

CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

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SECURITY INFORMATION

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THE SOURCE EVALUATIONS IN THIS REPORT ARE DEFINITIVE.  
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(FOR KEY SEE REVERSE)

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General Information

- The First State Bearing Factory (Pervyy Gosudarstvennyy Podshipnikovyy Zavod, or 1 GPZ) is located at 9 Sharikopodshipnikovaya Ulitsa, Zhdanovskiy (formerly Taganskiy) Rayon, Moscow. Branch lines run from the factory to Ugreshskaya Station on the Moscow Circular Railway. In addition to the Moscow Circular Railway the factory is connected with the town by streetcar routes Nos. 20, 40, and 43 and bus routes Nos. 15 and 43. Entrance to the factory is through a four-storied building which faces Sharikopodshipnikovaya Ul. Above the entrance there is a sign in gilt letters, "First State Bearing Factory i/n L. M. Kaganovich". The factory belongs to the Ministry of the Automobile and Tractor Industry of the USSR and is directly subordinate to the Chief Directorate of the Bearing Industry of the ministry. The address of the latter is 23 Neglinnaya Ul., Moscow.

History

- The construction of the factory was started at the end of 1930 on a site which had previously been a marshy refuse dump, near Simonovskaya Sloboda, which was subsequently named Leninskaya Sloboda. Work on the construction of the factory was continued day and night, with the exception of the winter months. By December 1931 the first-priority buildings had been completed and equipment, consisting of 900 machine tools and other machinery, had been introduced. In March 1932 an additional 600 articles of equipment were installed and the factory started producing the first No. 203 bearings. The second set of buildings was completed in January 1934 and about 3800 articles of equipment were installed in the factory. The total cost of construction was in the region of 108 million rubles, and that of the equipment which had been installed, 6,000,000 rubles. The design of the factory followed the plans of the Italian RIV bearing factories, and was based on the manufacturing methods of that firm, which had a large factory at Villa Pericossa. A number of American, German, and

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(Note: Washington Distribution Indicated By "X"; Field Distribution By "#".)

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figures from the right denote constructional peculiarities of the bearing. Below is given a list of tables, complete as far as possible, from which the diameter, series, type, etc., of a bearing can be obtained when its designation number is known.

a. First two figures from the right

Internal diameter:	10mm = 00
	12mm = 01
	15mm = 02
	17mm = 03
	20mm = 04
	25mm = 05
	30mm = 06
	35mm = 07
	40mm = 08
	45mm = 09
	50mm = 10
	55mm = 11
	60mm = 12
	65mm = 13
	70mm = 14
	75mm = 15
	80mm = 16
	85mm = 17
	90mm = 18
	95mm = 19
	100mm = 20
	105mm = 21

b. Third figure from the right

1. Denotes specially light series
2. " light series
3. " medium series
4. " heavy series
5. " light, wide series
6. " medium, wide series
7. " not stated
8. " not stated
9. " non-standard size of internal diameter

c. Fourth figure from the right

- Figure 0 denotes - radial ball bearing (radialno-sharikovyy podshipnik)
- " 1 " - radial spherical ball bearing (radialno-sharikovyy podshipnik, sfericheskiy)
- " 2 " - radial roller bearing with short cylindrical rollers (radialnyy rolikovyy podshipnik s korotkimi tsylindricheskimi rolikami)
- " 3 " - radial spherical roller bearing (radialnyy rolikovyy podshipnik, sfericheskiy)
- " 4 " - radial roller bearing with long cylindrical rollers (radialnyy rolikovyy podshipnik s dlinnymi tsilindricheskimi rolikami) and needle bearings (igolchatyy podshipnik)
- " 5 " - radial roller bearings with spiral rollers (radialnyy rolikovyy podshipnik s vitymi rolikami)
- " 6 " - radial thrust bearings (radialnyy upornyy podshipnik)
- " 7 " - cone roller bearings (radialnyy konicheskiy podshipnik)
- " 8 " - thrust ball bearings (upornyy sharikovyy podshipnik)
- " 9 " - thrust roller bearings (upornyy rolikovyy podshipnik)

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[redacted] 25X1  
 origin.

[redacted] All equipment was of foreign

[redacted] In the Turning Shop automatic multi-spindle machines for the treating  
 (obrabotka) of races [redacted] were installed. 25X1

[redacted] About 150 automatic machines made  
 by the German firm of Schoy were installed for treating races of larger size.  
 Other machinery included Blanchard surface-grinding machines (plosko-shlifovalnyy  
 stanok) for grinding races. 25X1

3. The first samples of bearings were assembled in January 1932 under the supervision of Italian specialists. Mass production of bearings Nos. 203, 218, etc. started in March 1932. During 1932 about 3,000,000 bearings of 28 types and sizes were produced, in addition to 1,500,000 unfinished bearings. In 1933 production was about 8 million bearings, in 1934 - 14 million, in 1935 - 17 million, and in 1936 - 26 million. In 1932 several factory schools were organized to train workers in their specialties. All workers joining the factory had to pass through these schools. In the autumn of 1941 a large part of the factory, both personnel and equipment, was evacuated to Kuybyshev on the Volga, Saratov on the Volga, Tomsk in Siberia, and Sverdlovsk in the Urals. At these towns new bearing factories were set up, new equipment obtained, and additional workers recruited. These factories expanded considerably and are now the average size of factories of this category. The factory at Saratov has been allotted the number 3, the Kuybyshev factory the number 4, the Tomsk factory the number 5, and the Sverdlovsk factory the number 6. The situation regarding the part of the factory which stayed in Moscow remained indefinite until the end of 1941. In 1942 the factory was re-organized and started the production of bearings for the tank industry and aviation industry in addition to articles in connection with the production of small arms. The factory on several occasions received mentions and prizes for its work. At the conclusion of hostilities the factory reverted to its pre-war production, which consisted of the manufacture of bearings for the automobile, tractor, agricultural, coal, metallurgical, oil, and other industries.

#### Production

4. Prior to the war the factory did not manufacture bearings of large overall dimensions (krupnogabaritnyy podshipnik) for rolling mills or high precision bearings. After the war the production of large overall-dimension and precision bearings developed considerably. The factory is at present turning out roller friction bearings (podshipnik kacheniya) of various types, such as radial ball and roller bearings, radial thrust ball and roller bearings, and ball and roller thrust bearings. Bearings produced include roller bearings with cylindrical rollers, bearings with long cylindrical rollers, needle bearings, cone bearings, double-row spherical (barrel type) bearings, and bearings with spiral rollers (vitoy rolik). Every type of bearing is allotted a designation consisting of up to 6 figures. The first two figures from the right denote the shaft diameter or internal diameter of the bearing. In the case of bearings with internal diameters less than 10mm the figures give the actual size of the shaft bearing. In the case of bearings with diameters of 10mm and over the first two figures indicate the diameter of the bearing but do not represent its actual size, which can be found from the table below. The third figure from the right denotes the series to which the bearing belongs. The fourth figure from the right denotes the type of bearing. The fifth and sixth

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d. Fifth and sixth figures from the right

As previously stated the fifth and sixth figures denote constructional peculiarities in bearings, of which there are several score. Radial ball bearings, for instance, have 12 constructional varieties, roller bearings with short cylindrical rollers have 14 varieties, and radial thrust bearings 11 varieties. A single-row, (odnoryadnyy) radial ball bearing with aperture for insertion of ball and with one protective washer is allotted a fifth figure, "6". A bearing with two protective washers is allotted a fifth figure, "8", and with one felt packing a fifth figure, "2".

e. Bearings with internal diameters below 10mm

Bearings with internal diameters below 10mm are designated somewhat differently as follows: Radial, spherical ball bearings with:

Internal diameter	5mm	=	1005
"	"	"	6" = 1006
"	"	"	7" = 1007
"	"	"	8" = 1008
"	"	"	9" = 1009

Single-row, radial ball bearings with internal diameters below 10mm are allotted one figure only as follows:

Internal diameter	4mm	=	4
	5mm	=	5
	6mm	=	6
	7mm	=	7
	8mm	=	8
	9mm	=	9 etc.

f. Single-row, radial ball bearings

Single-row, radial ball bearings are allotted only three figures in their series numbers, as "0" (the fourth figure from the right) is omitted.

Single-row, light series radial bearing, internal diameter	10mm	=	200
"	"	"	12mm = 201
"	"	"	15mm = 202
"	"	"	17mm = 203
"	"	"	20mm = 204
"	"	"	100mm = 220
"	"	"	105mm = 221 etc.

Single-row, heavy series radial bearing internal diameter	25mm	=	405
"	"	"	60mm = 412 etc.

Example of ball-bearing designations are given below:

Double-row, thrust ball bearings belonging to the heavy series are designated:

Internal diameter	25mm	=	38405
	75mm	=	38415 etc.

Double-row, thrust ball bearings belonging to the medium series are designated:

Internal diameter	70mm	=	38314
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Radial spherical bearings of medium wide series are designated:

Internal diameter	40mm	=	1608
	60mm	=	1612

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Radial spherical bearings of medium series are designated:

Internal diameter 10mm = 1300  
 45mm = 1309  
 95mm = 1319

Bearings with internal diameters other than standard are manufactured when specially ordered.

Materials and Methods Employed in the Manufacture of Bearings

5. In the manufacture of bearings (races, balls, and rollers) high-carbon chrome-manganese steel, types: ShKh6, ShKh9, ShKh10, ShKh12, and ShKh15, is employed. Separators are made primarily from brass, and also from duraluminum, textolite, and steel. During the last three years, brass separators have been produced by the precision-casting method, in addition to the stamping method. Races are turned from solid, round rods, and from seamless pipes with thick walls. In addition they are manufactured in the forge. The methods used in the forge are as follows:
  - a. By hot-forging solid rods on horizontal forging machines and by the employment of hammers;
  - b. By hot-rolling of blanks of smaller size in the Rolling Section (Otdeleniye Raskatok) of the forge. Rolling machines produced by RIV are being replaced by machines of Soviet make, KSM-05 and KSM-06. The KSM-06 machine rolls out a race in 12-14 seconds, after which the race requires light turning only. Mass production of races by this method started in 1951;
  - c. Cold stamping of rings on presses, from sheet steel, mainly for bearings with cone rollers. Balls are manufactured by stamping in the Ball Shop (Sharikovyy Tsekh), which has sections for large balls, medium balls, and small balls; in 1946 and 1947 numerous, new, horizontal filing machines (pilovochnyy stanok) with round discs instead of grooved discs and many other new grinding machines were introduced into the Ball Shop. During the war, in order to speed up the production of balls, abrasive treatment of balls was introduced. Since 1947 cooling by kerosene, which was injurious to the health of the workers, has been replaced by cooling with a non-injurious mixture. In 1951 electro-mechanical means of ball machining was introduced, which has almost entirely replaced the treatment of balls by filing (opilovka). In July 1952 trials took place in the Ball Shop on a rolling mill for manufacturing balls by a continuous rolling method. This rolling mill was built by the Stankokonstruktsiya (Machine Tool Construction) Factory under the supervision of specialists from the Experimental Scientific Research Institute of the Bearings Industry. Excellent results were achieved and it is hoped to increase considerably the production of balls as a result of introducing additional rolling mills of this nature. Rollers of various types, such as conical, cylindrical, and barrel-shaped, are produced in the Roller Shop. The stamping method, with subsequent grinding treatment, is employed.

Output

6. The total number of bearings produced by the factory during the pre-war period was about 234 million, made up of 752 different types and sizes. During the first half of 1941 the factory produced about three million bearings per month. The number of rejects was above normal. Below is the approximate output of the factory:
 

1945 -	5 $\frac{1}{2}$	million bearings of 200 types and sizes.
1946 -	7	million bearings
1947 -	11	million bearings
1948 -	17	million bearings
1949 -	22	million bearings

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1950 - 27 million bearings  
 1951 - 31 million bearings  
 1952 - 35 million bearings

17 million bearings were produced during the first six months of 1952, so it is assumed that the annual output is approximately that given above. The value of production in 1952 was approximately eight times that of 1945. During 1952 the factory dispatched an average of 20 truckloads of finished articles every 24 hours.

Personnel

7. A. G. Losev - Director 1945-1946  
 V. N. Takhtarov - Director 1947-1948, when he was appointed chief engineer to the Gorkiy Motor Vehicle Factory i/n Molotov
- F. G. Sukov - Director 1948-1949  
 N. M. Potapov - Director 1950-1951; previously director of the 8th State Bearing Factory at Sverdlovsk; at present Deputy Minister of the Automobile and Tractor Industry of the USSR
- V. K. Devyatov - Director 1951-1952; prior to this appointment he was Chief Engineer of the Central Directorate of the Bearings Industry of the Ministry of Automobile and Tractor Industry of the USSR, and earlier was Director of the 5th State Bearing Factory at Tomsk.
- Gromov - Chief Engineer; started work in the factory in 1932 as a turner
- Kishelev - Chief Technologist  
 Abramov - Deputy Chief Technologist  
 Cherkasskiy - Chief Designer  
 N. Sokolov - Chief of the Special Design Bureau  
 Chichilo - Chief Power Engineer  
 Kuznetsov - Chief Metallurgist  
 Medvedev - Chief Mechanical Engineer  
 Savoskin - Chief Dispatcher  
 Yudin - Chief Architect  
 Ovchinnikov - Production Chief  
 Reznikov - Chief of the Technical Control Section. This section controls about 3000 inspectors, examiners, and auxiliary workers.
- Martynov - Head of the Rolling Section of the Forge  
 Grigoryev - " " " Hammer Section " " "  
 Yuganov - " " " Cold Stamping Section " "

The factory at present employs about 12,000 men in three shifts. The number of personnel has increased yearly since 1945 by about 1000 men.

Shops

8. a. Ball Shop (Sharikovyy Tsekh). This shop occupies an area of about 100 x 150 meters.
- b. Roller Shop (Rolikovyy Tsekh). This shop occupies an area of about 300 x 200 meters
- c. Separator Shop (Separatorny Tsekh)
- d. Rod and Pipe Shop (Prutkovo-Trubny Tsekh)
- e. Forge (Kuznechnyy Tsekh). The forge, which is of considerable size, combines five sections.

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Horizontal Forging Machine Section (Otdeleniye Gorizontavno-Kovochnykh Machin)

Hammer Section (Otdeleniye Molotovoye)

Hot-Rolling Section (Otdeleniye Goryachey Raskatki)

Cold-stamping Section (Otdeleniye Kholodnoy Shtampovki)

Annealing Section (Otdeleniye Otzhiga)

f. Thermic Shop (Termicheskiy Tsekh)

g. Roller Bearing Shop (Tsekh Rolikovykh Podshipnikov)

h. Ball Bearing Shop (Tsekh Sharikovykh Podshipnikov)

i. Universal Joint Bearing Shop (Tsekh Kardannykh Podshipnikov)

j. Rod and Pipe Bearing Shop (Tsekh Prutkovo-Trubnykh Podshipnikov)

k. Small Series Shop No. 1 (Tsekh Melkikh Seriy No. 1)

l. " " " " 2 ( " " " No. 2)

m. " " " " 3 ( " " " No. 3)

n. " " " " 4 ( " " " No. 4)

o. Special Precision Bearing Shop No. 1 (Tsekh Osobotochnykh Podshipnikov No. 1)

p. " " " " No. 2 ( " " " No. 2)

q. Foundry with a Pressure Casting Section and a Steel Casting Section with electric arc furnaces. (Liteynyy Tsekh s Otdeleniyem Litiya pod Davleniyem i so Staliliteynym Otdeleniyem s elektrodugovymi pechami)

r. Foundry for Pattern Casting (Tsekh Litiya po Vyplavlyayemykh Modelyam)

s. Abrasives Shop (Abrazivnyy Tsekh)

t. Tool shop (Instrumentalnyy Tsekh). This shop is somewhat larger than the Roller Shop.

u. Consumer Goods Shop (Tsekh Shirпотреба)

v. Salvage Shop (Utiltsekh)

w. Machine Repairs Shop (Remontno-Mekhanicheskiy Tsekh)

x. Building Repairs Shop (Remontno-Stroitelnyy Tsekh)

y. Rationalization Shop (Tsekh Ratsionalizatsii)

z. Compressor Shop (Kompessornyy Tsekh)

aa. Motor Shop (Motornyy Tsekh)

ab. Transport Shop (Transportnyy Tsekh)

ac. Central Laboratory (Tsentralnaya Laboratoriya), to which several small laboratories are subordinate.

An assembly shop, which was the largest shop in the factory and occupied an area of about 600 x 250 meters, was abolished. This step was taken as, after

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the war, the factory was re-organized in such a way that shops were able to produce finished articles. Small Series Shops Nos. 1-4 have been organized for the production of large overall dimension bearings and certain special bearings. Special Precision Bearing Shop No. 2 has specific premises in which a temperature of 20° C is continuously maintained. These premises have a distinct lighting arrangement and are kept scrupulously clean. The finish is given to precision bearings in these premises. For measuring tolerances equal to thousandths of a millimeter, particularly accurate instruments, mainly optical, have been installed.

#### Number and Types of Machinery

9. During and since the war over 5000 items of new equipment have been installed in the factory. In 1947 about 2000 items were installed. A considerable amount of this equipment was of foreign manufacture, captured as trophies, and some was of Soviet manufacture. A large quantity of the existing equipment, including forging machinery, rolling machines, etc., was completely modernized during the last three years. Several fully-automatic conveyor belts were installed, including conveyor belts used for the production of races and rollers of various types. In 1951 and 1952 the factory received from Leningrad and Moscow machine tool factories special semi-automatic grinding machines, including the LZ-18. Automatic machines have been installed in the factory for sorting rollers, sorting and checking balls, for the automatic measuring of races while they are in the process of being ground, for measuring race apertures during machining, for sorting and checking bearing needles, etc.

#### Source of Materials

10. High carbon chrome --manganese steel, types ShKh6, ShKh9, ShKh10, ShKh12, and ShKh15, used in the manufacture of bearings, is received from:
- Elektrostal Metallurgical Factory at Elektrostal, near Noginsk, Moscow Oblast
  - Zlatoust Metallurgical Factory in the Urals
  - Serp i Molot Factory, Moscow
  - Dneprospetsstal Factory

#### Disposal of Production

11. After the war the main task of the factory was the production of radial ball bearings and cone roller bearings for the automobile and tractor industry. A large number of large- overall-dimension bearings is sent to metallurgical and large engineering works for use with rollers in the rolling mills. These include four-row bearings with cone rollers for cold rolling mills, double-row bearings with cone rollers for continuous, high-speed rolling mills, and double-row, spherical, roller bearings for special rolling mills. Enterprises supplied with these bearings include, among many others, the Dnepr Metallurgical Factory, Magnitogorsk Metallurgical Combine, and Stalingrad Metallurgical Factory, Krasnyy Oktyabr. Bearings are also produced in large quantities for the oil industry, ferrous and non-ferrous metal industries, electrical industry, engineering industry, aircraft industry, and for town and railroad transport. The factory has mastered the production of special precision bearings for high speeds (over 10,000 rpm). These bearings are manufactured for the aviation industry, the instrument building industry, and the machine tool industry (for precision grinding machines and semi-automatic shaving machines).

#### Factory Auxiliary and Welfare Services

12. a. The factory publishes almost daily a newspaper called Stalinskiy Prizvy (Stalin's Appeal). In addition, about 60 "wall newspapers" (stennaya

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gazeta) are published in shops and sections of the factory.

- b. The Party Cabinet of the factory, at the head of which is the Secretary of the Party Organization, is very active, both in the factory and among the workers' families. The Party Cabinet has at its disposal 200 propagandists and 1500 agitators who, in addition to personal contact, make extensive use of factory newspapers and radios. The radio network is highly organized, both at the factory and in factory dwellings. In addition to every factory shop and section, the majority of flats in factory dwellings have loud-speakers through which political and factory news is broadcast from the central station and from other points.
- c. A large part of the personnel is housed in living quarters belonging to the factory. These dwellings were started in 1932 and building continues. 16 four-storied buildings are located in Sharikopodshipnikovaya Ul. Two four-storied buildings were recently built in the Kozhukhovo settlement, four five-storied buildings in the Tekstilshchikiy settlement, and 3 large four-storied buildings in the Shcherbinka settlement. In addition, there are eight communal dwellings.
- d. The factory owns two clubs, one House of Culture, three day nurseries, and a large polyclinic with a small hospital, one small polyclinic, and a night sanatorium (nochnoy sanatoriy). In addition there is an artisans' school (remeslennoye uchilishche), which was formerly the factory apprentices' school, one technical school (tekhnikum), and a large number of Stakhanov schools, in which thousands of workers are always under training. There are about 300 medical personnel, of whom 90 are doctors and medical students, and about 130 are nurses.

1.  Comment: These two names apparently are given as transliterated from the original language; the firm and machine involved have not been identified by this office. It is likely that Scheu is the proper spelling for Schoy, and Sundstrand has been suggested as preferable to Sandstrand, though neither of these names can be verified.

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