CENTRAL INTELLIGENCE AGENCY

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History

1. The General Instrument Factory (Tsung Ho I Ch'i Ch'ang) (4844/0678/0308/0892/1681), Shanghai, was established by the Whitney Trading Company. The chief organizers were CHOU Yuan-chen (0719/0337/2823), chief manager of the Whitney firm, and LIU Ch'un-k'uai (0491/ /1816), also known as LIU Fei (0491/7378), second manager of the Whitney firm, who became manager of the new factory. The factory had great difficulty getting engineers and other workers, because, as a private company, it could not hire persons employed in state factories; it started with a staff of only 25 persons. 50X1-HUM 50X1-HUM 50X1-HUM

2. during the three-anti five-anti movements, although the factory, since it was just organized, was not affected directly, the Whitney Trading Company was investigated and former Whitney employees of the factory were recalled to the older firm to take part in the proceedings. CHOU, LIU, and another member of the factory were forced to confess to illegal activities, and the Whitney company was fined over ten billion yuan (old currency) They were given a year to pay the fine, and this necessitated stepping up the factory's activities in order to raise the money. the managers had invested about 50 million old yuan in the factory; they put in 130 million old yuan, and they have invested 25 million more. 50X1-HUM 50X1-HUM 50X1-HUM 50X1-HUM 50X1-HUM 50X1-HUM

3. the factory was semi-nationalized, an arrangem whereby the stockholders were to receive dividends not exceeding 4.5 percent for seven years, after which the factory would become totally nationalized. Before the nationalization measures went into effect, key personnel of the factory were sent away for several months' 50X1-HUM

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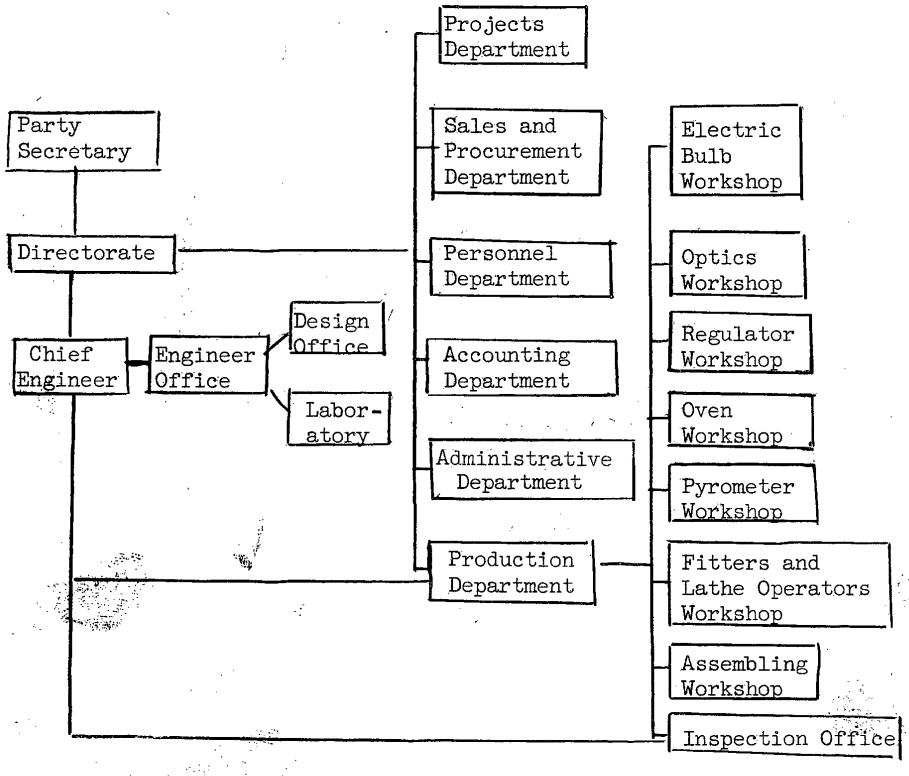
schooling to prepare them ideologically for the nationalization. Director LIU was required to attend a different school, especially for capitalists. [redacted] a group of three or four Communists came to the factory, ostensibly to increase production; they talked to the foremen and pointed out the need for nationalization. The manager was required to apply "voluntarily" for nationalization. Many other plants, some of which were not on the list for nationalization, were also required to apply "voluntarily" so that some could be rejected and acceptance could be made to appear a privilege. The government set three requirements for nationalization: the plant had to be making a profit, it had to be important to the state, and it had to be in need of modernization. About two months after the manager applied for nationalization, it was granted. The only immediate effect on the internal organization was the establishment of the office of party secretary in the factory, which then had a staff of about 45 or 50. 50X1-HUM

4. After nationalization, the plant was placed under the Administration of Technical Production (Kung Yeh Kuan Li Chu) (1562/2814/4619/3810/1444) of the Shanghai government, because it was a "local half- nationalized factory" instead of a "central" factory, which would have been placed directly under a ministry in Peiping. [redacted] 50X1-HUM
[redacted] representatives of the newly established Technical Bureau for Measuring Instrument Construction of the First Ministry of Machine Industry in Peiping visited Shanghai to investigate the possibility of incorporating the factory with the Shanghai Scientific and Industrial Instrument Research Institute, which was then being planned. They discussed the move with the engineering staff of the factory, which concurred in it. CHOU Hung-fu (0719/3163/3940), party secretary of the factory, who feared that his importance would be diminished, opposed the move. It was also opposed by the Shanghai government, which wanted to keep the factory under its jurisdiction. The official reason given by CHOU and the government was that the factory was the sole producer in China of some items, and if it were placed under the institute research would be emphasized at the expense of production. 50X1-HUM

5. The matter was taken to the State Planning Commission, where, [redacted] 50X1-HUM
[redacted] LI Fu-ch'un ruled that the factory should not be placed under the institute. The Technical Bureau, however, asked the factory engineers to assist informally in organizing the institute, which they did. [redacted] LI Fu-ch'un made a personal visit to Shanghai and reversed his decision, placing the factory under the institute. The factory had been criticized because it had too many engineers in proportion to its workers and production; LI's move was designed to bring the engineering staff of the factory into the institute, which was more interested in individual research capabilities than in factory production. [redacted] most of the engineers and the factory director had been given posts in the institute. While they still hold their positions in the factory also, they visit it only occasionally to supervise production and perform their research and development work at the institute. 50X1-HUM 50X1-HUM 50X1-HUM

Organization

6. The organization of the factory [redacted] included a directorate with subordinate offices (shih) (1358) and departments (k'o) (4430). Personnel transferred to the Shanghai Scientific and Industrial Instrument Research Institute are shown in the positions they nominally continue to occupy at the factory. There are, in addition to the personnel listed below, between 100 and 200 students scattered through the departments who are assigned to the factory for training. The organizational arrangement is the following: 50X1-HUM



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a. The directorate consists of the director, LIU Ch'un-k'uai, who is also concurrently chief of the Optical Devices Office of the Shanghai Scientific and Industrial Instrument Research Institute; and two vice-directors, CHOU Hung-fu, [redacted] and WANG Ku-min (3769/0657/3046), [redacted] both Communist Party members with no technical training. CHOU is concurrently party secretary, in which capacity he is in charge of all party activities in the plant.

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b. The plant has a few classified documents, such as reports on personnel matters, the annual production plan, and price lists. These are kept in the office of Vice-Director WANG Ku-min but are not locked up. The higest classification, stamped on the documents, is "Confidential" (chi mi) (2894/1378); there are no documents with the classification "Secret" (mi) (1378) or "Top Secret" (chi mi) (2817/1378).

c. The position of chief engineer is held by PAI Chin-yuan (4101/6855/0337), [redacted] who has occupied the post since the factory was es- 50X1-HUM
tablished, and who is concurrently chief of the Thermotechnical Office of the Shanghai Scientific and Industrial Research Institute. Under him is the Engineering Office (Kung Ch'eng Shih Shih) (1562/4453/1597/1358). It includes four engineers, who also staff the subsidiary Laboratory (Shih Yen Shih) (6107/7526/1358). This office studies foreign instruments, makes copies and improvements in them, and is responsible for new developments. Little work has been done here, however, since the transfer of the engineers to the Shanghai Scientific and Industrial Instrument Research Institute. Another subsidiary office is the Design Office (She 50X1-HUM
Chi Shih) (6080/6060/1358), headed by LIU Hsiao-szu (0491/1321/1835), [redacted] [redacted] a graduate of T'ung Chi (0681/3444)

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University, Shanghai, [redacted] a specialist in the mechanical aspects of instrument construction. There are about 35 employees of this office, all engineer technicians (chi-shu-yuan) (2111/5890/0765), persons with engineering degrees not yet designated full engineers by a classification commission. The four engineers who run the Engineering Office are: 50X1-HUM

(1) CHAO Yuan (6392/0337), [redacted] an optics specialist, who was graduated from Peiping University [redacted] and is concurrently a professor at Chekiang University and an engineer in the Optical Devices Office of the Instrument Research Institute. 50X1-HUM 50X1-HUM

(2) WANG T'ung-chang (3769/0681/7022), [redacted] graduated from Ch'ing Hua University, Peiping, [redacted] responsible for work on the electric oven, who is concurrently head of the Special Material Research Office of the Instrument Research Institute. 50X1-HUM

(3) YANG Hou-ching (2799/0624/2417), [redacted] graduated from Nanhai University in Tientsin [redacted] responsible for general electrical engineering problems. 50X1-HUM

(4) SHANG Shu-ch'i (4141/2885/3217), [redacted] graduated from the University of Wisconsin [redacted] an electronics specialist, who is also concurrently head of the Automatic Regulation Office of the Instrument Research Institute. 50X1-HUM

7. Under the directorate and its related offices are various departments:

a. The Plans Department (Chi Hua K'o) (6060/0487/4430) is headed by HSIUNG Tsung-ch'ing (3574/1350/0615), [redacted] a soldier, also factory secretary of the Communist Youth Party. [redacted] 50X1-HUM There are ten other employees. This department works closely with the Production Department, in which its employees work concurrently.

b. The Sales and Procurement Department has seven or eight employees and is headed by SHIH Ch'un-shu (2457/2504/2885).

c. The Personnel Department is headed by T'AO Shang-yueh (7118/1424/2588) and has about eight additional employees; all are members of the Communist Party. Two or three members of this department are designated as Communist cadre for the factory, but they are not organized as a special unit because the factory is not large enough to warrant it. The cadre is responsible for the political loyalty of members of the factory. [redacted] they worked through cross-examination and encouragement to informers, but these methods caused such wide-spread resentment that they are no longer carried on openly, although confidential investigations are still performed. The functions of the Personnel Department include supervision of the student apprentices assigned to the factory. 50X1-HUM

d. The Accounting Department handles bookkeeping and finances. It has five employees besides its chief, YU Hua-jen (0060/0553/0086).

e. The Production Department (Sheng Ch'an K'o) (3932/3934/4430) is headed by YUAN Hua-ch'uan (5913/5478/1557), [redacted] There are ten other employees, who work concurrently in the Plans Department. Administratively this department is directly under the director, but for technical problems it is under the Chief Engineer.

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8. Under the Production Department are various offices and workshops (ch'e chien) (6508/7035):

a. The Inspection Office tests final products to determine whether they are of good enough quality to be marketed. According to a decree of the Administration of Technical Production of the Shanghai government, chiefs of inspection offices in all factories should be at the same level as the plant director in order to prevent the latter from releasing poor products to the market. The factory has not complied with this decree, however; the chief of the Inspection Office is an engineer-technician, CHANG Shu-chi (1728/2885/1015). There are five other employees. The testing equipment is all either locally made or of standard type, such as German-made oscilloscopes, American-made vacuum tube voltmeter, various small meters, spectrum analyzer, and various items of Zeiss optical test equipment. The Inspection Office is subordinate to the Production Department but is also responsible to the Chief Engineer.

b. The Assembling Workshop assembles parts made in other workshops into final products and also handles electroplating, painting, and varnishing. It is broken down into smaller sections for each of the finished products made by the factory. The chief is an engineer-technician, P'AN Chia-te (3382/1367/1795); there are about 40 employees, of whom three or four are skilled workers.

c. The Fitters and Lathe Operators Workshop has about 60 employees, including three master fitters and three master lathe operators. Until mid-1957 it was headed by CHANG Ching-hsun (1728/2417/1559), a master lathe operator; he became deputy when a new shief, an engineer, took over [redacted] 50X1-HUM

d. The Pyrometer Workshop is headed by a technician, T'U Hsi-k'uei (4047/6932/7608), and has 20 other employees.

e. The Oven Workshop is headed by a skilled worker, WANG Chi-shan (3769/1015/0810), and has five employees.

f. The Regulator Workshop is headed by an engineer-technician, WANG Chih-i (3769/0037/0001). There are 15 employees, mostly technicians, who are capable workers but lack adequate training and experience.

g. The Optics Workshop is headed by a master grinder, FEI Pang-chih (6316/6721/3112); there are about 30 other employees.

h. The Electric Bulb Workshop is headed by SHIH Yuan-ying (2457/0337/5391), a master glassblower and practical engineer, without an engineering degree. There is one journeyman and about 20 apprentices. This section has no glassblowing machines, although [redacted] it was planning to make small bulbs by machine. 50X1-HUM

Labor Union

9. The labor union in the factory is very weak, although all personnel except the director belong to it; the reason is that the engineers, rather than the workers, are responsible for the operation of the plant. [redacted] 50X1-HUM

Physical Installation

10. [redacted] the factory moved from Yen Hai Lu (2518/3189/6424) No. 196 to an address in the 1900s on Yen An Hsi Lu (1693/1344/6007/6424) in the Fa Hua Chen (3127/5478/6966) section of Shanghai. It is on a corner and consists of three buildings: a one-story building, approximately square, covering about 500 square meters; a three-story rectangular building covering about 3000 square meters; and a small shed. Only the one-story building was there before the factory acquired the property; it was formerly a repair factory for textile machines. A wall on the north side of the property separates it from the Wen Shih (2429/1102) Fountain Pen Factory. Between the three-story building and the street are a few small buildings which do not belong to the factory and are used as private dwellings. The factory is trying to acquire these buildings in order to tear them down. 50X1-HUM

Production and Technical Developments 50X1-HUM

11. Products issued by the factory include the following: 50X1-HUM

a. The first product of the factory was thermocouples. Production started [redacted] and was about 2000 a year [redacted] it was about 10,000. About half the thermocouples produced are elements without meters, for replacement of burned-out elements; about half are complete units. More could be produced if there were greater demand.

(1) The models used are thermocouples manufactured by the Swiss firm Camili Bauer from Hartmann-Braun patents; these were obtained through the Whitney Trading Company. Two types are produced. The first has element wires of alumel, a nickel alloy, and chromel, a chrome alloy, made in lengths of one half meter to two meters. The shortest sell at 180 yuan, the longest at 250 yuan, for element and meter. The second type has wires of platinum and platinum rhodium; it is used for measuring temperatures up to 1600 degrees Centigrade. The largest of this type is one meter long and sells for 500 yuan; 20 centimeter items, chiefly for laboratory purposes, sell for over 250 yuan. Cost of production is about half the sale price.

(2) The element wire is obtained from the USSR through the China National Import-Export Corporation. The protective tubes are made of stainless steel, purchased in sheet form and sub-contracted to local sheet metal working shops to be rolled and welded into tubes. [redacted] the sheets came from the USSR; before that the factory was using old stock from the United States. The insulating stoppers (lead-in plugs) are ceramic, purchased in a finished form from an earthenware factory in T'angshan (N 39-38, E 118-11), Hopeh. 50X1-HUM

(3) Millivolt meters, using agate, which is plentiful in China, for bearings, are made at the factory.

b. The second item to go into production [redacted] was lenses for simple magnifying glasses. [redacted] 50X1-HUM

c. The third product [redacted] was plane glass disks, optical instruments for measuring the flatness of a surface. [redacted] this was still the only factory in China producing 50X1-HUM

these instruments. The instruments can measure within a ten thousandth of a millimeter accuracy. They are made in diameters of 40, 60, 80, 100, 120, 150, possibly 180, and 200 millimeters. Initially they were sold at a loss; [redacted] the smallest were sold for 50 or 60 yuan, the largest for over 200 yuan. The labor cost is one man-day per unit. [redacted] about three of the largest were sold each month and between 200 and 300 of the smallest. The large glasses are difficult to make, but the factory can make as many of the small ones as it can sell. 50X1-HUM 50X1-HUM

(1) Optical glass is not needed; normal hard glass is used. Initially, the plant purchased thick window glass. [redacted] [redacted] it began to use a hard glass like pyrex, made at the Nanking Glass Factory. It was first tested [redacted] [redacted] but was not in full production [redacted] since orders have to be placed four to six months in advance. 50X1-HUM 50X1-HUM 50X1-HUM

(2) The machinery for making the glasses is made at the plant. It purchases small 3.5 HP motors locally and procures mountings of cast iron from small two- or three-man foundries, of which there are several in Shanghai. The finest grain ferric oxide, which is very difficult to obtain, is used for polishing. The ferric oxide is probably of Japanese origin; it is obtained through a state-run procurement agency in Shanghai, the Wu Chin Kung Szu (0063/6855/0361/0674). 50X1-HUM

d. The fourth product of the plant, which went into production [redacted] [redacted] was an electric oven for determining carbon content of metals and other materials. [redacted] the ovens were improved by the addition of glow bars for better temperature control. Each oven is equipped with two or three glow bars covered with a metal housing with thermo-insulating material. [redacted] sold to the Wu Chin Kung Szu state procurement agency for over 3000 yuan each. They cost about half this amount to produce, but since factories are permitted to make only 15 percent profit, the declared cost of manufacture is higher than the actual cost. Labor costs are about 80 percent of the total because of the brick-laying and masonry work involved and the high percentage of defective ovens. Two-thirds of the ovens made are rejected as defective; about 50 salable ovens are produced a month. 50X1-HUM 50X1-HUM 50X1-HUM

(1) It took about three years [redacted] to develop the glow bars, which are about 350 millimeters long. Their chief use is in ovens. They sell for about 35 yuan. Imported glow bars were formerly available but were very expensive: they came [redacted] via the USSR. 50X1-HUM 50X1-HUM

(2) [redacted] some East Germans, who were technical advisors at the Po Shan (0590/1472) Factory in Shantung, came to the factory to investigate the development of these glow bars. 50X1-HUM

(3) [redacted] a delegation from Peiping came to Shanghai to investigate the improvement or enlargement of electric switching installations, small electric motors, and glow bars. This was the first indication the factory received of Chinese official notice, although it had been trying for three years to interest the government in glow bars. 50X1-HUM

e. [redacted] the factory began producing larger chamber ovens copied from the Soviet KO type, for which the original design had come from Germany. These ovens were being manufactured at the rate of 50X1-HUM

about 30 a month [redacted] they sell for about 5000 yuan. 50X1-HUM
[redacted] also, the factory began producing ovens of the Soviet 50X1-HUM
G-30 and G-50 types, at the rate of about 10 a month, which
sold for 10,000 yuan. These were not of good quality [redacted] 50X1-HUM
[redacted] the factory developed an
electronic temperature regulator for both the KO and G type oven;
it was of Chinese design but was made to look externally like the
Soviet type ERM-47. [redacted] the factory 50X1-HUM
started working on a six-kilowatt high-frequency induction heating-
surface annealing oven. [redacted] one was completed 50X1-HUM
for the factory's own use; production for sale was not achieved
[redacted] This is the only factory in China making
this type of oven. All parts are obtained in Shanghai, except
radio tubes, which come from the Peiping Radio Tube Factory.

f. [redacted] the factory began producing optical pyrometers; these
are made at the rate of about 400 a month and sell for about
450 yuan. [redacted] the plant began producing radiation pyrometers, 50X1-HUM
which are made at the rate of about 400 a month and sell for about
400 yuan. [redacted] it also began producing another optical 50X1-HUM
pyrometer, modeled on a Soviet type; it is made at the rate of
about 400 a month and sells for about 600 yuan.

g. [redacted] the factory started production of a polaroscope to test
internal tensions of glass. About 10 of these were being sold 50X1-HUM
a month [redacted] at about 1000 yuan each. Also [redacted] the 50X1-HUM
plant began making metallurgical microscopes for inspection of
metals. About 50 a month, at 6000 yuan each, were being sold [redacted]
[redacted] A polarization microscope was also introduced [redacted] 50X1-HUM
[redacted] about 15 a month were produced and sold for 1100
yuan each. A larger polaroscope went into production [redacted] 50X1-HUM

h. [redacted] after it had earned enough money from pyrometers, the
factory employed a glassblower and began producing lamps, in-
cluding lamps for optical pyrometers and low-pressure mercury
vapor lamps for use with the plane glass measuring instruments.
[redacted] it began producing lamps for radiation pyrometers and
[redacted] sodium lamps. This is the only factory in China producing
sodium lamps; according to the Academy of Sciences, they are
equal in quality to those made in East Germany.

[redacted]

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14. Enclosure A is a sketch of the layout of the factory.

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PHYSICAL PLANT, GENERAL INSTRUMENT FACTORY SHANGHAI