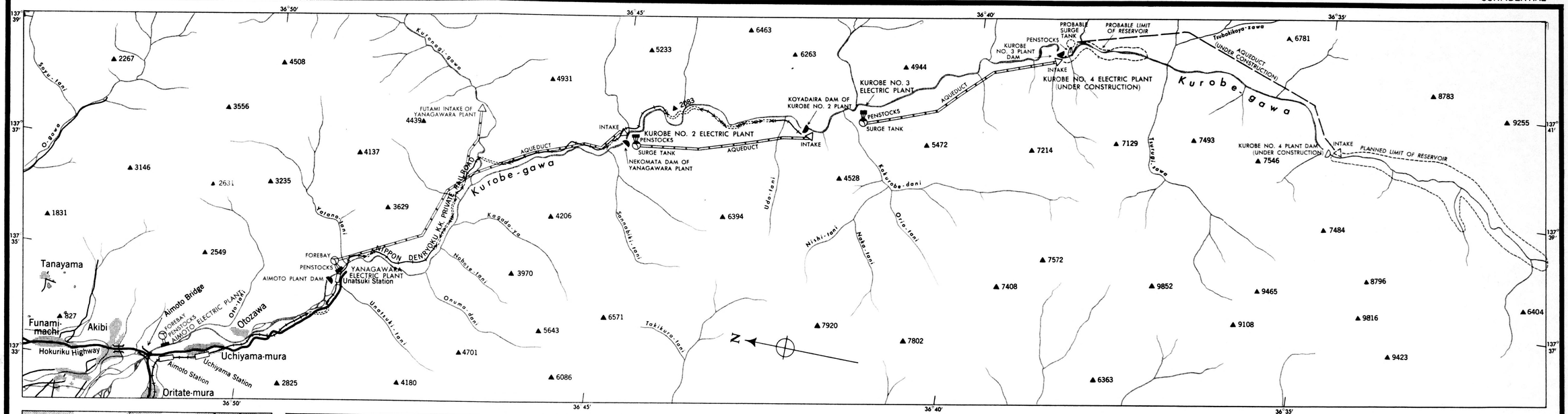
PROVISIONAL EDITION

Figure V-33

CONFIDENTIAL




# HYDRO PLANTS ON THE KUROBE-GAWA

## TOYAMA-KEN

0 1 2 3 4 5
MILES

0 2 3 4 5
KILOMETERS

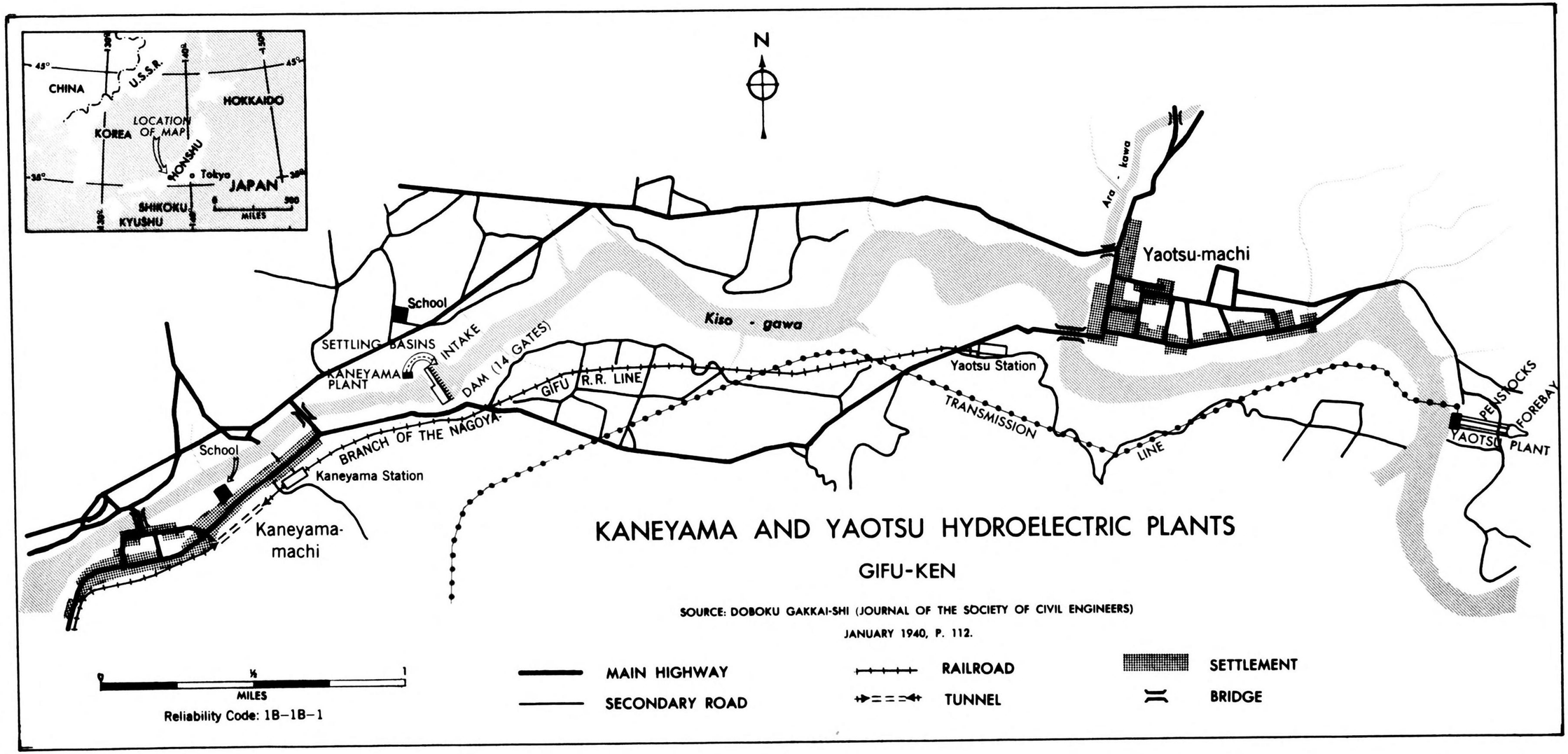
BASE MAP FROM 1:50,000 SERIES, JAPAN IMPERIAL LAND SURVEY BUREAU, 1930
W. D. M. C. FILE NO. JAPAN S30-JGS-50, SHEETS 59-7, 59-8, 54-5.

Reliability Code: 2B--1B--1

- SETTLEMENT
- RAILROAD
- LIGHT RAILROAD
- TUNNEL
- PRINCIPAL HIGHWAY
- SECONDARY ROAD
- BRIDGE - SELECTED
- ▲9816 SPOT HEIGHT (IN FEET)

MAP NO. 2610
6 OCTOBER 1943

COMPILED AND DRAWN IN THE BRANCH OF RESEARCH AND ANALYSIS, OSS
LITHOGRAPHED IN THE REPRODUCTION BRANCH, OSS




Reliability Code: 1B–1B–1

MAP NO. 2702
8 NOVEMBER 1943

COMPILED AND DRAWN IN THE BRANCH OF RESEARCH AND ANALYSIS, OSS
LITHOGRAPHED IN THE REPRODUCTION BRANCH, OSS

Transformers - 4 (incl 1 res) @ 5000 kva, 1-ph,
6.6,6.3,6/77,66 kv, D-D conn, water-cooled,
60 cyc, shell-type, Shibaura-make
3 @ 200 kva, 1-ph, 6.6,6.3,6/3.45,3.3
kv, D-D conn, 60 cyc, Toho Denki-make
Other equipment - 1 crane @ 20-ton cap; equipment for automatic operation was installed in Aug 1931; 2 exciters @ 150 kw
Tail race - 333 ft long

See: Photographs No. V-94, V-95, V-96, V-97
**Figure No. V-34**

Sources: DnK; DJY 1927; DJY 1929 p.316; ZKT 1939 p.1645; DGS 12/34 p.1545, 4/36 p.320; Ohm 6/31 supp p.6, 10/33 opp p.561; DnN 1940; Ohm-sha Guide 1933 p.19; TD Map

949. YAOTSU TAIL RACE HYDRO PLANT — Approx. Lat. 35°28' Long. 137°09'

Company: Toho Denryoku KK

Location: Plant - Yaotsu-machi, Kamo-gun, Gifu-ken

Capacity Commonly in Use (in kw): 1200, as of 1934

Importance: Rank in Japan - 250 + ; rank in Osaka-Nagoya supply area-100 +

Source of Power: Discharge of Yaotsu Hydro Plant using water of the Kiso-gawa

Date of Construction: Completed in May 1917; in operation Dec 1934

Details: Particular capacities (in kw) - 1200 installed cap; 1200 reg
Layout - Intake of plant is tail race of Yaotsu Hydro Plant
Eff head - 6.66 m; flow - 26.9 $m^3$/sec
Plant, external features - Of reinforced concrete construction with a galvanized sheet iron roof
Plant, equipment
Turbines - 1 @ 1800 hp, Francis-type, horizontal-shaft, Hitachi-make
Generators - 1 @ 1500 kva, 80% pf, 3-ph, 6600 v, 225 rpm, 60 cyc, Hitachi-make
Other equipment - Equipment for automatic operation installed in Apr 1928
Tail race - 94 ft long

Sources: DJY 1927; DJY 1929 p.316; Ohm-sha Guide 1933 p.19; DGS 4/36 p.320

950. YASHIRO NO. 1 HYDRO PLANT — Approx. Lat. 37°00' Long. 138°12'

Company: Nippon Soda KK

Location: Plant - Chinai, Suganuma-oaza, Yashiro-mura, Naka Kubiki-gun, Niigata-ken

Capacity Commonly in Use (in kw): Est 1760, as of 1928

Importance: Rank in Japan - 250 + ; rank in Tohoku supply area - 20 +

Source of Power: Yashiro-gawa

Date of Construction: Founded Nov 1927; in operation Mar 1940

Details: Particular capacities (in kw) - *1760 installed cap
Plant, equipment -
Turbines - 1 @ unknown cap, Dengyosha-make
Generators - 1 @ 2200 kva, 3-ph, 11,000 v, 60 cyc, Shibaura-make

Sources: DnN 1940 part II p.250; ZKT 1939 p.1648; Ohm 8/28 p.406

951. YASHIRO NO. 2 HYDRO PLANT — Approx. Lat. 36°52' Long. 138°13'

Company: Nippon Soda KK

Location: Plant - Taguchi-oaza, Nakayama-mura, Naka Kubiki-gun, Niigata-ken

Capacity Commonly in Use (in kw): Est 1000, as of 1932

Importance: Rank in Japan - 250 +; rank in Tohoku supply area - 20 +

Source of Power: Yashiro-gawa

Date of Construction: Completed in 1932; in operation Mar 1940

Details: Particular capacities (in kw) - *1000 installed cap
Plant, equipment -
Turbines - 1 @ unknown cap, Dengyosha-make
Generators - 1 @ 1250 kva, 3-ph, 11,000 v, 514 rpm, 60 cyc, Shibaura-make

Sources: DnN 1940 part II p.250; ZKT 1939 p.1648; SR 1/33

952. YASHIRO NO. 3 HYDRO PLANT — Approx. Lat. 37°00' Long. 138°10'

Company: Nippon Soda KK

Location: Plant - Yashiro-mura, Naka Kubiki-gun, Niigata-ken

Capacity Commohly in Use (in kw): 1980 (see Date of Construction)

Importance: Rank in Japan - 250 +; rank in Tohoku supply area - 20 +

Source of Power: Yashiro-gawa

Date of Construction: Unknown; under construction Sept 1937 and Sept 1938 at which time completion was scheduled for 1938; in operation Mar 1940

Details: Plant operates on 60 cyc

Sources: DnN 1940 part II p.250; DnGZ 9/37 p.(139); KN 1938 p.199, 1939 p.166

953. YASUOKA HYDRO PLANT

Approx. Lat. 35°21'
Long. 137°49'

Company: Yahagi Suiryoku KK

Location: Plant - 2, 3 of 4627, Takasu-oaza, Yasuoka-mura, Shimo Ina-gun, Nagano-ken

Capacity Commonly in Use (in kw): 52,500, as of April 1936

Importance: Rank in Japan - 35 ; rank in Osaka-Nagoya supply area-16
rank in Tokyo supply area - 13

Source of Power: Tenryu-gawa

Date of Construction: Construction was begun Aug 1935 and completed Apr 1936; in operation Mar 1940

Details: Particular capacities (in kw) - 52,800 installed cap; 11,600 reg; 40,900 spec; 32,100 reg pk
Layout - Aqueduct-type with storage dam
Eff head - 36 m; flow - 178.09 $m^3$/sec
Dam - Of concrete construction, gravity overflow-type, 50.85 m high, 143.24 m long with 12 tainter gates @ 7.35 m high, 8.8 m wide
Reservoir - 4,040,000 $m^3$/sec
Intake - 8 gates, 90 m upstream from dam
Aqueducts - 4 @ 515-600 m tunnel
Surge tanks - 4 @ 27 m high, 11 m diam, of concrete construction
Penstocks - 4 @ 76 m long
Fishway - 2 m wide
Plant, external features - Of concrete construction, 80 m long, 18 m wide, 3 stories high with 4 surge tanks directly behind plant and suspension bridge about 50 m downstream from plant.
Plant, equipment -
Turbines - 4 @ 16,000 kw, Francis-type, vertical-shaft, Dengyosha-make

Generators - 4 @ 16,500 kva, 80% pf, 3-ph, 6600 v, 143/171 rpm, 50/60 cyc, Shibaura-make
Transformers - 4 (incl 1 res) @ 18,000 kva, 3-ph, 6.6/154 kv, D-Y conn, self-cooled
Other equipment - 4 exciters @ 150 kw; 4 sub-exciters @ 12 kw. The plant operates under semi-automatic (1-man) control.
Area served - Nagoya-shi by way of the Nisshin substation

See: Photographs No. V-98, V-99, V-100, V-101
Figures No. V-35a, V-35b

Sources: Ohm 4/34 p.292, 6/34 p.401, 1935 p.947, 4/36 p.401, 7/36 pp.662,698,707, 6/41 p.449; ZKT 1939 p.1646; SR 10/34 p.377, 4/36 p.127, 6/36 p.(1), 7/39 adv; DnN 1940; DnGZ 8/33 p.674, 2/36 p.(142), 7/36 p.(87), 7/37; HSG pp.161,318; Ohm-sha Guide 1933 p.30; TD Map

954. YATSUKA NO. 10 HYDRO PLANT — Approx. Lat. 35°22' Long. 134°21'

Company: Nippon Denryoku KK; formerly Ombata Suiryoku Denki KK

Location: Plant - Hida-oaza, Tambi-mura, Yazu-gun, Tottori-ken

Capacity Commonly in Use (in kw): 2480, as of Dec 1936

Importance: Rank in Japan - 250 + ; rank in Chugoku supply area - 25 +

Source of Power: Yatsuka-gawa

Date of Construction: Unknown; in operation as early as Dec 1934 and as recently as Mar 1940

Sources: DnN 1940; DnK

955. YATSUZAWA HYDRO PLANT — Approx. Lat. 35°36' Long. 139°05'

Company: Tokyo Dento KK

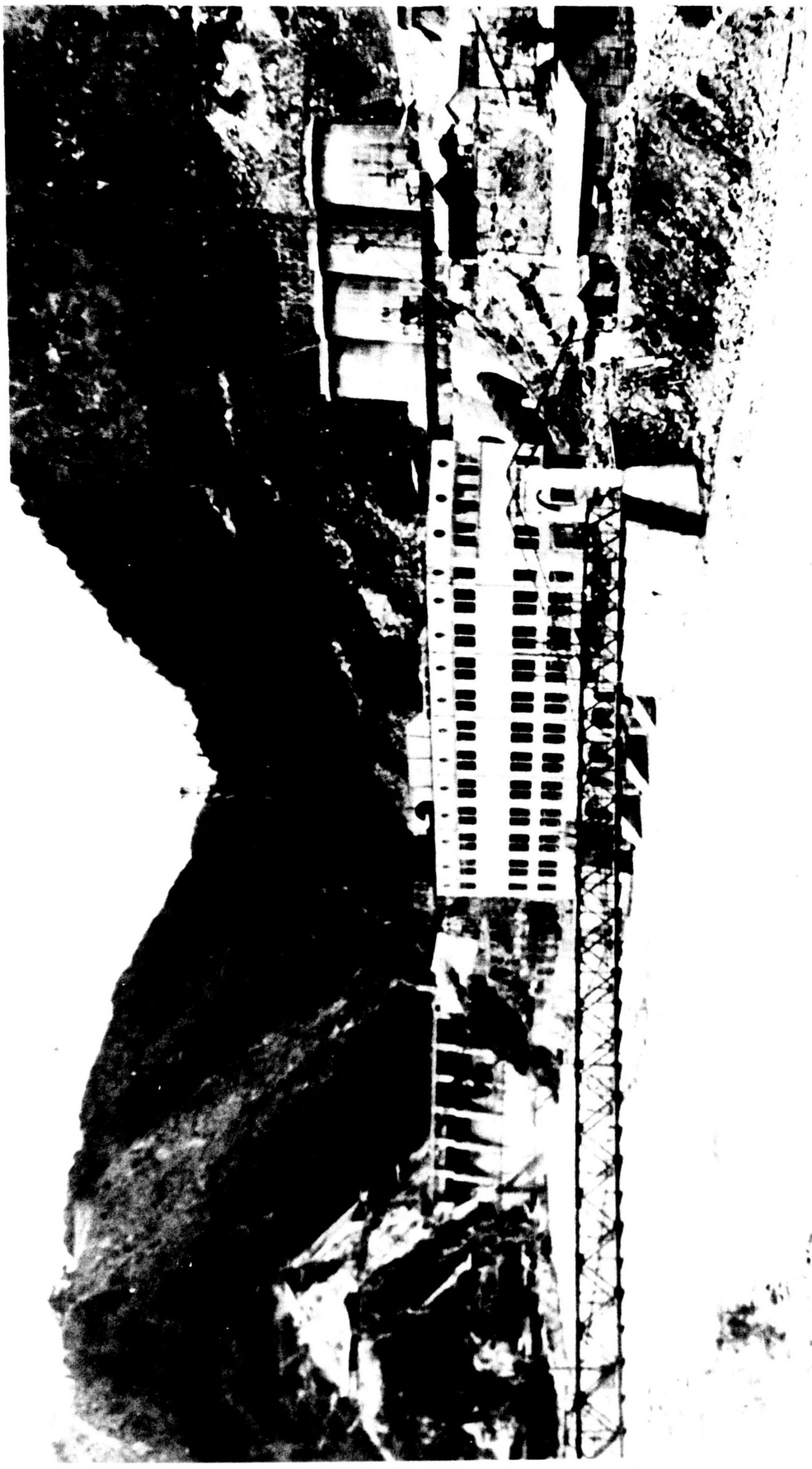
Location: Plant - 310, Yatsuzawa-oaza, Iwao-mura, Kita Tsuru-gun, Yamanashi-ken

Capacity Commonly in Use (in kw): 19,833, as of May 1936

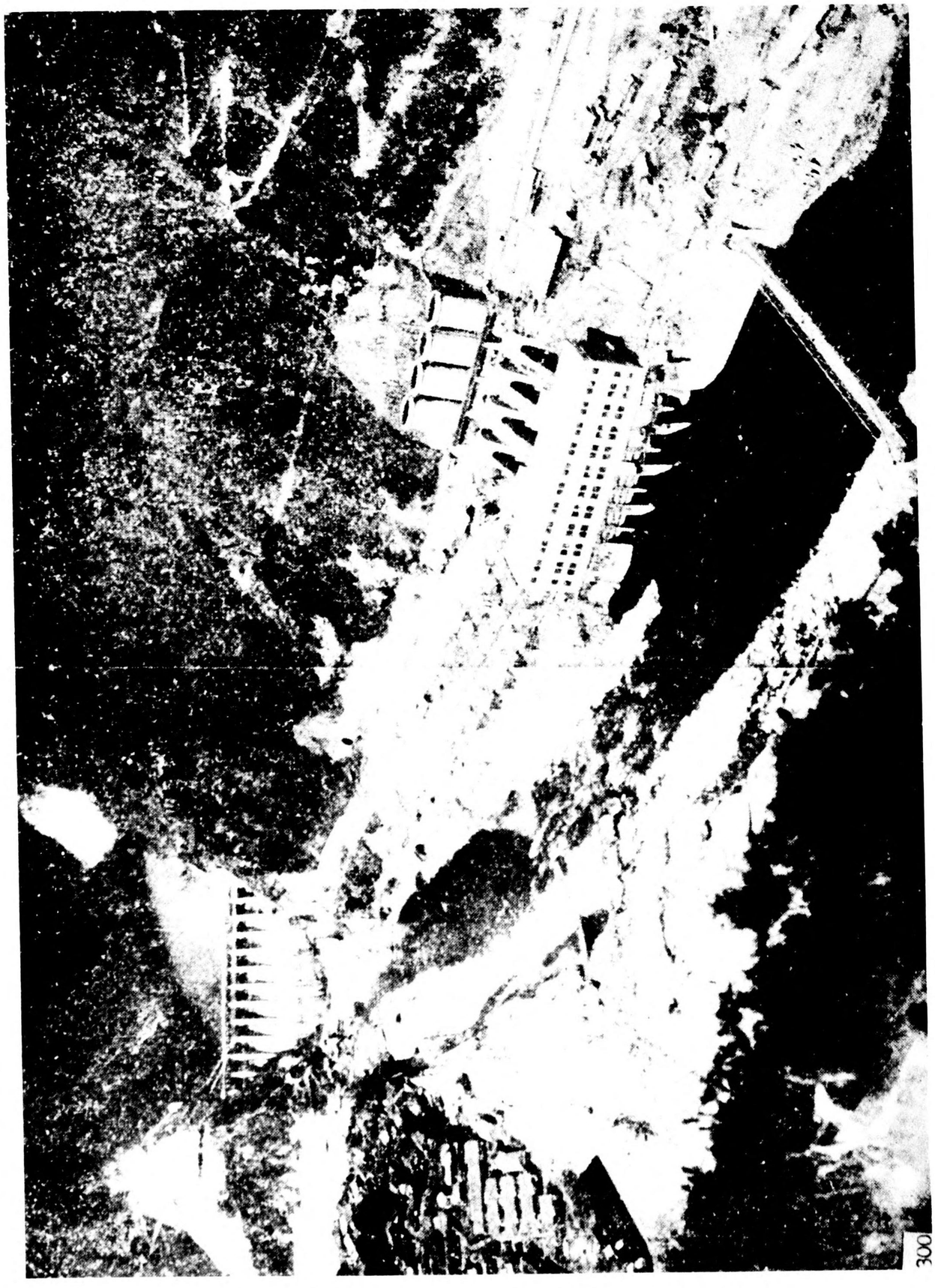
Importance: Rank in Japan - 125 ; rank in Tokyo supply area - 50

Source of Power: Katsura-kawa of the Sagami-gawa system

Date of Construction: Completed July 1912; in operation Mar 1940

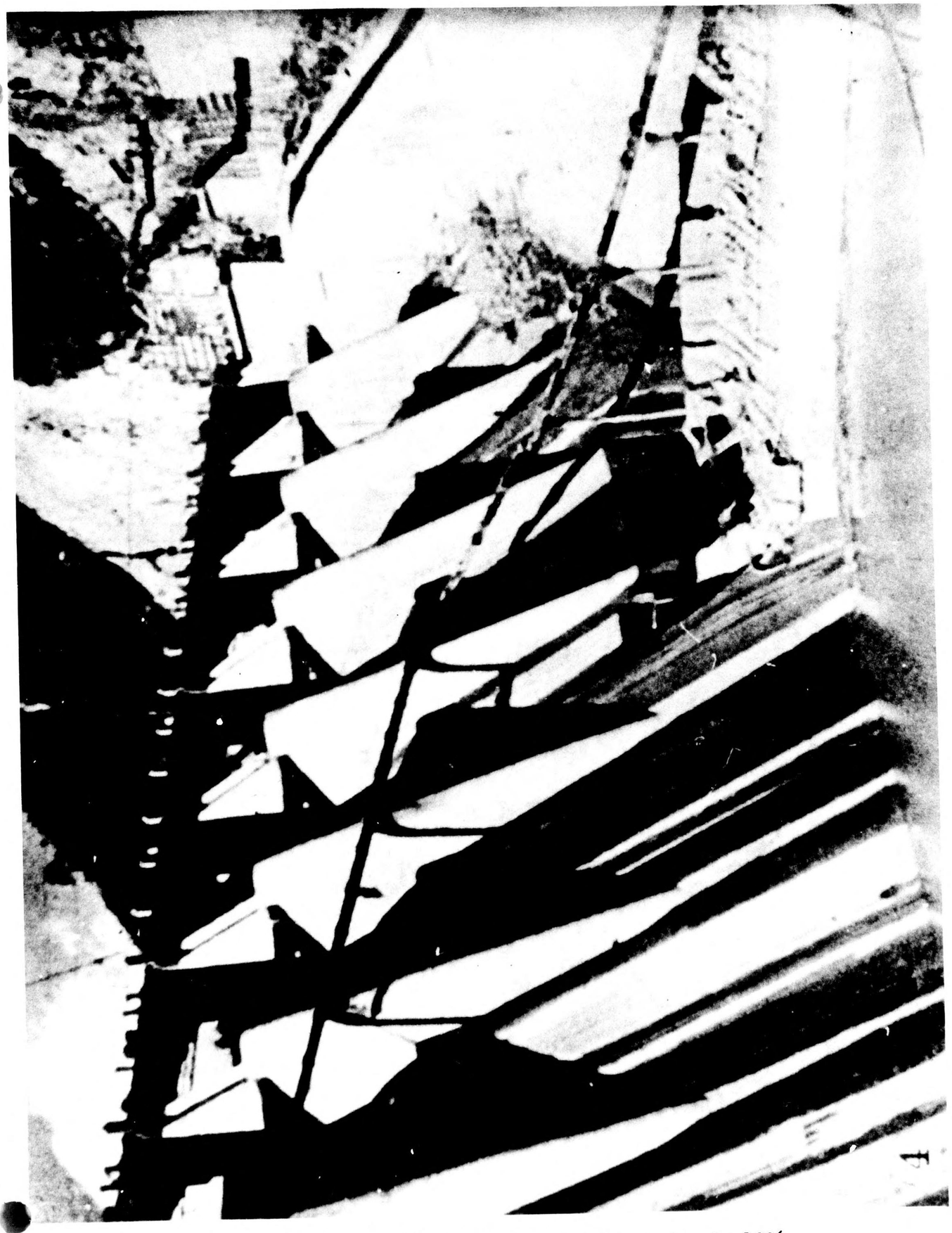


Photograph No. V-98 Yasuoka Hydro Plant and dam in 1936

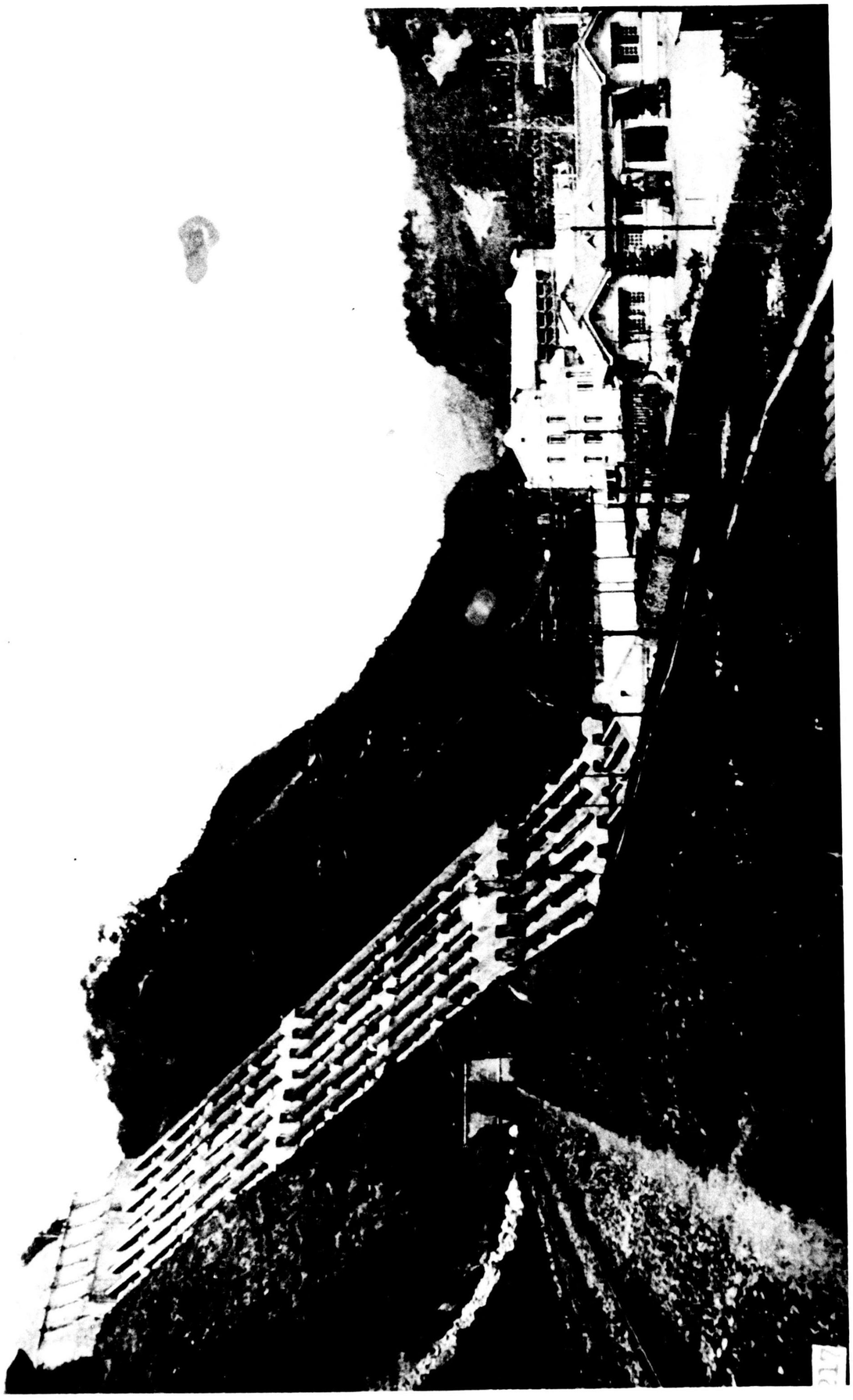


Photograph No. V-99 Yasuoka Hydro Plant and dam

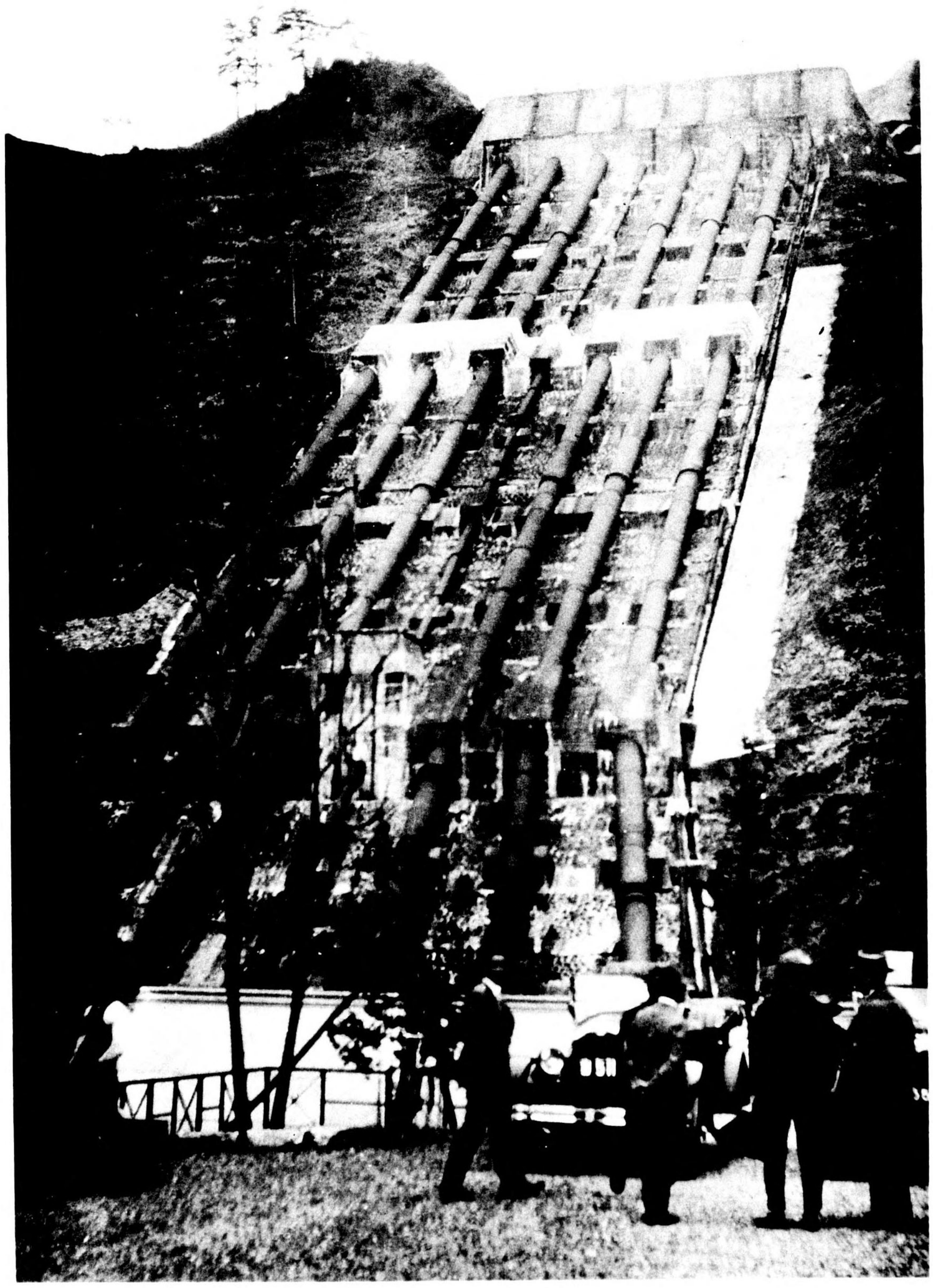
Photograph No. V-100 Yasuoka Hydro Plant from suspension bridge at side of plant



Photograph No. V-101 Yasuoka Hydro Plant dam in 1936



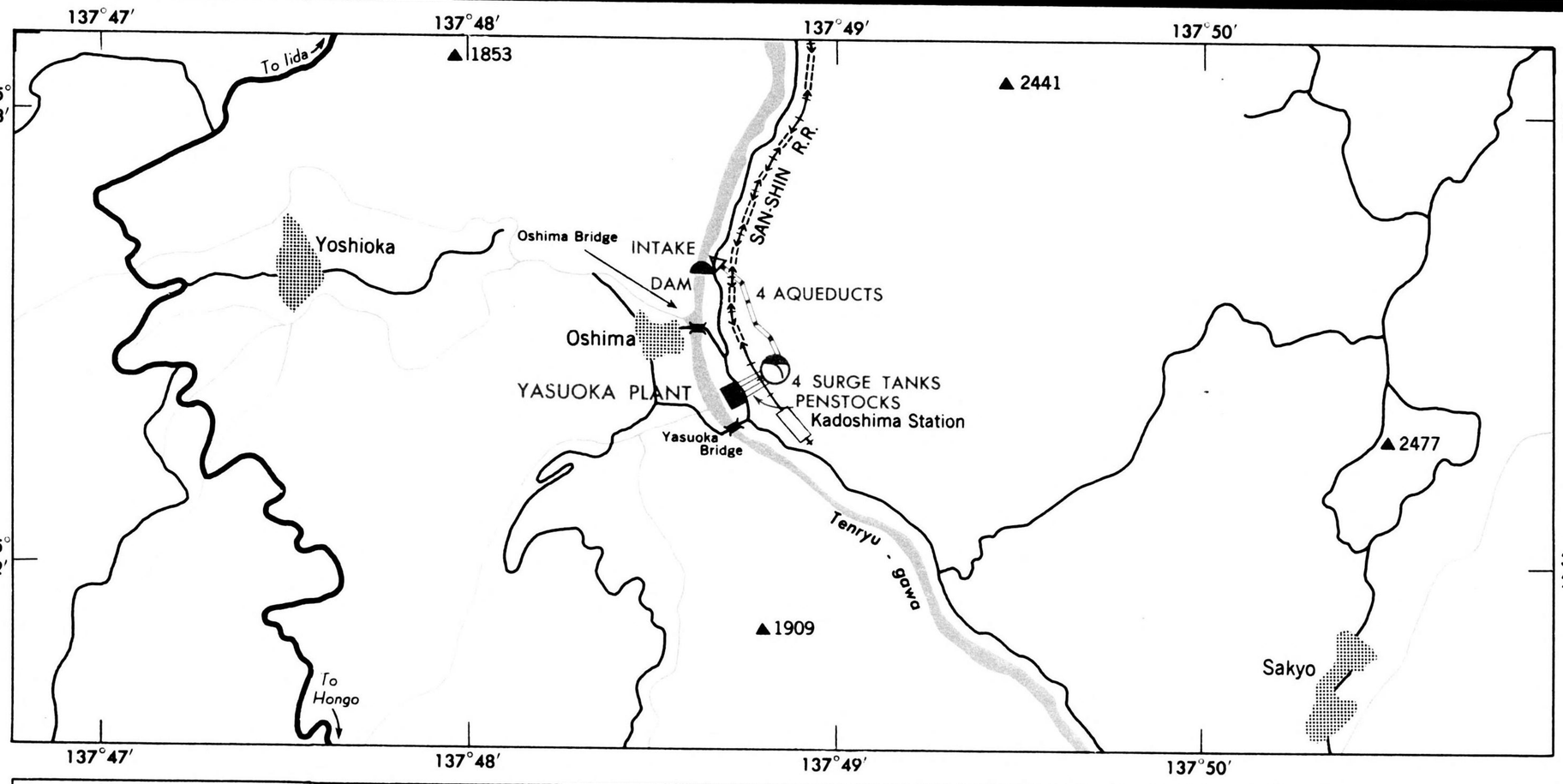
Photograph No. V-102 Yatsuzawa Hydro Plant in 1928



Photograph No. V-103 Yatsuzawa Hydro Plant penstocks in 1928

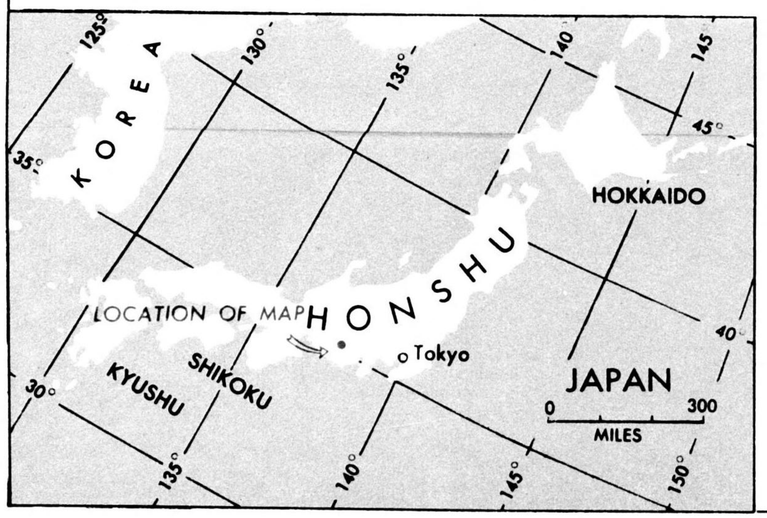
PROVISIONAL EDITION

Figure V-35a
CONFIDENTIAL




# YASUOKA HYDROELECTRIC PLANT

## NAGANO-KEN




BASE MAP FROM 1:50,000 SERIES, JAPAN IMPERIAL LAND SURVEY BUREAU, 1936
W.D.M.C. FILE NO. JAPAN S30-JGS-50, SHEET 47-4

| | |
|---|---|
| SETTLEMENT CENTER | PRINCIPAL HIGHWAY |
| RAILROAD | SECONDARY ROAD |
| TUNNEL | ▲1853 SPOT HEIGHT (IN FEET) |

0 ½ 1
MILES

0 ½ 1
KILOMETERS

Reliability Code 1B--1B--1

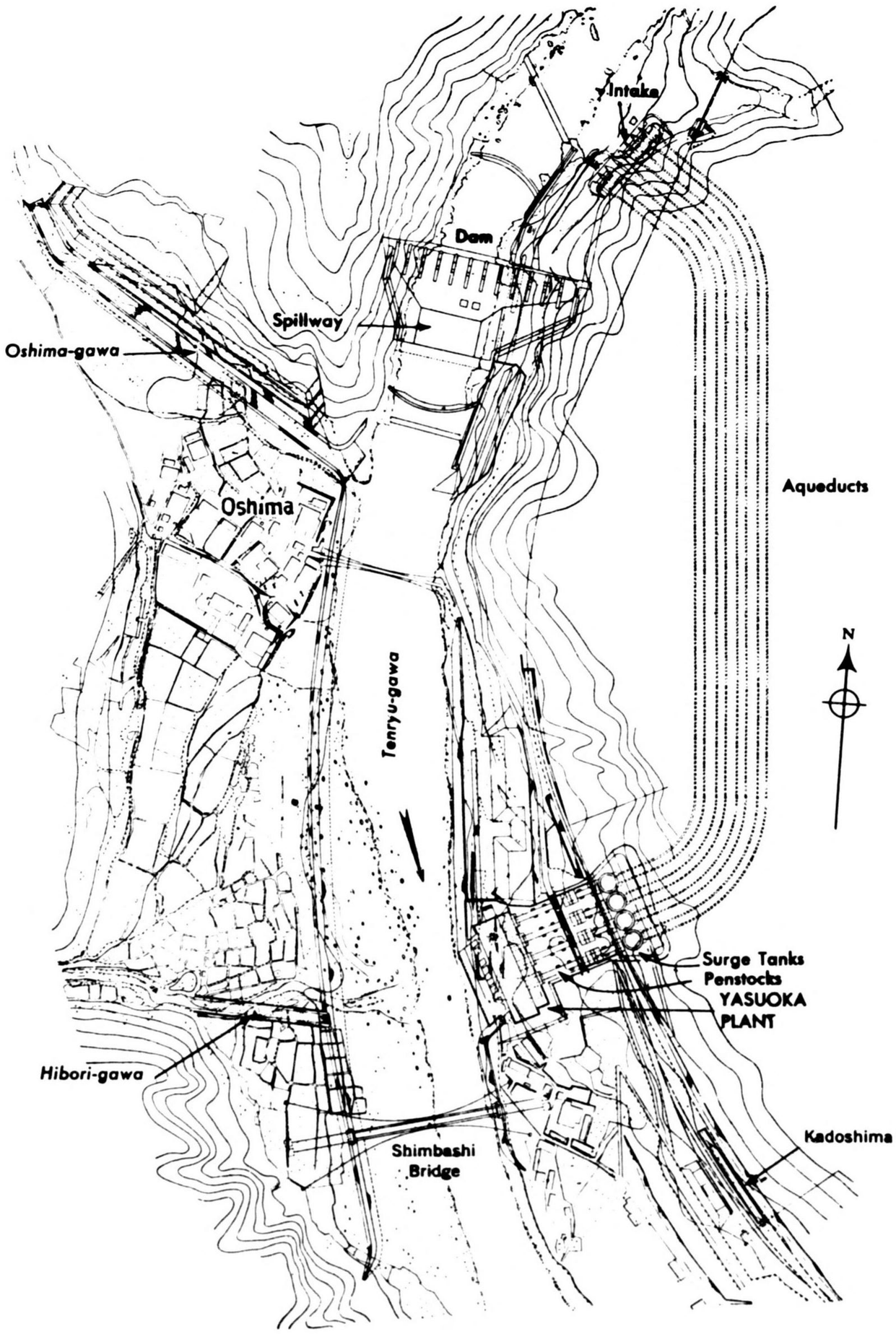
NO. 3113
25 MARCH 1944

COMPILED AND DRAWN IN THE BRANCH OF RESEARCH AND ANALYSIS, OSS
LITHOGRAPHED IN THE REPRODUCTION BRANCH. OSS

# YASUOKA HYDROELECTRIC PLANT

## NAGANO-KEN

*From: Shibaura Revyu, October, 1934, p. 377*




NO. A-3177-RA, OSS
14 APRIL 1944

CONFIDENTIAL

LITHOGRAPHED IN THE REPRODUCTION BRANCH, OSS

Details: Particular capacities (in kw) - 43,200 installed cap; 17,333 reg; 2500 spec; 35,000 reg pk
Layout - Aqueduct-type
Eff head - 114.69 m; flow - 41.7 $m^3$/sec
Dam - Of concrete with stone pitching, 90.9 m long, 4.09 m high
Settling basin - 10,030 $m^2$ water surface
Aqueduct - 513 m open channel with 4 aqueduct bridges
Forebay - 462 $m^2$ water surface
Penstocks - 6 large and 1 small @ 215 m long
Excess water spillway - 138.2 m long
Plant, external features - Of reinforced concrete construction 3 stories high with peaked roofs. 2 smaller one-story reinforced concrete buildings are on the premises.
Plant, equipment -
Turbines - 6 @ 12,500 hp, tandem Francis-type, horizontal-shaft, EW-make
Generators - 6 @ 8000 kva, 90% pf, 3-ph, 6600 v, 375 rpm, 50 cyc, AEG-make
Transformers - 7 (incl 1 res) @ 7500 kva, 1-ph, 6.6/39 kv, D-Y conn, water-cooled, core-type, GE-make
Other equipment - 3 exciters @ 250 kw; 1 crane @ 25-ton cap and 1 crane @ 10-ton cap
Tail race - 836.36 m long

See: Photographs No. V-102, V-103
Figure No. V-36

Sources: DnN 1940; ZKT 1939 p.1647; DJY 1927; DJY 1929 p.298; Ohm 6/31 supp p.6, 10/33 opp p.561; Ohm-sha Guide 1933 p.4; DnGZ 8/33 p.671; TD Map

## 956. YAWATA FACTORY STEAM PLANT

Approx. Lat. 33°51'
Long. 130°48'

Company: Asahi Garasu KK

Location: 5 of 9971, Doyama-aza, Emitsu-oaza, Yawata-shi, Fukuoka-ken

Installed Capacity (in kw): Est 10,000, as of 1939

Importance: Rank in Japan - 236 ; rank in Kyushu supply area - 32
Serves the Yawata Factory of the Asahi Garasu KK

Date of Construction: Unknown; in operation in 1939

957. YAWATA FACTORY STEAM PLANT Approx. Lat. 33°51'
Long. 130°48'

Company: Nippon Kasei Kogyo KK

Location: Kurosaki-ku, Yawata-shi, Fukuoka-ken

Installed Capacity (in kw): 24,000 (see Date of Construction)

Importance: Rank in Japan - 100 ; rank in Kyushu supply area - 18
Serves the Yawata Chemical Factory of the Nippon Kasei Kogyo KK

Date of Construction: Under construction July 1939; probably completed in 1940

Details: Plant, equipment -
Boilers - 3 @ Loeffler-type, 50 t/hr steam cap, 510° C, 115 kg/cm$^2$,
Turbines - 3 @ unknown cap, horizontal-shaft
Generators - 2 @ 10,000/12,000 kw, AEG-make
Other equipment - 3 condensers

958. YAWATA NO. 4 HYDRO PLANT Approx. Lat. 34°05'
Long. 135°27'

Company: Nankai Suiryoku Denki KK

Location: Plant - Yawata-mura, Arita-gun, Wakayama-ken

Capacity Commonly in Use (in kw): 1260, as of 1934

Importance: Rank in Japan - 250 + ; rank in Osaka-Nagoya supply area-100 +

Source of Power: Arita-kawa

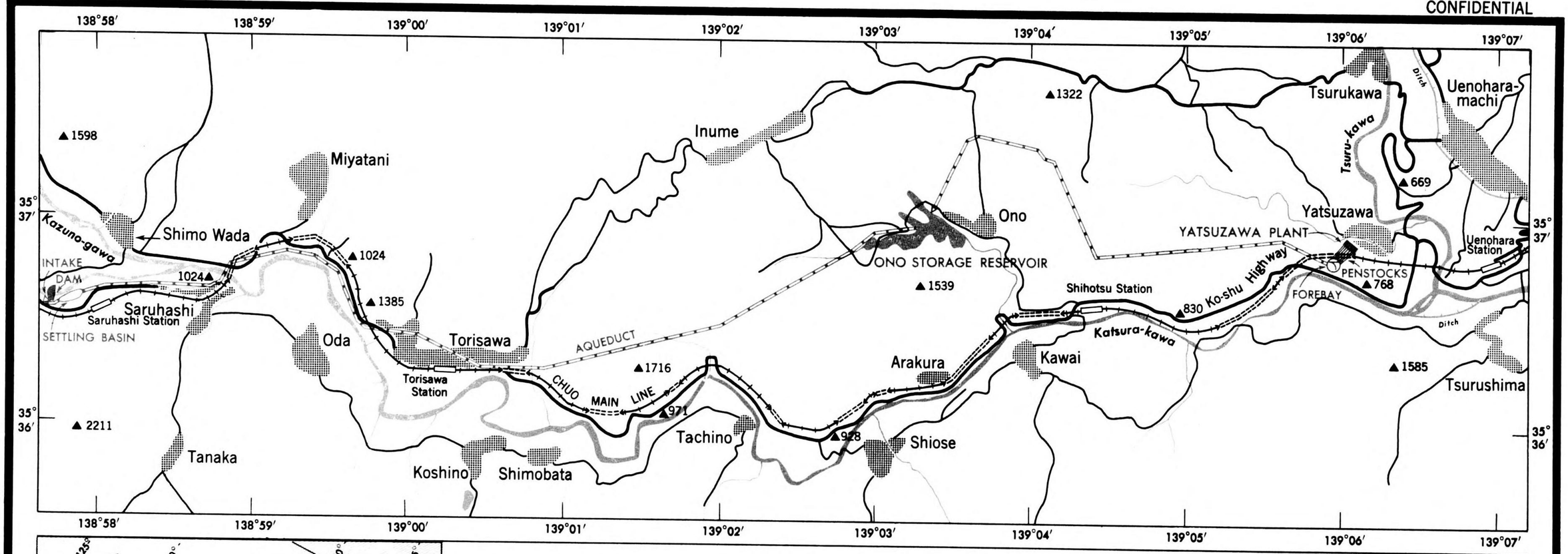
Date of Construction: Unknown; in operation as early as June 1928 and as recently as Mar 1940

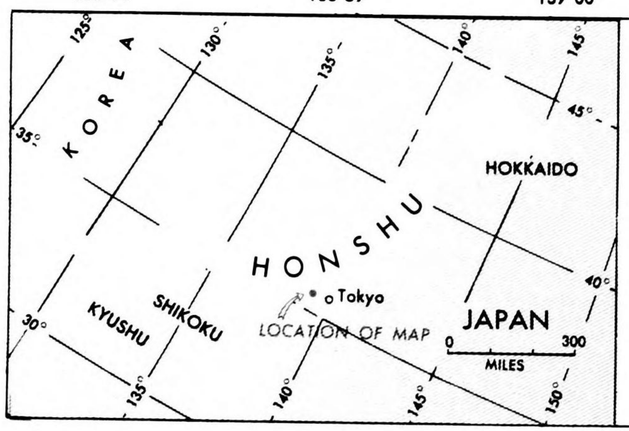
Details: Particular capacities (in kw) - *1300 installed cap; 690 reg; 570 spec
Eff head - 135 ft
Dam - 16.7 m high, 51.8 m long
Log chute - 1.5 m wide, 0.8 m deep, 49 m long
Plant, equipment -
Turbines - 1 @ 1170 hp, Francis-type, vertical-shaft, Voith-make
1 @ 730 hp, Francis-type, vertical-shaft, Voith-make
Generators - 1 @ 1000 kva, 3-ph, 3300 v, 600 rpm, 60 cyc, Shibaura-make
1 @ 625 kva, 3-ph, 3300 v, 600 rpm, 60 cyc, Shibaura-make
Transformers - 4 (incl 1 res) @ 550 kva, 1-ph, 3.3,3.15,3/33,31.5,30 kv, D-D conn, self-cooled, 60 cyc, shell-type, Hitachi-make

Sources: Ohm 3/28 p.180; DnN 1940; DJY 1929 pp.267,352; HSG p.324; DnGZ 7/37

PROVISIONAL EDITION

Figure V-36
CONFIDENTIAL




# YATSUZAWA HYDROELECTRIC PLANT

## YAMANASHI-KEN

BASE MAP FROM 1:50,000 SERIES, JAPAN IMPERIAL LAND SURVEY BUREAU, 1935
W.D.M.C. FILE NO. JAPAN S30-JGS-50, SHEETS 48-3 AND 49-15

½ 0 ½ 1 MILES

½ 0 ½ 1 KILOMETERS

Reliability Code. 1B--1B--1

SETTLEMENT CENTER
RAILROAD
RAILROAD TUNNEL
PRINCIPAL HIGHWAY
SECONDARY ROAD
▲ 1385 SPOT HEIGHT (IN FEET)

NO. 3201
31 MAY 1944

COMPILED AND DRAWN IN THE BRANCH OF RESEARCH AND ANALYSIS, OSS
LITHOGRAPHED IN THE REPRODUCTION BRANCH, OSS

YAWATA SEITETSU-SHO STEAM PLANTS - See NIPPON SEITETSU-SHO YAWATA STEAM PLANTS

YAYAMA HYDRO PLANT - See KAWAI HYDRO PLANT (NARA-KEN)

959. YODOGAWA FACTORY STEAM PLANT Believed to be Approx. Lat. 34°43'
Long. 135°32'

Company: Kanegafuchi Boseki KK

Location: Believed to be at 123, Tomofuchi-cho, Asahi-ku, Osaka-shi, Osaka-fu

Installed Capacity (in kw): Est 2500 (see Date of Construction)

Importance: Rank in Japan - 250 + ; rank in Osaka-Nagoya supply area-100 +

Date of Construction: Unknown; 1 unit @ est 2500 kw installed in Dec 1937; in operation Dec 1938

Details: Plant, equipment -
Turbines - 1 @ 2500 kw, Zoelly-type, Mitsubishi-make
Generators - 1 @ unknown cap, 60 cyc, Mitsubishi-make

Sources: DnGZ 3/38 adv p.54; ZKT 1939 p.45

960. YOGAWA HYDRO PLANT Approx. Lat. 35°38'
Long. 137°38'

Company: Kiso Hatsuden KK; formerly Shimmi Denryoku KK

Location: Plant - Yogawa-aza, Yomikaki-mura, Nishi Tsukuma-gun, Nagano-ken
Dam - Yogawa-aza, Yomikaki-mura, Nishi Tsukuma-gun, Nagano-ken

Capacity Commonly in Use (in kw): 1760, as of Dec 1934

Importance: Rank in Japan - 250 + ; rank in Osaka-Nagoya supply area-100 +

Source of Power: Yogawa of the Kiso-gawa system

Date of Construction: Unknown; in operation as early as June 1928 and as recently as 1937

Details: Particular capacities (in kw): 880 reg; 880 spec
Layout - Aqueduct-type
Eff head - 135 m; flow - 1.67 $m^3$/sec
Plant operates on 60 cyc

Sources: DJY 1929 p.295; DGS 1935 p.1287

961. YOKOGAWA HYDRO PLANT

Company: Tetsudo-sho

Location: Plant - Gumma-ken; exact location unknown

Capacity Commonly in Use (in kw): 3000, as of 1928

Importance: Rank in Japan - 250 + ; rank in Tokyo supply area - 100 +

Source of Power: Unknown

Date of Construction: An unconfirmed source reports plant in operation Dec 1928

Sources: TD Map

962. YOKOGAWA KARYU NO. 1 HYDRO PLANT Approx. Lat. 38°00'
Long. 140°28'

Company: Miyagi-ken

Location: Plant - Kashiwagiyama-aza, Seki-oaza, Shichigashuku-mura, Katta-gun, Miyagi-ken

Capacity Commonly in Use (in kw): 1800, as of Dec 1934

Importance: Rank in Japan - 250 + ; rank in Tohoku supply area - 100 +

Source of Power: Yoko-gawa

Date of Construction: Completed June 1929; in operation Mar 1940

Details: Particular capacities (in kw): *1600 installed cap; 600 reg; 1200 spec ; 1100 reg pk
Eff head - 380 ft; flow - 75 $ft^3$/sec
Plant, equipment -
Turbines - 2 @ 1400 hp, Francis-type, horizontal-shaft
Generators - 1 @ 2000 kva, 3-ph, 3300 v, 750 rpm, 50 cyc
Other equipment - Equipment for automatic operation has been installed

Sources: DnN 1940; ZKT 1939 p.1910; Ohm 5/28 p.265, 9/29 p.450; DnGZ 6/30 p.694

963. YOKOGAWA KARYU NO. 2 HYDRO PLANT — Approx. Lat. 38°00' Long. 140°28'

Company: Miyagi-ken, previously Sennan Denki Kogyo KK

Location: Plant - Shichigashuku-mura, Katta-gun, Miyagi-ken

Capacity Commonly in Use (in kw): 5895 (see Date of Construction)

Importance: Rank in Japan - 250 + ; rank in Tohoku supply area - 20 +

Source of Power: Yoko-gawa

Date of Construction: Plant partially (2000 kw) completed May 1928; probably finished soon after

Details: Particular capacities (in kw) - 3700 reg; 2195 spec
Plant operates on 50 cyc

Sources: Ohm 5/28 p.265

964. YOKOHAMA FACTORY STEAM PLANT — Approx. Lat. 35°29' Long. 139°37'

Company: Showa Denko KK; formerly Nippon Denki Kogyo KK

Location: 8, Ebisu-cho, Kanagawa-ku, Yokohama-shi, Kanagawa-ken

Installed Capacity (in kw): Est 12,500, as of Dec 1938

Importance: Rank in Japan - 190 ; rank in Tokyo supply area - 70
Serves the Yokohama Factory of the Showa Denko KK

Date of Construction: Unknown; in operation Dec 1938

Details: Plant, equipment -
Turbines - 1 @ 12,500 kw, extraction-type, Hitachi-make
Generators - 1 @ unknown cap, 3-ph, 3600 rpm, 60 cyc

Sources: HH 1/39 p.15; DnGZ 10/37 p.(143)

965. YOKOOJI STEAM PLANT — Approx. Lat. 34°55' Long. 135°45'

Company: Kyoto-shi

Location: 98 of 5-chome, Higashinoguchi-aza, Shimo Misu-oaza, Yokooji-cho, Fushima-ku, Kyoto-shi, Kyoto-fu

Installed Capacity (in kw): *10,000, as of 1933

Importance: Rank in Japan - 236 ; rank in Osaka-Nagoya supply area - 92

Date of Construction: Completed in 1925; in operation Mar 1940

Details: Plant, equipment -
Boilers - 4 (incl 2 res) @ B&W water tube-type, 250 lbs/in$^2$, 656° F, 6156 ft$^2$, B&W-make
Turbines - 2 (incl 1 res) @ 7500 hp, Curtis-type, horizontal-shaft, GE-make
Generators - 2 (incl 1 res) @ 6250 kva, 3-ph, 6600 v, 3600 rpm, 60 cyc, GE-make
Transformers - 6 (incl 3 res) @ 2000 kva, 1-ph, 6.6/22,21.5,20.46,19.94 kv, D-D conn, water-cooled, 60 cyc, core-type, EE-make
Other equipment - 2 exciters @ 32 kw; 4 superheaters; chain-grate stokers; 4 economizers
Area served - Kyoto-shi

Sources: DnN 1940; ZKT 1939 p.1907; Ohm-sha Guide 1933 p.53; Ohm 6/31 supp p.7; DnK; DJY 1927; DJY 1929 p.346; TD Map

966. YOKOOKA NO. 1 HYDRO PLANT Approx. Lat. 39°10'
Long. 139°59'

Company: Dai Nippon Denryoku KK; formerly Hokkaido Dento KK

Location: Plant - Yokooka-oaza, Kamigo-mura, Yuri-gun, Akita-ken

Capacity Commonly in Use (in kw): 1300, as of Dec 1934

Importance: Rank in Japan - 250 + ; rank in Tohoku supply area - 20 +

Source of Power: Torikoe-kawa and Iwamata-gawa

Date of Construction: Unknown; in operation as early as Dec 1926 and as recently as Mar 1940

Details: Particular capacities (in kw) - *1200 installed cap; 1000 reg; 300 spec
Eff head - 625 ft
Plant, equipment -
Turbines - 1 @ 1900 hp, Francis-type, Hitachi-make
Generators - 1 @ 1500 kva, 3-ph, 3300 v, 750 rpm, 50 cyc, Hitachi-make
Transformers - 4 (incl 1 res) @ 500 kva, 1-ph, 3.3/33 kv, D-D conn, water-cooled, 50 cyc, shell-type, Hitachi-make

Sources: DnN 1940; DJY 1927; DJY 1929 pp.290,404

967. YOKOOKA NO. 2 HYDRO PLANT

Approx. Lat. 39°10'
Long. 139°58'

Company: Dai Nippon Denryoku KK; formerly Hokkaido Dento KK

Location: Plant - Yokooka-oaza, Kamigo-mura, Yuri-gun, Akita-ken

Capacity Commonly in Use (in kw): 2530, as of 1927

Importance: Rank in Japan - 250 + ; rank in Tohoku supply area - 20 +

Source of Power: Torikoshi-kawa and Iwamata-gawa systems

Date of Construction: Unknown; in operation as early as Nov 1927 and as recently as Mar 1940

Details: Particular capacities (in kw) - *3000 installed cap; 1680 reg; 850 spec
Eff head - 133 m
Plant, equipment -
Turbines - 1 @ 4750 hp, Francis-type, Hitachi-make
Generators - 1 @ 3750 kva, 3-ph, 3300 v, 600 rpm, 50 cyc, Hitachi-make
Transformers - 4 (incl 1 res) @ 1250 kva, 1-ph, 3.3/33 kv, D-D conn, water-cooled, 50 cyc, Hitachi-make

Sources: DnN 1940; DJY 1929 pp.290,404; Ohm 2/28 p.134

YOKOTAIRO STEAM PLANT - See YOKOOJI STEAM PLANT

968. YOMIKAKI HYDRO PLANT

Approx. Lat. 35°35'
Long. 137°36'

Company: Nippon Hassoden KK; formerly Daido Denryoku KK

Location: Plant - On the right bank of the Kiso-gawa at 1 of 3070, Shimada-oaza, Yomikaki-mura, Nishi Tsukuma-gun, Nagano-ken

Capacity Commonly in Use (in kw): 40,700, as of Oct 1933

Importance: Rank in Japan - 55 ; rank in Osaka-Nagoya supply area - 23

Source of Power: Kiso-gawa

Date of Construction: Completed Dec 1923; in operation Mar 1940

Details: Particular capacities (in kw): *40,800 installed cap; 21,100 reg; 19,600 spec
Layout - Aqueduct-type
Eff head - 112 m; flow - 45.3 $m^3$/sec
Penstocks - 3
Plant, external features - Of concrete construction, 3 stories high. 2 bridges cross Kiso-gawa at side of plant
Plant, equipment -
Turbines - 3 @ 19,000 hp, Francis-type, vertical-shaft, EW-make
Generators - 3 @ 17,000 kva, 3-ph, 6600 v, 360 rpm, 60 cyc, W-make
Transformers - 9 (incl 3 res) @ 8500 kva, 1-ph, 6.6/89 kv, D-Y conn, water-cooled, 60 cyc, core-type, GE-make
Other equipment - 2 exciters @ 460 kw
Area served - Nagoya-shi, Osaka-shi

See: Photographs No. V-104, V-105, V-106, V-107, V-108, V-109, V-110, V-111, V-112, V-113
Figure No. V-4
Sources: DnN 1940; ZKT 1939 p.1646; Ohm-sha Guide 1933 p.4; Ohm 6/31 supp p.6, 10/33 opp p.561, 12/37 p.1390; DnK; DGS 12/34 p.1545; DnGZ 12/35 p.(56); DJY 1927; DJY 1929 p.342; TD Map; HSG p.19

969. YONAI HYDRO PLANT — Approx. Lat. 39°45' Long. 141°20'

Company: Tohoku Shinko Denryoku KK

Location: Plant - Asagishi-mura, Iwate-gun, Iwate-ken

Capacity Commonly in Use (in kw): 5200 (see Date of Construction)

Importance: Rank in Japan - 250 + ; rank in Tohoku supply area - 20 +

Source of Power: Yone-kawa of the Tenryu-kawa system

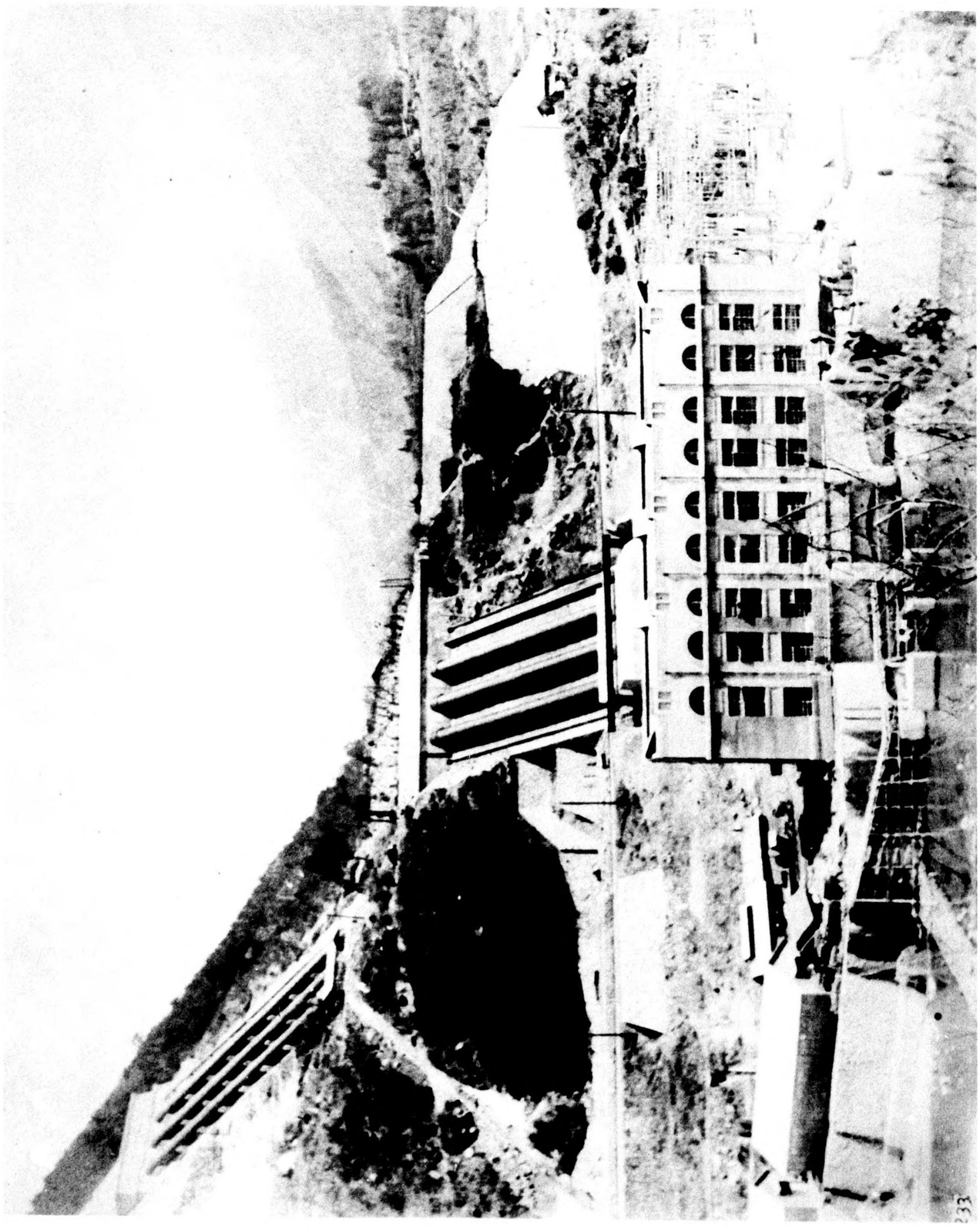
Date of Construction: Under construction Mar 1940 with completion scheduled for 1942

Details: Plant operates on 50 cyc

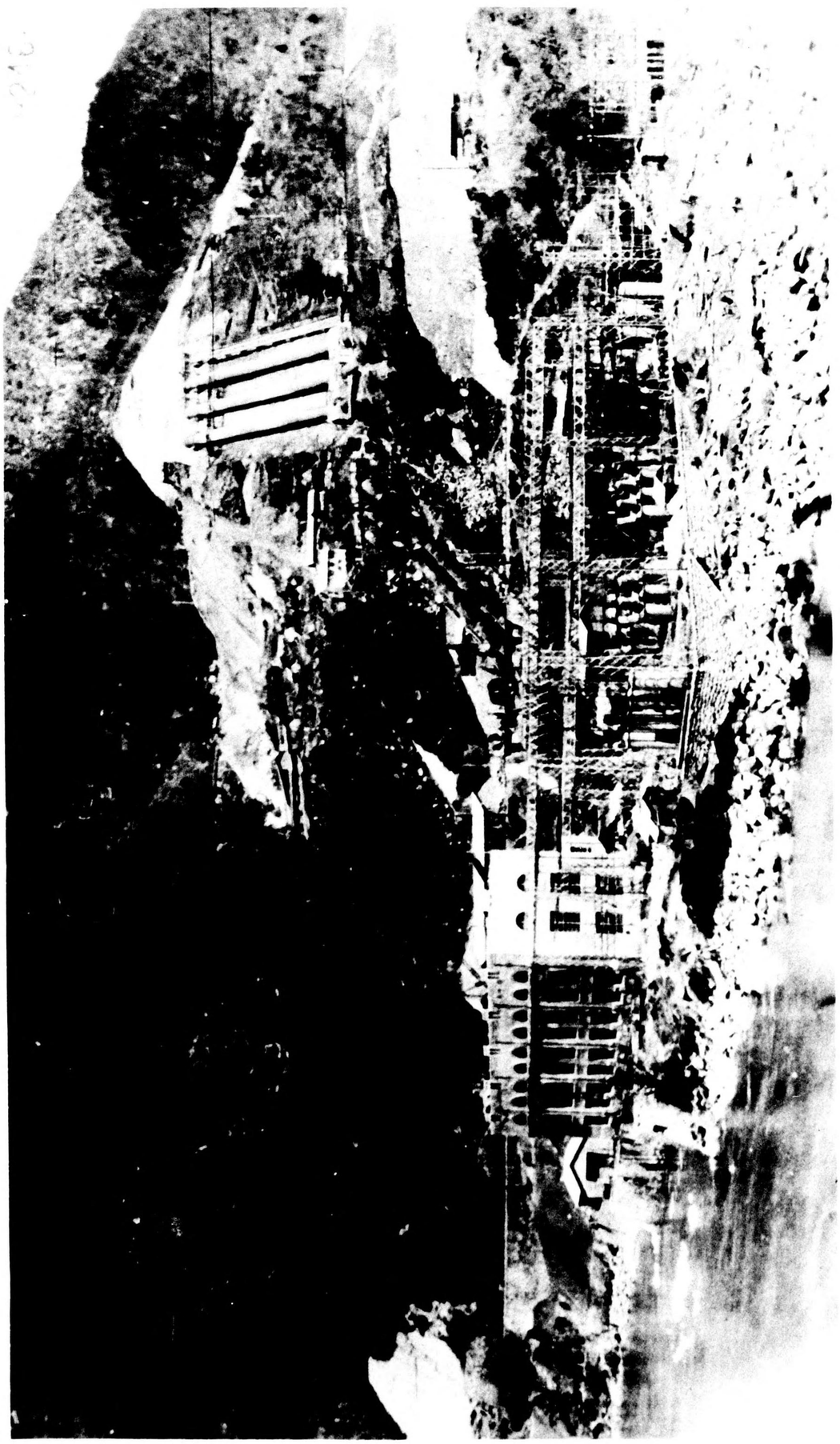
Sources: DnN 1940; KN 1939 p.166; Ohm 10/37 p.1088

970. YONEGO STEAM PLANT — Approx. Lat. 35°36' Long. 133°20'

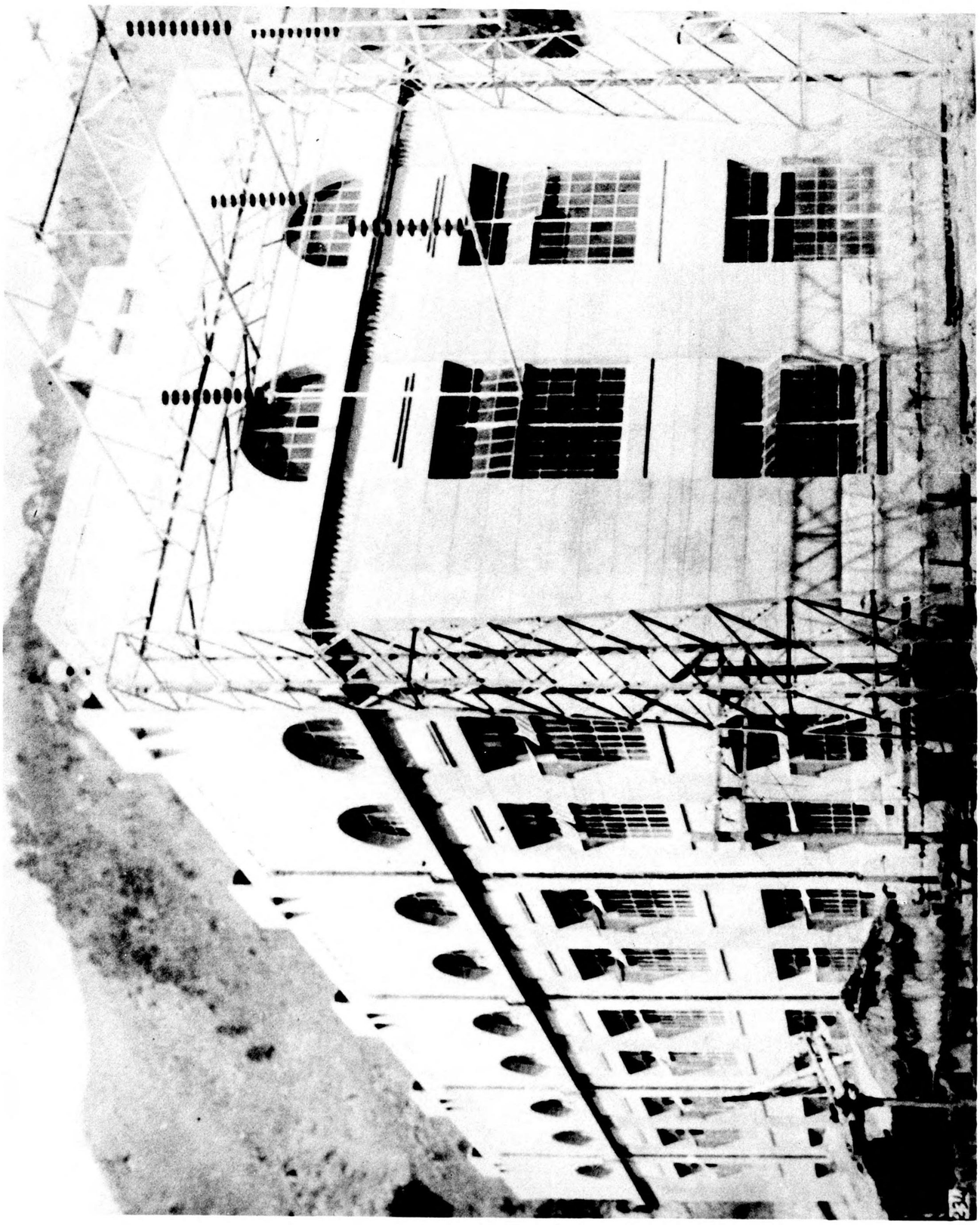
Company: Hiroshima Denki KK; formerly San-in Denki KK



Photograph No. V-104 Yomikaki Hydro Plant

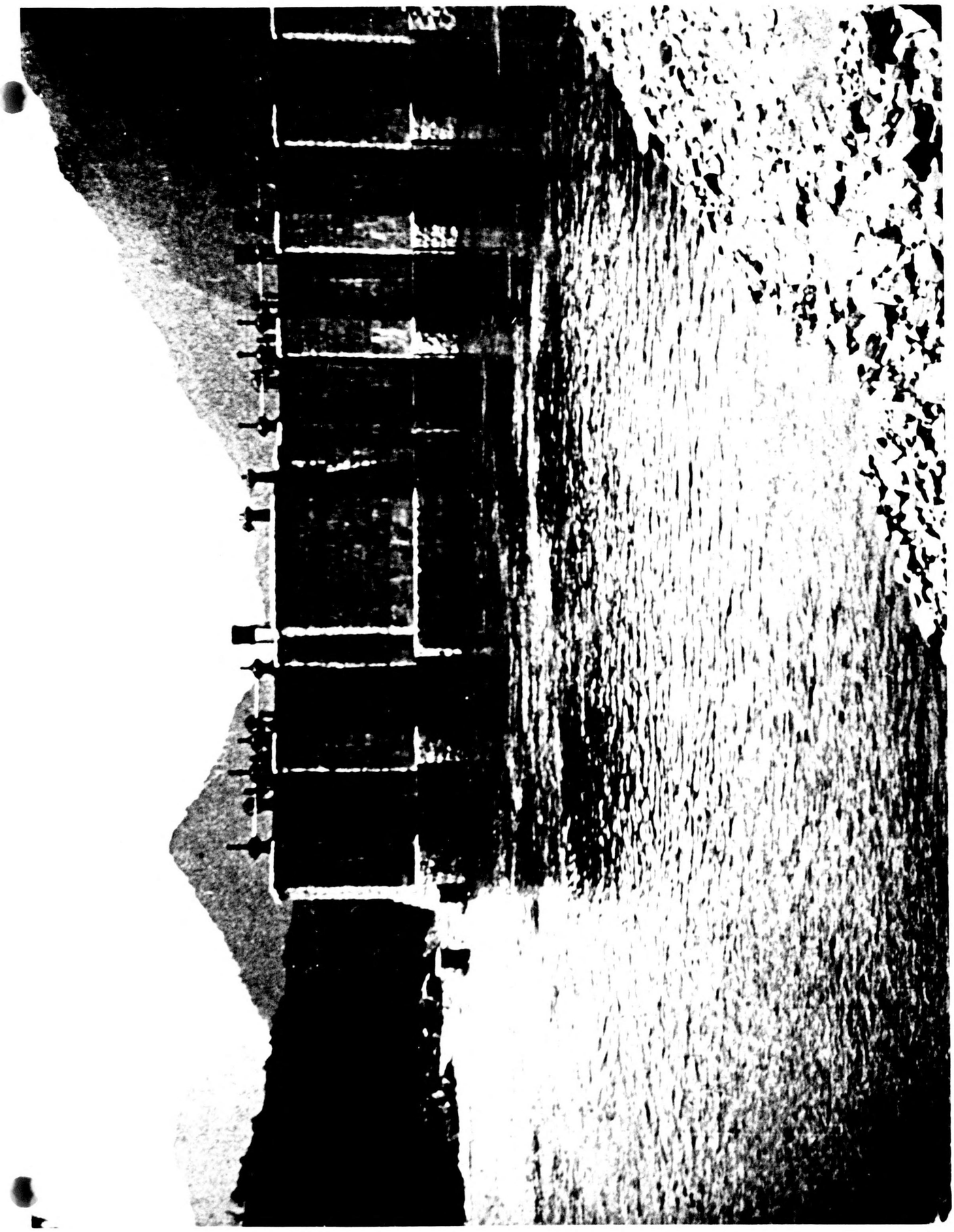


Photograph No. V-105 Yomikaki Hydro Plant



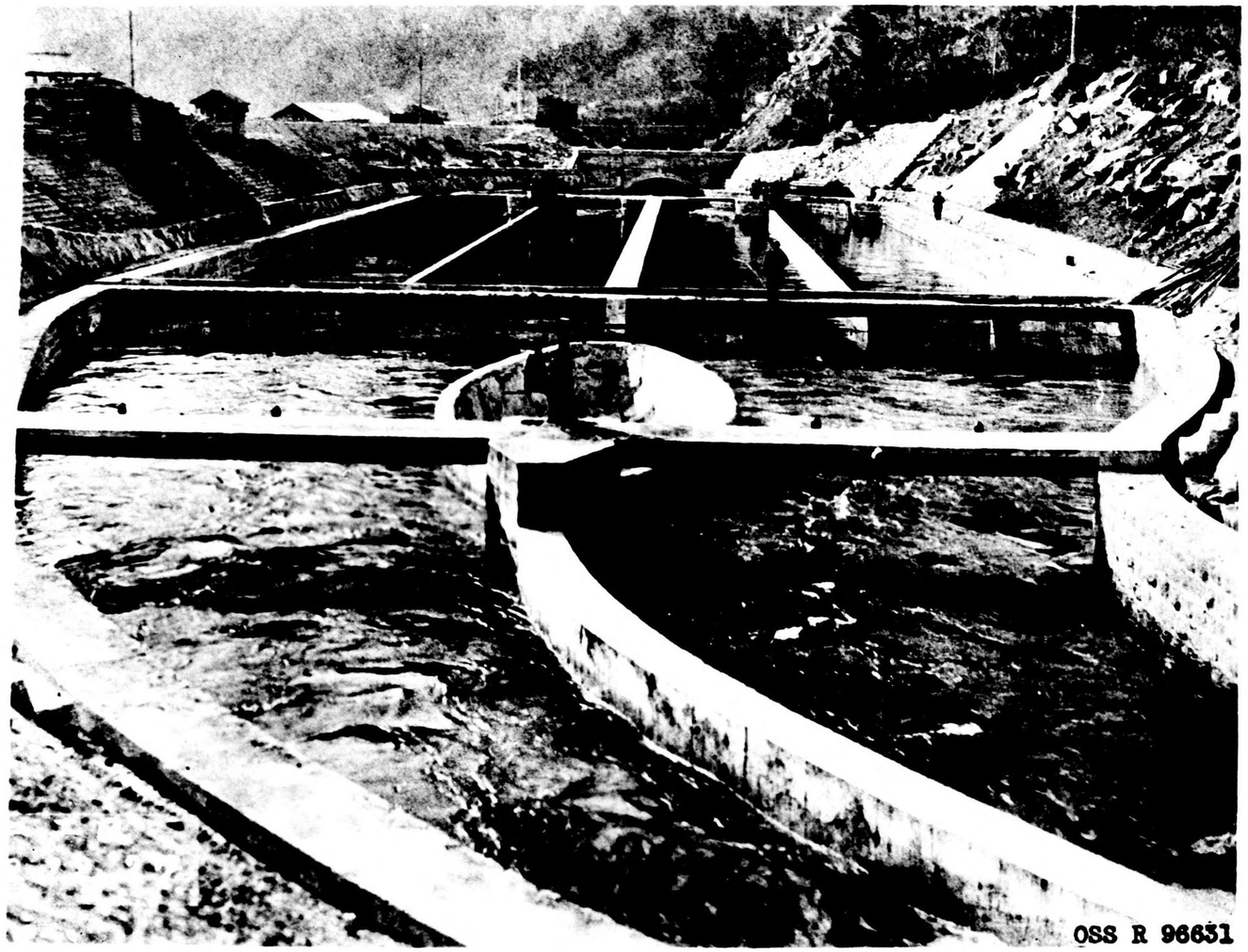
Photograph No. V-106 Yomikaki Hydro Plant

Photograph No. V-107 Yomikaki Hydro Plant



Photograph No. V-108 Yomikaki Hydro Plant dam

Photograph No. V-109 Yomikaki Hydro Plant dam



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Photograph No. V-110 Yomikaki Hydro Plant settling basin

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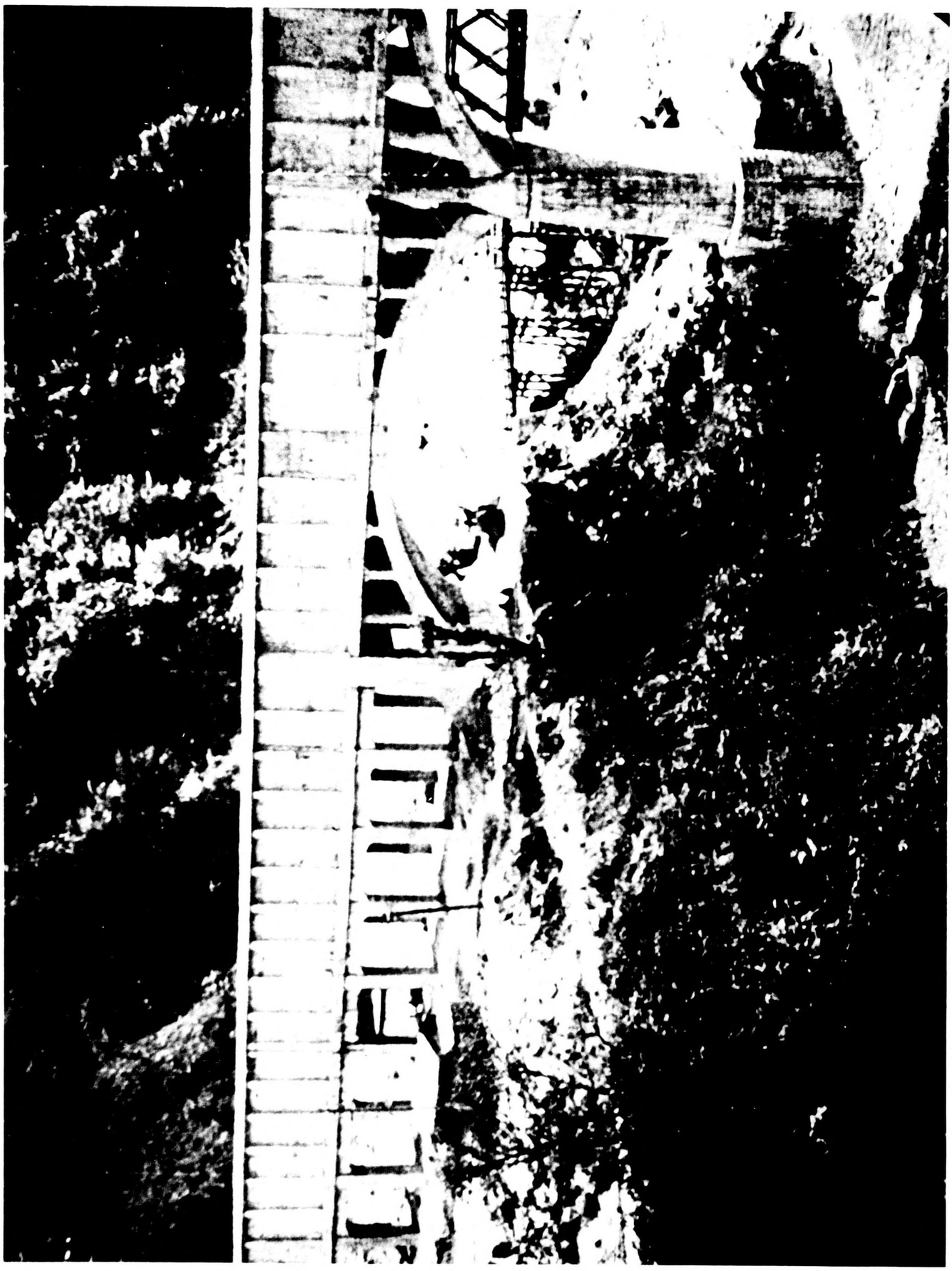


Photograph No. V-111 Yomikaki Hydro Plant aqueduct

Photograph No. V-112 Yomikaki Hydro Plant aqueduct

Photograph No. V-113 Yomikaki Hydro Plant forebay

Location: 148, 3-chome, Nada-cho, Yonego-shi, Tottori-ken

Installed Capacity (in kw): 4000, as of Dec 1936

Importance: Rank in Japan - 250 + ; rank in Chugoku supply area - 25 +

Date of Construction: Founded Nov 1925 with a single-unit cap of 1000 kw; cap was increased in Mar 1928 to 4000 kw by the addition of one or more units; plant in operation Mar 1940

Details: Particular capacities (in kw) - 4000 supp
Plant, equipment -
Boilers - Unknown no @ B&W-type, 180 lbs/in$^2$, 380° C, 2400 ft$^2$, B&W-make
Turbines - 1 @ 1500 hp, Curtis-type, vertical-shaft, GE-make
Generators - 1 @ 1250 kva, 3-ph, 2200 v, 1800 rpm, 60 cyc, GE-make
Additional turbo-generator equipment has been installed

Sources: DnN 1940; ZKT 1939 p.1649; Ohm 6/28 p.346; DnK; DJY 1927; DJY 1929 p.360

971. YONEKAWA HYDRO PLANT

Approx. Lat. 35°21'
Long. 137°50'

Company: Chuo Denryoku KK; formerly Nanshin Denki KK

Location: Plant - Yasuoka-mura, Shima Ina-gun, Nagano-ken

Capacity Commonly in Use (in kw): 2380 (see Date of Construction)

Importance: Rank in Japan - 250 + ; rank in Osaka-Nagoya supply area - 100 +

Source of Power: Yone-kawa of the Tenryu-kawa system

Date of Construction: Under construction Mar 1940; has probably been completed since

Details: Particular capacities (in kw) - 980 reg; 1400 spec; 1410 reg pk

Sources: DnN 1940; KN 1939 p.166; Ohm 10/37 p.1088

YONEKO STEAM PLANT - See YONEGO STEAM PLANT

YONJIKAWA HYDRO PLANT - See SHIJIKAWA HYDRO PLANT

972. YOSE HYDRO PLANT Approx. Lat. 35°36'
Long. 139°13'

Company: Kanagawa-ken

Location: Plant - 1 of 16-banchi, Wakayagi-oaza, Uchigo-mura, Tsukui-gun, Kanagawa-ken

Capacity Commonly in Use (in kw): 26,550 (see Date of Construction)

Importance: Rank in Japan - 91 ; rank in Tokyo supply area - 34

Source of Power: Sagami-kawa

Date of Construction: Construction was begun Nov 1938; believed to be in operation Mar 1940

Details: Particular capacities (in kw) - *25,600 installed cap;
10,000 reg; 16,550 spec; 26,300 reg pk
Layout - Aqueduct-type
Eff head - 40 m; flow - 85 $m^3$/sec
Dam - 50 m high, 195 m long with 6 sluice gates @ 8 m high and 9 m wide
Aqueduct - Pressure tunnel, 700 m long, of concrete construction
Surge tank - 48 m high, 15 m inner diam
Plant, equipment -
Turbines - 2 @ unknown cap
Generators - 2 @ 16,000 kva, 3-ph

Sources: DnN 1940; Ohm 2/39 p.204; DGS 3/38 p.312

973. YOSHIKAWA HYDRO PLANT Approx. Lat. 38°25'
Long. 140°09'

Company: Yamagata Denki KK

Location: Plant - 305, Yoshikawa-oaza, Kawadoi-mura, Nishi Murayama-gun, Yamagata-ken

Capacity Commonly in Use (in kw): 1370, as of June 1928

Importance: Rank in Japan - 250 + ; rank in Tohoku supply area - 20 +

Source of Power: Samukawae-gawa of the Mogami-gawa system

Date of Construction: Founded June 1919; in operation Mar 1940

Details: Particular capacities (in kw) - *1400 installed cap;
970 reg; 400 spec
Eff head - 59 ft
Plant, equipment -
Turbines - 1 @ 2200 hp, Francis-type, Dengyosha-make

Generators - 1 @ 1750 kva, 3-ph, 3300 v, 300 rpm, 60 cyc, Shibaura-make
Transformers - 3 @ 600 kva, 1-ph, 3.45,3.3,3.15/26.3,15.15 kv, D-D conn, water-cooled, 60 cyc, shell-type, Shibaura-make

Sources: DnN 1940; ZKT 1939 p.1649; DJY 1927; DJY 1929 p.400

974. YOSHIMA STEAM PLANT

Approx. Lat. 37°05'
Long. 140°50'

Company: Furukawa Sekitan Kogyo KK

Location: Yoshima-mura, Iwaki-gun, Fukushima-ken

Installed Capacity (in kw): 3750, as of Dec 1936

Importance: Rank in Japan - 250 +; rank in Tohoku supply area -20 +
Serves the Yoshima coal mine of Furukawa Sekitan Kogyo KK

Date of Construction: Unknown; in operation as early as Dec 1934 and as recently as Dec 1936

Sources: DnK

975. YOSHINO HYDRO PLANT

Approx. Lat. 34°23'
Long. 135°53'

Company: Ujigawa Denki KK

Location: Plant - 188, Minami Tarui-caza, Nakasho-mura, Yoshino-gun, Nara-ken

Capacity Commonly in Use (in kw): 1661, as of Dec 1934

Importance: Rank in Japan - 250 +; rank in Osaka-Nagoya supply area-100 +

Source of Power: Yoshino-gawa

Date of Construction: Founded Nov 1922; in operation Mar 1940

Details: Particular capacities (in kw) - *2400 installed cap; 936 reg; 725 spec
Eff head - 77.88 ft
Plant, equipment -
Turbines - 3 (incl 1 res) @ 1100 hp, Francis-type, EW-make
Generators - 3 (incl 1 res) @ 1000 kva, 3-ph, 3300 v, 360 rpm, 60 cyc, W-make

Transformers - 4 (incl 1 res) @ 650 kva, 1-ph, 3.3/
19.05 kv, D-Y conn, water-cooled, 60 cyc, core-type
Shibaura-make
1 @ 300 kva, 3-ph, 16,15.5/33,32 kv,
D-Y conn, water-cooled, 60 cyc, core-type, Okumura-make

Sources: DnN 1940; ZKT 1939 p.1645; DJY 1927; DJY 1929 p.350

976. YOSHINO NO. 1 HYDRO PLANT Approx. Lat. 36°21'
Long. 136°38'

Company: Kanazawa-shi

Location: Plant - Yoshino-aza, Yoshinotani-mura, Ishikawa-gun,
Ishikawa-ken

Capacity Commonly in Use (in kw): 5150, as of Dec 1936

Importance: Rank in Japan - 250 + ; rank in Osaka-Nagoya supply area-100 +

Source of Power: Senami-kawa of the Tetori-kawa system

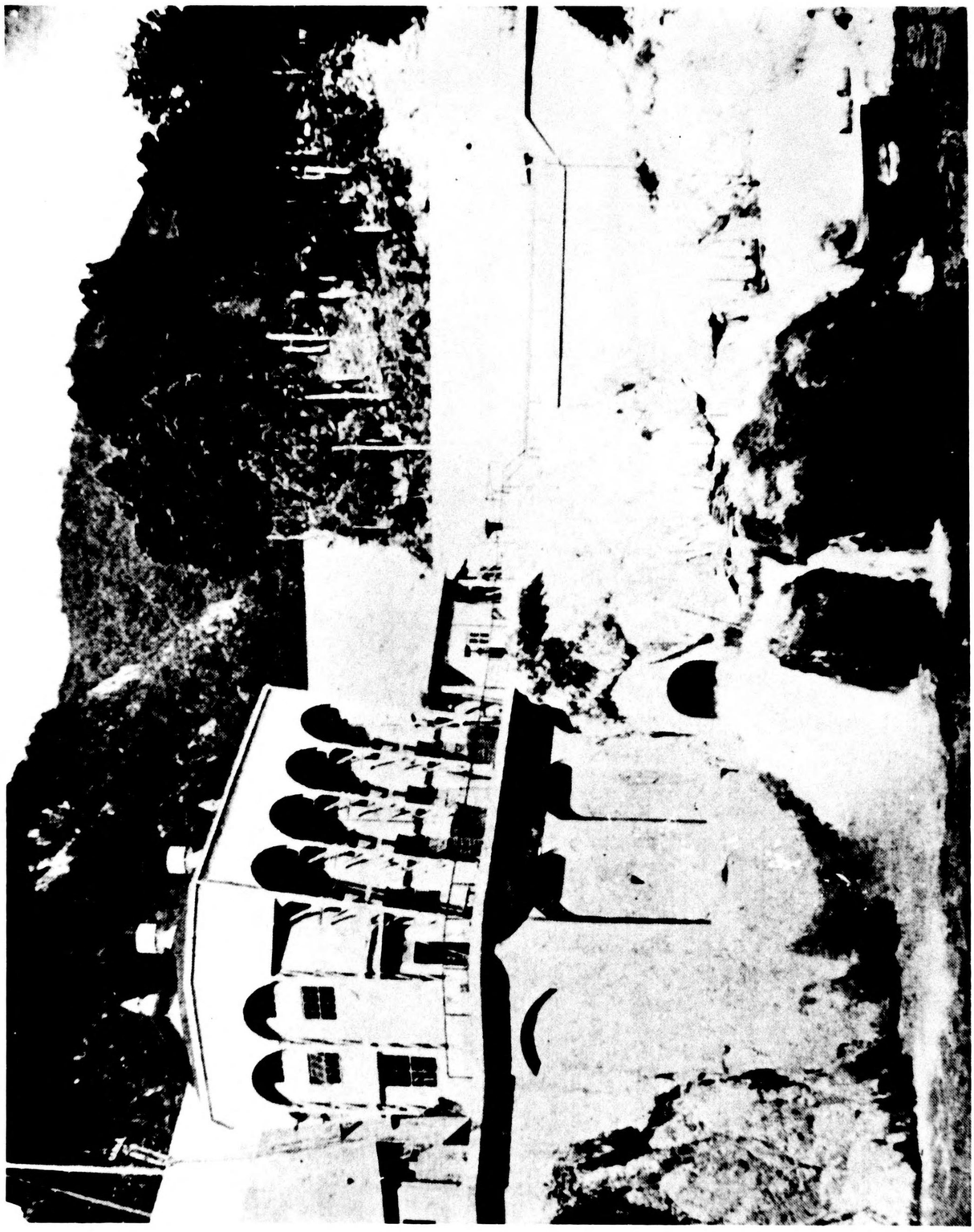
Date of Construction: Unknown; in operation as early as Dec 1926 and
as recently as Mar 1940

Details: Particular capacities (in kw) - *7440 installed cap;
5150 reg
Eff head - 171 ft
Plant, equipment -
Turbines - 2 @ 3700 hp, Francis-type, vertical-shaft,
W-make
1 res @ 4500 hp, Francis-type, vertical-shaft,
Hitachi-make
Generators - 2 @ 3000 kva, 3-ph, 6600 v, 514 rpm,
60 cyc, W-make
1 res @ 3300 kva, 3-ph, 6600 v, 450 rpm,
60 cyc, Hitachi-make
Transformers - 7 (incl 1 res) @ 1250 kva, 1-ph, 6.6/
44 kv, D-D conn, water-cooled, 60 cyc, shell-type,
W-make

Sources: DnN 1940; Ohm 6/31 supp p.6, 7/32 p.397, 9/34 p.679;
DnK; DJY 1927; DJY 1929 pp.257,336; TD Map

977. YOSHINO NO. 2 HYDRO PLANT Approx. Lat. 36°21'
Long. 136°38'

Company: Kanazawa-shi



Photograph No. V-114 Yoshino No. 2 Hydro Plant in 1930

Location: Plant - Yoshino-aza, Yoshinotani-mura, Ishikawa-gun, Ishikawa-ken

Capacity Commonly in Use (in kw): 1000, as of Dec 1934

Importance: Rank in Japan - 250 + ; rank in Osaka-Nagoya supply area- 100 +

Source of Power: Tetori-kawa

Date of Construction: Completed Dec 1930; in operation Mar 1940

Details: Particular capacities (in kw) - *1200 installed cap; 1000 reg
Eff head - 13 m; flow - 6.7 $m^3$/sec
Plant, external features - Of concrete construction, 2 stories high with peaked roof
Plant, equipment -
Turbines - 2 @ unknown cap, propeller-type, Dengyosha-make
Generators - 2 @ 750 kva, 3-ph, 6600 v, 514 rpm, 60 cyc, Shibaura-make

See: Photograph No. V-114

Sources: DnN 1940; SR 3/31 frontispiece and pp.95,107; Ohm 7/30 pp. 320,323, 3/31 pp.107,165

978. YOSHINOTANI HYDRO PLANT

Approx. Lat. 36°17'
Long. 136°39'

Company: Yahagi Suiryoku KK; formerly Hakusan Suiryoku KK

Location: Plant - On the right bank of the Tetori-kawa at Kinaberi Shin-oaza, Yoshinotani-mura, Ishikawa-gun, Ishikawa-ken
Dam - Higashi Aratani-oaza, Yoshinotani-mura, Ishikawa-gun, Ishikawa-ken

Capacity Commonly in Use (in kw): 12,500, as of Dec 1936

Importance: Rank in Japan - 190 ; rank in Osaka-Nagoya supply area- 80

Source of Power: Ozo-gawa of the Tetori-gawa system

Date of Construction: Completed May 1926; in operation Mar 1940

Details: Particular capacities (in kw) - *12,000 installed cap; 6250 reg; 6250 spec
Layout - Aqueduct-type
Eff head - 126.1 m; flow - 12.5 $m^3$/sec
Dam - 20.5 m high, 60 m long
Penstock - 1, dividing into 2
Excess water spillway - 1 pipe running alongside penstock
Plant, external features - Of concrete construction, 2 stories high with peaked roof.

Plant, equipment -
Turbines - 2 @ 11,500 hp, Francis-type, vertical-shaft, BBC-make
Generators - 2 @ 7500 kva, 1-ph, 6600 v, 514 rpm, 60 cyc, GE-make
Transformers - 7 @ 5000 kva, 1-ph, 6.6/83,80,77 kv, D-D conn, water-cooled, shell-type, Shibaura-make

See: Photograph No. V-115
Figure No. V-20

Sources: DnN 1940; DnK; Ohm-sha Guide 1933 p.22; Ohm 6/31 supp p.6, 10/33 opp p.561; DJY 1929 p.336; TD Map; DnGZ 7/37

YOSHINOYA HYDRO PLANT - See YOSHINOTANI HYDRO PLANT

979. YOSHIRA HYDRO PLANT Approx. Lat. 33°59'
Long. 134°04'

Company: Mima Suiryoku Denki KK

Location: Yoshira-oaza, Habayama-mura, Mima-gun, Tokushima-ken

Capacity Commonly in Use (in kw): 2000, as of Dec 1936

Importance: Rank in Japan - 250 + ; rank in Shikoku supply area -15 +

Source of Power: Sadamitsu-kawa system

Date of Construction: Founded Nov 1925; in operation Mar 1940

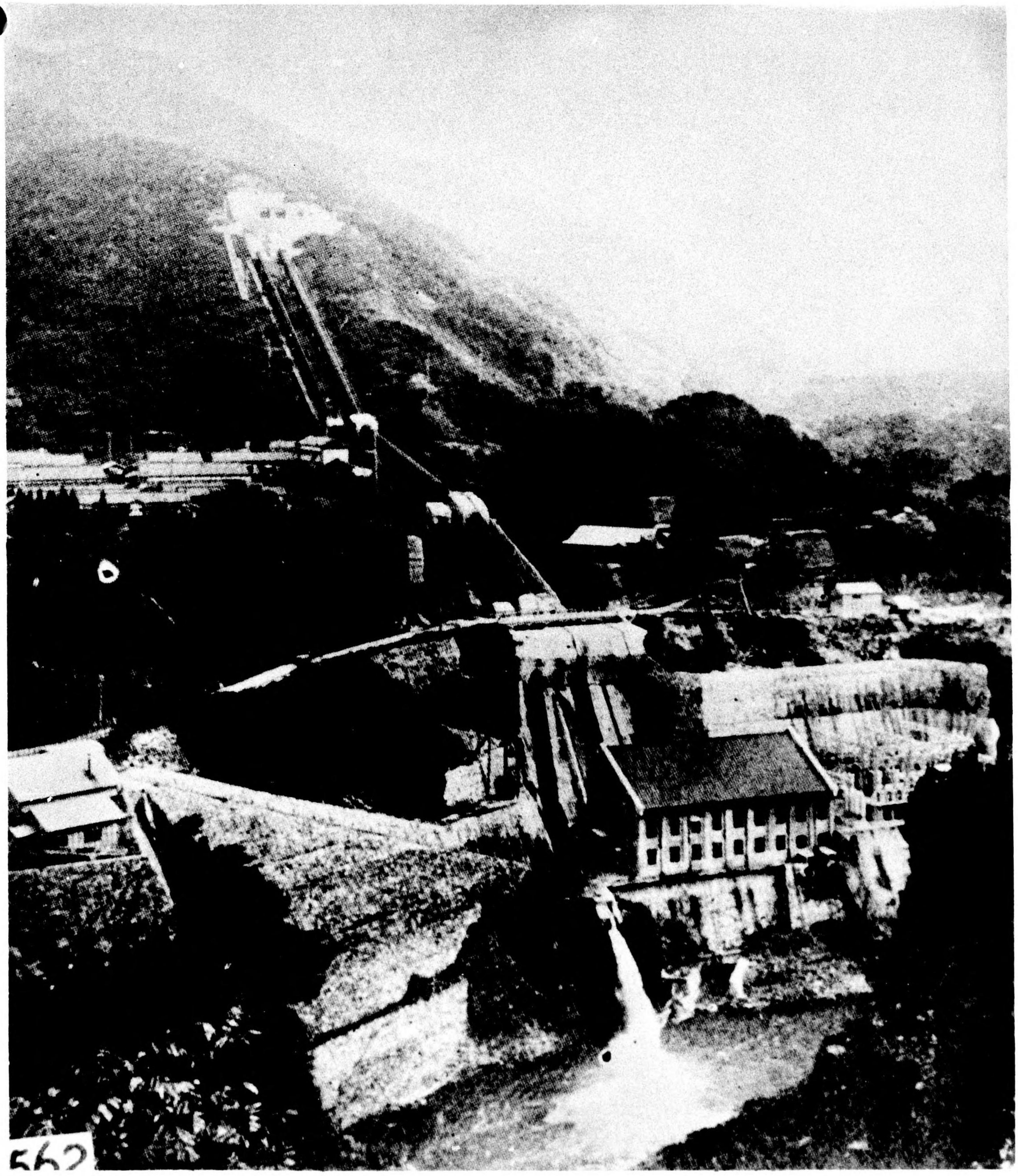
Sources: DnN 1940; DnK; ZKT 1939 p.1650

980. YOSHIWARA FACTORY STEAM PLANT Approx. Lat. 35°10'
Long. 138°11'

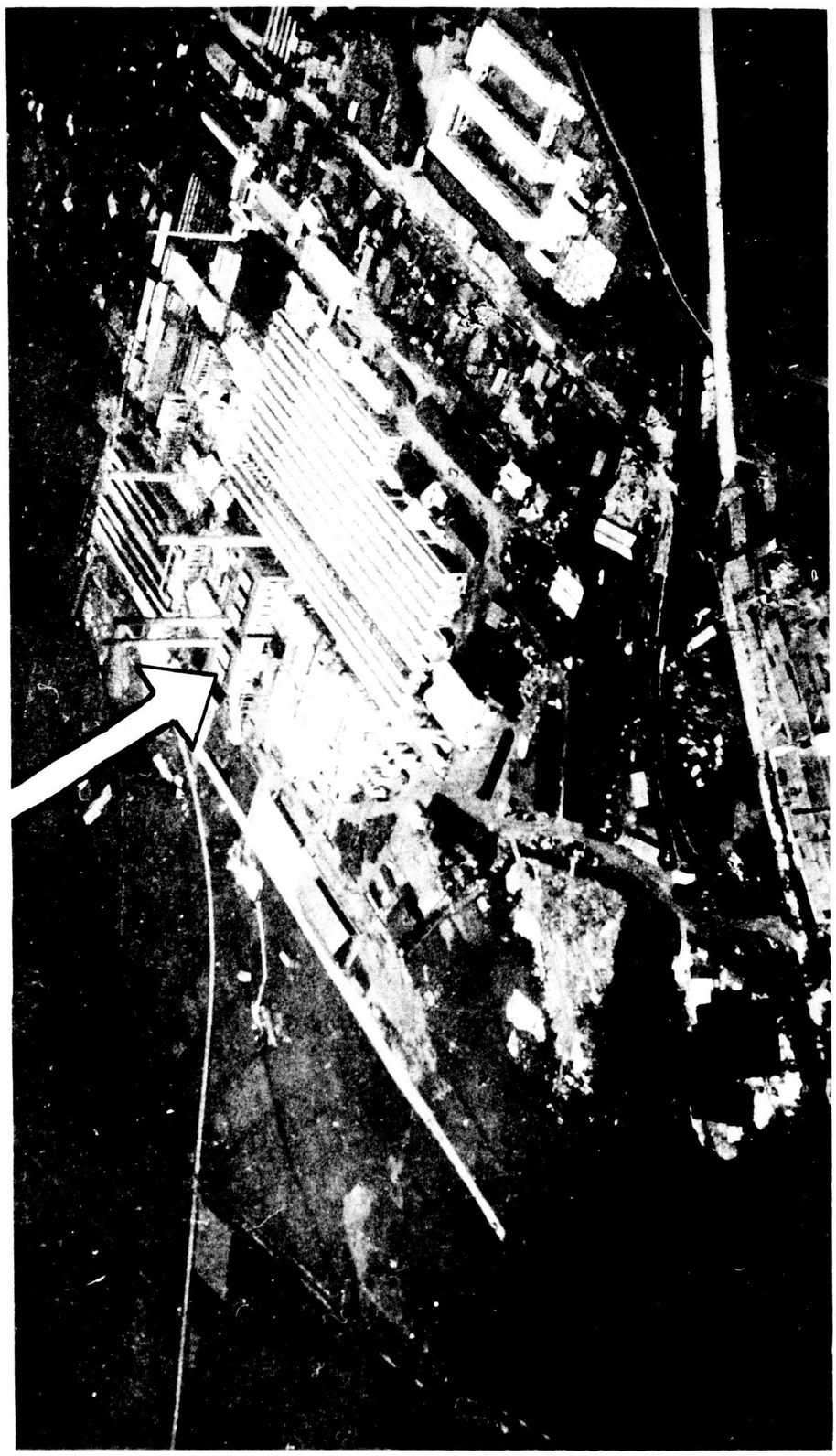
Company: Tokyo Jinzo Kenshi KK

Location: Yoshiwara-machi, Fuji-gun, Shizuoka-ken

Installed Capacity (in kw): 3000, as of Dec 1938




Photograph No. V-115 Yoshinotani Hydro Plant



Photograph No. V-115a Yoshiwara Factory Steam Plant of the Tokyo Jinzo Kenshi KK. The arrow gives the plant's probable location.

Importance: Rank in Japan - 250 + ; rank in Tokyo supply area - 100 +
Serves the Yoshiwara rayon factory of the Tokyo Jinzo Kenshi KK

Date of Construction: Unknown; in operation as early as Dec 1935 and as recently as Mar 1940

Details: Plant, equipment -
Turbines - 2 @ unknown cap
Generators - 1 @ 1875 kva, 3-ph, 4650/3900, 155/130 cyc, Shibaura-make
1 @ 1875/1570 kva, 3-ph, 3410/2860 v, 4600/3900 rpm, 155/130 cyc, Shibaura-make

Sources: DnN 1940 part II p.299; ZKT 1939 p.1108; SR 1/36 pp.2 ff, 1/39 p.3

981. YOTSUKURA FACTORY STEAM PLANT

Approx. Lat. 37°06'
Long. 141°00'

Company: Iwaki Cement KK

Location: Yotsukura-machi, Iwaki-gun, Fukushima-ken

Installed Capacity (in kw) - 3000, as of 1929

Importance: Rank in Japan - 250 + ; rank in Tohoku supply area - 20 +
Serves cement plant of Iwaki Cement KK

Date of Construction: Unknown; in operation 1929

Details: Plant, equipment -
Turbines - 2 @ unknown cap
Generators - Believed to be 2 @ 1500 kw

Sources: Directory of Japanese Portland Cement Manufacturers 1929 p.32

982. YOTSUYA HYDRO PLANT

Approx. Lat. 36°37'
Long. 137°11'

Company: Takaoka Dento KK

Location: Plant - 2 of 1943, Hirota-oaza, Miyagawa-mura, Nei-gun, Toyama-ken

Capacity Commonly in Use (in kw): 1370, as of Feb 1936

Importance: Rank in Japan - 250 +; rank in Osaka-Nagoya supply area -100 +

Source of Power: Ushigakubi channel of the Jintsu-kawa system

Date of Construction: Founded Feb 1922; in operation Mar 1940

Details: Particular capacities (in kw) - *1120 installed cap;
880 reg; 490 spec
Eff head - 30 ft
Plant, equipment -
Turbines - 2 @ 1000 hp, Francis-type, Dengyosha-make
Generators - 2 @ 700 kva, 3-ph, 6600 v, 225 rpm, 60 cyc,
Shibaura-make

Sources: DnN 1940; ZKT 1939 p.1648; Ohm 5/36 p.490; DJY 1927; DJY 1929 p.338

983. YUBARI STEAM PLANT

Approx. Lat. 43°03'
Long. 141°58'

Company: Hokkaido Tanko Kisen KK

Location: Yubari-oaza, Yubari-machi, Yubari-gun, Hokkaido

Installed Capacity (in kw): 7000, as of July 1936

Importance: Rank in Japan - 250 + ; rank in Hokkaido supply area - 15 +
Serves the Yubari colliery of the Hokkaido Tanko Kisen KK

Date of Construction: Unknown; in operation as early as July 1936 and as recently as Mar 1940

Sources: DnN 1940; Nippon Kogyo Kaishi 7/36 pp.508-509

984. YUBI HYDRO PLANT

Company: Nippon Keikinzoku KK; formerly Fujikawa Denryoku KK

Location: Plant - Yubi-machi, Ibara-gun, Shizuoka-ken

Capacity Commonly in Use (in kw): 56,000 (see Date of Construction)

Importance: If completed, rank in Japan - 34 ; rank in Tokyo supply area - 14

Source of Power: Unknown

Date of Construction: Under construction Dec 1933; no evidence of completion has been received.

Sources: Ohm 6/34 p.401

985. YUDA HYDRO PLANT

Approx. Lat. 31°56'
Long. 130°28'

Company: Nippon Suiden KK

Location: Plant - Tsurukawara-aza, Yuda-oaza, Miyanojo-machi, Satsuma-gun, Kagoshima-ken

Capacity Commonly in Use (in kw): 1200, as of Dec 1934

Importance: Rank in Japan - 250 + ; rank in Kyushu supply area - 50 +

Source of Power: Sendai-kawa

Date of Construction: Founded July 1921; in operation Mar 1940

Details: Particular capacities (in kw) - 1200 installed cap; 4600 reg; 740 spec
Eff head - 30 ft
Plant, equipment -
Turbines - 2 @ 850 hp, Francis-type, EW-make
Generators - 2 @ 600 kw, 3-ph, 11,000 v, 360 rpm, 60 cyc, GE-make

Sources: DnN 1940; ZKT 1939 p.1651; DJY 1927; DJY 1929 p.382

986. YUGASHIMA DIESEL PLANT

Approx. Lat. 34°53'
Long. 138°56'

Company: Kanogawa Denryoku KK

Location: Yugashima-oaza, Kami Kano-mura, Takata-gun, Shizuoka-ken

Installed Capacity (in kw): 1000, as of Dec 1934

Importance: Rank in Japan - 250 + ; rank in Tokyo supply area - 100 +

Date of Construction: Completed in 1933; in operation Dec 1934

Details: Plant, equipment -
Turbines - 2 @ unknown cap
Generators - 2 @ 625 kva, 3-ph, 3500 v, 231/277 rpm, 50/60 cyc

Sources: Ohm 9/33 adv p.14, 1/35 adv p.27

987. YUKAWA HYDRO PLANT

Approx. Lat. 36°10'
Long. 137°38'

Company: Keihin Denryoku KK

Location: Plant - Azumi-mura, Minami Azumi-gun, Nagano-ken

Capacity Commonly in Use (in kw): Est 6000, as of Dec 1936

Importance: Rank in Japan - 250 + ; rank in Tokyo supply area - 100 +; rank in Osaka-Nagoya supply area - 100 +

Source of Power: Yu-kawa

Date of Construction: Unknown; in operation as early as June 1930 and as recently as Mar 1940

Details: Particular capacities (in kw) - 6000 installed cap
Eff head - 221 m
Plant, equipment -
Turbines - 2 @ 4600 hp, horizontal-shaft
Generators - 2 @ 3200 kva, 93.75 pf, 3-ph, 6600 v, 300/360 rpm, 50/60 cyc
Other equipment - Equipment for automatic operation has been installed

Sources: DnN 1940; DnK; DnGZ 6/30 p.695

YUKAWA HYDRO PLANT - See OKAWA HYDRO PLANT (NIPPON SUIDEN KK)

988. YUKINO HYDRO PLANT

Approx. Lat. 33°11'
Long. 131°23'

Company: Kyushu Suiryoku Denki KK

Location: Plant - 1670, Iwashimo-aza, Shimokawa-oaza, Yunohira-mura, Oita-gun, Oita-ken

Capacity Commonly in Use (in kw): 1600, as of Dec 1934

Importance: Rank in Japan - 250 + ; rank in Kyushu supply area - 50 +

Source of Power: Oita-kawa

Date of Construction: Founded Dec 1915; in operation Mar 1940

Details: Particular capacities (in kw) - 1600 installed cap; 1600 reg
Eff head - 322 ft
Plant, equipment -
Turbines - 2 @ 1450 hp, Francis-type, Dengyosha-make
Generators - 2 @ 800 kw, 3-ph, 3450 v, 720 rpm, 60 cyc, Shibaura-make
Transformers - 3 @ 2500 kva, 1-ph, 3.5,3.4,3.3/66,22 kv, D-D conn, water-cooled, 50 cyc, shell-type, Hitachi-make

Sources: DnN 1940; ZKT 1939 p.1651; DJY 1927; DJY 1929 p.376

YUKISAWA HYDRO PLANT - See NAMESAWA HYDRO PLANT

989. YUMURA HYDRO PLANT

Approx. Lat. 35°14'
Long. 132°55'

Company: Izumo Denki KK

Location: Plant - 4 of 1527, Yumura-oaza, Onsen-mura, Nita-gun, Shimane-ken

Capacity Commonly in Use (in kw): 1000, as of Dec 1934

Importance: Rank in Japan - 250 + ; rank in Chugoku supply area - 25 +

Source of Power: Hii-kawa

Date of Construction: Founded Nov 1919; in operation Mar 1940

Details: Particular capacities (in kw) - *920 installed cap;
550 reg; 450 spec
Eff head - 92 ft
Plant, equipment -
Turbines - 1 @ 1600 hp, Francis-type, Voith-make
Generators - 1 @ 1150 kva, 3-ph, 3500 v, 600 rpm, 60 cyc, SS-make
Transformers - 4 (incl 1 res) @ 410 kva, 1-ph, 3.5/20 kv, D-D conn, water-cooled, 60 cyc, shell-type, Kawakita-make

Sources: DnN 1940; ZKT 1939 p.1649; DJY 1927; DJY 1929 p.360

990. YUNOKAMI HYDRO PLANT

Approx. Lat. 37°18'
Long. 139°54'

Company: Showa Denko KK; formerly Nippon Denki Kogyo KK

Location: Plant - On the left bank of the O-gawa at 2 of 1119, Harakawa-aza, Yunokami-oaza, Egawa-mura, Minami Aizu-gun, Fukushima-ken
Dam - On the right bank of the O-gawa in Bungokai-aza, Shiono-oaza, Asahida-mura, Minami Aizu-gun, Fukushima-ken

Capacity Commonly in Use (in kw): 6800, as of Dec 1936

Importance: Rank in Japan - 250 + ; rank in Tokyo supply area - 96
Serves the Hirota Factory of the Showa Denko KK

Source of Power: O-gawa of the Agano-gawa system

Date of Construction: Construction was begun Apr 1935 and completed Dec 1935; in operation Dec 1936

Details: Particular capacities (in kw) - *6880 installed cap; 2500 reg; 4300 spec
Layout - Aqueduct-type; at a point about 650 m downstream from the intake, the aqueduct crosses the Kannon-gawa via a 50 m long bridge of reinforced concrete construction. The aqueduct then crosses the O-gawa via a 100 m long bridge of similar construction.
Eff head - 68.742 m; flow - 12.5 $m^3$/sec
Dam - 10.5 m high, 86 m long, overflow-type with 7 tainter gates @ 7.57 m wide and 6.06 m high
Aqueducts - 5606 m total length, incl 5456 m tunnel and 150 m aqueduct bridges
Surge tank - 30 m long, 12 to 20 m wide, 2.5 to 4.1 m deep, of concrete construction
Penstocks - 2 @ 121 m long, of iron construction
Excess water spillway - 148.8 m long conduit, of concrete construction
Fishway - 3 m wide
Plant, external features - Of reinforced concrete construction, 3 stories high
Plant, equipment -
Turbines - 2 @ unknown cap, Francis-type, vertical-shaft
Generators - 2 @ 4300 kva, 3-ph, 6600 v, 500 rpm, 50 cyc
Tail race - 539 m long

See: Photographs No. V-116, V-117

Sources: DnK; Ohm 7/35 p.732, 3/36 p.303, 10/36 p.1007; DnGZ 3/36 p.334, 5/36 p.(417); HSG p.318

YUNOUE HYDRO PLANT - See YUNOKAMI HYDRO PLANT

991. YURAKAWA HYDRO PLANT

Approx. Lat. 35°17'
Long. 135°20'

Company: Kyoto Dento KK

Location: Plant - Tonase-oaza, Yamage-mura, Ikaruga-gun, Kyoto-fu

Capacity Commonly in Use (in kw): 2460, as of Dec 1936

Importance: Rank in Japan - 250 + ; rank in Osaka-Nagoya supply area- 100 +

Source of Power: Yura-kawa

Photograph No. V-116 Yunokami Hydro Plant in 1936

Photograph No. V-117 Yunokami Hydro Plant aqueduct
over the Kannon-gawa in 1936

Date of Construction: Founded Mar 1924; in operation Mar 1940

Details: Particular capacities (in kw) - *2400 installed cap; 500 reg; 1960 spec
Eff head - 52.5 ft
Dam - 15.2 m high, 89.7 m long, overflow gravity-type
Plant, equipment -
Turbines - 3 @ 1300 hp, Francis-type, vertical-shaft, EW-make
Generators - 3 @ 1000 kva, 3-ph, 3300 v, 300 rpm, 60 cyc, W-make
Transformers - 4 (incl 1 res) @ 1000 kva, 1-ph, 3.3,3.15,3/33,31.5,30 kv, D-D conn, water-cooled, 60 cyc, shell-type, W-make

Sources: DnN 1940; ZKT 1939 p.1644; DnK; TD Map; DJY 1929 pp.263,344; DnGZ 7/37; DGS 8/33 p.672

YUSAWA HYDRO PLANT - See YUZAWA HYDRO PLANT

992. YUSE HYDRO PLANT

Approx. Lat. 40°07'
Long. 140°50'

Company: Dai Nippon Denryoku KK; formerly Yoneshirogawa Suiden KK

Location: Plant - Yuse-oaza, Miyakawa-mura, Katsuno-gun, Akita-ken

Capacity Commonly in Use (in kw): 1425, as of July 1936

Importance: Rank in Japan - 250 + ; rank in Tohoku supply area - 20 +

Source of Power: Yoneshiro-kawa

Date of Construction: Completed May 1928 with cap of *800 kw and increased in July 1936 to 1425 kw; in operation Mar 1940

Details: Particular capacities (in kw) - *1360 installed cap; 745 reg; 680 spec

Sources: DnN 1940; Ohm 5/28 p.265, 10/36 p.1009

993. YUTAKA HYDRO PLANT

Approx. Lat. 35°19'
Long. 137°45'

Company: Yahagi Suiryoku KK

Location: Plant - Hirashima-aza, Wago-oaza, Yutaka-mura, Shimo Ina-gun, Nagano-ken

Capacity Commonly in Use (in kw): 13,000 (see Date of Construction)

Importance: Rank in Japan - 180 ; rank in Osaka-Nagoya supply area- 77

Source of Power: Wago-kawa, a branch of the Wachino-gawa of the Tenryu-kawa system

Date of Construction: Construction was begun July 1935 and partially completed Dec 1936; plant fully in operation Mar 1940

Details: Particular capacities (in kw) - 6600 reg; 6400 spec
Dam - 8.3 m high; flow - 5.3 $m^3$/sec
Log chute - 2 m wide, 17.5 m long

Sources: DnN 1940; DnK; Ohm 10/35 p.1034, 7/37 p.308; HSG pp.198,324

994. YUYAMA HYDRO PLANT

Approx. Lat. 35°11'
Long. 138°07'

Company: Fuji Denryoku KK

Location: Plant - Goryo Chinai, Senzu-aza, Senzu-oaza, Kami Kawane-mura, Haibara-gun, Shizuoka-ken

Capacity Commonly in Use (in kw): 24,000, as of Dec 1936

Importance: Rank in Japan - 100 ; rank in Tokyo supply area - 38 ; rank in Osaka-Nagoya supply area - 46

Source of Power: Sumata-kawa, branch of the Oi-kawa system, and the Oma-gawa

Date of Construction: Construction was begun Feb 1930 and completed Oct 1935; in operation Mar 1940

Details: Particular capacities (in kw) - *22,720 installed cap
Layout - Aqueduct-type
Eff head - 505.52 ft
Dam - 214 ft high, 588.312 ft long at top, gravity-type, of concrete construction with 4 tainter gates @ 17 ft high and 21.75 ft long, and 2 sluice gates @ 4.5 ft high and 4.5 ft wide
Reservoir - 4,450,000 $m^3$ cap
Aqueducts - 2 tunnels, incl 1 (from the Sumata-kawa) @ 1,157.2 ft long and 1 (from the Oma-gawa) @ 1,3619.4 ft long
Surge tank - Of reinforced concrete construction, upper part 11 ft diam and lower part 12 ft diam x 170 ft deep
Penstocks - 2

Plant, equipment -
Turbines - 2 @ 20,000 hp, Francis-type, vertical-shaft, Hitachi-make
Generators - 2 @ 14,200 kva, 3-ph, 11,000 v, 428/514 rpm, 50/60 cyc, Hitachi-make
Transformers - 4 @ 10,000 kva
Other equipment - 2 exciters @ 90 kw; 1 crane @ 55-ton cap

Sources: DnN 1940; DnK; DnGZ 5/36 p.(417), 10/36 p.(132), 7/37; Ohm 10/32 p.561, Ohm 1/35 p.113, 10/35 p.928, 1/36 p.116; DGS 8/33 p.674, 4/35 p.584; HSG pp.161,193,194

995. YUYAMA HYDRO PLANT

Approx. Lat. 33°15'
Long. 131°02'

Company: Kyushu Suiryoku Denki KK

Location: Plant - 1170, Kami Yuse-aza, Yuyama-oaza, Nakagawa-mura, Hida-gun, Oita-ken

Capacity Commonly in Use (in kw): 8317, as of Dec 1936

Importance: Rank in Japan - 250 + ; rank in Kyushu supply area - 40

Source of Power: Kuma-gawa and Sunokawa-gawa of the Chikugo-gawa system

Date of Construction: Completed May 1921; in operation Mar 1940

Details: Particular capacities (in kw) - *9000 installed cap; 4617 reg; 3700 spec
Layout - Aqueduct-type
Eff head - 87 m; flow - 12.5 $m^3$/sec
Penstocks - 3
Plant, equipment
Turbines - 3 @ 4250 hp, Francis-type, horizontal-shaft, Dengyosha-make
Generators - 3 @ 3750 kva, 3-ph, 6600 v, 600 rpm, 50 cyc, Shibaura-make
Transformers - 4 (incl 1 res) @ 3750 kva, 1-ph, 6.6/66 kv, D-D conn, water-cooled, 50 cyc, shell-type, Shibaura-make
Other equipment - 3 exciters @ 65 kw
Area served - Fukuoka-ken and Oita-ken

See: Figures No. V-37, V-38

Sources: DnN 1940; ZKT 1939 p.1651; Ohm-sha Guide 1933 p.27; Ohm 6/31 supp p.6; DnK; DJY 1927; DJY 1929 p.374; TD Map

996. YUZAWA HYDRO PLANT Approx. Lat. 36°55'
Long. 138°48'

Company: Tokyo Dento KK

Location: Plant - Oishida-aza, Yuzawa-mura, Minami Uonuma-gun, Niigata-ken

Capacity Commonly in Use (in kw): 14,000, as of Dec 1936

Importance: Rank in Japan - 166 ; rank in Tokyo supply area - 62

Source of Power: Kiyozu-gawa of the Shinano-gawa system

Date of Construction: Completed Dec 1922; in operation Mar 1940

Details: Particular capacities (in kw) - 14,000 installed cap; 6500 reg; 7500 spec
Layout - Aqueduct-type
Eff head - 300.27 m; flow - 6.120 $m^3$/sec
Dam - 3.64 m high, 163.18 m long, of rubble concrete construction pitched with stone
Aqueducts - 42.42 m open channel, 698.39 m culvert, 5897 m tunnel
Forebay - 69 $m^2$ water surface
Penstocks - 2 @ 770 m long
Excess water spillway - 890 m long
Plant, external features - Of reinforced concrete construction, 3 stories high with 9 wooden shacks and 5 two-story buildings of wooden construction on premises
Plant, equipment -
Turbines - 4 @ 6000 hp, Francis-type, horizontal-shaft, EW-make
Generators - 4 @ 4375 kva, 80% pf, 3-ph, 6600 v, 500 rpm, 50 cyc, W-make
Transformers - 6 @ 4800 kva, 1-ph, 6.6/66.37 kv, D-D conn, water-cooled, 50 cyc, shell-type, W-make
Other equipment - 4 exciters @ 40 kw; 1 crane @ 20-ton cap
Tail race - 424.24 m long

See: Figure No. V-39

Sources: DnN 1940; ZKT 1939 p.1648; Ohm 6/31 supp p.6, 7/32 p.397, 10/33 opp p.561; DnK; DJY 1927; DJY 1929 p.298; Ohm-sha Guide 1933 p.18; TD Map

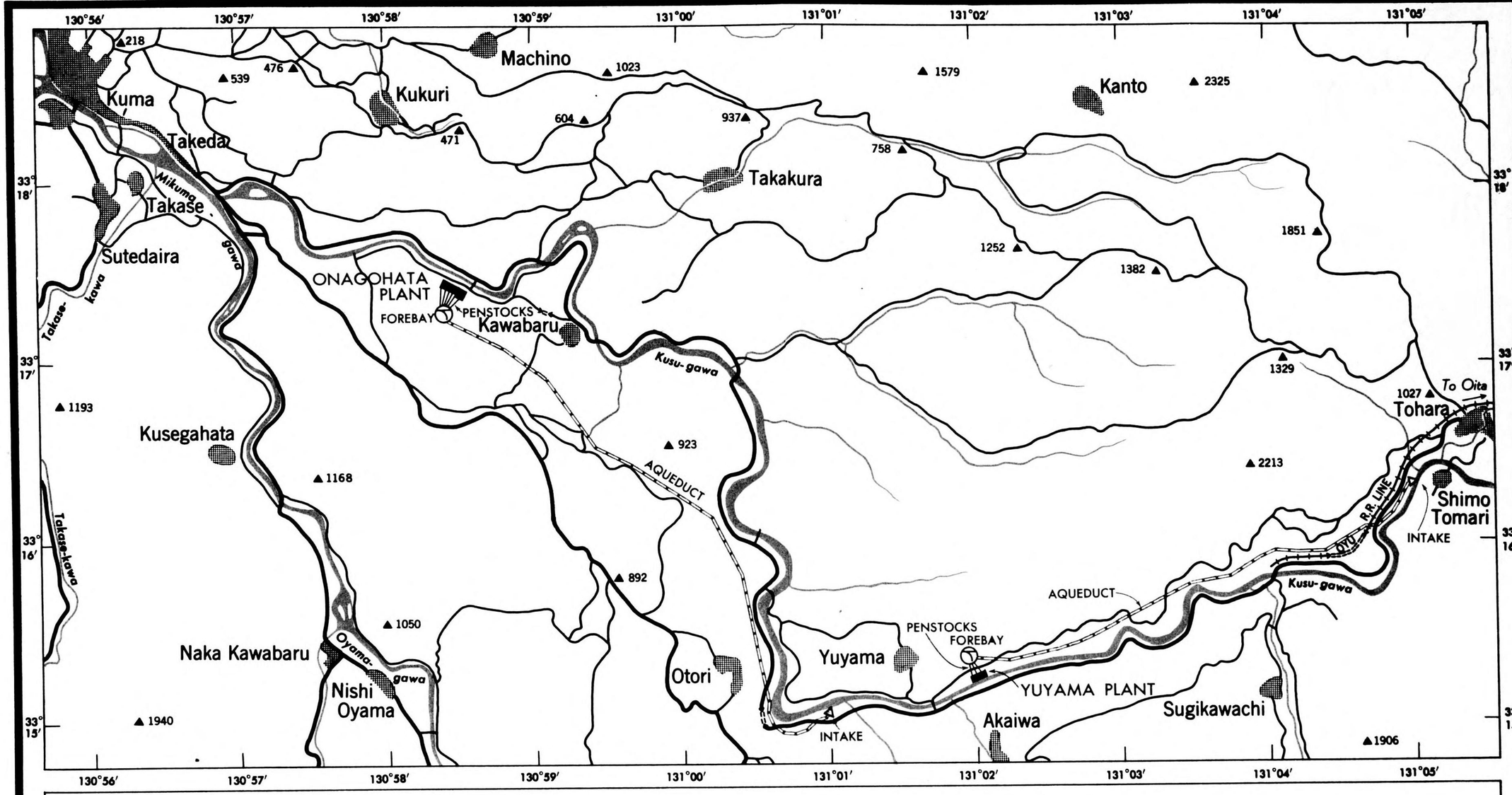
997. YUZUHARA NO. 1 HYDRO PLANT Approx. Lat. 33°22'
Long. 132°56'

Company: Yuzuhara Suiryoku Denki KK

Location: Plant - Yamako-oaza, Yuzuhara-mura, Takaoka-gun, Kochi-ken

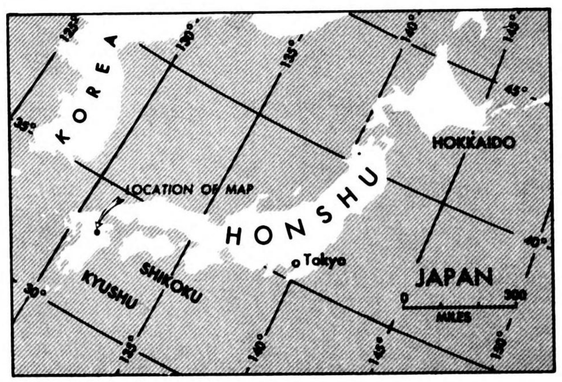
Capacity Commonly in Use (in kw): 1300 (see Date of Construction)

PROVISIONAL EDITION




# ONAGOHATA AND YUYAMA HYDROELECTRIC PLANTS

## OITA-KEN




BASE MAP FROM 1:50,000 SERIES, JAPAN IMPERIAL LAND SURVEY BUREAU, 1934
W.D.M.C. FILE NO. JAPAN S30-JGS-50, SHEETS 11-1 AND 12-13

0 1 2 3
MILES

0 1 2 3
KILOMETERS

Reliability Code: 1B--1B--1

- SETTLEMENT CENTER
- RAILROAD
- TUNNEL
- PRINCIPAL HIGHWAY
- SECONDARY ROAD
- ▲ 539 SPOT HEIGHT (IN FEET)

MAP NO. 2846
1 JANUARY 1944

COMPILED AND DRAWN IN THE BRANCH OF RESEARCH AND ANALYSIS, OSS
LITHOGRAPHED IN THE REPRODUCTION BRANCH, OSS

Figure V-38
CONFIDENTIAL

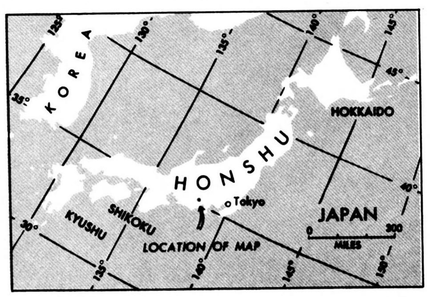
PROVISIONAL EDITION

# OIKAWA, OMA, OYAMA, AND YUYAMA HYDROELECTRIC PLANTS

## SHIZUOKA-KEN

BASE MAP FROM 1:50,000 SERIES, JAPAN IMPERIAL LAND SURVEY BUREAU, 1936
W.D.M.C. FILE NO. JAPAN S30-JGS-50, SHEETS 39-13 AND 39-14

Reliability Code 1B--1B--1




SETTLEMENT
RAILROAD
TRAMWAY
PRINCIPAL HIGHWAY
SECONDARY ROAD
TUNNEL
▲ 4405 SPOT HEIGHT (IN FEET)

MAP NO. 2842
19 JANUARY 1944

COMPILED AND DRAWN IN THE BRANCH OF RESEARCH AND ANALYSIS, OSS
LITHOGRAPHED IN THE REPRODUCTION BRANCH, OSS

Importance: Rank in Japan - 250 - ; rank in Shikoku supply area - 15 +
It is very probable that this plant is serving the
Iyo Tetsudo Denki KK

Source of Power: Yuzuhara-gawa of the Shimanto-gawa system

Date of Construction: Completed 1938; in operation Mar 1940

Details: Particular capacities (in kw) - *1500 installed cap
Eff head - Believed to be 29.2 m
Plant, equipment -
Turbines - Believed to be 1 @ 1800 kw, Francis-type, vertical-shaft, Hitachi-make
Generators - Believed to be 1 @ 1875 kva, 3-ph, 400 rpm, 60 cyc, Hitachi-make
Plant operates on 60 cyc

Sources: DnN 1940; KN 1939 p.166; HH 1/39 pp.7,10

998. YUZUHARA NO. 2 HYDRO PLANT Approx. Lat. 33°19'
Long. 132°57'

Company: Yuzuhara Suiryoku Denki KK

Location: Plant - 1070, Higashinobo-aza, Nakadaira-oaza, Yuzuhara-mura, Takaoka-gun, Kochi-ken

Capacity Commonly in Use (in kw): 6000, as of Feb 1937

Importance: Rank in Japan - 250 + ; rank in Shikoku supply area - 15 +

Source of Power: Yuzuhara-gawa of the Shimanto-gawa system

Date of Construction: Completed Feb 1937; in operation Mar 1940

Details: Particular capacities (in kw) - 1050 reg; 4950 spec; 6000 reg pk
Layout - Aqueduct-type
Eff head - 53.62 m; flow - 13.64 $m^3$/sec
Dam - 94.2 m long, 22 m high with 4 tainter gates @ 6.3 m high and 10 m wide
Penstocks - 2
Fishway - 3 m wide
Plant, external features - Of concrete construction, 3 stories high
Plant operates on 60 cyc

See: Photographs No. V-118, V-119, V-120

Sources: DnN 1940; HSG pp.17,318; Ohm 5/37 p.612; DGS Kaimu 1937 p.35; DnGZ 10/37 p.905

999. YUZUHARA NO. 3 HYDRO PLANT — Approx. Lat. 33°18' Long. 132°58'

Company: Yuzuhara Suiryoku Denki KK

Location: Plant - Matsuhara-oaza, Yuzuhara-mura, Takaoka-gun, Kochi-ken

Capacity Commonly in Use (in kw): Est 2580, as of Dec 1936

Importance: Rank in Japan - 250 + ; rank in Shikoku supply area - 15 +

Source of Power: Yuzuhara-gawa of the Shimanto-gawa system

Date of Construction: Unknown; in operation as early as Dec 1934 and as recently as Mar 1940

Details: Plant operates on 60 cyc

Sources: DnN 1940; DnK; HSG p.17

1000. ZOZO HYDRO PLANT — Approx. Lat. 36°50' Long. 138°10'

Company: Chuo Denki KK

Location: Plant - Zozo-oaza, Nakayama-mura, Naka Kubiki-gun, Niigata-ken

Capacity Commonly in Use (in kw): 1700, as of Dec 1934

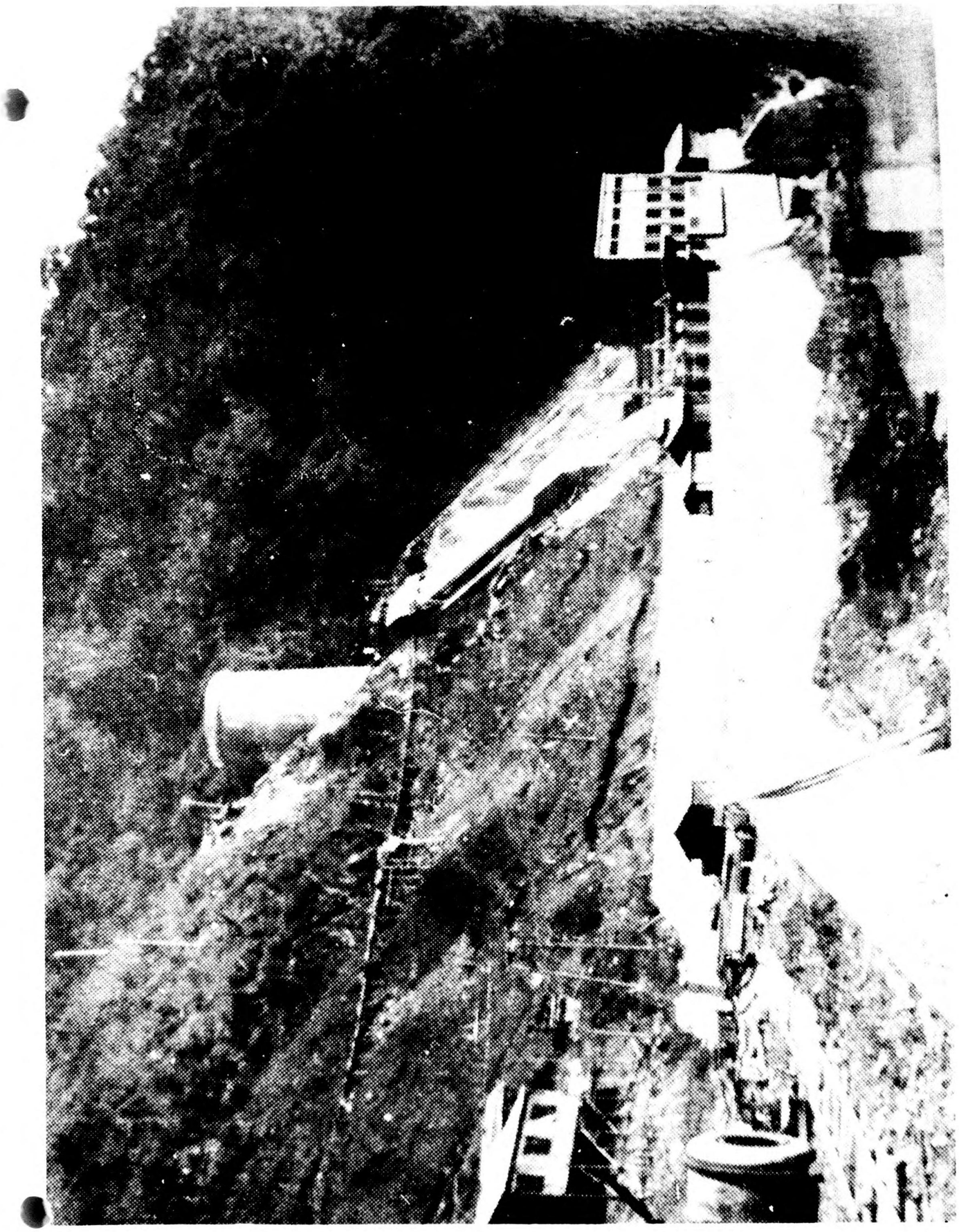
Importance: Rank in Japan - 250 + ; rank in Osaka-Nagoya supply area - 100 +

Source of Power: Seki-kawa of the Ara-kawa system

Date of Construction: Founded Sept 1907; in operation Mar 1940

Details: Particular capacities (in kw) - *1680 installed cap; 1500 reg; 200 spec
Eff head - 107 ft
Plant, equipment -
Turbines - 2 @ 800 hp, Voith-make
1 @ 900 hp, Francis-type, Dengyosha-make
Generators - 2 @ 750 kva, 3-ph, 3450 v, 400 rpm, 60 cyc, Shibaura-make
1 @ 600 kva, 3-ph, 3400 v, 600 rpm, 60 cyc, Hitachi-make

Sources: DnN 1940; HSG p.10; ZKT 1939 p.1648; DJY 1927; DJY 1929 p.386; SR 8/34 p.272; Ohm 5/28 p.265, 12/32 p.667



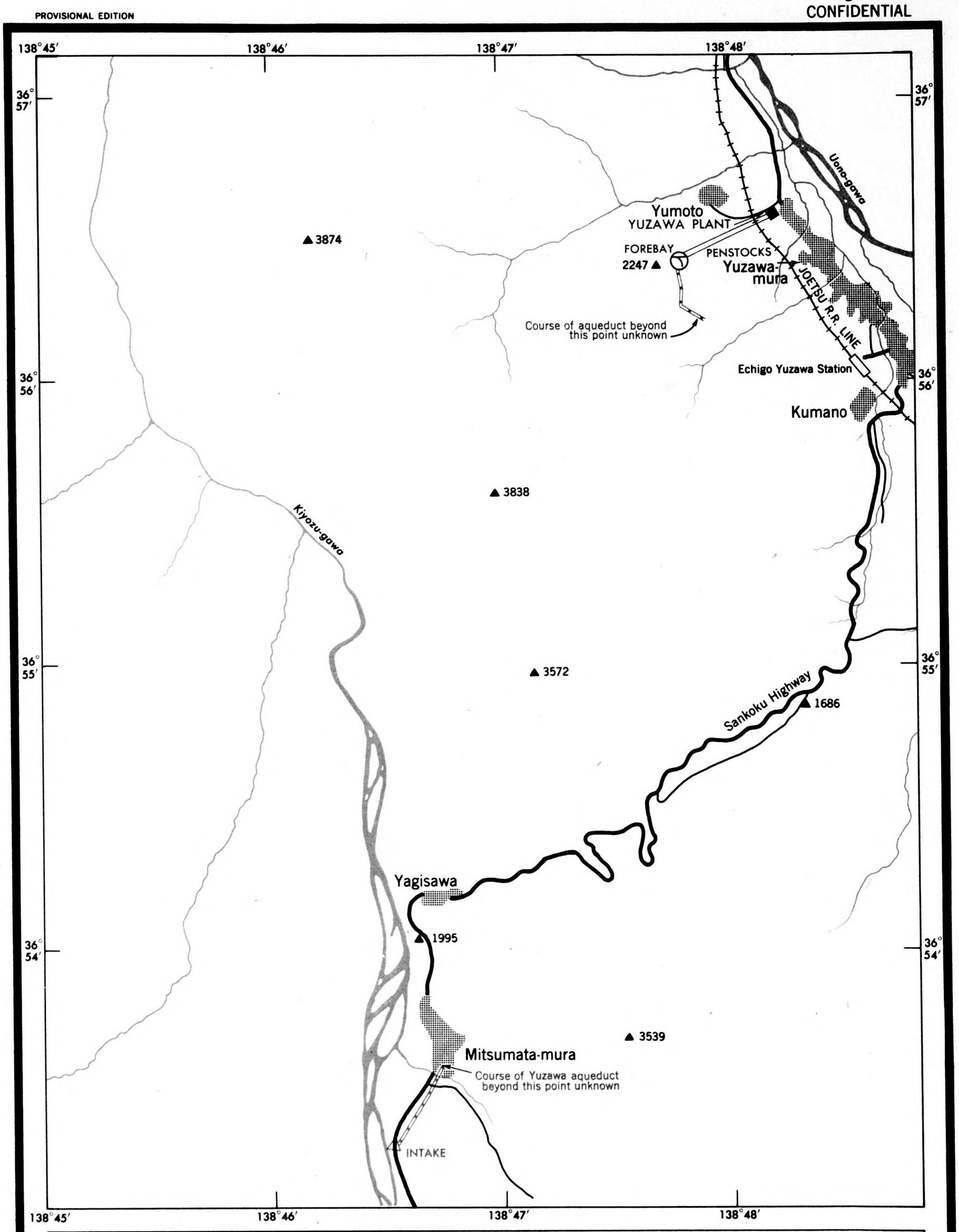
Photograph No. V-118 Yuzuhara No. 2 Hydro Plant in 1937

Photograph No. V-119 Yuzuhara No. 2 Hydro Plant dam
under construction in 1937, from downstream

Photograph No. V-120 Yuzuhara No. 2 Hydro Plant dam in 1937, from upstream

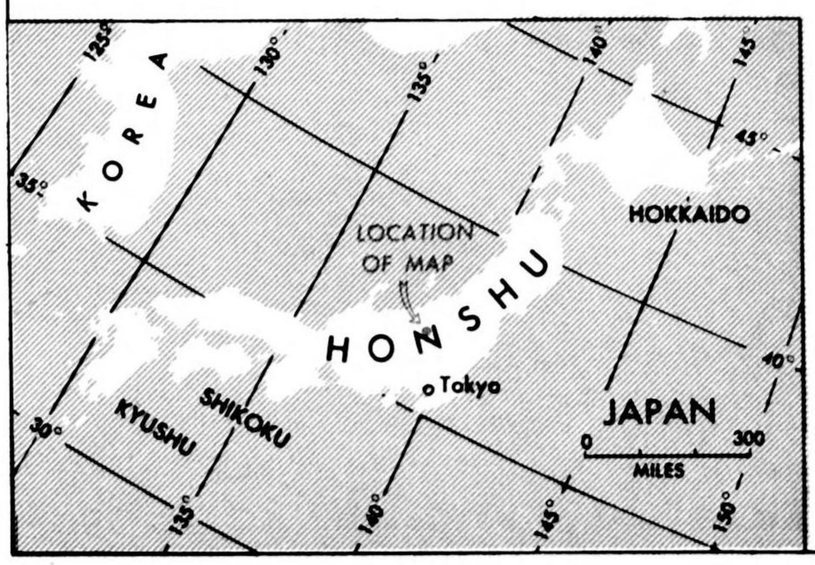
Figure V-39
CONFIDENTIAL

PROVISIONAL EDITION




# YUZAWA HYDROELECTRIC PLANT

## NIIGATA-KEN




BASE MAP FROM 1:50,000 SERIES, JAPAN IMPERIAL LAND SURVEY BUREAU
W.D.M.C. FILE NO. JAPAN S30-JGS-50, SHEET 60-3 (1933)

SETTLEMENT CENTER

PRINCIPAL HIGHWAY

RAILROAD

SECONDARY ROAD

▲3539 SPOT HEIGHT (IN FEET)

0 ½ 1
MILES

0 ½ 1
KILOMETERS

Reliability Code: 1B–1B–1

NO. 3114
12 APRIL 1944

COMPILED AND DRAWN IN THE BRANCH OF RESEARCH AND ANALYSIS, OSS
LITHOGRAPHED IN THE REPRODUCTION BRANCH, OSS