CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

25X1

SECRET/

25X1

COUNTRY	USSR (Moscow Oblast)	REPORT NO.	
SUBJECT	Aircraft Accessory Plant at Moscow	DATE DISTR.	14 October 1953
		NO. OF PAGES	4
DATE OF INFO.		REQUIREMENT NO.	
PLACE ACQUIRED		REFERENCES	

25X1 25X1

25X1

2. The aircraft accessory plant was located on the southern side of a street to the railroad station which passed north of Dynamo Stadium. From the plant it was a five minutes' walk to the Dynamo Stadium and ten to twelve minutes to the railroad station. From the third floor of the administration building, the advertisement lights of the Pravda Publishing Firm could be seen to the south at a distance of 300 to 400 meters. The administration building was located in the western portion of the plant area, east of a side street. The building had an underpass which was used as a plant entrance. The other plant buildings were located north and east of the administration building. The plant allegedly had a work force of 500 Soviets. German civilians or PWs allegedly were not working at the plant.

25X1

SECRET/

25X1

25X1A

STATE	x	ARMY	x	NAVY	x	AIR	Ev x #	FBI		AEC		

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

 25X1

SECRET [redacted]

3. 25X1 The plant produced rpm governors which had been developed by the Junkers Plant at Dessau for the Jumo-004. The output was not determined. [redacted] 25X1 [redacted] 800 to 1,000 unmachined, cast components of the governor casing in a workshop. There were twelve test stands for servo motors and four rpm test stands available at the plant which exceeded the equipment of the Junkers Plant and indicated that the output was rather high. The quality of the governors, however, was imperfect. About fifty percent of the products did not meet the Junkers specifications for acceptance, which, in order to fill the production quota, were only partly followed by the plant administration. Some pistons of the units which left the plant had faulty surfaces or badly trimmed edges. During the meetings, the Soviet engineers attempted to persuade the German engineers to alter or omit the specifications for acceptance in the test instructions, because, if these specifications were strictly followed, it would be impossible to meet the production quota fixed by the Soviets. The German engineers emphasized that, by improving the production method, it should be possible to meet the qualitative and quantitative requirements. Foreman 25X1 Fritz Schmidt, [redacted] who had worked with the Junkers Plant since 1935, took a great part in familiarizing the Soviet foremen with German precision work methods. It was not learned whether the visit of the group of German engineers to the plant had been a success.[1]

Aircraft Engine Plant at Chernigovka

4. In late 1947 or early 1948, engineer Kreuzburg (fnu) of the Junkers Group was temporarily transferred from Zavod 2 to the aircraft engine plant in Chernigovka. Having returned from his mission, Kreuzburg stated that the plant was a big enterprise, working three shifts on the series production of BMW-003 and Jumo-004 turbojet engines. Kreuzburg was assigned to the plant to eliminate difficulties encountered in series production.[2]

Mechanical Zavod Located near Development Plant No. 2

5. A plant called the Mechanical Zavod was located about six kilometers south of Upravlencheskiy, on the road to Kuybyshev. The Junkers Group learned that jet engine components were produced at this plant.

Radio Shielding of Spark Plugs

6. The spark plugs used in these experiments had a gap of 2.5 mm and an ignition coil with a tension of 20,000 v. The type was not determined. Kerosene was used for ignition. The radio shielding operated at wave lengths down to 3 cm with resistances up to 15 ohms. The resistance gave a radio disturbance elimi- 25X1 nation factor of 160 (sic). [redacted] the project of radio shielding for spark plugs was of importance especially with regard to the ultra shortwave radio sets to be used. The resistances were produced and installed in the plant for spark plugs in Ufa.

Ignition Tests

7. The Jumo-012 was previously ignited with gasoline. Experiments conducted by the British in 1949 and 1950 directed the Soviet interests to kerosene ignition. 25X1 It was intended to achieve kerosene ignition up to an altitude of 15,000 m. [redacted] 25X1 [redacted] experiments had been conducted to determine whether kero- 25X1 sene ignition would still function at an altitude of 6,000 meters. [redacted] 25X1 [redacted] ground tests in a vacuum chamber simulating an altitude of 6,000 meters that the ignition of kerosene could be guaranteed at this altitude, at temperatures down to -30°C. At altitudes above 6,000 meters, the kerosene was still atomized but instead of ignition sparks, a kind of arc, as on neon light tubes, was produced. The problem of kerosene ignition at altitudes 25X1 above 6,000 meters had not been solved. [redacted] a solution to the problem would probably be found in flight tests, because there were difficulties encountered with the testing chamber for altitudes around 15,000 meters.

SECRET/ [redacted] 25X1

The Jumo-022 Governor System

8. Enclosed is a sketch of the Jumo-022 governor. The sketch is divided into the following parts:

I Temperature governor
II Control unit
III Fuel governor with p-control
IV Operational chart

25X1 [redacted] The mixture control unit proved to be very successful in many long ground tests. Flight test data were not obtained. In the legend the component parts are listed according to their functions.

Legend to Enclosure

I Temperature Governor

1. Oil tank
2. Pump
3. Overflow valve
4. Diaphragm
5. Compressor
6. Thermo capsule
7. Adjustable transmission lever
8. Spring
9. Control piston
10. Gain piston
11. Rack
12. Toothed segment
13. Shaft leading to the fuel control unit

II Servo Control Unit

16. Throttle lever
17. Reduction gear
18. Cam
19. Sliding lever
20. Drive
21. Connecting link with worm gear
22. Sliding lever with adjustable roll
23. Drive shaft leading to fuel control unit
24. Fuel control spring

III Fuel Control Unit

14. Barometric capsule
15. Control piston for p-control

IV Operational Chart

9. The control units operated as follows:

a. Temperature governor: The oil is pumped from the tank (1) through the diaphragm (4) into the space forward of the control piston. The pressure is regulated by the overflow valve (3). At increasing temperatures, the thermo capsule, containing a liquid with a big volume expansion coefficient, expands longitudinally. This expansion transmitted to the spring (8) by the transmission lever (7) effects an increased pre-stress of the spring (8). The control piston, which is tending to close the return flow of the oil is pressed back to neutral position by the pressure of the returning oil until a balance is established between the pressure of the returning oil and the spring. The increasing pressure activates the gain piston (10) which, via the rack (11), adjusts the shaft (13) leading to the fuel control unit (III), increasing the pressure to the injection nozzles.

25X1

SECRET/[redacted]

b. Servo control unit: The servo unit was to adjust the main fuel valve when the throttle lever (16) was constantly pulled in accordance with the characteristics (IV). For instance, if the throttle lever (16) is moved about 90 degrees, the cam (18) revolves about 270 degrees. Because of the shape of the cam, the sliding lever (19) supported by the cam makes a turn of 90 degrees. This motion is transmitted by the drive (20) to the connecting link (21). The sliding lever rolling on the connecting link transmits this motion to the drive shaft (23) and on to the fuel control unit. The fuel control spring (24) is connected to the drive shaft (23) and on to the sliding lever (22) the connecting link (21), the drive (20), the sliding lever (19), and finally to the cam (18). In order to adopt the servo control unit to the variations of the aircraft engines produced in mass production, it is necessary that the main curve reproduced on the chart (IV) be modified. By adjusting the worm at the connecting link, the curve is moved in direction a-b, while an adjustment of the roll of the sliding lever (22) effects an alteration of the curve in c-d direction.

c. Fuel control unit with p-control: The fuel flow to the injector nozzles is controlled according to the chart (IV) by the main fuel valve. The fuel pressure produced by the pumps is reduced to 85 to 88 percent. By adjusting the control lever which is coupled with the control lever to the rpm governor of the propeller, the rpm of the engine, and therefore, the rpm of the fuel pump, can be controlled. This roughly constitutes the functioning of the fuel control system. Precision control is achieved by the main fuel valve. The difference between injection pressure and feeding pressure, 85 to 88 percent, remains approximately constant, with regard to the given range of rpm. The temperature governor described above releases an additional area to the injection nozzles, thus reducing the throttling (difference in pressure), and increases the injection pressure. The p-control operated according to the same system.

25X1 [redacted] Comments

25X1

1. [redacted] it indicates the approximate capacity of the aircraft accessory plant in Moscow. The plant concerned is probably the Aircraft Accessory Plant No. 33.

2. This confirms previous information according to which Jumo-004 and BMW-003 turbojet engines were produced at Plant No. 26 during the time reported.

25X1 [redacted]

25X1 [redacted]

SECRET/[redacted]

25X1