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STAT

A REPORT
on
Otmuchow Dam

Prepared by
Project Treasure Island
for
Directorate of Intelligence, USAF
1954

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REPORT

on

Otmuchow Dam in Poland

This report covers information on the Otmuchow Dam on the Nysa River which serves for the control of navigation on the Oder (Odra) River and for power production. The report is the result of a study of German open sources, published between the years 1927 - 1937 and listed in the attached bibliography. The most valuable sources among these are listed under Nos. 5 and 6. A 1946 postwar Russian source lists the same data as prewar German sources.

The information is compiled in accordance with the P.V.D. questionnaire as follows:

I. Functions

A. The system of which the dam forms a part

The Oder River is navigable on a 640 km stretch from Cosel to Stettin. The stretch Cosel to Ransern -- about 160 km long -- was canalised; however, the navigability of the Oder River downstream from Ransern has frequently suffered from low water supply. In order to remedy this situation storage reservoirs on the tributaries of the Oder River were created as seen on map Fig. 1.

B. The dam within the system

(See Figs. 1, 2, 3 and 4).

The Otmuchov Dam, located on the Neisse (Nysa) River, creates a storage reservoir, which in dry seasons can supply the Oder River with additional flow. The dam also serves for power production.

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C. Highways and/or railways resting on the dam or adjacent thereto

As seen in Fig. 3, there is no railroad or highway passing over the top of the dam. The railroad line to the north of the reservoir had been moved north to prevent flooding of the tracks. There are 3 bridges across the spillway channel. For highways see Figs. 2 and 3.

D. Navigation locks in connection with dam

The dam has no navigation lock.

II. Location and designation

A. Data which will make possible pinpointing the installation

See Figs. 2 and 3.

The dam is located on the Nysa Klodzka (Glatzer Neisse) River west of Otmuchov (Ottmachau), Wojewodztwo Opolskie.

B. Official, local and popular names of dams and dependent installations

The official Polish name of the community after which the dam is named is Otmuchow, the German name is Ottmachau.

III. Dimensions

A. Dam

1. Maximum and minimum head on dam

The average head is 14.5 m and the maximum head is 18 m.

2. Maximum and minimum depth of water below dam

No information available, but conclusions can be drawn from Figs. 5 and 6.

3. Total height of dam above river bed and above foundations

The total height of the dam is 20 m from the river bed and 17 m from the foundation (see diagram Fig. 5).

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4. Elevation of bottom of penstocks at dam

See Figs. 6, 7 and 8.

5. Total thickness at base and at high water level

The thickness of the dam is 120 m at the base and 5 m at the crown. The thickness at the high water mark can be established from Figs. 4, 5, 6 and 8.

6. Slopes of dam faces

See Figs. 5, 6 and 8.

7. Length at crown, across river bed and along spillway

The length of the dam is 6.5 km. The length of the spillway section is 206 m plus 2 times 15 m (see Fig. 3).

B. Reservoir

1. Capacity

Maximum capacity	143,000,000 cu m.
Normal capacity	100,000,000 cu m.
Minimum assured capacity	5,000,000 cu m.

2. Area

The area covered by the reservoir is 2,200 ha.

3. Length, width and depth (including profile)

See Fig. 3 Length: 27 km

Width: 600 m.

4. Detailed plan in the vicinity of dam

See Figs. 3 and 4.

C. Navigation locks in connection with dams (structural details)

There is no navigation lock at the dam.

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IV. Hydrological data (rainfall, flow, etc.)

The catchment area of the Nysa River is 2,348 sq km. The discharge of the Nysa River:

maximum:	1,315,000,000 cu m
medium:	719,700,000 cu m
minimum:	324,000,000 cu m.

The flow:

maximum:	1,800 cu m/sec
normal:	22.8 cu m/sec
below dam:	15 cu m/sec .

V. Foundation conditions and soil characteristics under and near the dam

Tertiary clay was found 8 m below the surface (See Fig. 5).

VI. Design data

A. Structural type or types

The Otmuchov Dam is a long earth dam shaped in plan as a horse-shoe (see Fig. 3).

B. Materials used

Water-proof clay and earth for the dam, reinforced concrete and granite, amounting to 210,000 cu m for the outlet work and power-house.

C. Design criteria

No information on stresses is available.

D. Details and equipment (penstocks, control gates, inspection galleries cranes, etc.)

Outlet

The 100-m long waste sluice outlets are located at about the center

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of the dam, at both sides of the powerhouse as seen in Fig. 3. The cross section of the outlet sluice is shown in Fig. 6. The outlets under construction are shown in Figs. 6 and 7. The sluices are equipped with 6 valves of "Chop" type, designed for a total flow of 500 cu m/sec.

Spillway section and cascade channel

In addition to the sluice outlets a 206-m long spillway serves for the discharge of flood waters. It has two sluice gates, each 15 m wide and 3.3 m high. The spillway is on the right end of the dam (see Fig. 3).

Cranes

There are 2 cranes with a 75-ton capacity each.

VII. Special data on power dams

A. Capacity (Kva), present and proposed

According to prewar sources: 4,800 kw.

(No postwar source available for capacity figures).

B. Output (Kwh/yr) achieved and proposed

16,000,000 kwh/yr (1933 source).

C. Powerhouse

The powerhouse is placed in the same building as the 6 sluice outlets.

1. Location

As seen in Figs. 3 and 4, the powerhouse is built at about the middle of the dam at the east end of the reservoir and southwest of the community of Otmuchov.

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2. Structure

The power plant is placed in a glass and steel structure, as seen in Fig. 4.

3. Installations

See Fig. 8.

2 Kaplan turbines made by J. M. Voith, Heidenheim, each 300 rpm, 35 mm.

2 generators made by Siemens-Schuckertwerke A. G., each 2,000 kw, 6,300 V.

Each generator is connected with an outdoor transformer of 3,200 kva.

4. Number, dimensions, location and type of penstocks

There are no penstocks.

D. Places of installations served; ties with power grids

Before the war it was connected with the "Ueberlandwerke Schlesien".

E. Location and description of transformer yards and transmission system

The 15-kv transformers are placed outside of the powerhouse. They are built by Bergmann Elektrizitatswerke.

VIII. Historical data

A. Name and background of the designer

The first plan was designed by Kurt Weidner, Magdeburg.

B. Dates of construction

Construction started in 1928; put into operation June 17, 1933.

C. Sources of material

Material found on location.

D. Records of war damage, failures, removal of equipment etc.

No source with this information has been available so far.

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E. Data on condition of structure at any date

No information available.

F. Proposals for enlargement, alteration, or extension of function

No information available.

IX. Graphical material

A. Photographs, especially those taken during construction

Photographs attached to this report are shown on Figs. 4, 6 and 7.

B. Working drawings, general and detailed

Not available.

C. Record and publication drawings

Drawings attached to this report are shown on Figs. 1, 2, 3, 6 and 8.

D. Sketches by persons who have seen installation

Not available.

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Oder River System. Source:Deutsche Wasserwirtschaft,Stuttgart,1937,p.123

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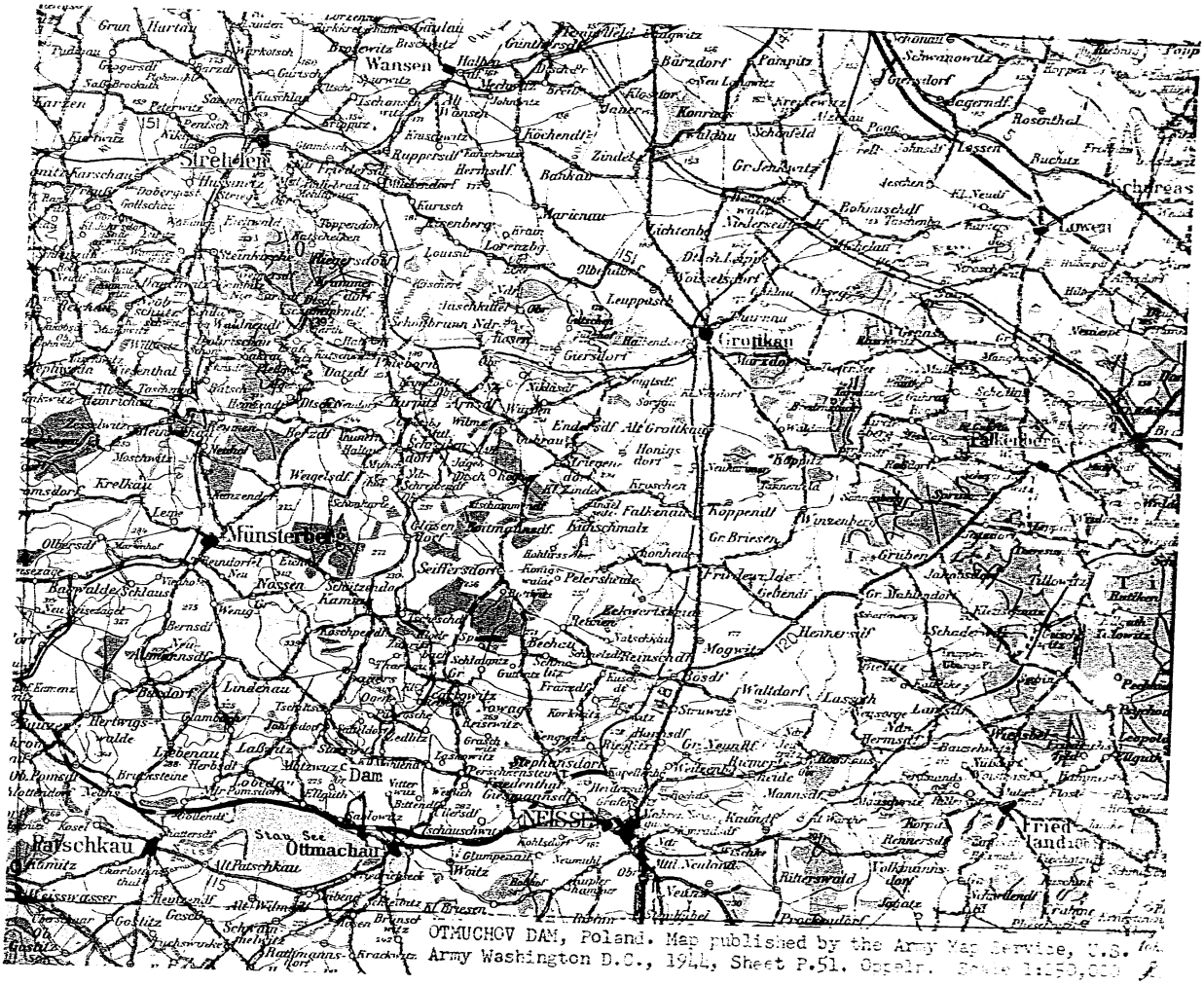

OTMUCHOV DAM, Poland. Map published by the Army Map Service, U.S. Army Washington D.C., 1944, Sheet P.51. Oppelr. Scale 1:150,000

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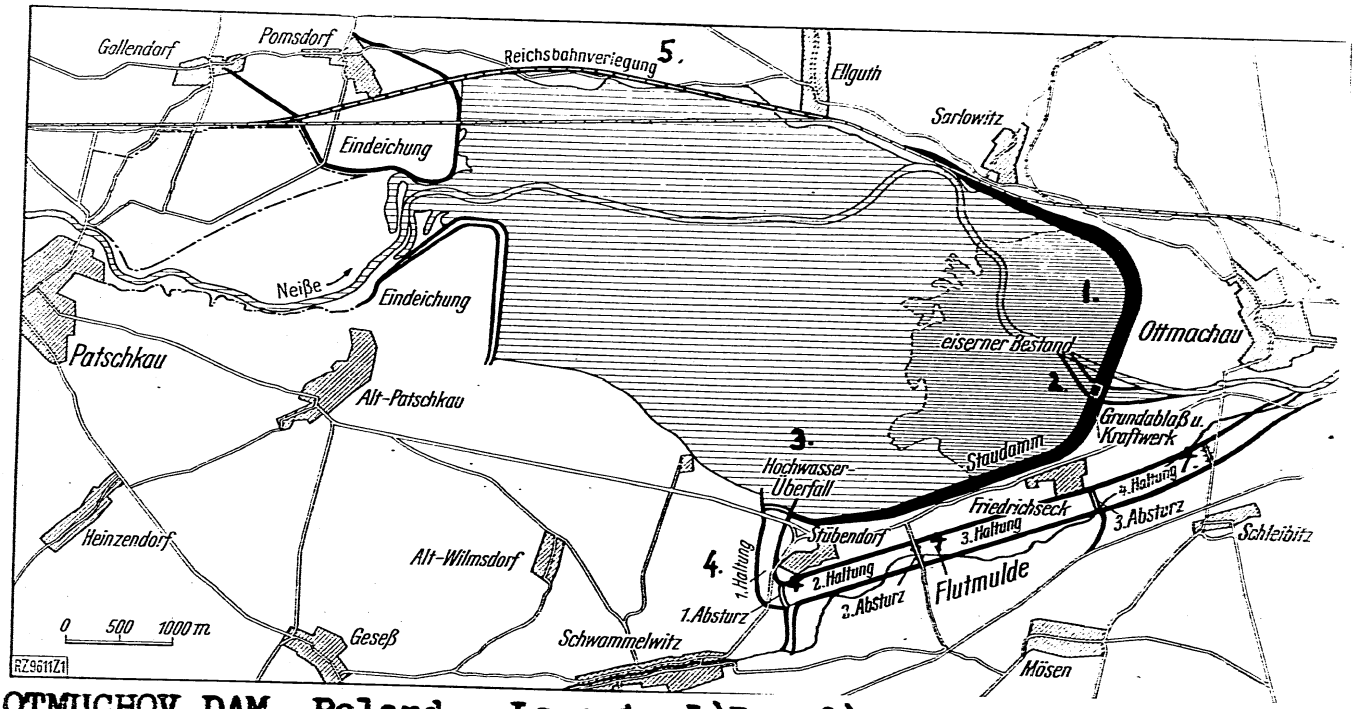

OTMUCHOV DAM, Poland. Layout. 1)Dam 2)Powerhouse and Outlet Works 3)Spillway Section 4)Chutes 5)Railroad. Source: Verein Deutscher Ingenieure, Berlin, 1933, p. 1058

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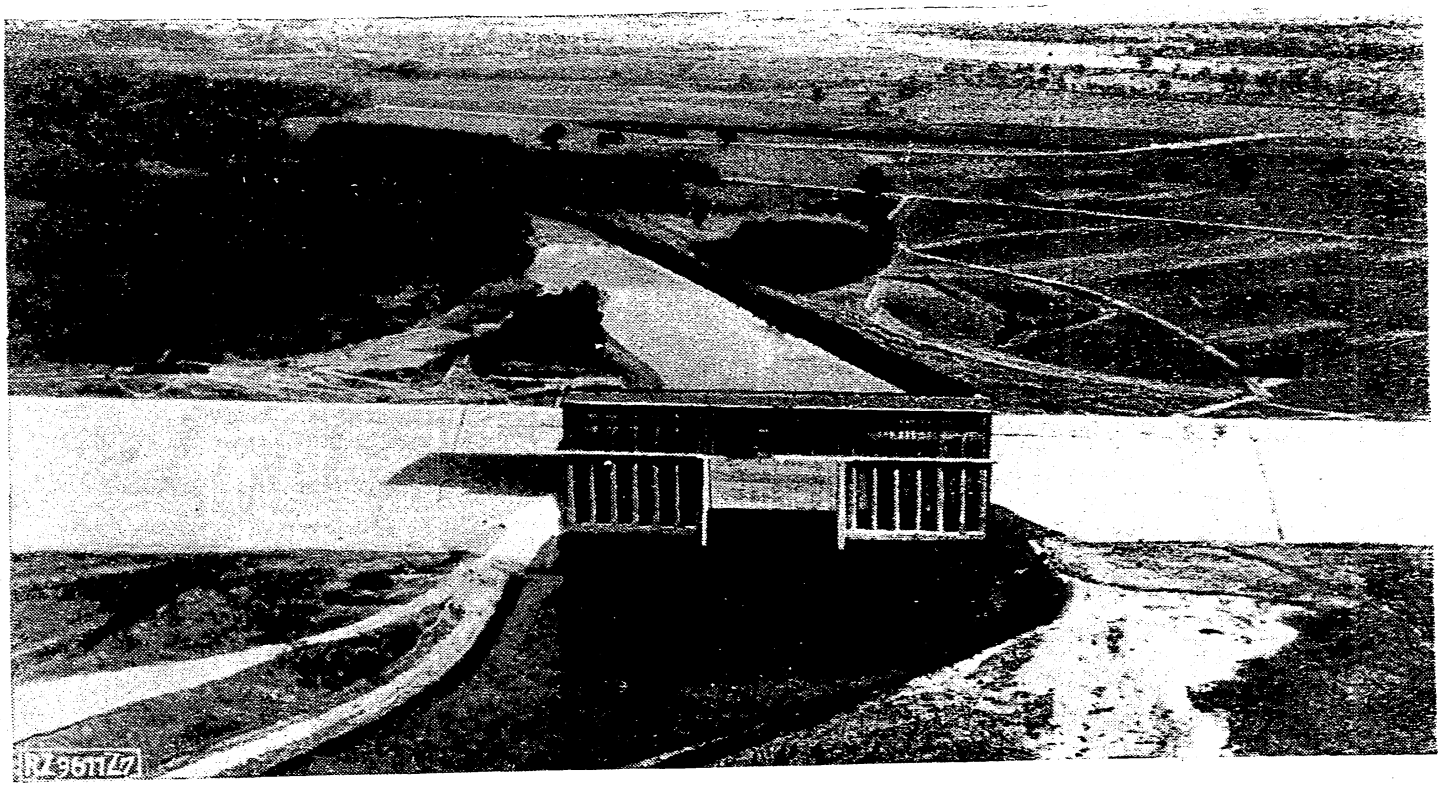

OTMUCHOV DAM, Poland. Powerhouse and Center Section of Dam. Source: Verein Deutscher Ingenieure, Berlin, 1933, p. 1057

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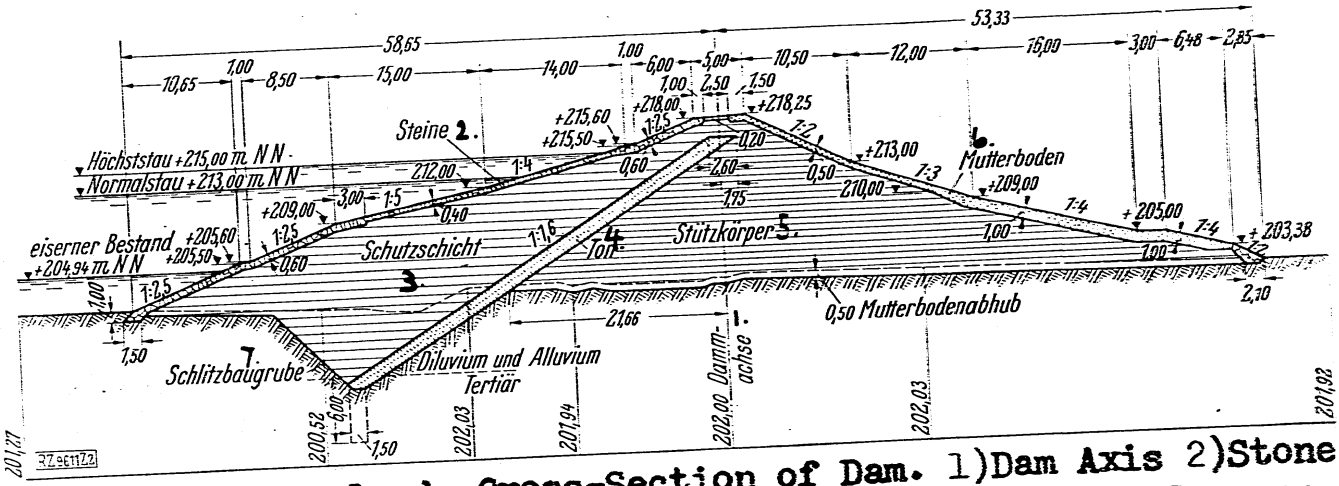

OTMUCHOV DAM, Poland. Cross-Section of Dam. 1)Dam Axis 2)Stone Facing 3)Earth Fill 4)Clay 5)Core 6)Humus 7)Cut-off. Source: Verein Deutscher Ingenieure, Berlin, 1933, p. 1058

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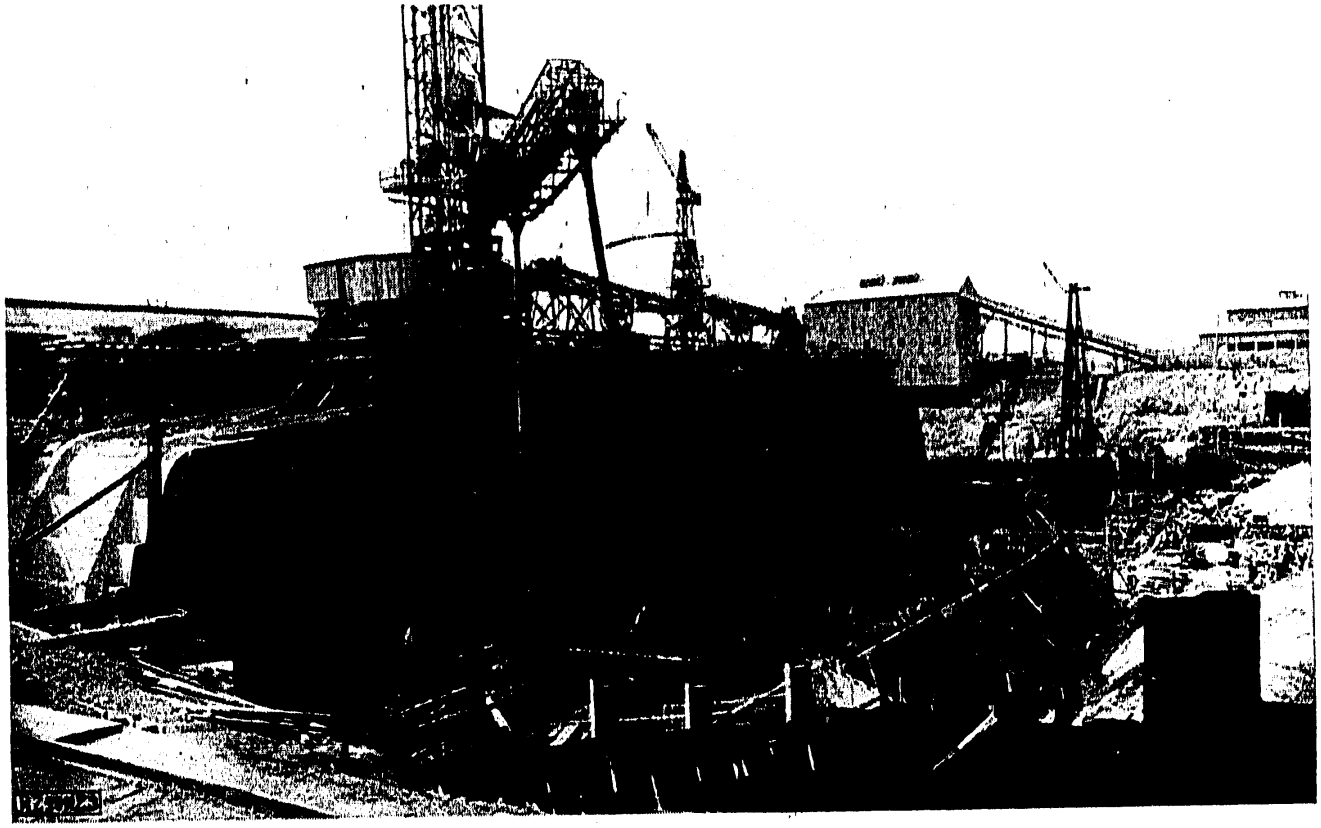
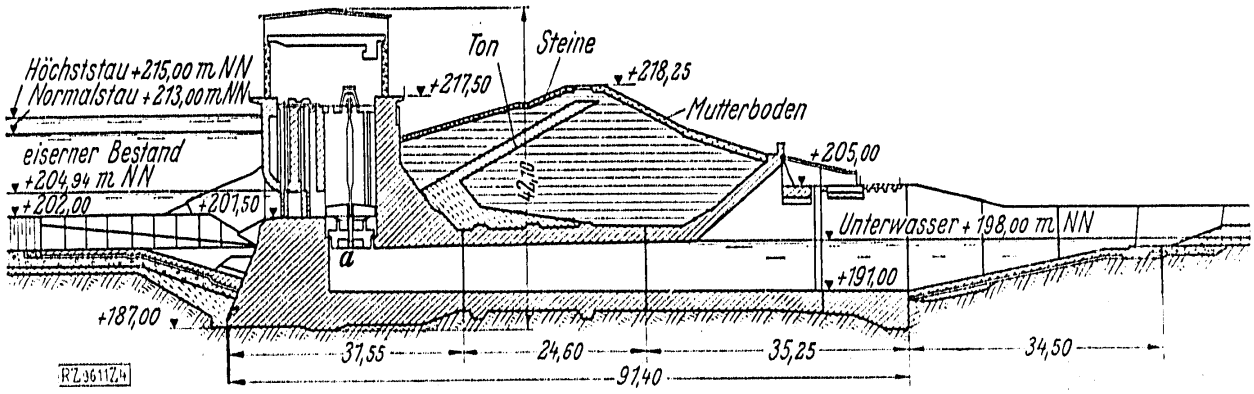


Outlet Works During Construction.



Cross-Section of Outlet Works.
OTMUCHOV DAM, Poland. Source: Verein Deutscher Ingenieure, Berlin, 1933, p. 1059

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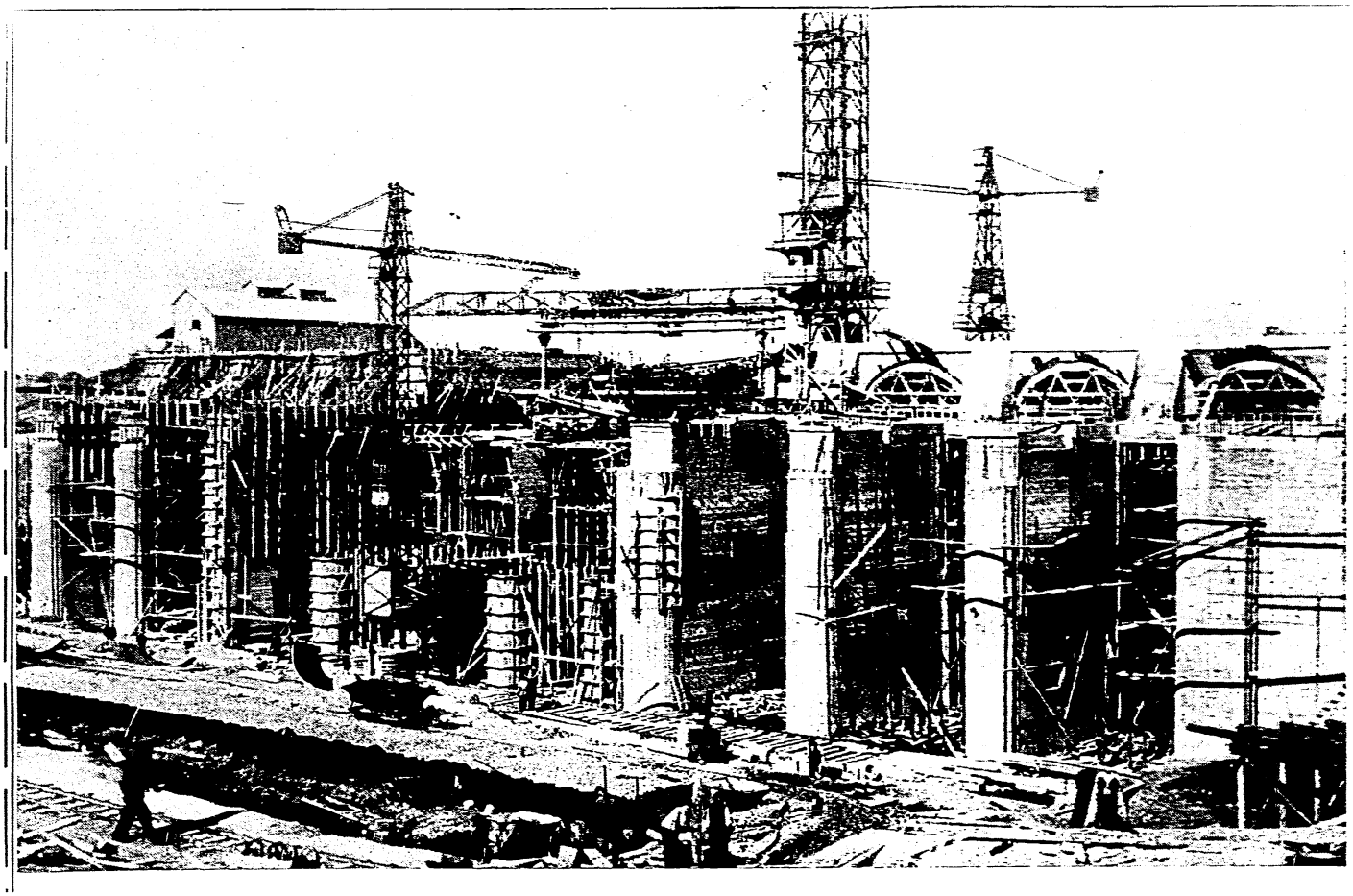

OTMUCHOV DAM, Poland. Discharge Outlets Under Construction. Source: Deutsche Wasserwirtschaft, Stuttgart, 1937, No. 7, p. V.

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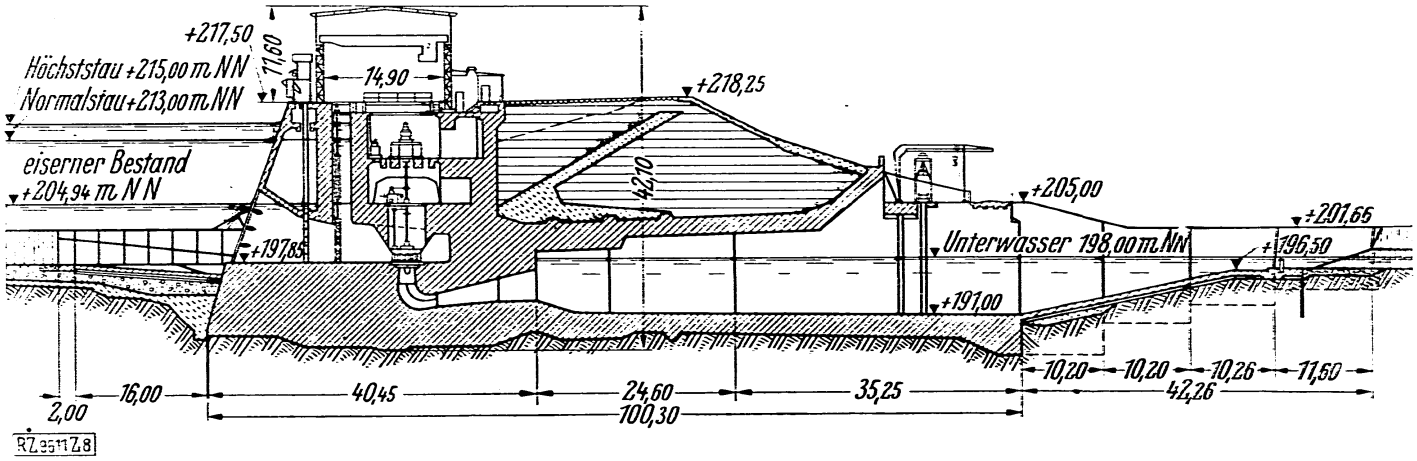

OTMUCHOV DAM, Poland. Cross-Section of Power Plant.
Source: Verein Deutscher Ingenieure, Berlin, 1933, p.1060

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