience. A laboratory chief with the degree of aspirant received a basic salary of from 2,000 to 2,500 rubles per month. An aspirant who did not hold a job calling for administrative responsibilities probably received from 1,500 to 2,000 rubles per month as a basic salary. An engineer without a higher academic degree and administrative responsibilities was paid a basic salary of about 1,200 rubles per month.

Controls Over Employment Mobility

56. Recent university graduates employed at Institute 160 were required to work for a stipulated period of time at places of employment designated by the MCEI.

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57. On the other hand, recent university graduates were evidently given some freedom of choice in job assignments. Apparently some of the more talented university graduates were able to choose between employment in Moscow or Fryazino. Many such engineers were encouraged to renounce their natural preference for working in Moscow by offering them relatively favorable housing in Fryazino.

58. All other Soviet engineers were subject to some controls on their employment mobility, as evidenced by the fact that many employees at Institute 160 were transferred against their wishes to plants in Novosibirsk and Tashkent. Furthermore, many engineers who wished to transfer to another place of employment were unable to do so. They presumably were required to submit an application for transfer to the MCEI through their laboratory or section chief. The approval of such an application evidently depended considerably upon the recommendation of immediate supervisors. If a section chief approved such a request, an applicant experienced no great difficulties in obtaining a transfer. But it is noteworthy that those who were successful generally were the least qualified engineers.

Comments: In all probability, the MGB and not the MVD was the agency which controlled the activities of the personnel section and other security agencies at Institute 160. 25X1

Soviet colleagues were probably not aware of recent changes transferring certain functions of the MVD to the MGB. It is also quite possible that the Ministry of State Control and not the Ministry of Finance supervised the institute's accounting and finance offices. 25X1

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