ACC CEB/4/2

10000/150/711 CENTRAL ELEC
MAY, JUNE 19

10000/150/711 CENTRAL ELECTRICITY BOARD FILES
MAY, JUNE 1944

Central
Electricity Board file

CEB/A/2

10000 /150/711

THIS FOLDER
CONTAINS PAPERS
FROM MAY 1944
TO JUNE 1944
CATALOGUE.

SUBJECT: Dams.

SECRET

(9)

Headquarters,
A. A. I.,

2531/9/RE,

13 Jun 44

CG FIFTH Army (For Engr) (6),
CE EIGHTH Army (6),
CE 5 Corps
Central Electric Board.

1. Diagrams and notes describing dams in the Northern Appenines as far west as La Spezia - Parma are enclosed herewith.

2. The largest dams are :-

(a) The Suviana and Scalere dams, in the Reno basin.

(b) The Quarto and Monte Castello dams, on the River Savio.

3. None of the dams appears to have major operational importance.

A.A.I.
OFFICIAL
4/L 9/6
CENTRAL
ELECTRICAL BOARD

Major, R.E.,
for Major General,
Chief Engineer.

Copies to:-

GSI(a) (10)
G(Plans)
G(Special Ops)
D Wks
OSS attention Lt Dorr.

ENCLOSURE.

729

Dams in the Northern Apponnines as far west as Spezia - Parma

1	2	3	4	5	6	7	8
River basin	Dam	Map ref	Height of dam wall above valley floor	Length of dam wall	Working Capacity	Construction	No of t sluice
Reno	Scalere	98/694085	35.5 m.		5,914,000 cu.m.	Masonry gravity	-
"	S.Maria del Brasinone	98/723109	14.5 m.		400000 cu.m.	Masonry gravity	5
"	Pavana	98/603078	48 m.		800,000 cu.m.	Concrete gravity	
"	Dam ?	98/589110					
"	Suviana	98/634099	80.5 m.		36,000,000 cu.m.	Masonry gravity	Secto sluic
Panaro	Riolunato	97/329221	19 m.		150,000 cu.m.	Reinforced concrete dam with masonry counterforts.	
Secchia	Muschioso	97/220271	42.25 m.		2,700,000 cu.m.	Concrete Gravity	Sect
"	Braglie	97/2524	37 m.		2,000,000 cu.m.	Masonry Gravity	Sec
"	Ammare	96/087317 (Map ref of centre of reservoir)	19.5 m.		185,000 cu.m.	Earth, lined with clay or dry stone	
Enza	Lake Verde	85/887381	25 m.		1,850,000 cu.m.	Masonry Gravity	
"	Raduli di Lagastrello	85/924363	27.9 m.		3,650,000 cu.m.	Earth	
"	Lake Ballano	85/897387	18 m.		1,250,000 cu.m.	Masonry Gravity	
Secchia	Ozola	96/101288?	25 m.		50,000 cu.m.	Reinforced concrete with counterforts	
Savio	Quarto	108/461797	13.4 m.		6,670,000 cu.m.	Concrete gravity	To
"	Montecastello	Nr.108/5485	50 m.		18000,000 cu.m.	Concrete gravity	
Serchio	Corfino	96/113143	38 m.		780,000 cu.m.	Concrete arch	
"	Pontecosi	96/116106	23 m.		2,300,000 cu.m.	Concrete gravity	T
"	Gallicheri	96/115021?	37.2 m.		820,000 cu.m.	Concrete arch	
"	Sparando	On the Torrente Lima	25 m.		350,000 cu.m.	Reinforced concrete gravity	

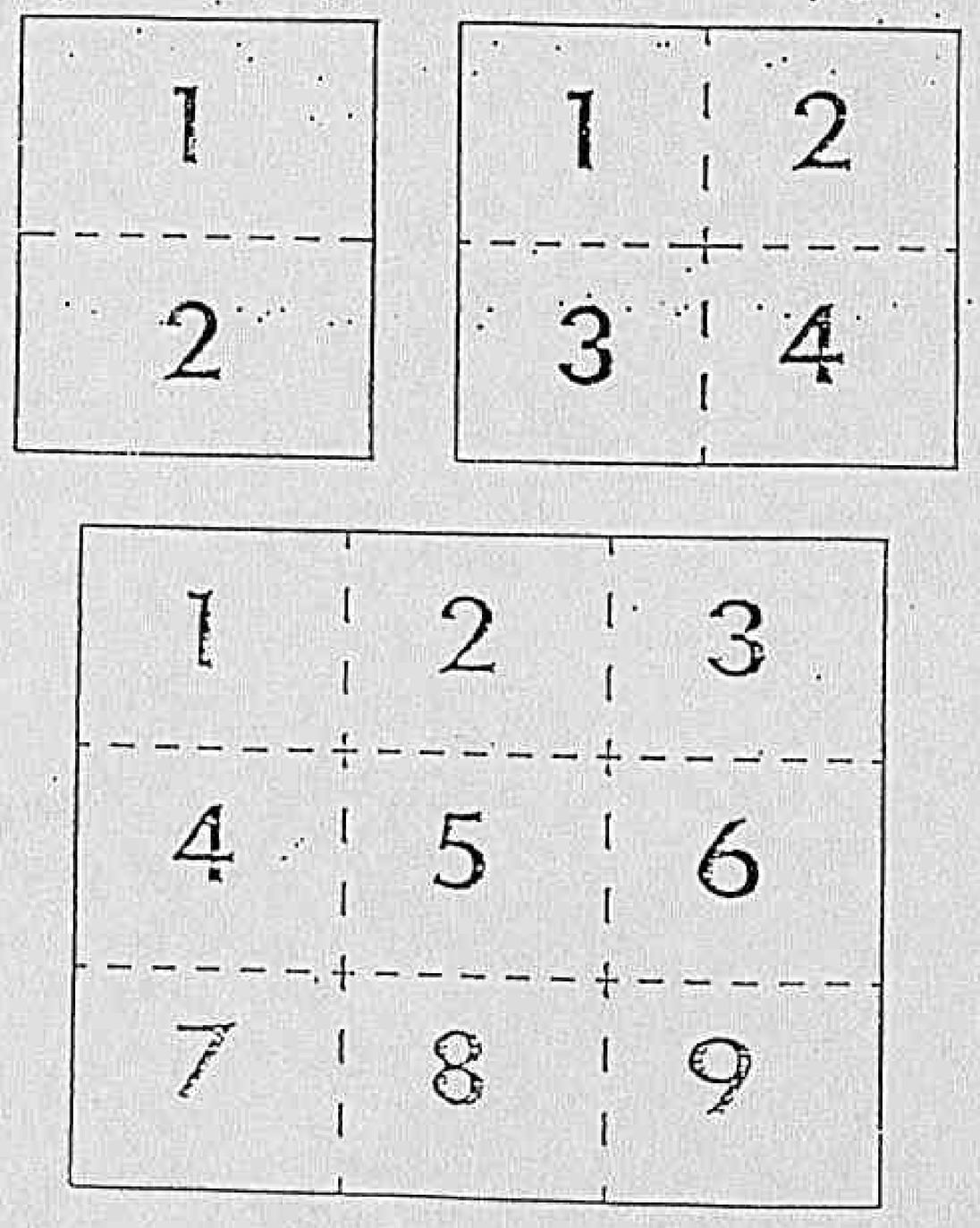
627

Dams in the Northern Appennines as far west as Spezia - Parma

ref	4 Height of dam wall above valley floor	5 Length of dam wall	6 Working Capacity	7 Construction	8 No of top sluices	9 Ht of top sluices	10 Remarks
94085	35.5 m.		5,914,000 cu.m.	Masonry gravity	-		
23109	14.5 m.		400000 cu.m.	Masonry gravity	5	4 m.	
03078	48 m.		800,000 cu.m.	Concrete gravity			Existence of dam NOT confirmed by air photos
89110							Above this point, Reno forms a small lak
94093	80.5 m.		36,000,000 cu.m.	Masonry gravity	Sector type sluices		- " -
29221	19 m.		150,000 cu.m.	Reinforced concrete dam with masonry counterforts.			
20271	42.25 m.		2,700,000 cu.m.	Concrete gravity	Sector type sluices		
2524	37 m.		2,000,000 cu.m.	Masonry Gravity	Sector type sluices		
87317 (Map of centre reservoir)	19.5 m.		185,000 cu.m.	Earth, lined with clay or dry stone	-	-	This reservoir if fed by the discharge from Predaro station, NOT directly by streams.
887381	25 m.		1,850,000 cu.m.	Masonry gravity	-	-	Storage reservoir.
921363	27.9 m.		3,650,000 cu.m.	Earth			
97387	18 m.		1,250,000 cu.m.	Masonry gravity	-	-	- " -
012888?	25 m.		50,000 cu.m.	Reinforced concrete with counterforts			
61797	13.4 m.		6,670,000 cu.m.	Concrete gravity	Top sluices		
5485	50 m.		18000,000 cu.m.	Concrete gravity			Existence of dam NOT confirmed by air photos
112143	38 m.		780,000 cu.m.	Concrete arch			
116106	23 m.		2,300,000 cu.m.	Concrete gravity	Top sluices		
115021?	37.2 m.		820,000 cu.m.	Concrete arch			
rrente Lima	25 m.		350,000 cu.m.	Reinforced concrete gravity	Top sluices		NOT located on map

MAPS AND CHARTS TOO LARGE TO FILM ON ONE EXPOSURE ARE FILMED CLOCKWISE BEGINNING IN THE UPPER LEFT CORNER, LEFT TO RIGHT, AND TOP TO BOTTOM.

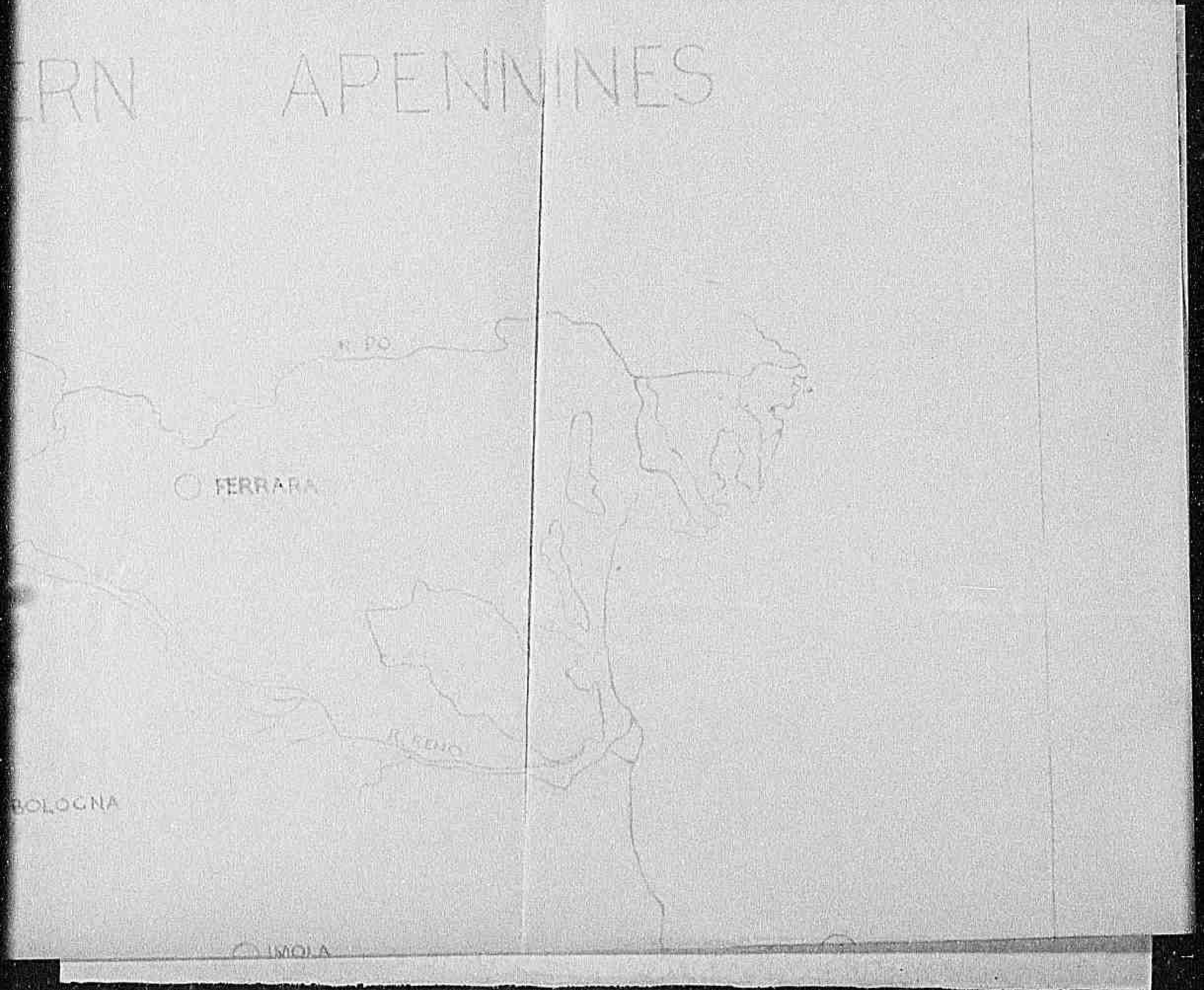
SEE DIAGRAMS BELOW.



REY

Nº	DAM
1	SCALARE
2	S. MARIA DEL BRAGINONE
3	PAVANA
4	
5	SUVIANA
6	RIO LUNATO
7	MUSCHIOSO
8	BRAGLIE
9	LAKE VERDE
10	LAKE GALLANO
11	AMMARE
12	OZOLA
13	QUARTO
14	MONTECASTELLO
15	CORSO
16	MONTECCIOLI
17	GANGHERI
18	DI LAGASTRELLO
19	

IN THE NORTHERN



(10)

(13)

(14) (7) (15)

(8) (17)

(16)

(6)

LA SPEZIA

PISA

MAJOR DAM

MINOR DAM

SCALE - 1/500 000

BOLOGNA

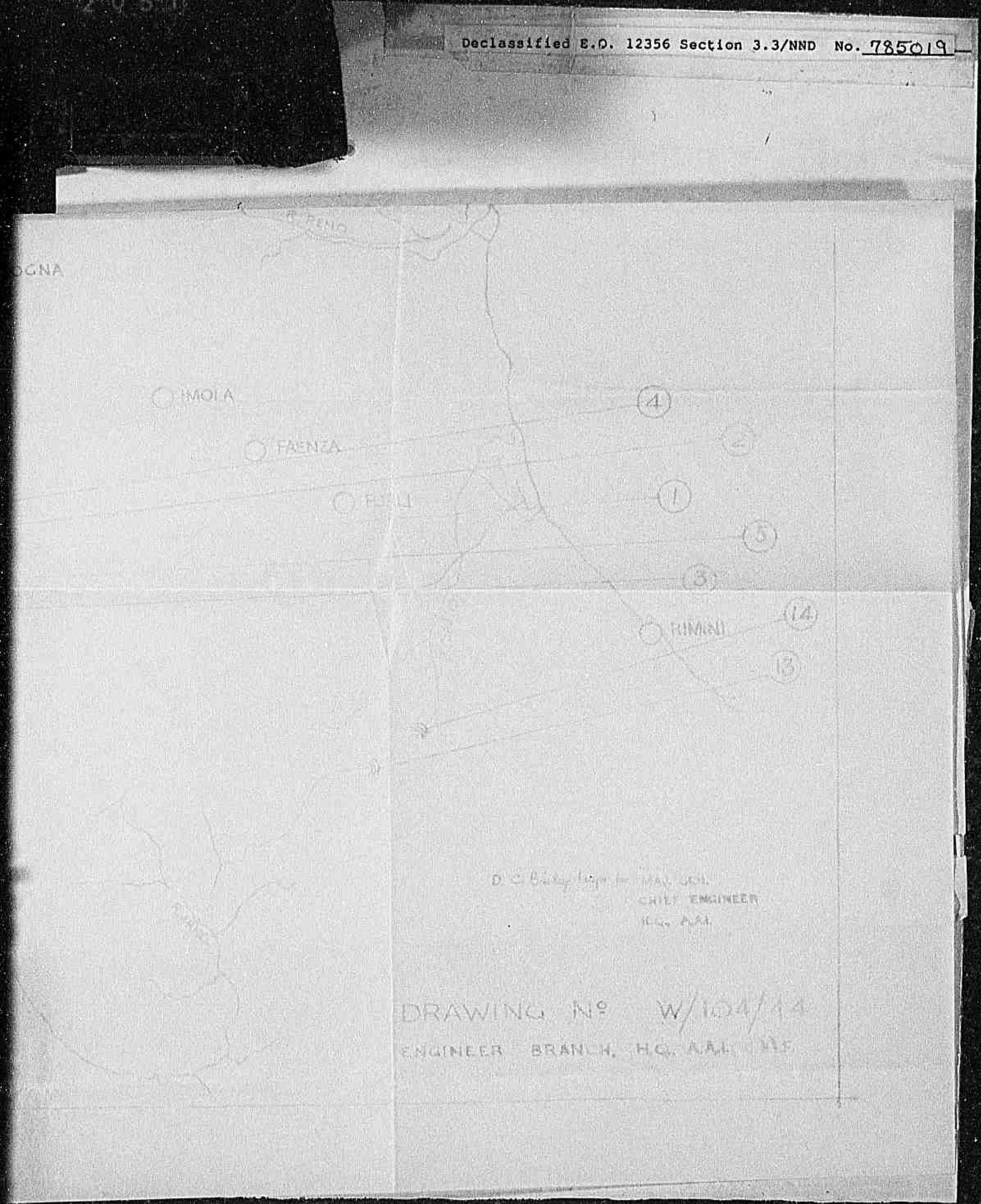
NOTE:
DAM IS LOCATED ON
THE TORRENTE LIMA 7 MI PISTOIA
EXACT LOCATION UNKNOWN

CCA

FLORENCE

PISA

RAIL



D. C. Bailey Lodge for MAJ. GEN.
CHIEF ENGINEER
H.Q., A.A.F.

DRAWING No. W/1054/44

ENGINEER BRANCH, H.Q. A.A.F. M.E.

SUBJECT:- Hydro-electric stations

SECRET

(1) Headquarters
A. A. I.
2530/7/RE
13 Jun 44.

(8)

14 JUN 1944

MAAF (attn Wing/Comdr WISEMAN)

1. Reference conversation WISEMAN - BAILEY.

2. It is requested that consideration be given to bombing the following targets:-

(a) LARDERELLO electric power station, generation by volcanic gas, map ref 112/4710 (Air cover is required in order to pinpoint station).

(b) GALLIOANO hydro-electric power station map ref 96 - II 15250350.

3. The object of the bombing should be to destroy roof and walls of power stations, while causing minimum damage to plant in the stations. It is suggested that this might be accomplished by using bombs that will explode on hitting roof or walls and BEFORE penetrating to machinery.

4. If walls and roof of power stations are destroyed and plant is buried under debris it is thought unlikely that further demolition will be considered necessary by the Germans. Plant rescued from under debris may however be of great service to us.

W. J. Cardale

Brigadier
for Major General
Chief Engineer

7293

Copy to: DM for Central Electric Board

Internal distribution: CSI (a)
DM

DCB/RED

SUBJECT:- Terni Power Stations.

SECRET

Headquarters,
A. A. I.

(7)

CM. EIGHTH Army
Central Electric Board.

2531/6/RE

10 Jun 44.

Examination of air photo cover of 9 June 1045 hrs shows no evidence of enemy demolitions at the Terni group of power stations, except for damage to the transformer of Collestatte station A 943400.

D.C. Bailey

Major, RE,
for Major General,
Chief Engineer.

Copy to: D.W.
G.S.I. (a)
G(Air)
G(Special Ops)

729 ?

SUBJECT:- SAITO and TURANO dams

SECRET

(6)

Headquarters
A. A. I.

2531/9/RE

21 May 1944.

CG FIFTH Army (for Engineer)
CE EIGHTH Army
Central Electric Board

1. Study of air photos of 27 Dec and 15 May shows that:-

a) The above reservoirs are now only about one fifth full.

b) The level of the water in the reservoirs has not risen, and may in fact have fallen slightly, between December and May.

2. In the normal way, the water level in the reservoirs should be high at this time of year. It seems evident therefore that the Germans are NOT planning to cause destruction and floods by blowing the dams. On the contrary, they may be keeping the water low deliberately, in order to minimise the use of the dams, if captured by ourselves.

3. The present level and volume of water in the reservoirs was estimated as follows:-

	SAITO Dam	TURANO Dam
Height of top of dam above valley floor.	90 m.	69.5 m.
Height of water above valley floor - 15 May	48.5 m.	30.5 m.
Volume of water 15 May	50,000,000 cu m.	26,000,000 cu m.

Estimates were based on B quality near vertical photos.

R.C. Bailey

Major, RE
for Major-General,
Chief Engineer.

ENCL:- "A" Translation of Italian description of the dams, with photos and plans.
"B" Graphs showing relation of water level to volume of water in the reservoirs.

this time of year. It seems evident therefore that the Germans are NOT planning to cause destruction and floods by blowing the dams. On the contrary, they may be keeping the water low deliberately, in order to minimise the use of the dams, if captured by ourselves.

3. The present level and volume of water in the reservoirs was estimated as follows:-

	SAITO Dam	TURANO Dam
Height of top of dam above valley floor.	90 m.	69.5 m.
Height of water above valley floor - 15 May	43.5 m.	30.5 m.
Volume of water 15 May	50,000,000 cu m.	26,000,000 cu m.

Estimates were based on B quality near vertical photos.

R.C. Bailey

Major, RE,
for Major-General,
Chief Engineer.

ENCL:- "A" Translation of Italian description of the dams, with photos and plans.
"B" Graphs showing relation of water level to volume of water in the reservoirs.

Copy to:- GSI(a) - without enclosures
G(Special Ops) - " "
OSS att. Lt. Dorr- " "
De Wke " "
War Diary(2) " "

7291

SUBJECT: Translation of parts of "The plants of the 'Termi' Power Company on the Salto and Turano Rivers", L'Energia Elettrica, March, 1939, pp. 235-47.

1. These installations will include four drawoffs: a principal drawoff under pressure and fed by two great control reservoirs built on the Turano and Salto Rivers, and connected with each other, and three open channels from the Velino River. Of these last, one will have its origin at a level about 20 meters higher than the maximum level of the water in the two reservoirs mentioned above and will be connected with the principal drawoff so that eventually any flow exceeding the needs of the power plant will be carried back by force of gravity to the reservoirs themselves; the second will originate at a level roughly 20 meters below the first; and the third will utilize the lower waters of Velino-Peschiera, available near the Cotilia power plant, and common to the sources mentioned above.

2. The flow coming from the Salto and Turano reservoirs and from the upper Velino diversion will give a single head of the order of 430 meters (average value), while those of the other two Velino sources will give separate heads of 30 and 10 meters.

3. The Salto and Turano reservoirs are created by two concrete gravity dams having the following dimensions:

	Turano	Salto
Maximum height above the original river bed in meters	69.50	90.00
Maximum height above the level of the foundation in meters	74.70	104.00
Height of the crown above sea level in meters	542.00	543.00
Height of the lip of the spillway above sea level in meters	535.60	539.25
Height above sea level of the maximum normal water level in m.	540.00	540.00
Height above sea level of the minimum water level in meters	495.00	477.50
Height above sea level of the axes of the intake in meters	493.30	475.44
Radius of the curve (horizontal cross section) in meters	253.00	150.00
Length of the crown in meters		

2. The flow coming from the Salto and Turano reservoirs and from the upper Velino diversion will give a single head of the order of 130 meters (average value), while those of the other two Velino sources will give separate heads of 30 and 10 meters.

3. The Salto and Turano reservoirs are created by two concrete gravity dams having the following dimensions:

	Turano	Salto
Maximum height above the original river bed in meters	69.50	90.00
Maximum height above the level of the foundation in meters	74.70	104.00
Height of the crown above sea level in meters	542.00	543.00
Height of the lip of the spillway above sea level in meters	535.60	539.25
Height above sea level of the maximum normal water level in m.	540.00	540.00
Height above sea level of the minimum water level in meters	495.00	477.90
Height above sea level of the axes of the intake in meters	493.30	475.44
Radius of the curve (horizontal cross section) in meters	253.00	150.00
Length of the crown in meters	256.00	180.00
Volume of walling $10^3 m^3$	286.00	358.00

4. The spillways of the reservoirs have been built for a maximum (exceptional) flow of 1300 m^3/s in the case of Turano and 1100 m^3/s in the case of Salto. The relevant installations are as follows :

Turano reservoir

(a) One spillway on the surface at the crest of the dam consisting of three spans each 13 m. wide and provided with sluice gates in sections holding back a maximum depth of 4.40 m.

7209

/..(b)

(b) One spillway at the base consisting of a conduit on the left bank (independent of the dam) 230 m. long, with an internal diameter of 3 x 3.50 m., provided with a grill and a flat sluice gate moving on an inclined plane at the entrance, and a sluice gate along a narrowed section (2.60 x 3.50 m.) located a little upstream from the dam; the conduit is constructed of concrete, with smooth finish, and can discharge a flow of 45 m³/s.

(c) A spillway which leaves the connecting tunnel between the Salto and Turano reservoirs at a point 240 m. downstream of the reservoirs. This spillway, provided with a butterfly (?) valve (a farfalla), can handle a maximum flow of about 60 m³/s.

Salto reservoir.

(a). A surface spillway which extends the entire length of the dam, divided into 13 sections each 10 m. wide.

(b). A spillway at the base, independent of the dam, exactly as at the Turano reservoir; internal diameter of the conduit: 3-3.50 m.; maximum capacity: 45 m³/s.

(c). A spillway which leaves the connecting tunnel between the Salto dam and the Cotilia power station, with a maximum capacity of 60 m³/s.

5. Data concerning the utilization of the Salto, Turano, and Velino rivers.

Characteristics	Diversion					
	Principal (Salto and Turano reservoirs)			From the Velino		From Velino Fosalbara
	Turano	Salto	Totals	Upper	Lower	
Useful capacity of the reservoirs: a) hydroelectric utilization $10^6 m^3$	140	250	390			
b) for flood control $10^6 m^3$	11	10	21			
Average annual flow available m^3/s	4,360	4,300	9,660	2,500	10,000	23,000
Maximum possible flow			20,000	6,500	10,000	60,000

(a). A surface spillway which extends the entire length of the dam, divided into 13 sections each 10 m. wide.

(b). A spillway at the base, independent of the dam, exactly as at the Turano reservoir; internal diameter of the conduit: 3-3.50 m.; maximum capacity: 45 m^3/s.

(c). A spillway which leaves the connecting tunnel between the Salto dam and the Cotilia power station, with a maximum capacity of 60 m^3/s.

5. Data concerning the utilization of the Salto, Turano, and Velino rivers.

Characteristics	Diversion					
	Principal (Salto and Turano reservoirs)			From the Velino Upper Lower		From Velino Pescolanciano
	Turano	Salto	Totals			
Useful capacity of the reservoirs: a) hydroelectric utilization $10^6 m^3$	140	250	390			
b) for flood control $10^6 m^3$	11	20	31			
Average annual flow available m^3/s	4,860	4,800	9,660	5,300	10,000	25,000
Maximum possible flow			99,000	6,300	10,000	60,000
Average industrial flow m^3/s.			2,560			
Useful head						
a. Maximum m.	148			35		
b. Minimum m.	90			27		
c. Average industrial m.	130		130	30		20

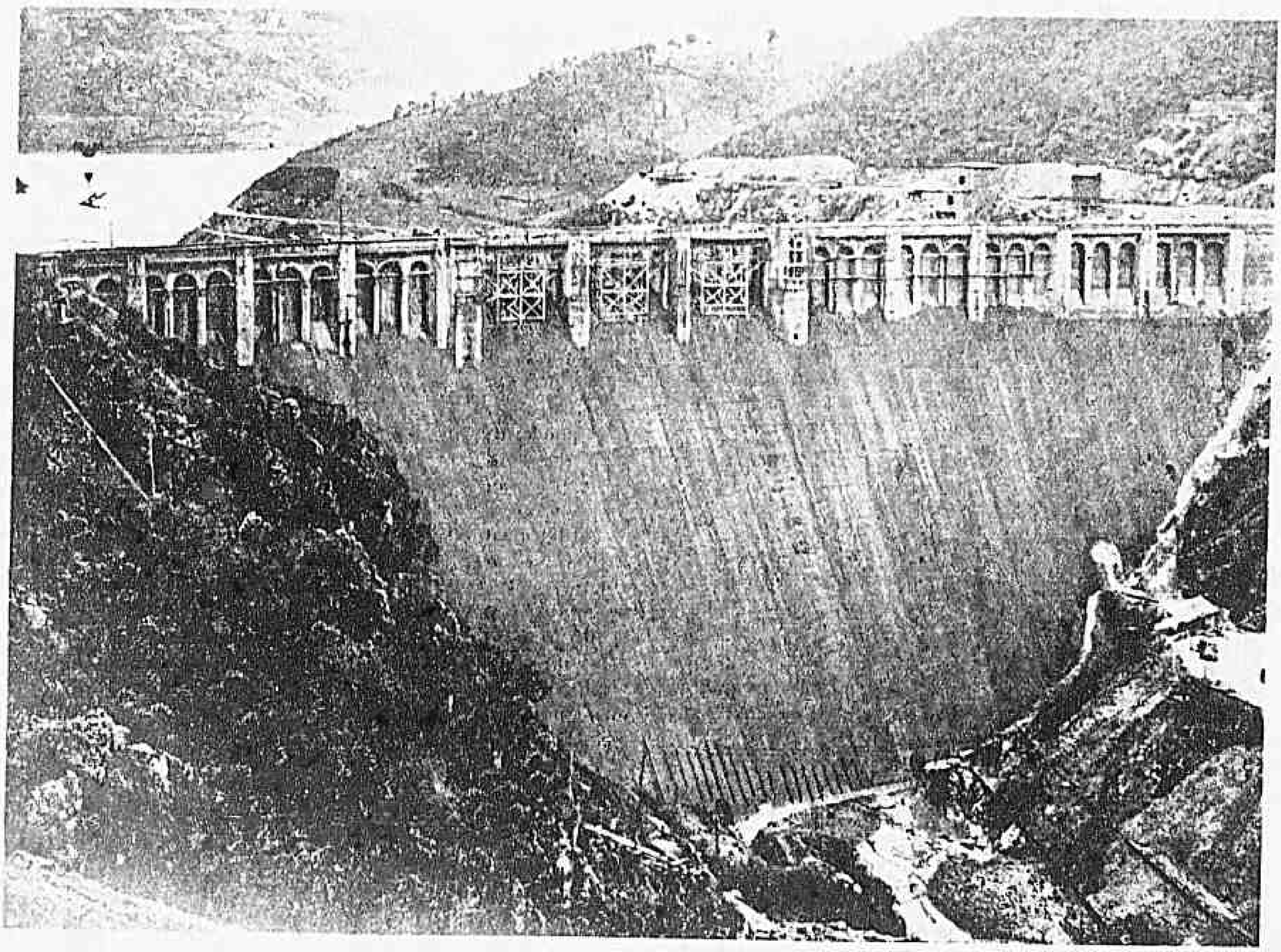
6. The Turano reservoir is connected with the Salto reservoir by a pressure conduit having a total length of about 9 km., with a constant internal diameter of 2.90 m. and subdivided into two sections of almost equal length with opposite inclinations, i.e., of 0.3% towards the Turano reservoir (first section) and of 2% towards Salto reservoir. The intake installation at the Turano reservoir consists of a horizontal conduit, with its base at 491.80 m. above sea level, protected at the entrance by a grill. A vertical shaft connects with the conduit and has an opening facing upstream, with an entrance front 7.20 m. high and 4.00 m. broad, protected by a grill.

/..Where

Where it joins this shaft, the conduit may be closed by a flat sluice gate on rollers 3.00 x 3.00, worked from a control room directly above the shaft itself; and downstream of the dam, near the branching off of the spillway mentioned above, it is provided with a butterfly (?) valve 3.00 m. in diameter, with both manual and electric motor controls.

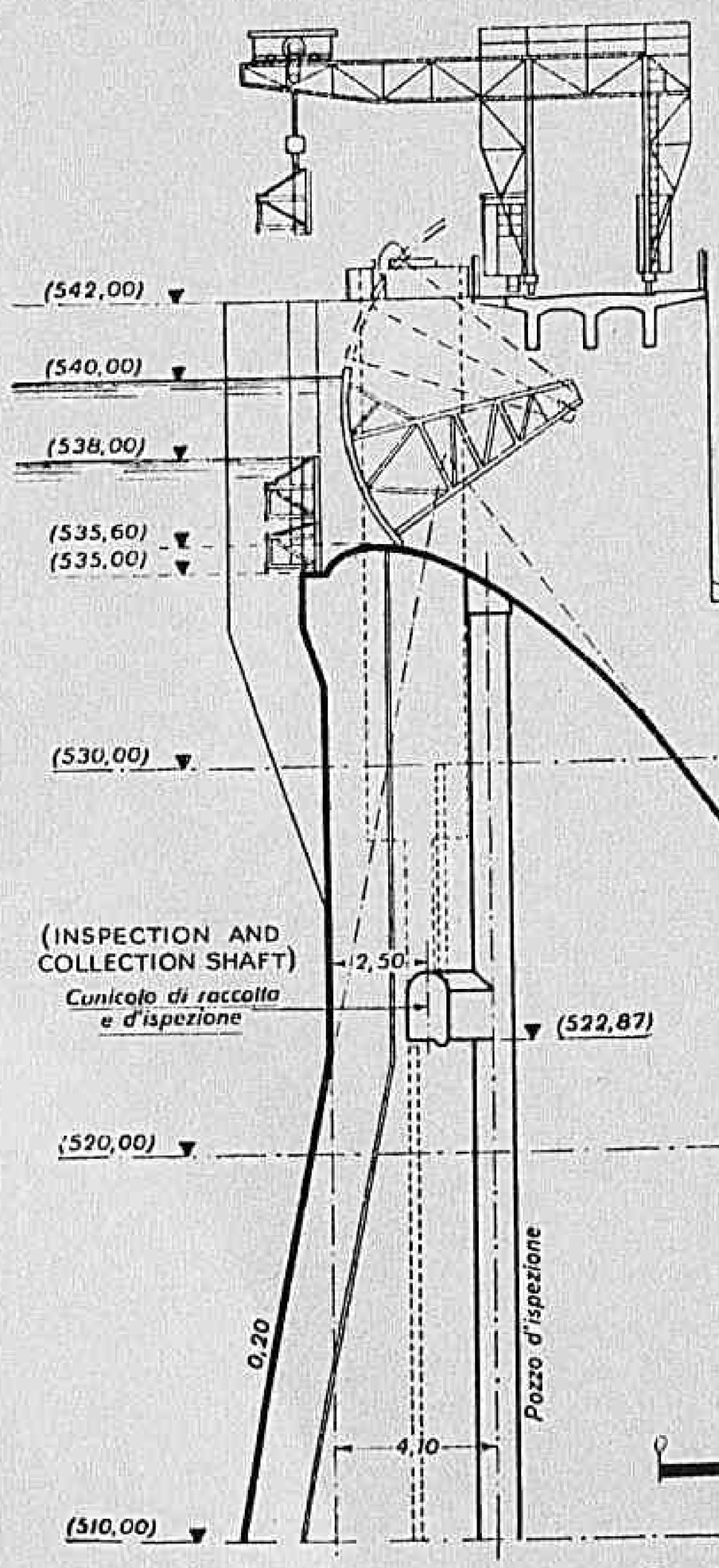
7. For closing the pressure conduit on the Salto reservoir side there is a flat sluice-gate moving on an inclined plane at the entrance to the conduit, and a butterfly (?) valve installed in a subterranean chamber made for the purpose, reached by an access passage downstream of the dam.

8. From the Salto reservoir, on the right bank, runs the main drain-off, which will carry the united waters of both reservoirs. It has a total length of 11,800 Km., a constant internal diameter of 4 m., an average inclination of 1.75, and ends in a surge chamber composed of a vertical pipe with an internal diameter of 12.50 m. and a height of 82.25 m. From this last run two penstocks cut in rock (?), of a diameter of 4 m., with automatic safety valves at their entrances, and ending in a group of generators in the Cotillo power plant.



AA1/Misc/104

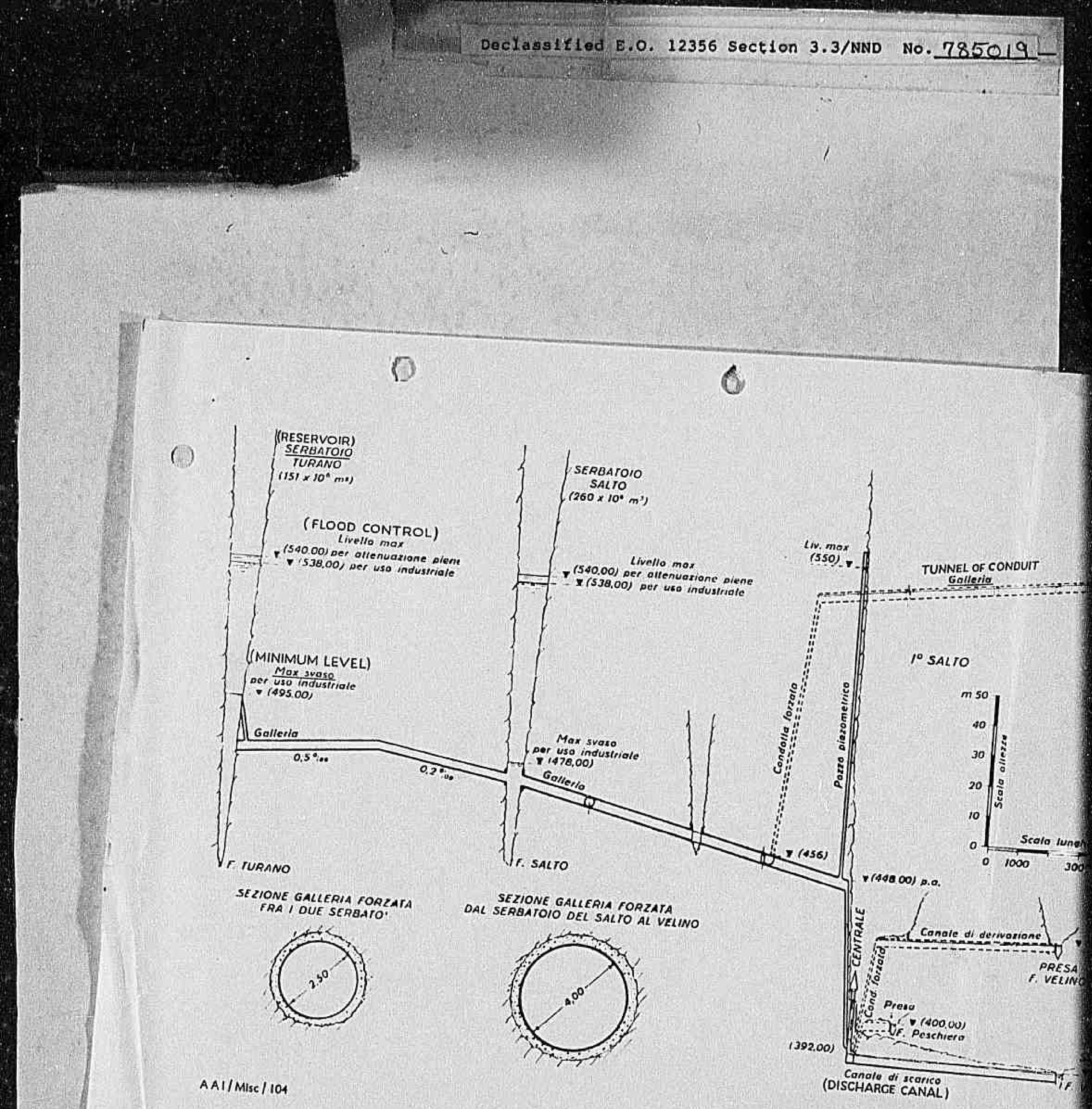
Reproduced by 19th Field Survey Coy. R.E. May 1944



AA1/Misc/104

Reproduced by 19th. Field Survey Coy. R.E. May 1944.

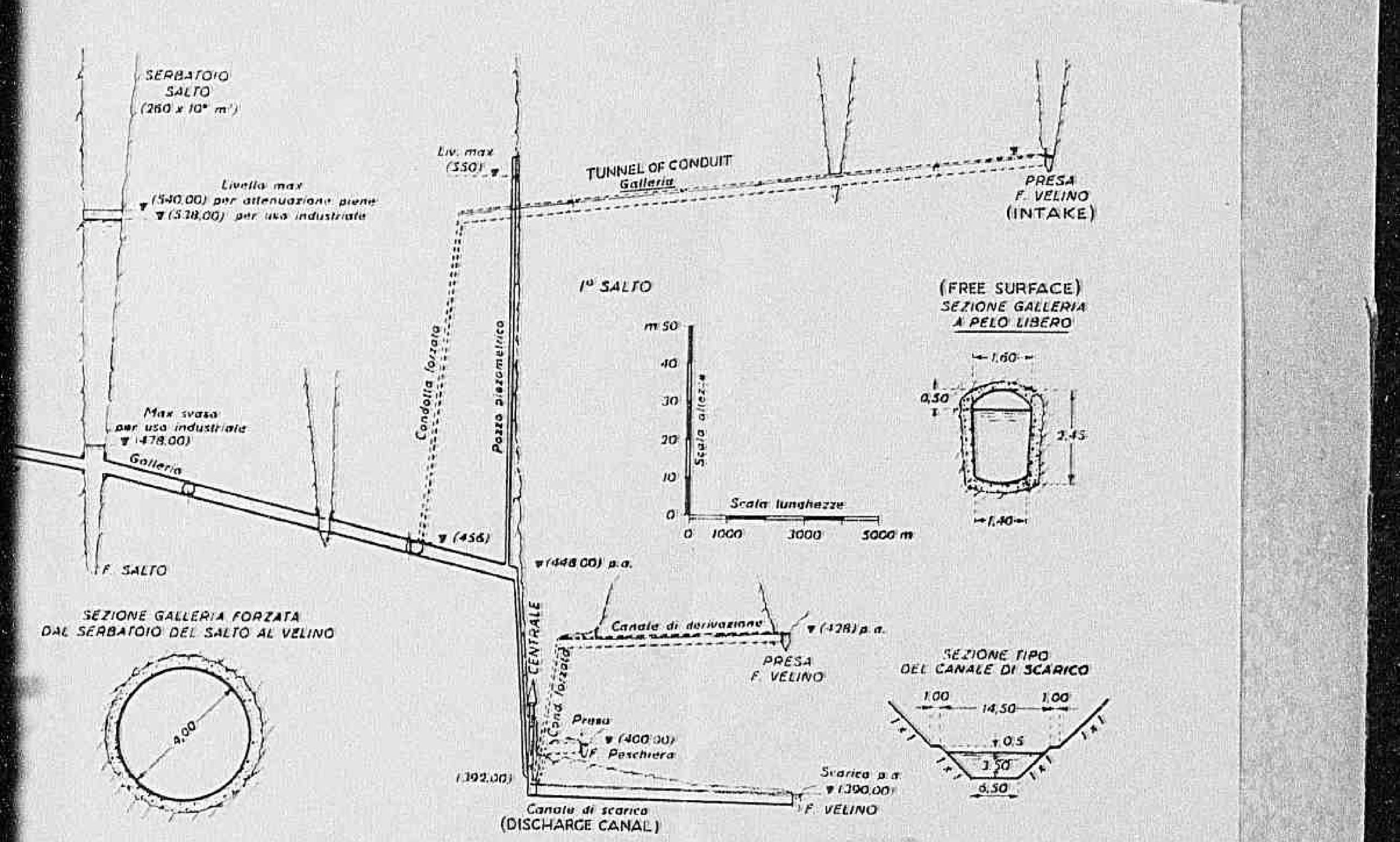
7285



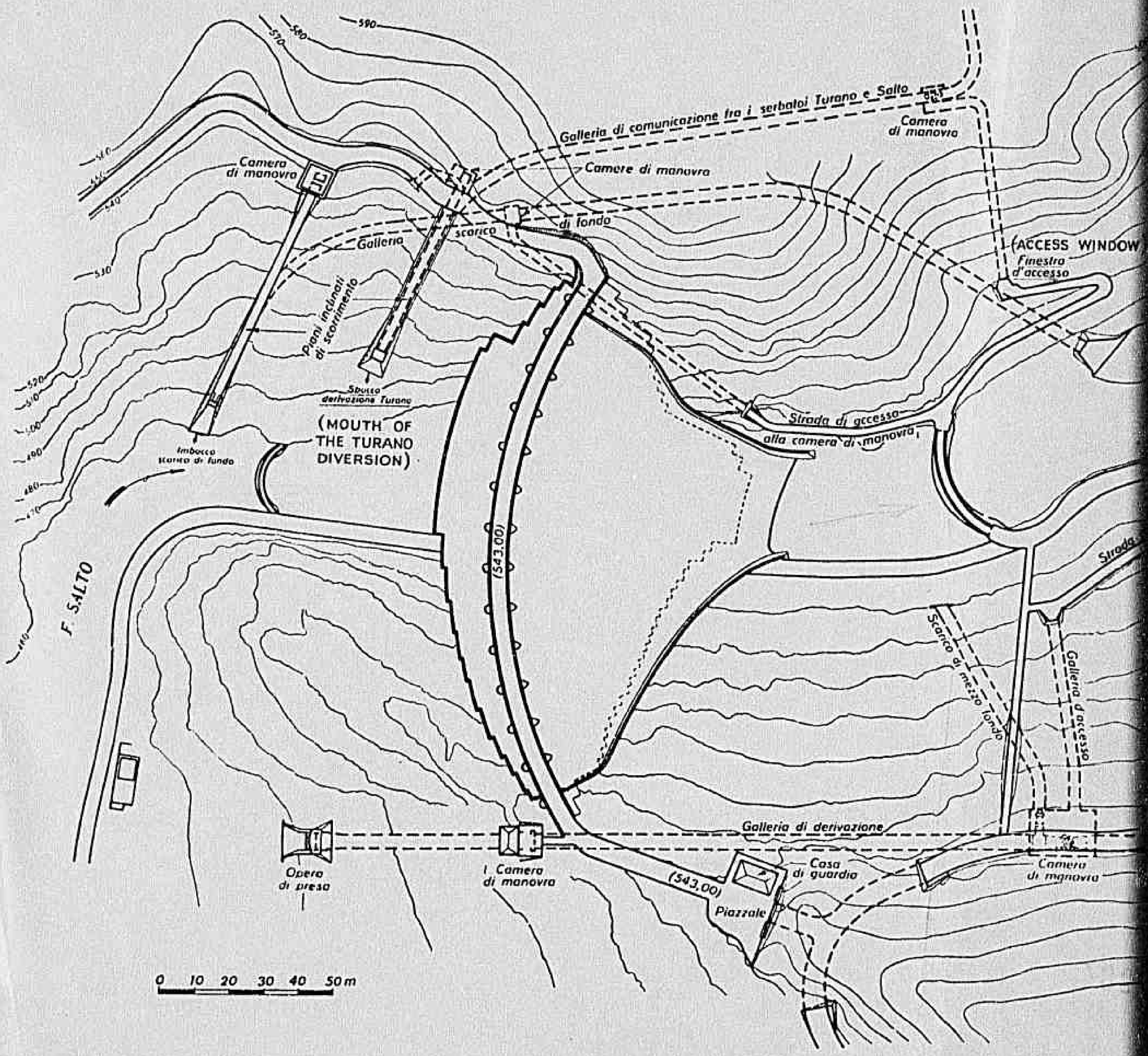
SEZIONE GALLERIA FORZATA
FRA I DUE SERBATOI

SEZIONE GALLERIA FORZATA
DAL SERBATOIO DEL SALTO AL VELINO

AAI/Misc/104

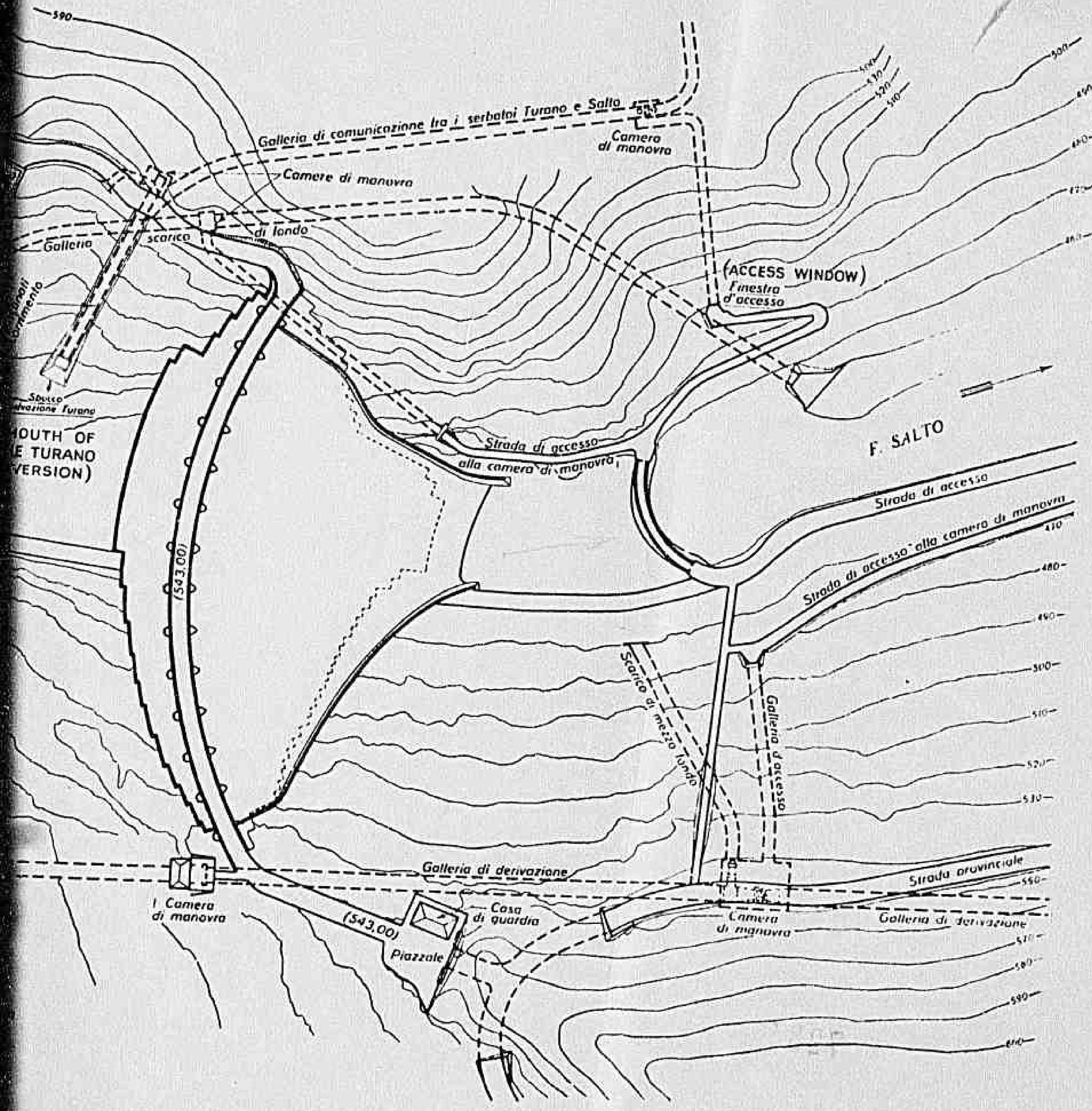


Reproduced by 19th. Field Survey Coy., R.E. May 1944.



AAI/Misc/104

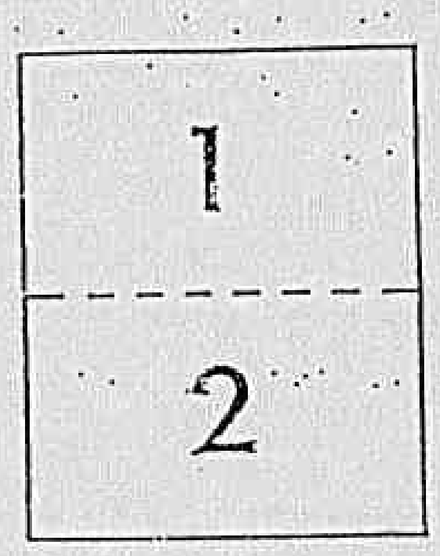
Reproduced by 19th. Field

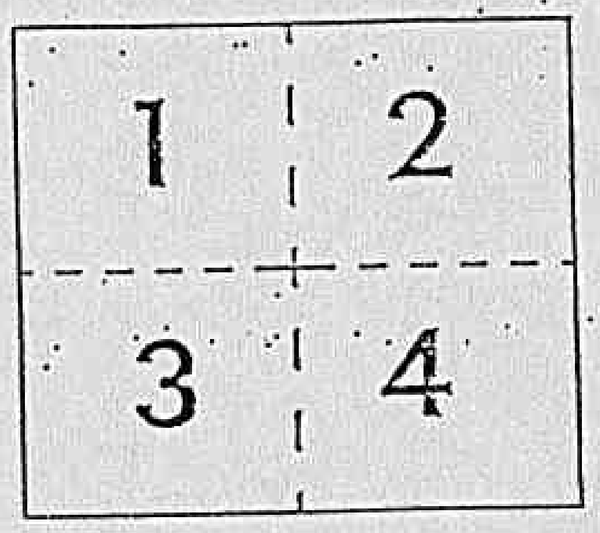


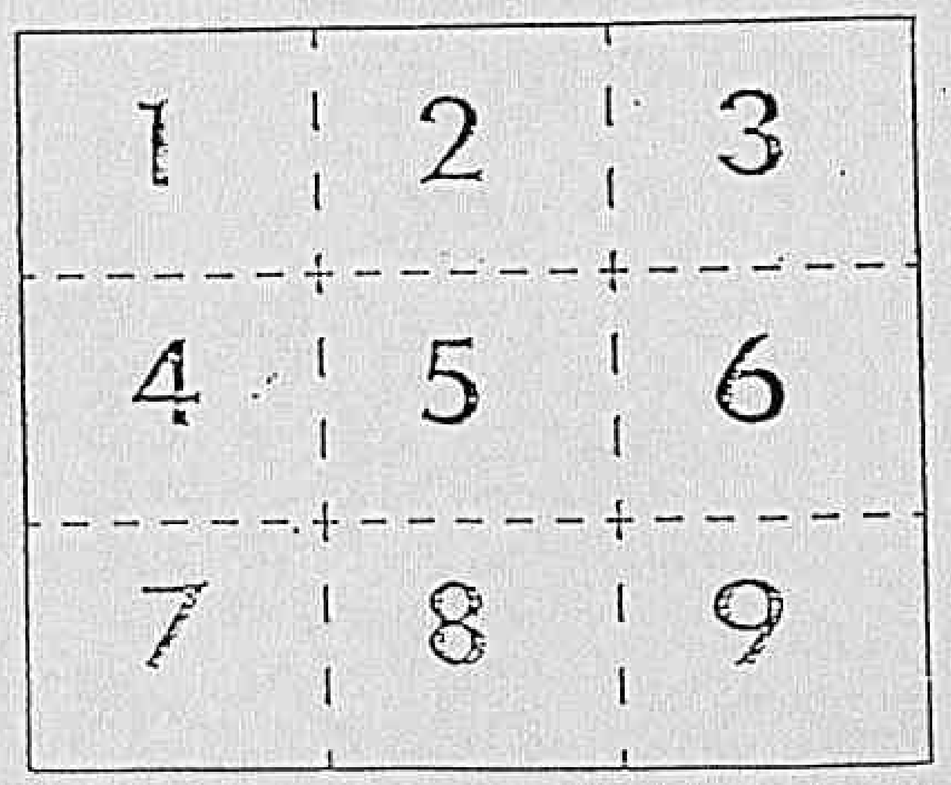
Reproduced by 19th. Field Survey Coy. R.E., May 1944.

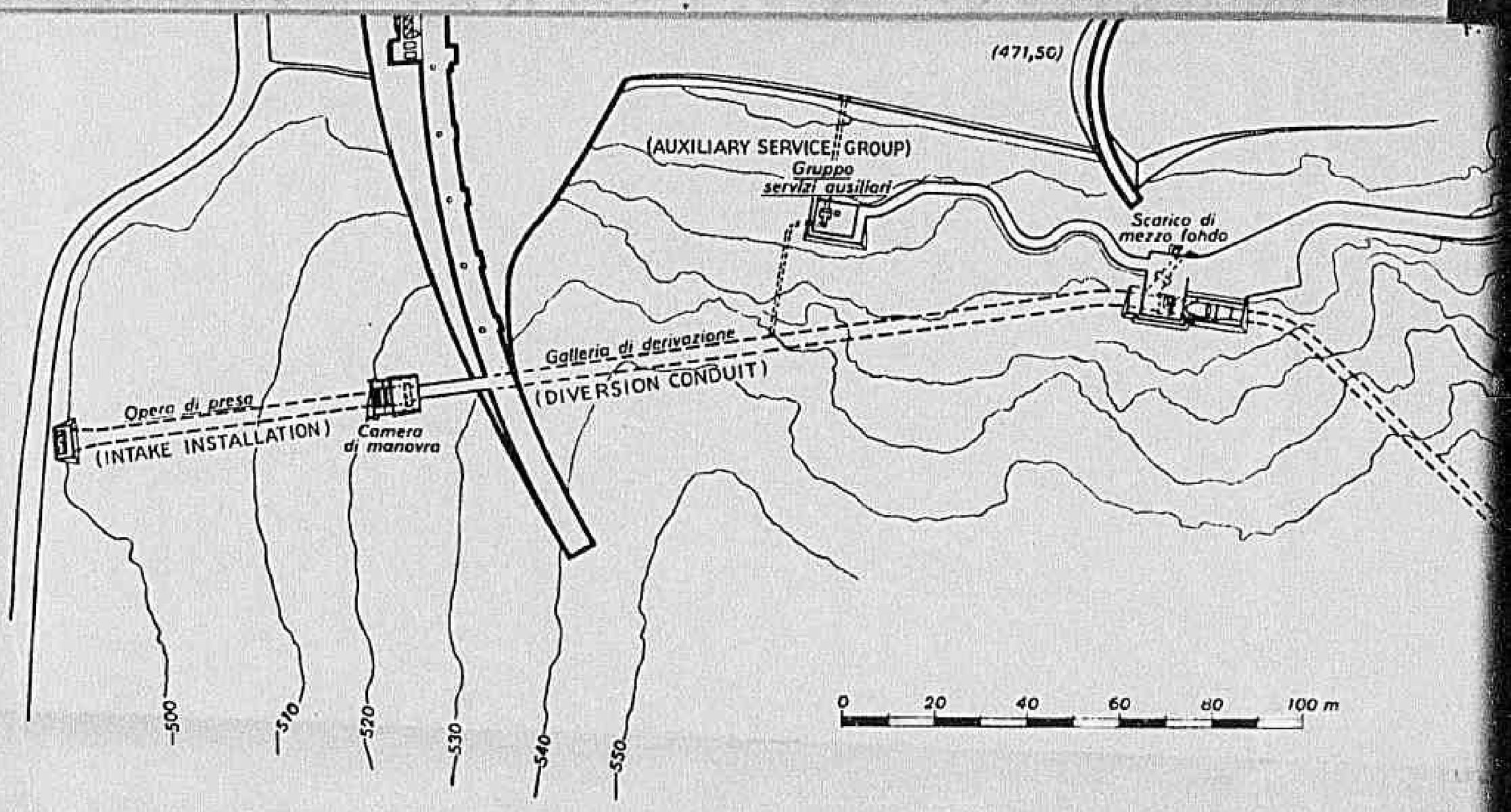
MAPS AND CHARTS TOO LARGE TO FILM
ON ONE EXPOSURE ARE FILMED CLOCKWISE
BEGINNING IN THE UPPER LEFT CORNER,
LEFT TO RIGHT, AND TOP TO BOTTOM.

SEE DIAGRAMS BELOW.

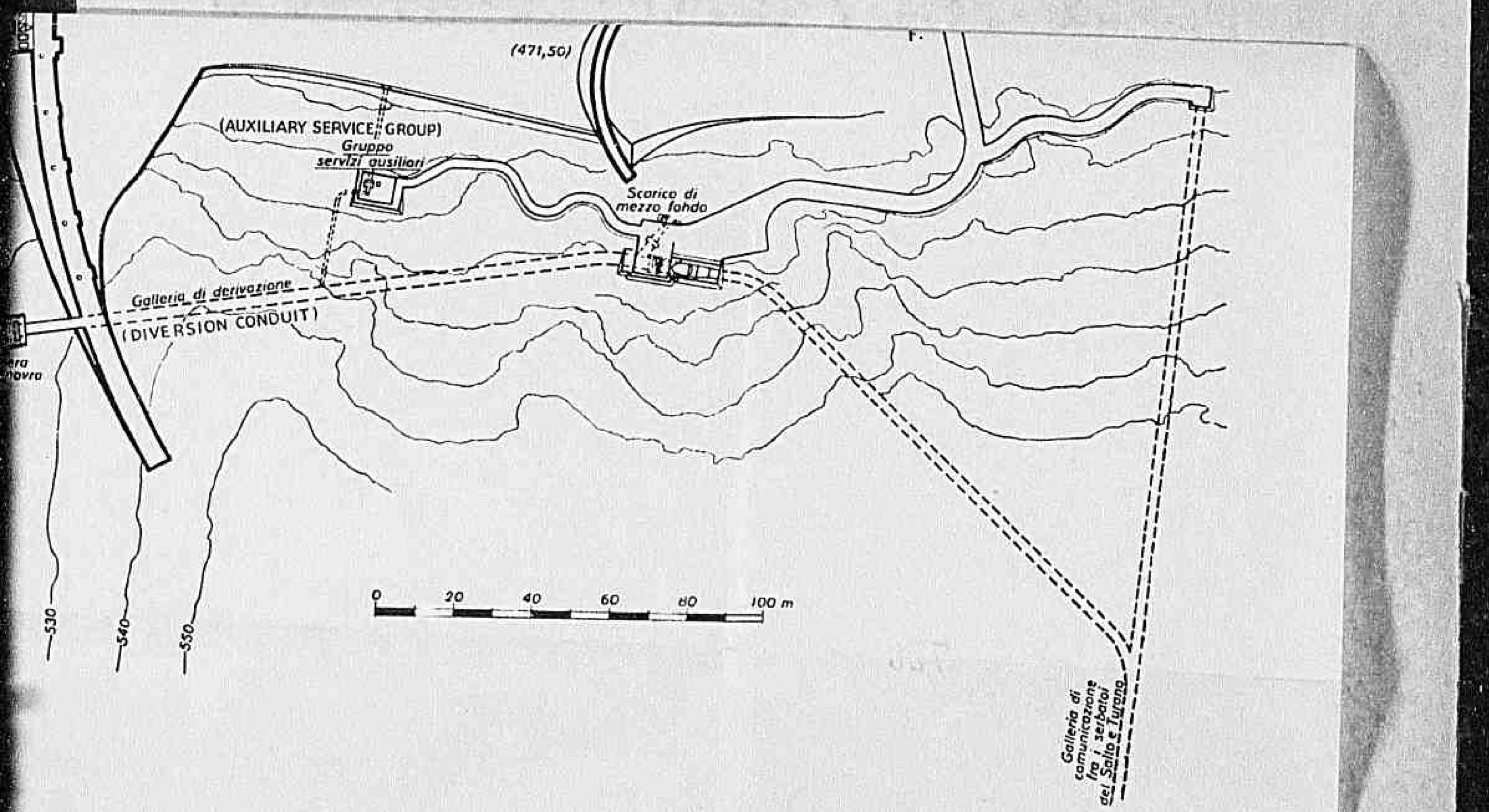




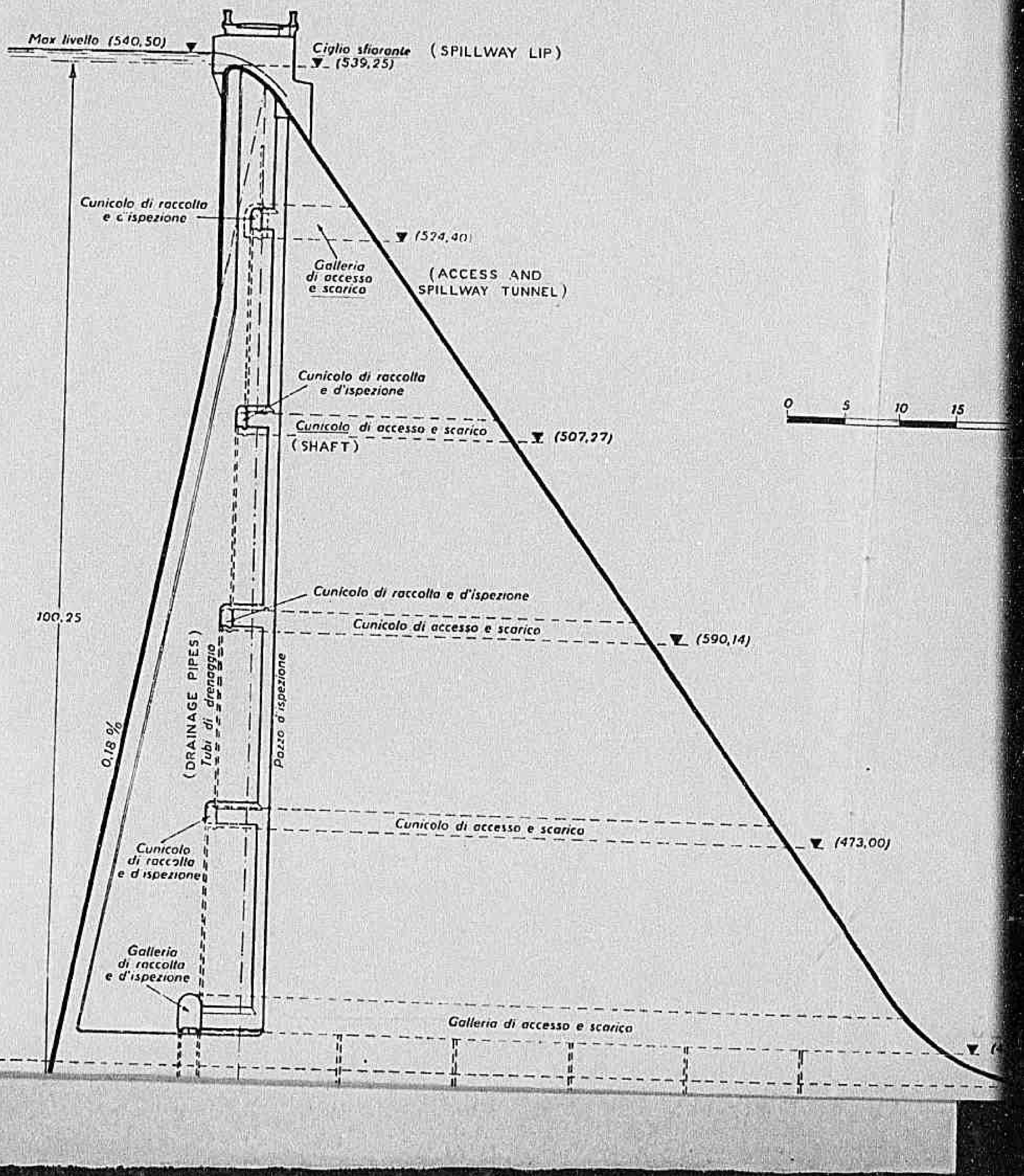


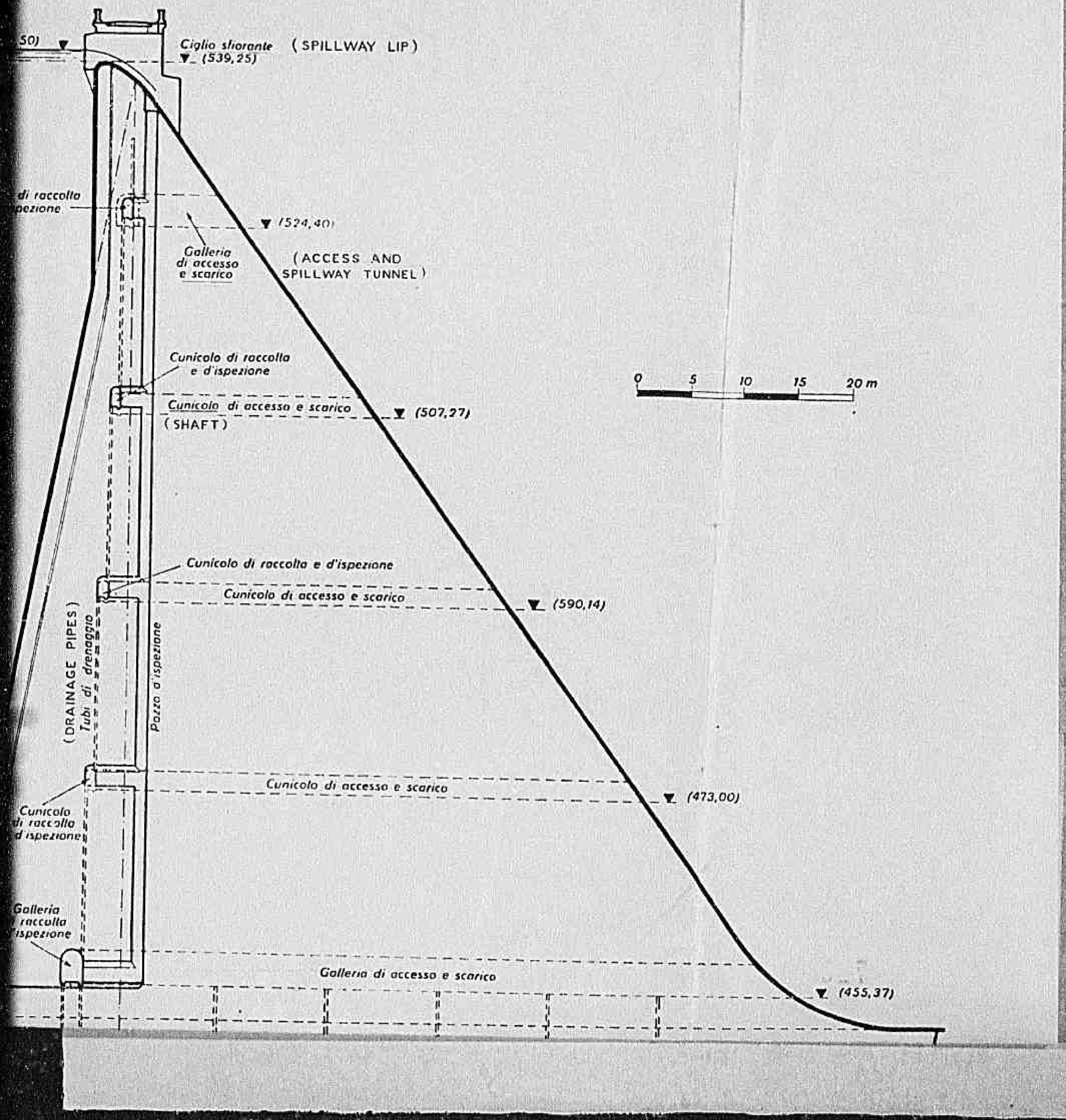


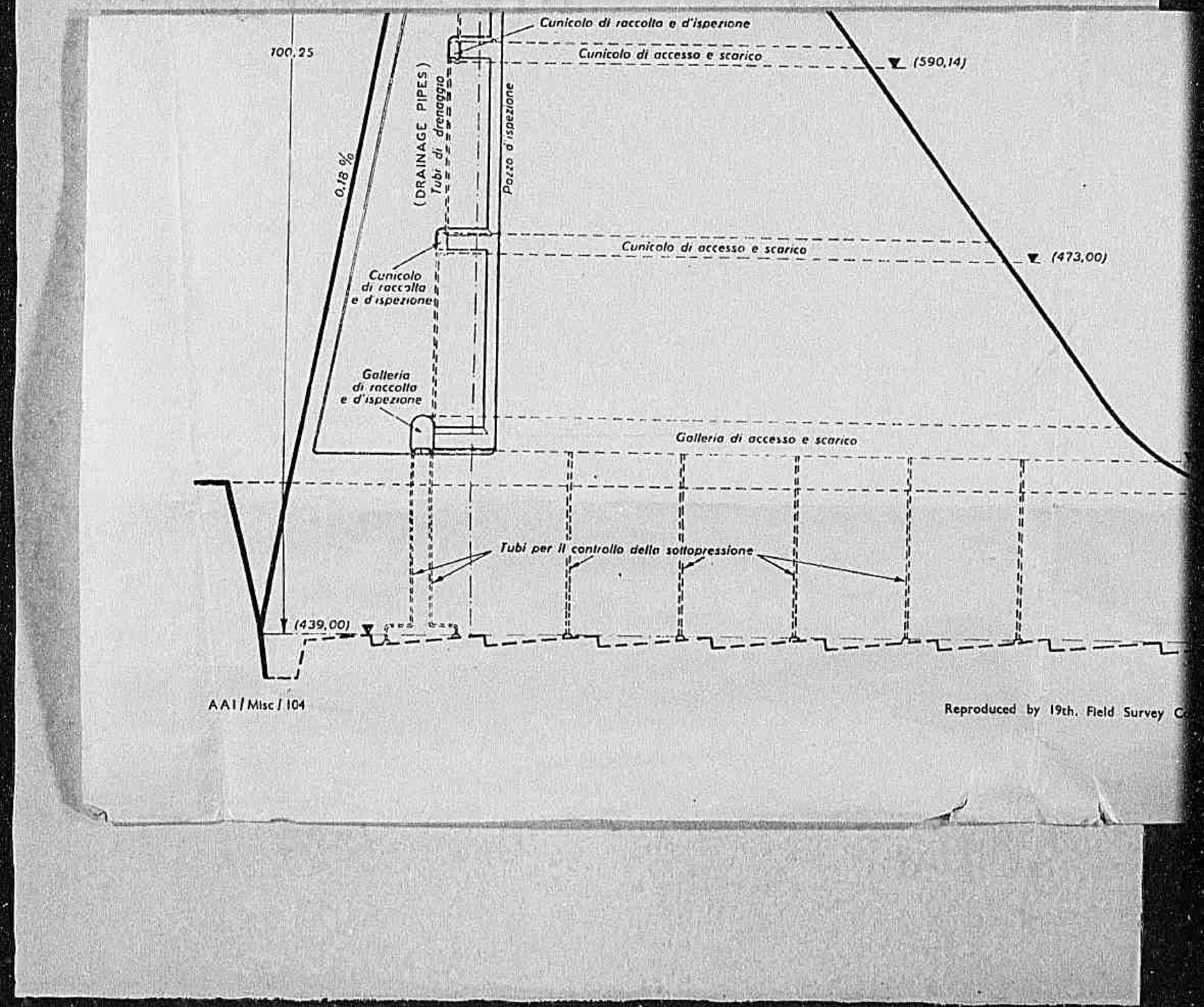
AA1 / Misc / 104



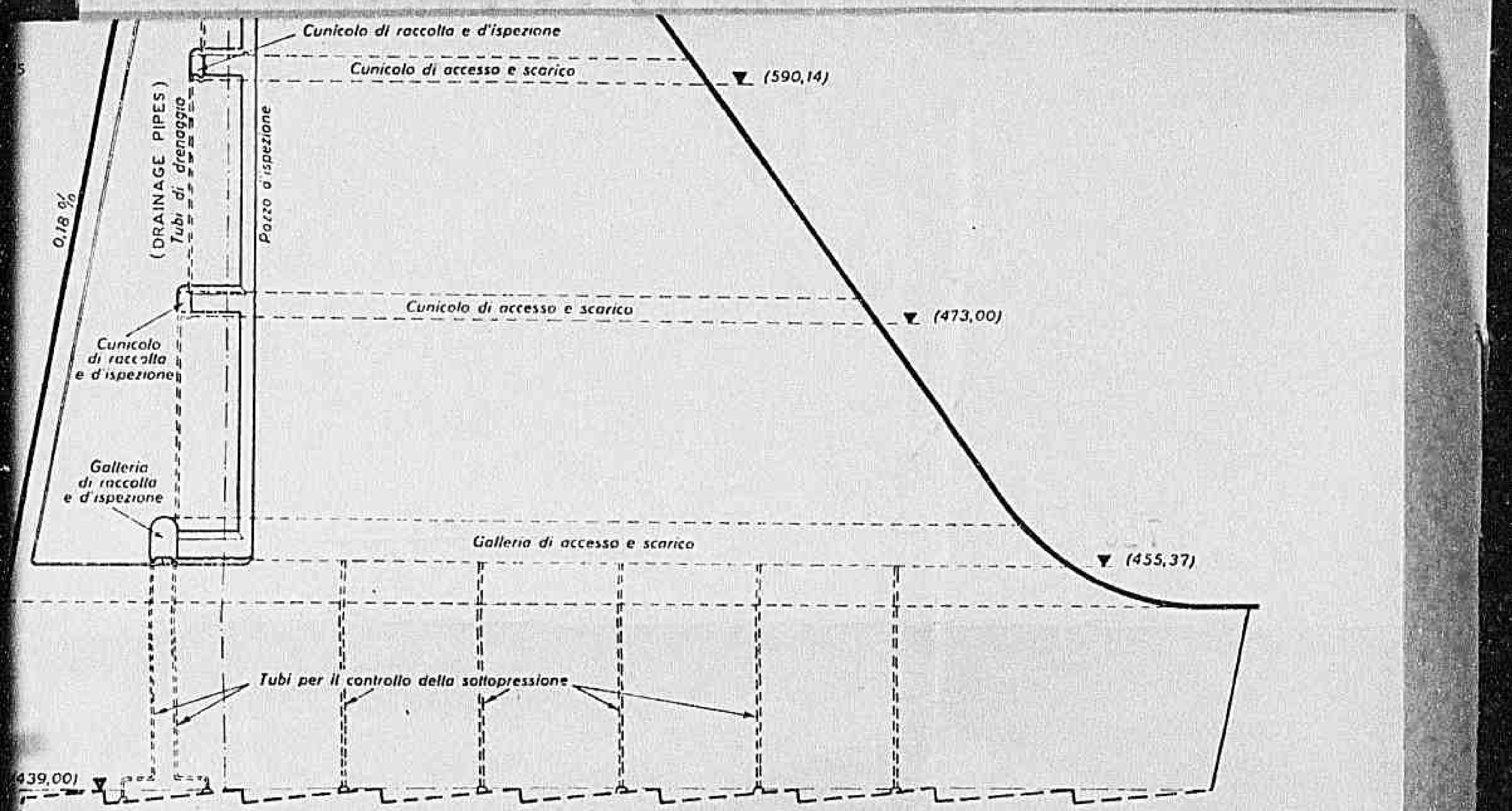
Reproduced by 19th. Field Survey Coy., R.E. May 1944.





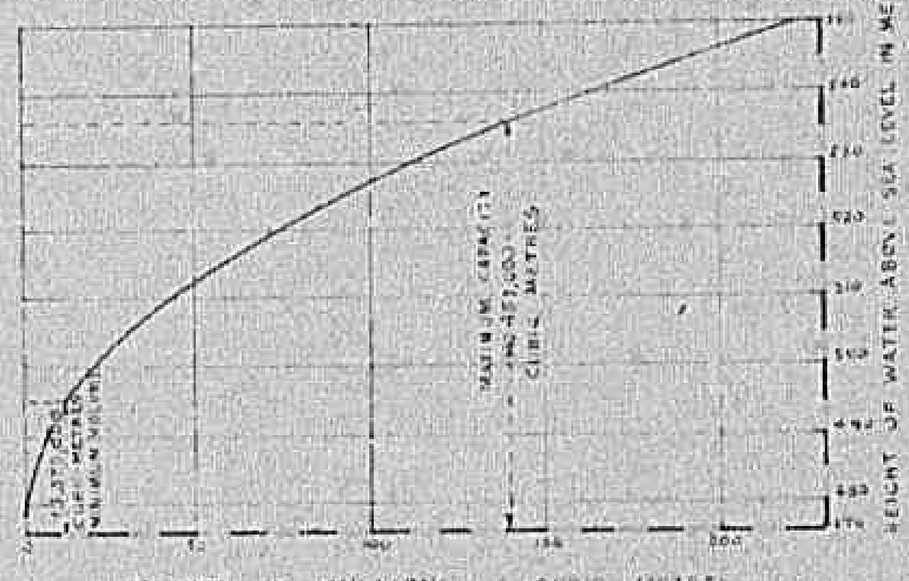


AA1 / Misc / 104



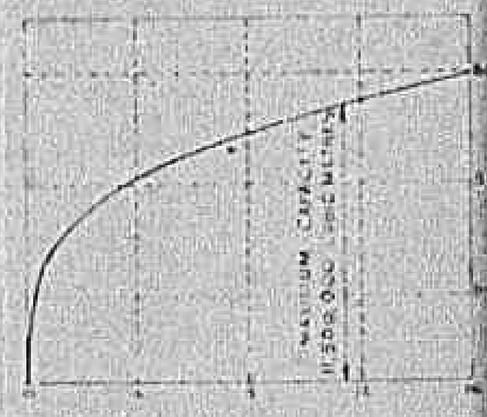
Reproduced by 19th. Field Survey Coy., R.E, May 1944.

THE TURANO DAM.



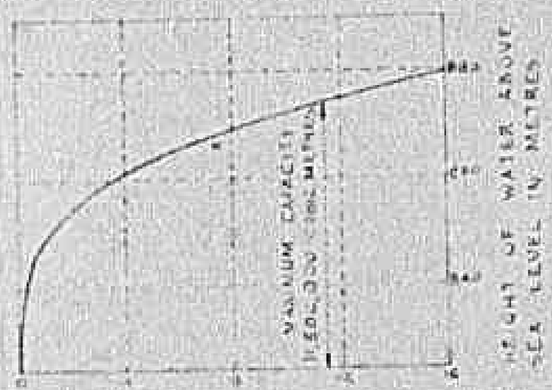
HEIGHT OF TOP OF DAM WALL ABOVE SEA LEVEL = 542 METRES.

SCANDARELLA DAM.



HEIGHT OF TOP OF DAM WALL ABOVE SEA LEVEL = 880 METRES

SCANDARELLA DAM

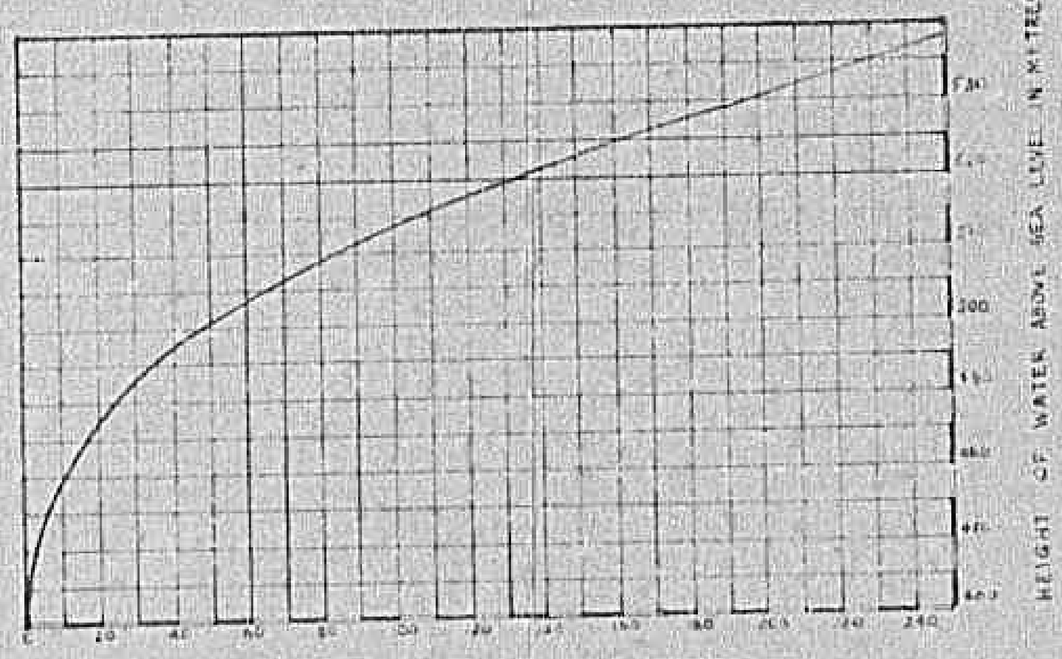


VOLUME IN MILLIONS OF CUBIC METRES

HEIGHT OF TOP OF DAM WALL ABOVE SEA LEVEL = 880 METRES.

HEIGHT OF WATER ABOVE SEA LEVEL IN METRES.

THE SALTO DAM.

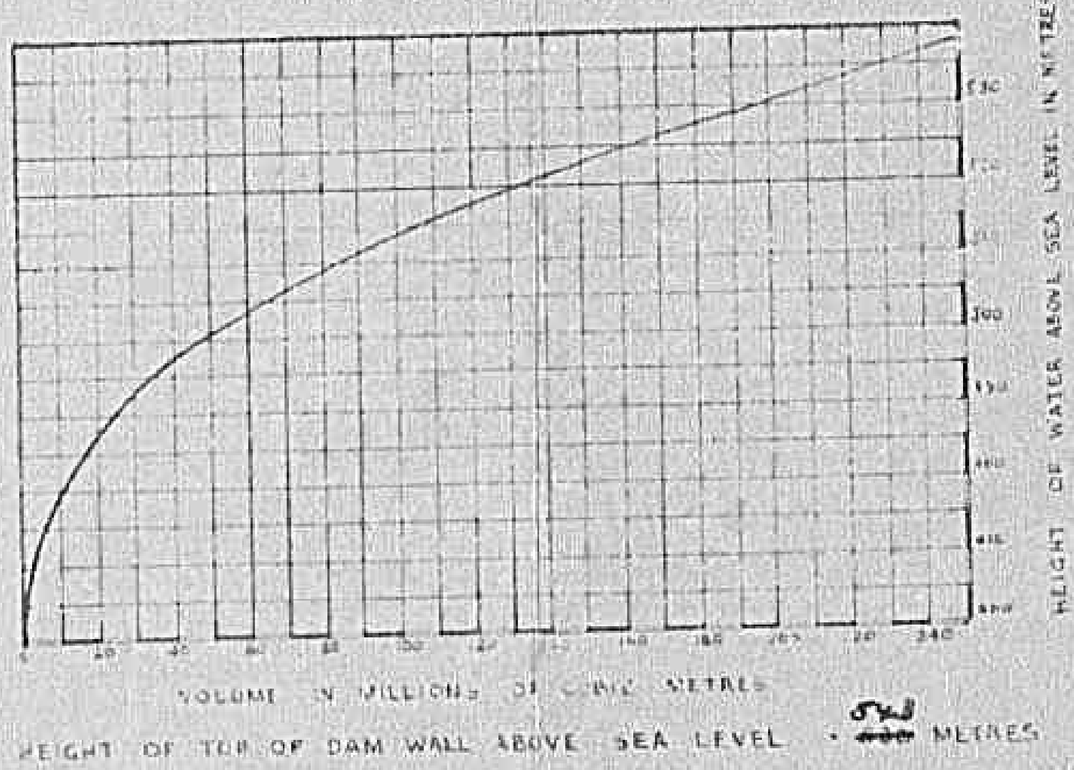


VOLUME IN MILLIONS OF CUBIC METRES

HEIGHT OF TOP OF DAM WALL ABOVE SEA LEVEL = 543 METRES

HEIGHT OF WATER ABOVE SEA LEVEL IN METRES

THE SALTO DAM.



HEIGHT OF TOP OF DAM WALL ABOVE SEA LEVEL - 524 METRES

SECRET

SUBJECT:- Vomano Dam

Headquarters,
A. A. I.,
2531/9/RE
17 May, 1944.

Central Electric Board.

1. Further to our 2531/9/RE of 11 May

2. Air cover of 13 May shows that the amount of water in the Vomano reservoir has increased, though the reservoir is not yet by any means full. A road which appeared in air photos of January is now partly submerged.

3. The following information was taken from air cover of 13 May:-

Area occupied by water in reservoir.....	1680 acres.	
Estimated volume of water	122,000,000 cu. m	
Maximum depth of water		36 metres
Length of Dam 139/514370		46½ metres
Height of Dam 139/514370		At least 47 metres
Sluices		No evidence of top sluices

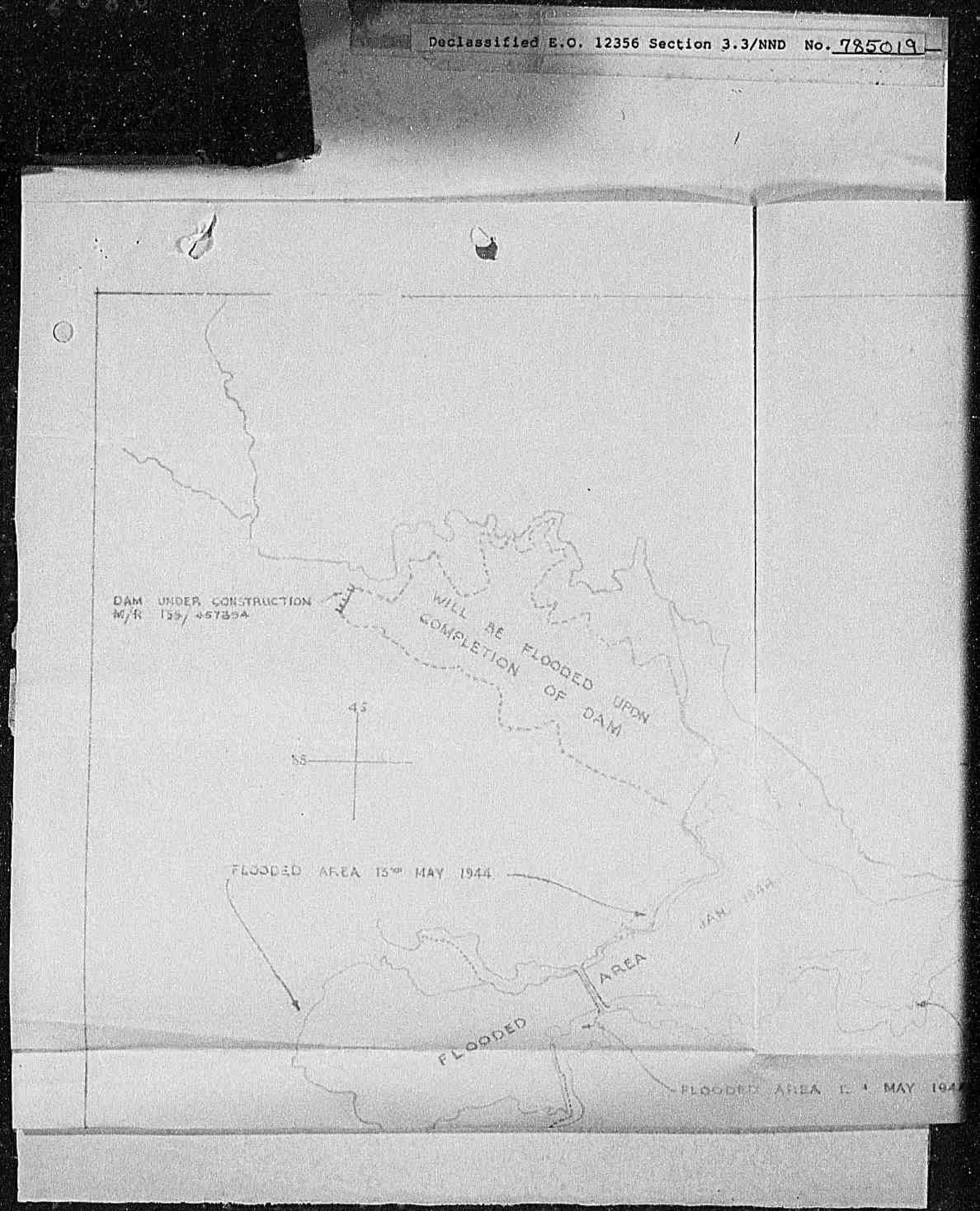
4. Drawings showing the reservoir and details of the dam at 139/514370 are attached.

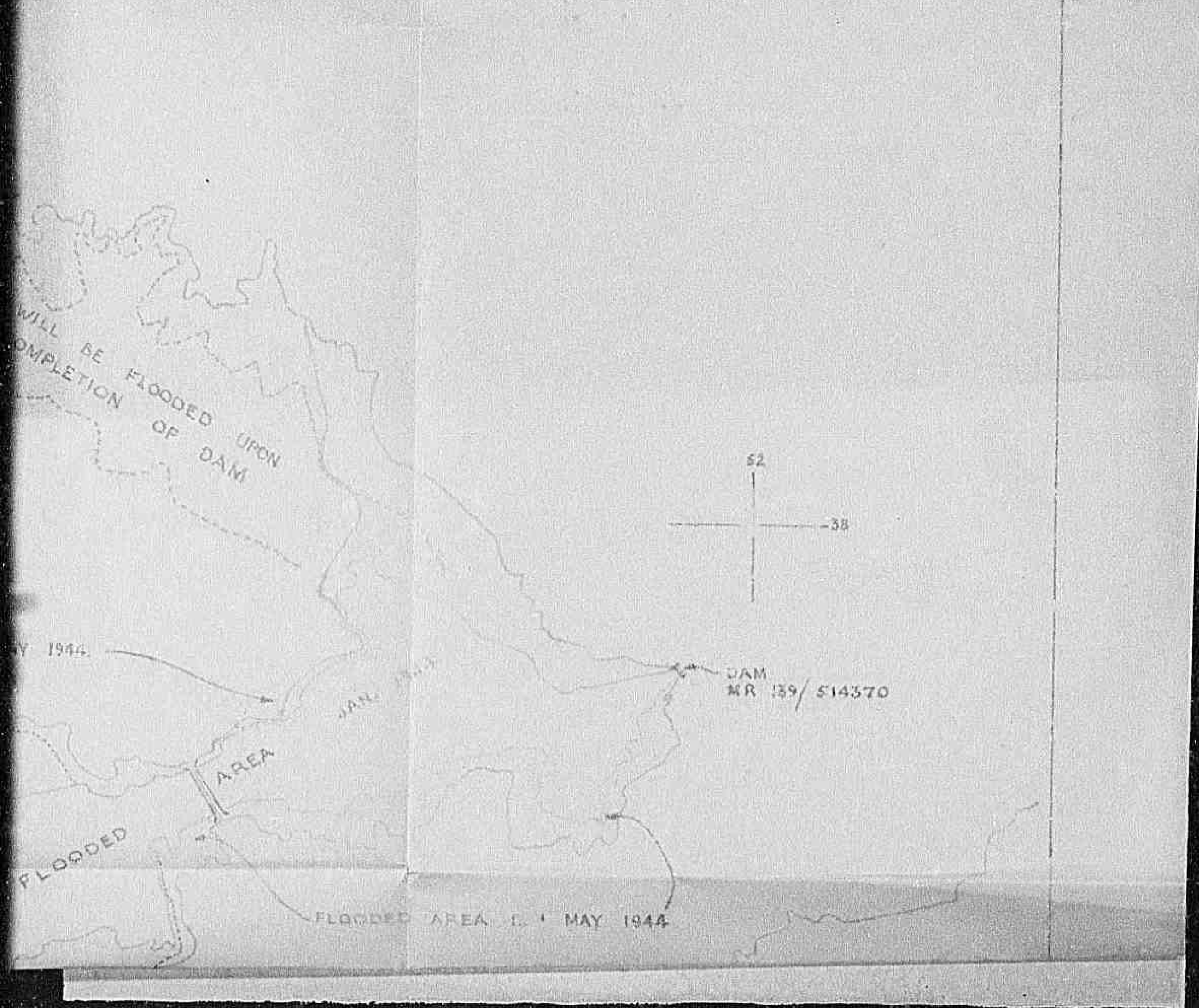
5. Cover of the dam itself has been re-ordered, since most of the detail in the cover of 13 May was obscured by cloud.

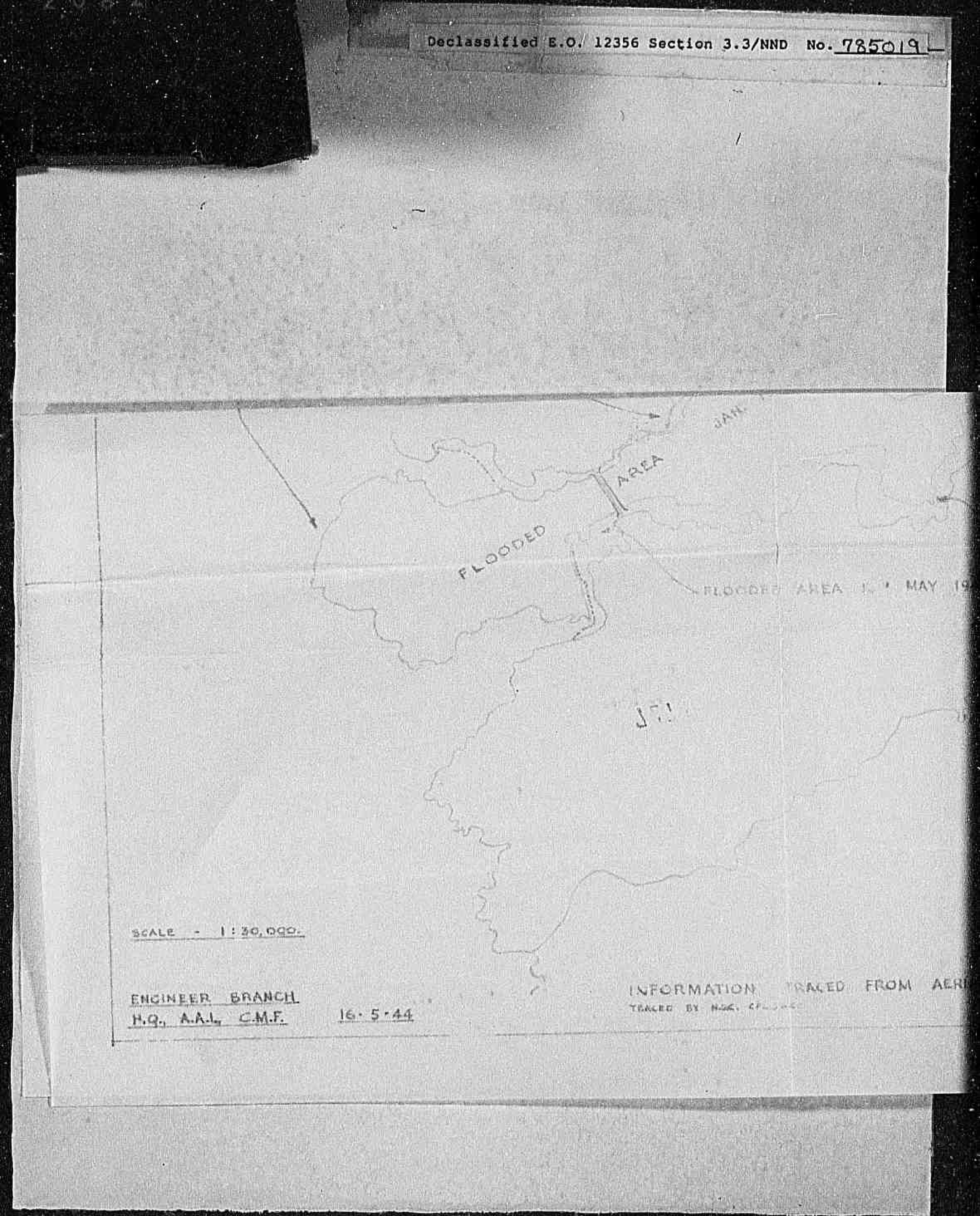
A. A. I. OFFICIAL 4/2 11/24 CENTRAL ELECTRICAL BOARD

Maj-Gen
for Major-General
Chief Engineer.

Copies to :- G Special Ops
G.S.I(a)
War Diary (2)



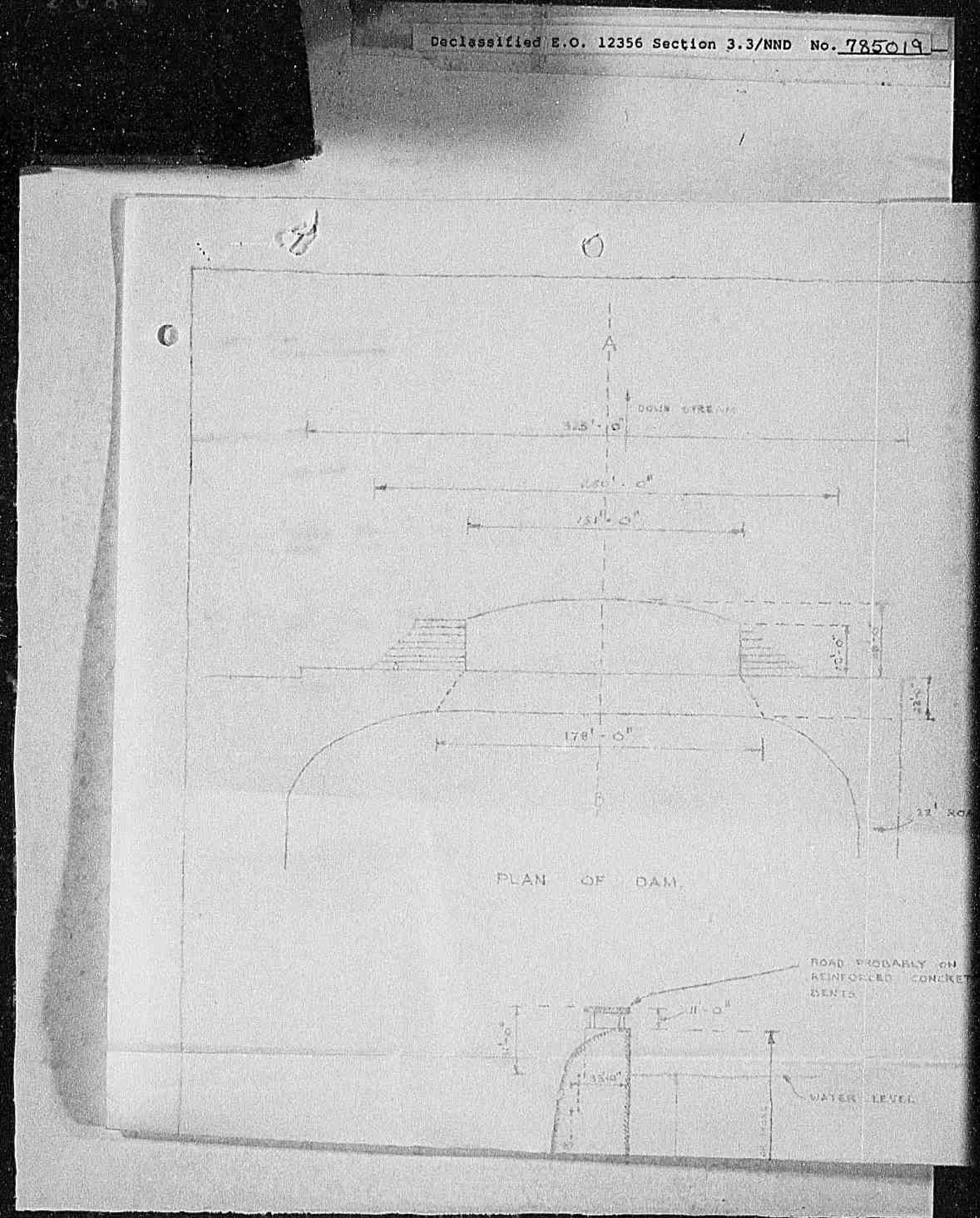


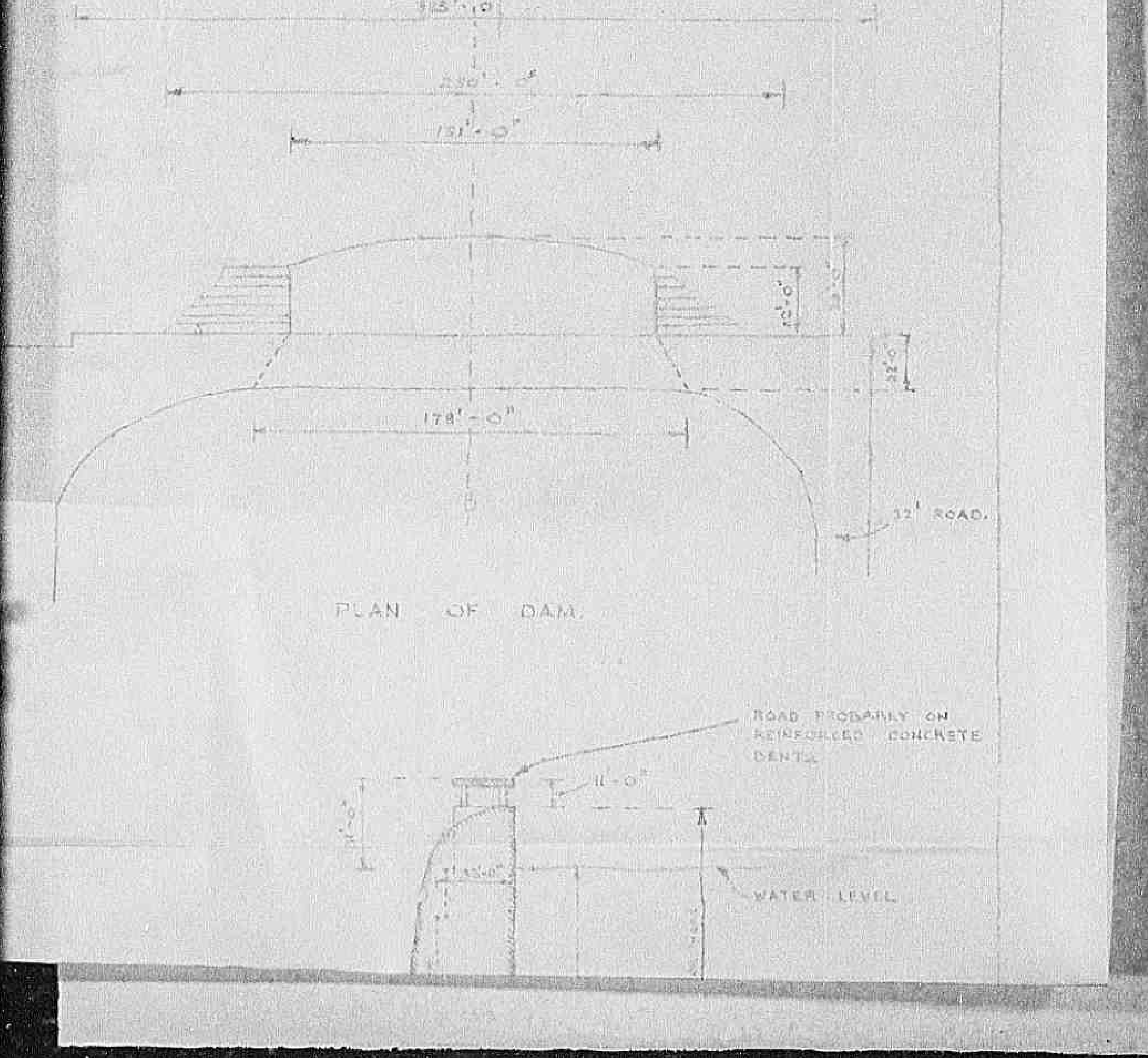


FLOODED AREA 1 & 2 MAY 1944

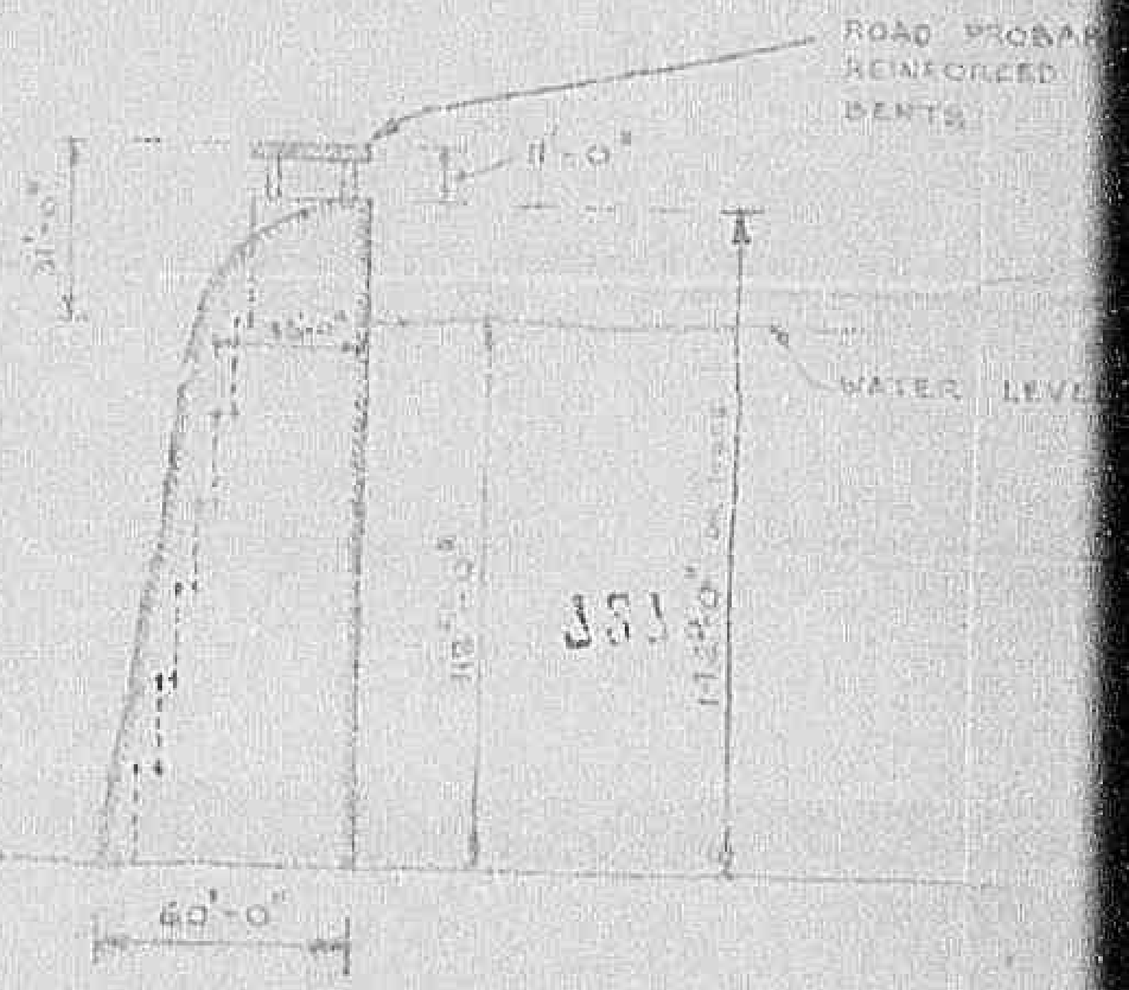
VOMANO RESERVOIR
PLAN No. INT/102/44

INFORMATION TRACED FROM AERIAL PHOTOGRAPH
TRACED BY M.C.C. CELLIER





PLAN OF DAM

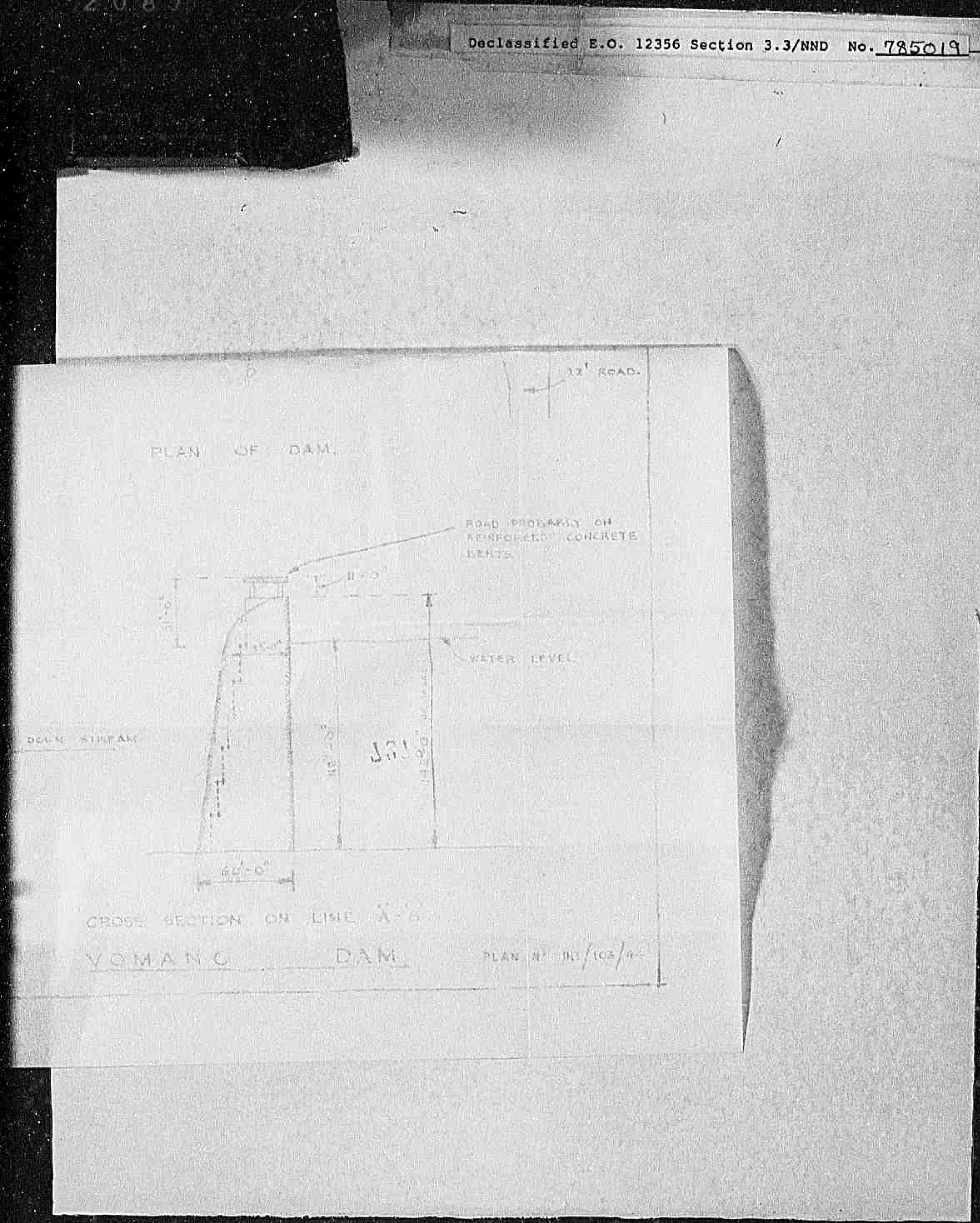


CROSS SECTION ON LINE A-B

ENGINEER BRANCH
H.Q. AAF CMF
12-5-44

VOMANO DAM

PLAN



(1)

SECRET

SUBJECT: Vomano Reservoir

Headquarters,
A. A. I.

2531/9/RE

11 May 1944

G(Special Ops)

1. Reference our 2531/9/RE/2 of 10 May.

2. Examination shows that the reservoir was incomplete, and only part full, in January. Even so, the area occupied by water was about 1500 acres and the estimated volume of water 90,000,000 cu. m.

3. Two dams were built or under construction, one in the gorge at 139/514370, the other across the valley at 139/457394. When these dams were completed, it was evidently intended to flood the whole area shown in the attached plan.

4. Later and better photo cover of the dams should be available 12 or 13 May.

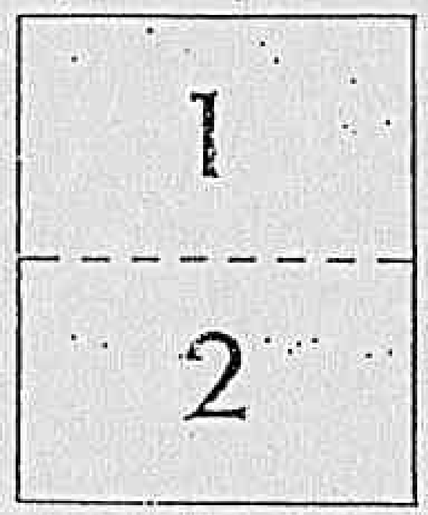
D.C. Bailey Major

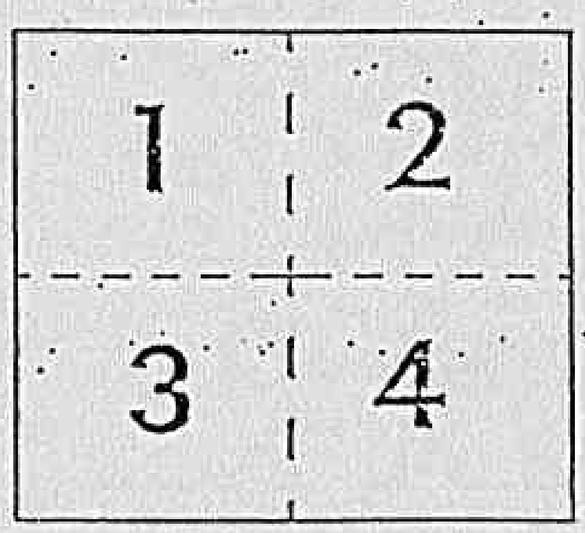
for Major-General
Chief Engineer

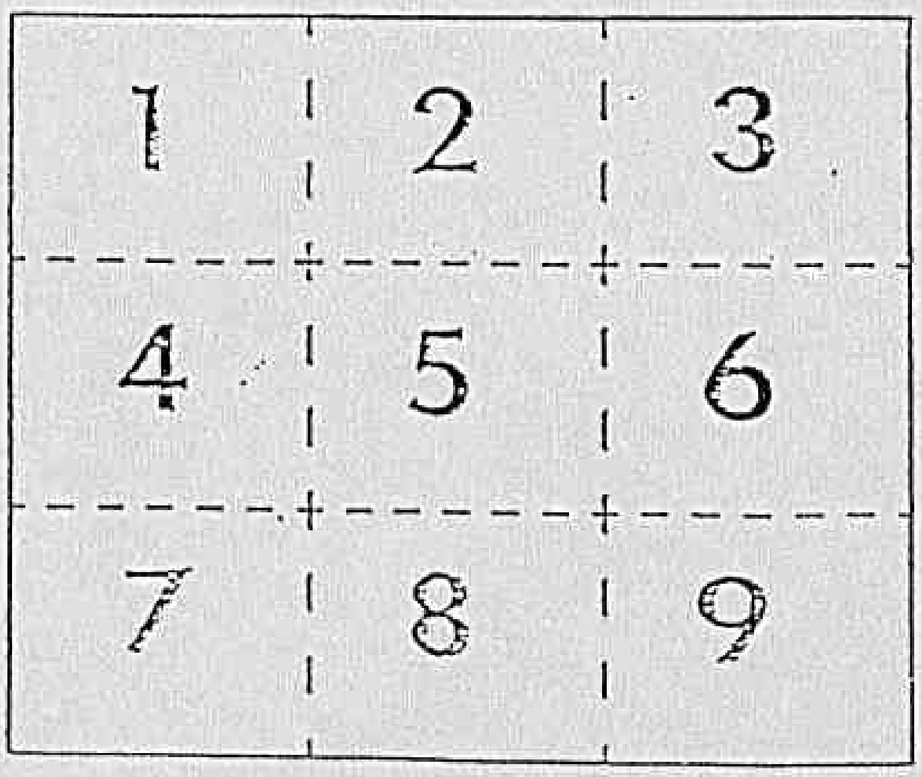
Copies to: Central Electric Board
OE 5 Corps
GSI (a)
War Diary (2)

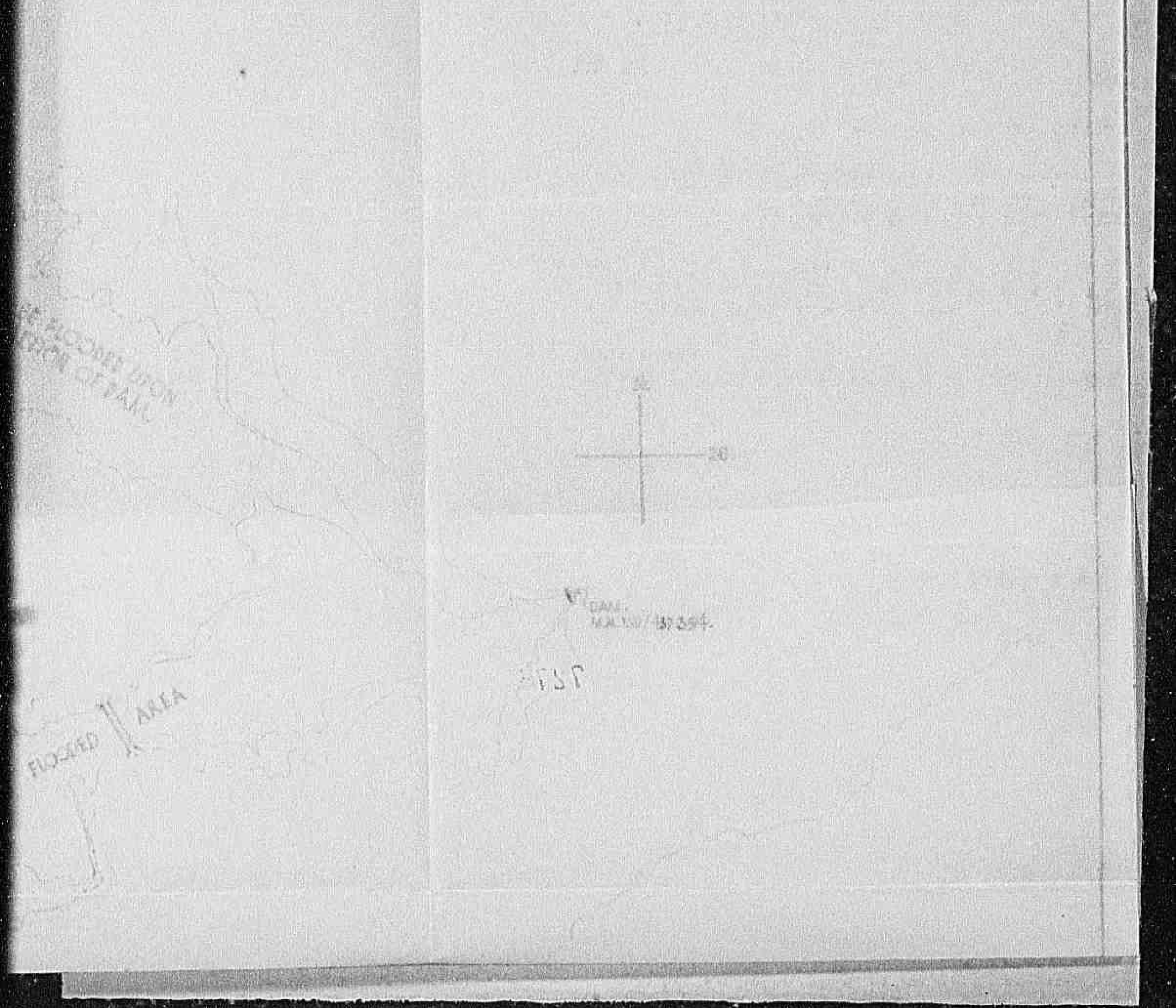
MAPS AND CHARTS TOO LARGE TO FILM
ON ONE EXPOSURE ARE FILMED CLOCKWISE
BEGINNING IN THE UPPER LEFT CORNER,
LEFT TO RIGHT, AND TOP TO BOTTOM.

SEE DIAGRAMS BELOW.









Engineer Services
H.Q. A.A.F. C.S.S.F. 11/6/44.

4/2 (3)

SUBJECT: PESCARA Dam.

Headquarters,
A. A. I.,
2531/9/CE/1
10 May 44.

CG FIFTH Army (for Engr),
CE EIGHTH Army,
CE 5 Corps,
Central Electric Board.

1. Herewith copy of air force photo interpretation report on the bombing of the PESCARA dam 147 965065. It appears likely that one of the three main sluices and one of the five side sluices were destroyed. As there is only a small head of water in this reservoir, the resulting rush of water was not great and, according to this report, little damage has resulted. The emptying of the reservoir will however put PESCARA III electric power station out of action.

2. Information regarding the height of water in the reservoir before bombing and stereo pairs of the dam, have been requested.

J.R. Bailey Major Hr

Major General,
Chief Engineer.

Copy to:- GSI(a),
G(Special Ops),
D Wks.

See (4)

7275

~~SECRET~~
PHOTOGRAPHS

PHOTOGRAPHIC INTERPRETATION REPORT NO.175 6TH MAY 1944

683 Squadron. B.425. 6th May, 1944 12.20 hrs 12,000 ft "F/36" 'A'
F/Lt. Carr.

POPOLI TO PESCARA

DAM EAST OF TORRE AT MR.B.965065.

DAMAGE TO STRUCTURE

A. 1. At least 3 direct hits.
2. A ~~weir~~ on the downstream side has been damaged.
3. There is quite definitely much more damage than is visible on the photographs.

B. DAMAGE TO APPROACHES

1. The approaches from both banks are cut.
2. Other tracks and roads are cut.

EFFECTS OF BOMBING ABOVE SLUICES.

1. The level on the dam has been reduced considerably.
2. At one point, for example, the width has been reduced from 200 yards to 20 yards.
3. Only the normal stream course now appears to contain water. (3007,3008)

EFFECTS OF BOMBING IMMEDIATELY BELOW DAM.

1. Little change seen here although one sand bank has been submerged.
2. The high river banks here would probably easily contain the flood water. (3006)

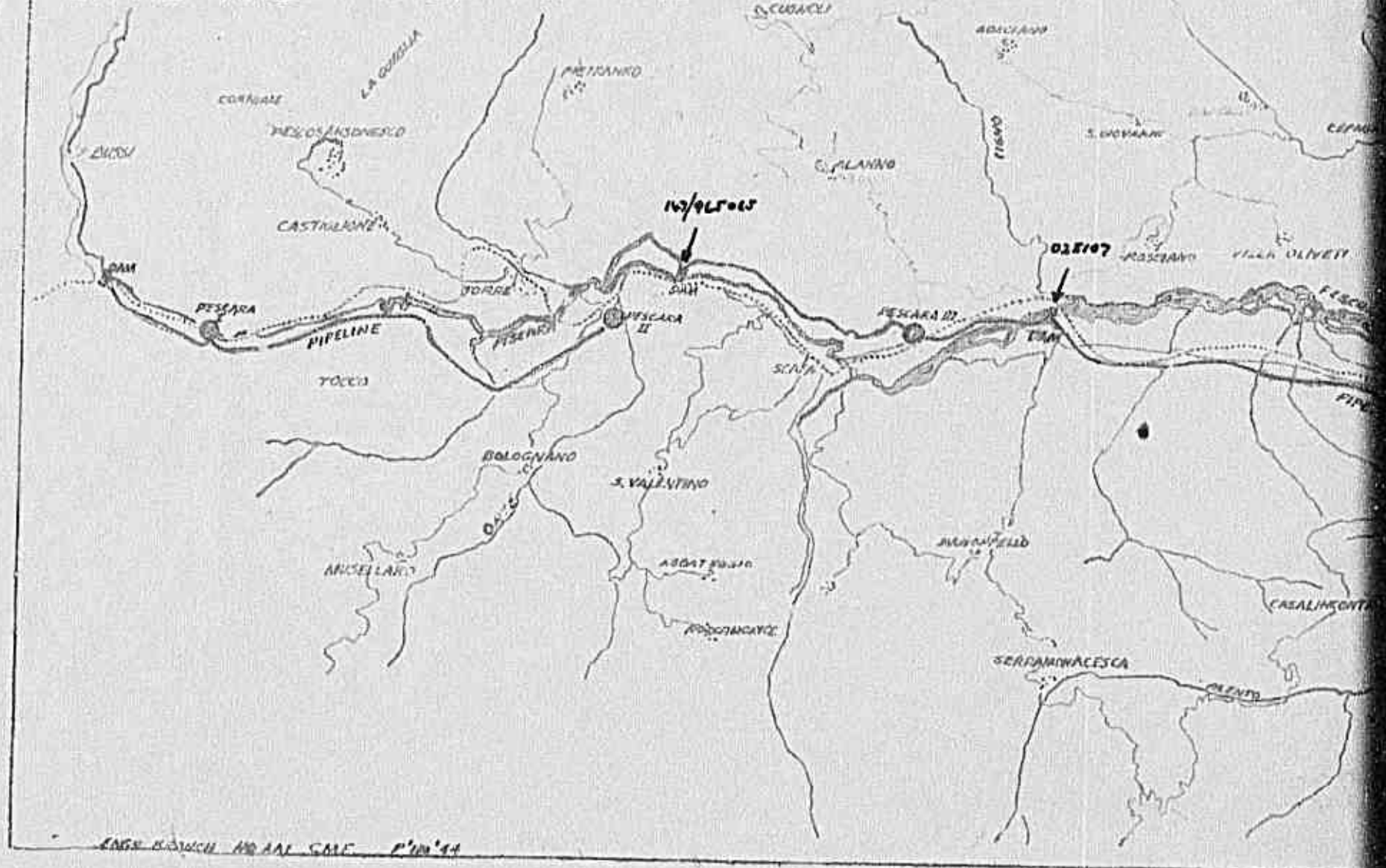
SLUICES AT MR. C. 025107

1. No significant change is observed here.
2. Any force that the flood waters may have had at this point was probably weakened by the width of the river above the sluices. (3010,3011)

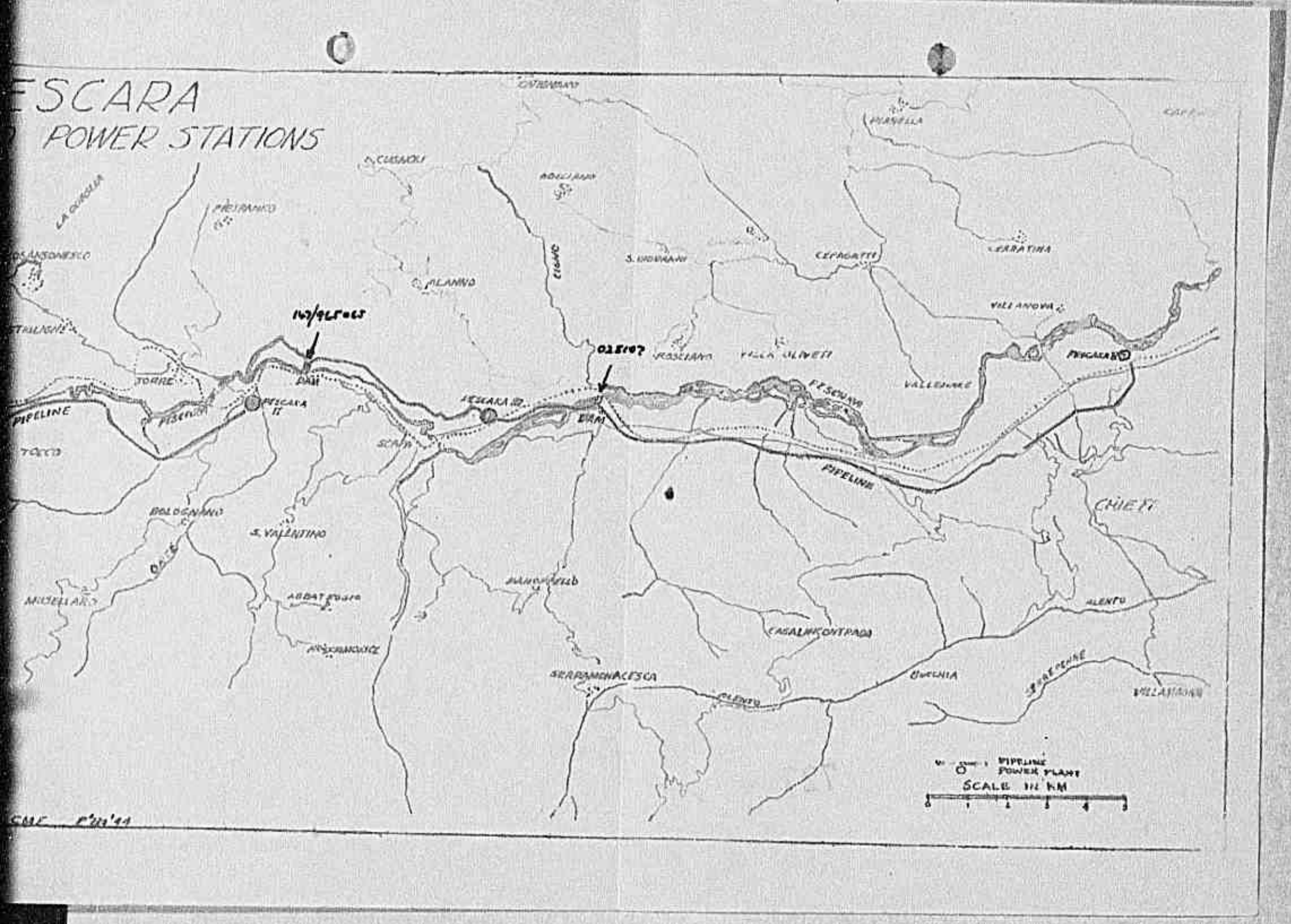
727

-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-

PESCARA
DAMS AND POWER STATIONS



EDGE BOSWELL AND ASSOC. 5/20/44



CONFIDENTIAL

A.A.I.
CENTRAL ELECTRICAL BOARD
APO 400

REF: CEB/4/2

11 May 1944

SUBJECT:- Hydroelectic Stations as Air Targets

TO:- CE HQ AAI

1. Ref your 2530/7/RE dated 5 May 44.

2. A study has been made of the hydroelectric plants, steam plants, and electric power substations in SICILY and ITALY which have been bombed and/or mined. The study may be summarized as follows :-

(a) In SICILY and Southern ITALY (below BARI) no hydroelectric plant or substation has been bombed and none has been mined. Three steam plants in SICILY were bombed and shelled, considerable damage being done in each case although in no case was the building completely wrecked. These steam plants were not mined.

(b) North of the line BARI/TANEGRO, the CAPUANO steam plant and VOLTURNO diesel plant were both severely bombed. The VOLTURNO plant was not mined; the CAPUANO plant was completely mined but many of the mines were rendered inoperative so that it has been possible to rehabilitate the plant. The FOGGIA substation was most severely bombed; it was not mined. BARI substation was neither bombed nor mined. FRATTAMAGGIORE substation was not bombed but was completely mined. The TORRE substation was severely bombed and afterwards heavily mined. No hydroelectric station now in Allied control has been bombed. The CARIGLIANO River hydro station has been heavily mined. The LETE hydro station has been heavily mined. The No 1 MATESE station lightly mined, and No 2 MATESE heavily mined.

3. The study of each case, in so far as information is available, indicates that whether or not power installations are mined depends more on the tactical situation than it does on bombing, ie. a station in use is not likely to be seriously damaged by mines if it is captured by quick forward movement.

4. No instance is known where enemy preparations for mining have been disrupted by bombing.

5. It is obviously more difficult to completely mine a station where the building has been knocked down but no instance is known to me of the complete demolition of a power house building by bombing. The effect of bombing in preventing demolition would seem to be largely psychological.

JAMES P. GROWDON,
COLONEL CE,
Vice Chairman, AAI - C.E.B.

Comments.

Agreed that if roofs and walls of Hydro-electric Station can be brought down on the plant it may prevent prepared demolition, but this can be achieved only by blast effect. A direct hit will of course cause irreparable damage to the plant and its associated equipment.

If bombing as suggested in CE letter 1 can have the effect of bringing down roofs and walls on the plant, it will certainly make rehabilitation and repair speedier and easier

SUBJECT:- Hyd -Electric Stations as ..r targets

CONFIDENTIAL

Headquarters
A. A. I.

2530/7/RE

5 May 44.

Central Electric Board

1. It has been suggested that hydro-electric stations might be bombed, using bombs with impact fuzes, with the object

(a) Of producing the greatest effect of destruction, with the least damage to vital plant

(b) Of disrupting enemy preparations for demolition.

If walls and roof of power stations are destroyed and plant is buried under debris it is thought unlikely that further demolition will be considered necessary by the Germans. Plant rescued from under debris may however be of great service to us.

2. Will you please submit your comments on this proposal.

CHESSHYRE

Lt Col
for Maj-Gen
Chief Engineer

Copy to: D.W.
File - 2531/6/RE