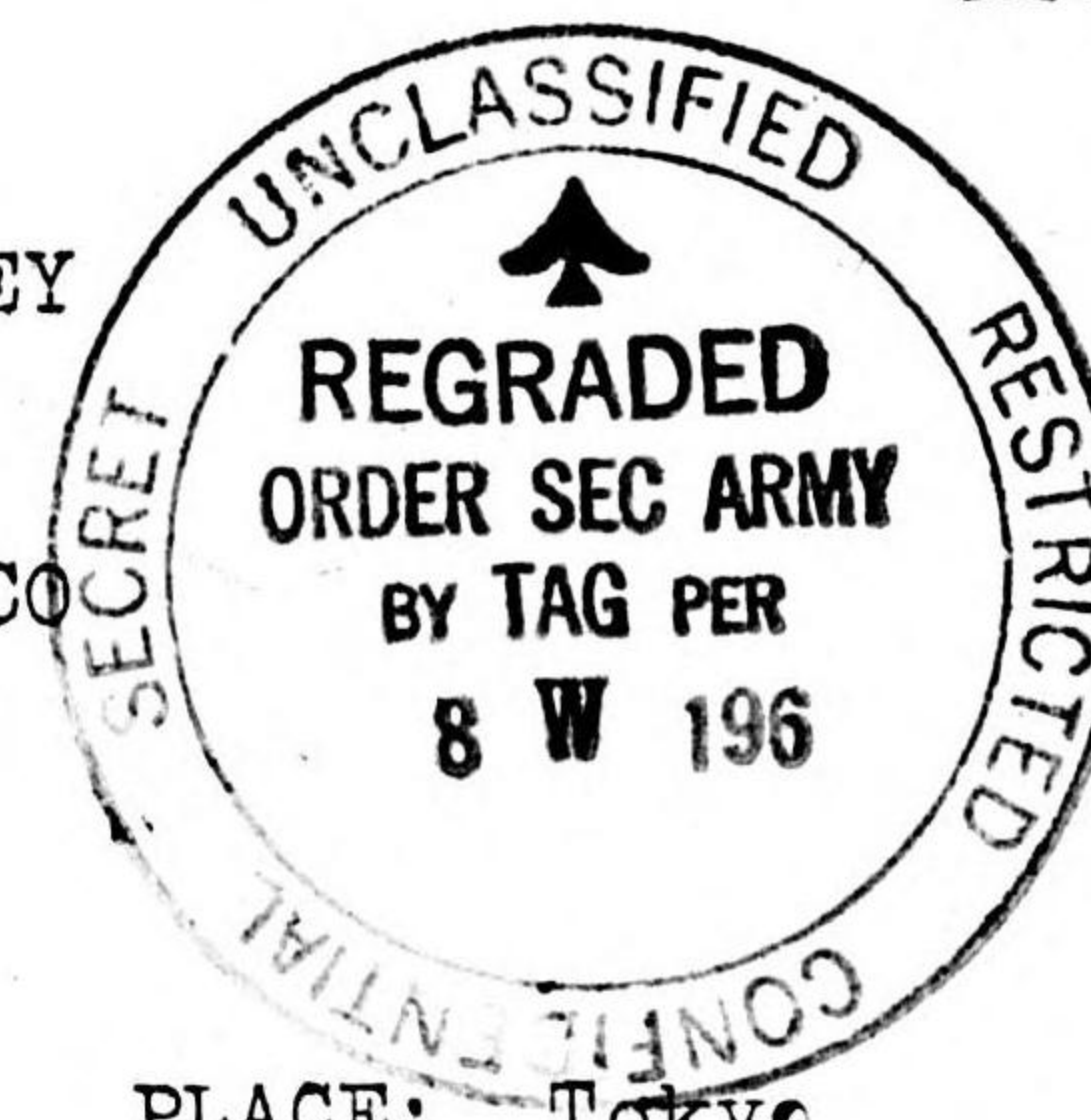


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HEADQUARTERS
U.S. STRATEGIC BOMBING SURVEY
(PACIFIC)
APO #234
C/O POSTMASTER, SAN FRANCISCO

Oil and Chemical Division #95



INTERROGATION NO. 391

PLACE: Tokyo
DATE: 20 November 1945

Division of Origin: Oil Chemical and Rubber

Subject: Control and Manufacture of Liquid Jet Propellants

Reference: USSBS #385 (Oil Chemical and Rubber Division #88)

Personnel interrogated and background of each:

SAIKI, K., Colonel, IJA - Prior to November 1944 control and manufacture of all liquid jet propellants came under the jurisdiction of the IJN. After that date the National Committee for Rogo-Yaku (code name for all jet and rocket propellants) was established by the Munitions Ministry. Representatives from the War Ministry, Navy Ministry and Munitions Ministry met to make major decisions. This resulted in the IJN retaining control of all development and research while actual production also became a responsibility of IJN Munitions Bureau, Special Chemicals Section (Toku Yaku Bu) with an Army officer in charge. Colonel Saiki held that job from November 1944 until the end of the war.

Where interviewed: Room #810, Meiji Bldg.

Interrogator: Lt. Comdr. W. H. Evans, USNR

Interpreter: Mr. T. Kawahara

Allied Officers Present: Comdr. G. G. Lamb, USNR

SUMMARY:

(1) Colonel Saiki substantiated the statements of IJN officers recorded in USSBS #385 regarding the factors which accounted for the wide discrepancy between capacity and actual production of liquid jet propellants, namely,

1. inexperience
2. shortage of raw materials, and
3. losses from bombing, earthquake and flood.

He does not, however, evaluate these factors in the same order of importance for the three periods - late 1944, early 1945 and mid 1945. Faulty maintenance is placed in second position during the third period and inexperience was never overcome even to the point where it was secondary.

(2) Colonel Saiki prepared rough graphs showing the planned production actual available capacity and actual production by months from July 1945 for the three chemicals - Hydrogen Peroxide, Hydrazine Hydrate and Sodium Permanganate. After adequate deliberation he will prepare more accurate data of this nature and will present a completed report on 24 November.

(3) Colonel Saiki failed to add or detract from the facts on records established during the interrogation USSBS #385.

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PERSONAL BACKGROUND

| DATES | <u>ACTIVITY</u> |
|-----------|--|
| 1916-1920 | Imperial Japanese Military College |
| 1921-1928 | General duty in IJA |
| 1928-1929 | Tokyo Imperial University, school of Chemical Engineering as a picked student for a regular Army sponsored course. |
| 1929-1933 | Regular course at Tokyo Imperial University in Explosives Engineering. |
| 1933-1935 | Tokyo-Iwahana Arsenal, IJA - managing the manufacture of smokeless and black powder and in experimental research in explosives. |
| 1935-1942 | Military instructor at Marashimo Technical School, IJA, studying munitions |
| 1942 | IJA Technical Laboratory |
| 1942-1945 | Toku Yaku Bu (National Jet Propellants Committee) attaches to the IJM Munitions Bureau in charge of production Section. Retained status in IJA Technical Laboratory. |

PROCESSES

According to Colonel Saiki the basic plans for the production of Hydrogen Peroxide (H_2O_2) were bought from the Germans in 1939 and that a small plant was constructed in 1940. It was not until 1944, however, that Hydrazine Hydrate ($NH_2.NH_2.H_2O$) was manufactured. This was at the Kuroaki Mitsubishi plant where very small amounts were produced; but the process was excellent and the material of high quality.

PRODUCTION

Actual production of 35% H_2O_2 started in October 1944 and increased to 10 tons in November, 15 in December, reaching a maximum in May 1945 at 50 tons after which it fell off due to the factors discussed in a following section.

Actual planned capacity for 80% H_2O_2 was set at 2,500 tons per month by the Planning Board of the Munitions Ministry. Planned capacity for 35% H_2O_2 amounted to approximately four times this value, or 10,000 tons per month.

Actual available capacity in terms of manufacturing plant facilities actually built grew from 100 tons in January 1945 to 200 in February, 500 in April, and reached a maximum by the war's end of about 1,000 tons per month. The actual capacity for 35% H_2O_2 amounted to approximately four times these values. The ideal ratio of combustion for H_2O_2 and $NH_2.NH_2.H_2O$ is about 9 to 1 and the great bottleneck as it turned out was not Hydrazine Hydrate, but Hydrogen Peroxide.

DIFFICULTIES

Actual production, according to Colonel Saiki, amounted to only about 25% of planned capacity and plant facilities actually constructed. The principal factors accounting for this discrepancy were given the following order of importance for the periods, late 1944, early 1945, and mid 1945.

| <u>FACTOR</u> | <u>NUMBER INDICATING ORDER OF IMPORTANCE</u> | | |
|------------------------------------|--|------------|----------|
| | Late 1944 | Early 1945 | Mid 1945 |
| 1. Lack of experience (equipment) | 1 | 1 | 1 |
| 2. Shortage of new and maintenance | 2 | 2 | 3 |
| 3. Shortage of raw materials | 3 | 3 | 2 |

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Lack of experience included inadequate technical data on the process as well as engineering know-how and qualified technicians. This difficulty was never overcome to the point where it was secondary to other factors. Saiki stated that all during their efforts this situation gave them the most trouble. Production and more production was always emphasized and plans were rushed through without having had fundamental consideration and without research

A shortage of new equipment and maintenance materials, which account for the second most important factor in production never exceeding about 25% capacity, came from a combination of circumstances. Saiki summarized this situation by stating that, although the highest priorities were awarded the project for equipment and material, they were unable to maintain the equipment in working order.

Raw material shortages which became acute in late 1944 were secondary only to inexperience as a prime bottle-neck by early 1945. Floods in early 1945, an earthquake in December 1944, and finally, bombing in early 1945, reduced the raw material supply, particularly of Sulfuric Acid and Ammonia (H₂SO₄ and NH₃) to such a low level that the entire liquid jet propellant program as planned by the Munitions Ministry became a joke.

Col. Saiki will prepare an essay on the subject of factors accounting for the discrepancy between actual production and capacity for submission on 24 November.

RECORDS

On the subject of records Saiki had nothing to add or detract from the picture already developed in previous interrogations. He did not admit to having personal notes or files in his possession. However, the fact that he offered to prepare a detailed report may give credence to the belief that he may have access to such data. It is believed that the reports to be submitted by Captain Suzuki, IJN (see USSBS #385) and that by Colonel Saiki will be prepared independently and therefore should offer interesting comparisons.

No reliably evaluated leads were developed as to possible sources of production records. Rear Admiral YOKOTA, Toshio, IJN was mentioned as a possible lead. His position is believed to be head of the Toku Yaku Bu Section of the IJN Munitions Bureau. YOKOTA's predecessor was a Rear Admiral ADACHI, Sukezō.