Declassified E.O. 12356 Section 3.3/NND No. 785019

ACC CEB/19/5

10000/150/732

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10000/150/732

SARDINIA
DEC. 1943 - MAR. 1944

Declassified E.O. 12356 Section 3.3/NND No. 785019

A.A.I.
CENTRAL ELECTRICAL BOARD
A.P.O.400

CEB/21/1

26 March 1944

SUBJECT:- Electric Power Plant Equipment.

TO:- Local Resources Section, HQ AAI (Adm Echelon)

1. Ref your letter, 17/36/LR dated 23 March 44, and letter and report attached thereto.

2. The report on power equipment in Sardinia is not in sufficient detail to determine whether or not any of such equipment should be removed for use at other sites.

3. As soon as feasable an officer will be sent to Sardinia to inspect electric power equipment and study the possibility of its use elsewhere.

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

Declassified E.O. 12356 Section 3.3/NND No. 785019

HQ AAI (ADM ECHELON)
LOCAL RESOURCES SECTION
C.M.F.

REF:- 17/36/LR 23 MARCH 44

To:- Chairman,
Central Electrical Board. (For attention of Colonel Growdon)

SUBJECT:- Electric Power Plant Equipment

1. I enclose a copy of letter L/1, dated 14 March 44, from the Allied Force Local Resources (Sardinian) Board together with a copy of the report mentioned.

2. May this Section please have your comments on para.4 of the letter.

Lieut.Colonel,
A.Q.M.G.,
Local Resources Section.

Copy to:- Chairman,
Electric Power Committee,
AFLR (I) B.

WGM

747

Declassified E.O. 12356 Section 3.3/NND No. 785019

COPY

ALLIED FORCES
LOCAL RESOURCES BOARD
(Sardinia)
APO 512 U.S. ARMY

L/1

14 March 1944

SUBJECT:- Electric Power Plant Equipment

To:- Local Resources Section,
HQ, ACMF (ADM ECHELON),
C.M.F.

1. Reference is had to the Minutes of the Electric Power Committee, AFLR (Italian) Board, dated 1 February 1944, which indicated urgent requirements on the Italian Mainland for the repair of electric power plants and/or the installation of auxiliary generating stations.

2. An investigation has been made by the Allied Commission for Sardinia as to the availability of surplus electric generating equipment here and report dated 12 March 1944 is attached for information.

3. In addition to the equipment indicated in the Allied Commission's Report, Lt.Col. Long, Vice-Chairman of this Board, has reported a complete Diesel engine generator set at the Tempio Refrigeration plant which is not in use.

4. Should any of the equipment indicated as available be of interest it is suggested that an electrical engineer who is conversant with the Italian Mainland requirements be sent to Sardinia to inspect the equipment.

For the Chairman:

(Sgd.) E.E. ALLWINE,
Colone, AUS,
Vice-Chairman

Incls: Copy of ACC Report.

Copy to: AFLRS
ACC Region 6

746

COPY

COPY

THERMAL
ELECTRIC POWER PLANT EQUIPMENT
IN SARDINIA

12 March 1944

1. General.

Investigation has been made to cover all thermal power plants in Sardinia to include units of power and necessity for local use.

The plants investigated are located at:- Cagliari
Porto Vesme
San Caterina
Sassari

Two small generating sets are located at Cagliari and are included in the report. General descriptive data follows in the above order.

2. Cagliari Power Station (S. Gilla)

(a) 2 Turbo Generators
1 - 1 at 7500 KVA
2 - 1 at 11000 KVA

(b) Power factor 0.8

(c) Primary motors
1 Turbo generator, Tosi-Marelli KW 6000
2 " " Stal- " KW 8800

(d) Pressure 27 kg/cmq

(e) Temperature 375° C

(f) Voltage 5 KV

(g) Rotation per minute: 3000

(h) Boilers:
1. 2 at 17 tons/steam load
2. 2 at 30 tons/steam load

(i) Fuel: Small size coal (Sulcis) on Riley type grate.

(j) The plant was built about 1928 and produces about 35,000,000 KWH per year. It is used as supplemental supply to the grid system for the entire Island to take care of the load when the hydro - plants are unable to operate at full capacity on account of water shortage or in dry seasons.

(k) The plant is complete and ready to operate and is essential and necessary unit and cannot be removed without serious loss to sustained output.

(l) No damage was done during bombing raids in 1943.

3. San Caterina Plant (Palmas Suergiu)

(a) 4 turbo generators
1. 2 at 12500 KVA (Tosi)
2. 1 at 11000 KVA (Stal)
3. 1 at 1900 KVA (Stal)

(b) Power factor 0.8

(d) Boilers:
1. 4 from 50 tons/steam hour
2. Pressure and Temperature:
(a) 3 units - 37 KQ/CMG - 400° C
(b) 1 unit - 27 KQ/CMG - 375° C

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Two small generating sets are located at Cagliari and are included in the report. General descriptive data follows in the above order.

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2 - 1 at 11000 KVA

(b) Power factor 0.8

(c) Primary motors

1 Turbo generator, Tosi-Marelli KW 6000
Stal- KW 8800

(d) Pressure 27 kg/cmq

(e) Temperature 375° C

(f) Voltage 5 KV

(g) Rotation per minute: 3000

(h) Boilers:
1. 2 at 17 tons/steam load
2. 2 at 30 tons/steam load

(i) Fuel: Small size Coal (Sulcis) on Riley type grate.

(j) The plant was built about 1928 and produces about 35,000,000 KWH per year. It is used as supplemental supply to the grid system for the entire Island to take care of the load when the hydro - plants are unable to operate at full capacity on account of water shortage or in dry seasons.

(k) The plant is complete and ready to operate and is essential and necessary unit and cannot be removed without serious loss to sustained output.

(l) No damage was done during bombing raids in 1943.

3. San Caterina Plant (Palmas Suergiu)

(a) 4 turbo generators

1. 2 at 12500 KVA (Tosi)
2. 1 at 11000 KVA (Stal)
3. 1 at 1900 KVA (Stal)

(b) Power factor 0.8

(c) Primary motors

1. 2 units at 12500 KW
2. 1 unit at 8800 KW
3. 1 Unit at 1500 KW

(d) Boilers:

1. 4 from 50 tons/steam hour
2. Pressure and Temperature:
   (a) 3 units - 37 KQ/CMG - 400° C
   (b) 1 unit - 27 KQ/CMG - 375° C

(e) Voltage - 5 KV

(f) Rotation per minute - 3000

(g) Fuel - pulverised local coal

(h) The plant was built in 1938 - 39 and is in first class condition except that the No.4 boiler and one transformer are not working due to damage by air raids in 1943. It is used on an average of 6 months per year, with an output of 70,000,000 KWH per year, to supplement the hydro electric plants at Tirso and Goghinas when dry seasons occur making a shortage of stored water.

(i) The plant forms an integral part of the grid supply system and is a necessity for use in operation in Carbonia Mining district.

(j) Air raids caused damage to one corner of the boiler house, one transformer and a residence, but the damage is minor and operations will not be handicapped.

4./

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4. Porto Vesme Plant of the Monteponi Co.

(a) 2 turbo generators

1. One 4500 KWH (Stal 1937 5200 HP)
2. One 4000 KWH (Tosi 5440 HP)
3. 3000 R P M
4. Output 2,500,000 KWH per month with maximum of 35,000,000 KWH per year.

(b) Boilers

1. Two at 17 tons/steam hour
2. 35.42 Kg/sq cm pressure - 400° C temperature

(c) Fuel

One boiler uses powdered coal, the other small local lump - automatic feed.

(d) The plant is an old one, but was remodelled in 1937 using new boilers and machinery. One corner of the building was blown off in an air raid in 1943 but the plant is complete and ready to operate. It normally runs the year round, furnishing 20,000,000 KWH of the required 50,000,000 KWH annual requirement of the Monteponi Co. in its mining operations. Normal purchases from the Soc. Elettrica Sarde amount to 30,000,000 KWH but at this time operations are greatly reduced.

(e) The plant is owned and operated by the Monteponi Company, a private mining organization. An engineer of the Soc. Elettrica Sarde is of the opinion that under normal conditions his corporation can furnish the power for all the mining operations needed, but if the season was a dry one and mining operations are in full operation a shortage of power would result. The need for this equipment would therefore need to be an emergency to warrant the removal of this plant. Since it is a private firm, a purchase price would need to be arranged.

5. Sassari Producer - Gas Plant

(a) 4 Gas producer sets - furnace and retorts. (bought 16 years ago and were old then)

(b) 4 engines - 2 cylinders (Societa Italiana Larger - Wolf). 250 HP each (Nos.6743, 6441, 6443 and 7479).

(c) Generators.

1. Three 3000 volts - 98 Amps - 50 cycle A.C. 300 KW
2. One 3150 volts - 42 amps - 50 cycle A.C. 230 KW

Declassified E.O. 12356 Section 3.3/NND No. 785019

One boiler uses powdered coal, the other small local lump - automatic feed.

(d) The plant is an old one, but was remodelled in 1937 using new boilers and machinery. One corner of the building was blown off in an air raid in 1943 but the plant is complete and ready to operate. It normally runs the year round, furnishing 20,000,000 KWH of the required 50,000,000 KWH annual requirement of the Monteponi Co. in its mining operations. Normal purchases from the Soc. Elettrica Sarde amount to 30,000,000 KWH but at this time operations are greatly reduced.

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(a) 4 Gas producer sets - furnace and retorts. (bought 16 years ago and were old then)

(b) 4 engines - 2 cylinders (Societa Italiana Larger - Wolf). 250 HP each (Nos.6743, 6441, 6443 and 7479).

(c) Generators.

1. Three 3000 volts - 98 Amps - 50 cycle A.C. 300 KW
2. One 3150 volts - 42 amps - 50 cycle A.C. 230 KW
3. 1 Alternator - 175 HP - 16 Amps - 600 RPM - 1200 volts
4. 1 electric welding outfit.

(d) Transformers.

1. 3 - 70,000 volt - 15000 volts
2. 8 - 15,000 volt - 250/150 volts

(e) Sassari has population of 55,000 and uses average 20,000 KWH daily - Plant has daily capacity of 24,000 KWH.

(f) Plant has not been operated in about 6 years, but is in good condition and can be used if and when needed. All power in this area now comes from the hydro electric net.

(g) Fuel needed is imported Anthracite. Local semi-anthracite coal from Siemi has not been tried but the plant Superintendent at Sassari for the Soc. Elettrica Sarde thinks that the sulphur content is too high for use.

(h)/

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(h) This plant is definitely surplus and could be used where needed, if fuel is supplied.

6. Producer Gas Plant at Cagliari Salt Works.

(a) 2 Generators, engines and producers for 550 Volt -
3 x 147 amps - 290 KW.

(b) Fuel is Anthracite Coal.

(c) Condition is good and owner says he can operate without the plants.

(d) Transformers 5000 volts to 500 volts and 500 volts to 160 volts.

(e) Owned by a private firm which will negotiate a sale if needed.

7. Diesel Plant.

There is a complete Diesel engine - generator set 3 KW - 110 volt (DC) with switchboard at the headquarters shop of the 13th Regiment Italian Army at Cagliari. It is not in use.

8. Summary.

From the data listed above, it would seem that the only plants that can be definitely moved from the area would be the Producer Gas Plants at Sassari (paragraph 5) and Cagliari (paragraph 6) plus the small Diesel Plant at Cagliari (paragraph 7). The thermal plants at Cagliari (2) and San Caterina (3) are necessary for power production for the Island. The Plant at Porto Vesme (4) has possibilities if the need justifies the removal which may or may not interfere with mining operations by the Monteponi Company. 7 1/2

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Declassified E.O. 12356 Section 3.3/NND No. 785019

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SOCIETÀ ELETTRICA SARDA

ANONIMA - SEDE IN ROMA

DIREZIONE

Capitale L. 150.000.000 interamente versato

Telegrammi: ELETTROSARDA Cagliari - Corrispondenza: Casella Po
Telefoni: Direzione 2424 - Uffici 2342 - 3501 - 350

DA CITARE NELLA RISPOSTA

A - D/v/310/ 712

FEB - 2 1944

ESPRESSO

Arborea, 22 gennaio 1944

AL CAPO DELLA MINING DIVISION
FORWARD ECHELON H.Q. 2675 Reg. A.C.C.
A.P.O. 394

Con riferimento alla Vs/ 29/12 u.s. ed allegato pro-memoria in data 3/1/1944 giuntoci il 20 u.s. rimettiamo qui unita la risposta al questionario da Voi formulato.

Distinti saluti.-

2 allegati

SOCIETÀ ELETTRICA SARDA
IL DIRETTORE

743

VISTI

2 All.

Mod. 244 d - 9-43-3000

Declassified E.O. 12356 Section 3.3/NND No. 785019

Società Elettrica Sarda

Arborea, 21 gennaio 1944

RISPOSTA AL QUESTIONARIO 3 GENNAIO 1944
DELLA MISSIONE ALLEATA

1°) Le informazioni sono fornite dall'Ing.Direttore della Società.

2°) Si è preso nota e ci si atterrà a quanto richiesto.

3°) Si unisce la mappa richiesta: Nella legenda sono indicate le precisazioni richieste.

4°) La mappa di cui al punto 3°) contiene anche le indicazioni richieste al punto 4)

5°) Impianti termici:

I°) - Centrale termoelettrica di S.Gilla - Cagliari

a) Numero 2 turboalternatori

b) Potenza apparente di ogni unità n°1 turboalternatore da 7500 KVA.
n°1 turboalternatore da 11000 KVA.

c) Fattore di potenza cosØ = 0,8

d) Potenza dei motori primi:
n°1 turboalternatore Tosi-Marelli Kw. 6000
n°1 " Stal " 8800

e) Pressione 27 Kg/cmq. - Temperatura vapore 375 °C.

f) Voltaggio: 5 KV.

g) Giri al minuto: 3000

h) Ditta costruttrice:
gruppo da 7.500 KVA: Tosi-Marelli
gruppo da 11000 KVA: Stal.

i) Caldaie: n°4 - due da 17 tonn/h.di vapore; due da 30 tonn.h. di vapore.

l) Tipo di combustibile: carbone minuto bruciato su griglia tipo Riley

m) Il turboalternatore da 7500 KVA Tosi-Marelli è attualmente fuori servizio per guasto alla turbina alta pressione (spalettatura del rotore e statore; deformazione dell'asse).

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Mod 244 - 2/41 - 2000

VISTI:

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II° - Centrale termoelettrica di S.Caterina - Palmas Suergiu

a) Numero 4 turboalternatori

b) Potenza apparente di ogni unità:
n°2 turboalternatori da 12.500 KVA -
n°1 turboalternatore da 11.000 KVA -
n°1 turboalternatore da 1.900 KVA -

c) Fattore di potenza cosØ = 0,8

d) Potenza dei motori primi:
n°2 unità da 12.500 Kw.
n°1 unità da 8.800 Kw.
n°1 unità da 1.500 Kw.

e) Pressione e temperatura:
n°3 unità - 37 Kg/cmq. - 400 °C.
n°1 unità - 27 Kg/cmq. - 375°C.

f) Voltaggio: 5 KV.

g) Giri al minuto: 3.000

h) Ditta costruttrice:
- gruppi da 12.500 KVA: Tosi-Brown Boveri
- gruppo da 11.000 KVA: Stal
- gruppo da 1.900 KVA: Stal.

i) Caldaie: n°4 da 50 tonn/h.di vapore

l) Tipo di combustibile: carbone polverizzato

m) La IV^ caldaia ed il 3° trasformatore sono attualmente fuori servizio in seguito a danneggiamento della centrale per offesa aerea.

7.40

Note:

a) Esiste a Sassari una piccola vecchia centralina termica con motori a gas,ma data la nessuna importanza della centrale ed il suo stato di conservazione non si è ritenuto di doverla segnalare nei suoi dettagli.

b) Per assicurare il funzionamento delle centrali termiche occorre facilitare l'approvvigionamento di materiale di consumo,e pezzi di ricambio. Si segnalano come particolarmente urgenti:
Fosfato trisodico ed acido solforico per accumulatori
Occorre provvedere inoltre con sollecitudine agli olii lubrificanti,

Mod 244° - 2/41 - 2000

VISTI:

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ed isolanti nonchè i pezzi di ricambio ed ai vari materiali segnalati sia al Comando Militare - Ufficio Affari Civili - che all'Unione degli Industriali.

6°) Impianti Idraulici

I° - Centrale del Tirso - I° salto

a) Numero 4 gruppi turbina-alternatore

b) Potenza apparente di ogni unità:
- n°2 unità da 9.000 KVA
- n°2 unità da 5.500 KVA.

c) Fattore di potenza: cosØ = 0,7 per tutte le unità

d) Potenza dei motori primi:
- n°2 unità da 4.400 Kw.
- n°1 unità da 5.300 Kw.
- n°1 unità da 6.600 Kw.

e) Tutti i motori primi sono turbine a reazione tipo Francis

f) Altezza di caduta sotto la quale funziona l'impianto: cariabile da m.27 a m.54.

g) Voltaggio di ogni unità: 5 KV.

h) Giri al minuto: 427

i) Fabbrica costruttrice delle turbine: Ditta S.Giorgio
Fabbrica dei due alternatori:
- da 5.500 KVA: Metropolitan Vickers -
- da 9.000 KVA: Compagnia Generale di Elettricità

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l) Altezza massima delle diga: m.70 (dalle fondazioni)

m) Capacità complessiva del serbatoio: 400.000.000 mc.

n) Capacità complessiva in Kwh.del serbatoio: circa 30 milioni di Kwh.

o) Riserve nel serbatoio al 19/1/44:

quota m.90,62 sul mare (metri d'altezza d'acqua utili per produzione energia: 10,62)
metri cubi di acqua: circa 130 milioni
Kwh. circa 9,4 milioni.

Dati presumibili delle condizioni sulle quali si troverà il serbatoio alla fine della stagione delle pioggie (aprile 1944):

Mod 244 - 2/41 - 2000

VISTI:

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E' in funzione all'andamento della stagione delle pioggie ed al consumo dell'energia elettrica.
Ammesso un afflusso al serbatoio pari alla media dei vari anni si può ritenere,in via di orientamento,che alla fine della stagione delle piogge il livello del lago sarà verso le maggiori quote se da parte delle Autorità militari sarà consentito raggiungere con l'invaso tali quote.

p) Tutte le unità sono in efficienza.

q) L'invaso del Tirso era stato limitato all'inizio della guerra; era poi stata tolta ogni limitazione nell'aprile 1942; è stato limitato a quota 90 nel maggio 1943; attualmente si sta esaminando il problema con le Autorità Militari per stabilire a quale quota dovrà essere limitato l'invaso di tale lago.

IIº - Centrale del Tirso - 2º Salto

a) Nº1 gruppo turbina alternatore

b) Potenza apparente: 4.500 KVA.

c) Fattore di potenza: cosØ = 0,7

d) Potenza motore prima; 4.000 Kw.

e) Il motore primo è una turbina ad elica

f) Altezza media di caduta sotto la quale funziona l'impianto: m.16

g) Voltaggio: 5 KV.

h) Giri al minuto; 214.

i) Fabbrica costruttrice:
- della turbina: Ditta San Giorgio
- dell'alternatore: Brown Boveri

l) Altezza massima della diga: m.26

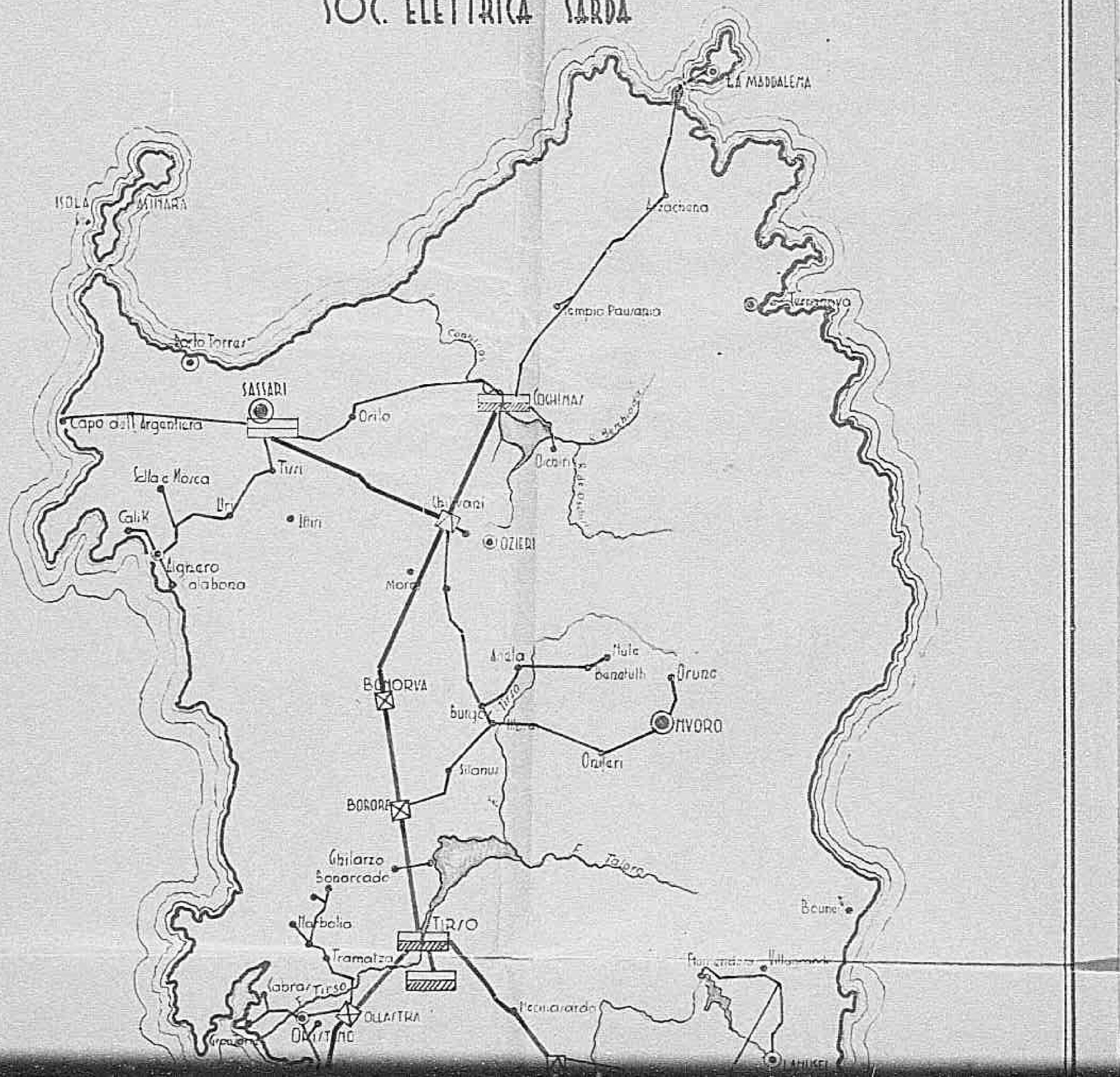
m) Capacità utile del serbatoio per la regolazione giornaliera: mc.1.100.000.
L'impianto però utilizza l'invaso del 1º salto che,come è stato detto,è di circa 400 milioni di mc. e quindi la riserva in Kwh.dell'impianto è di circa 11 milioni di Kwh.

n) Il gruppo è in efficienza.

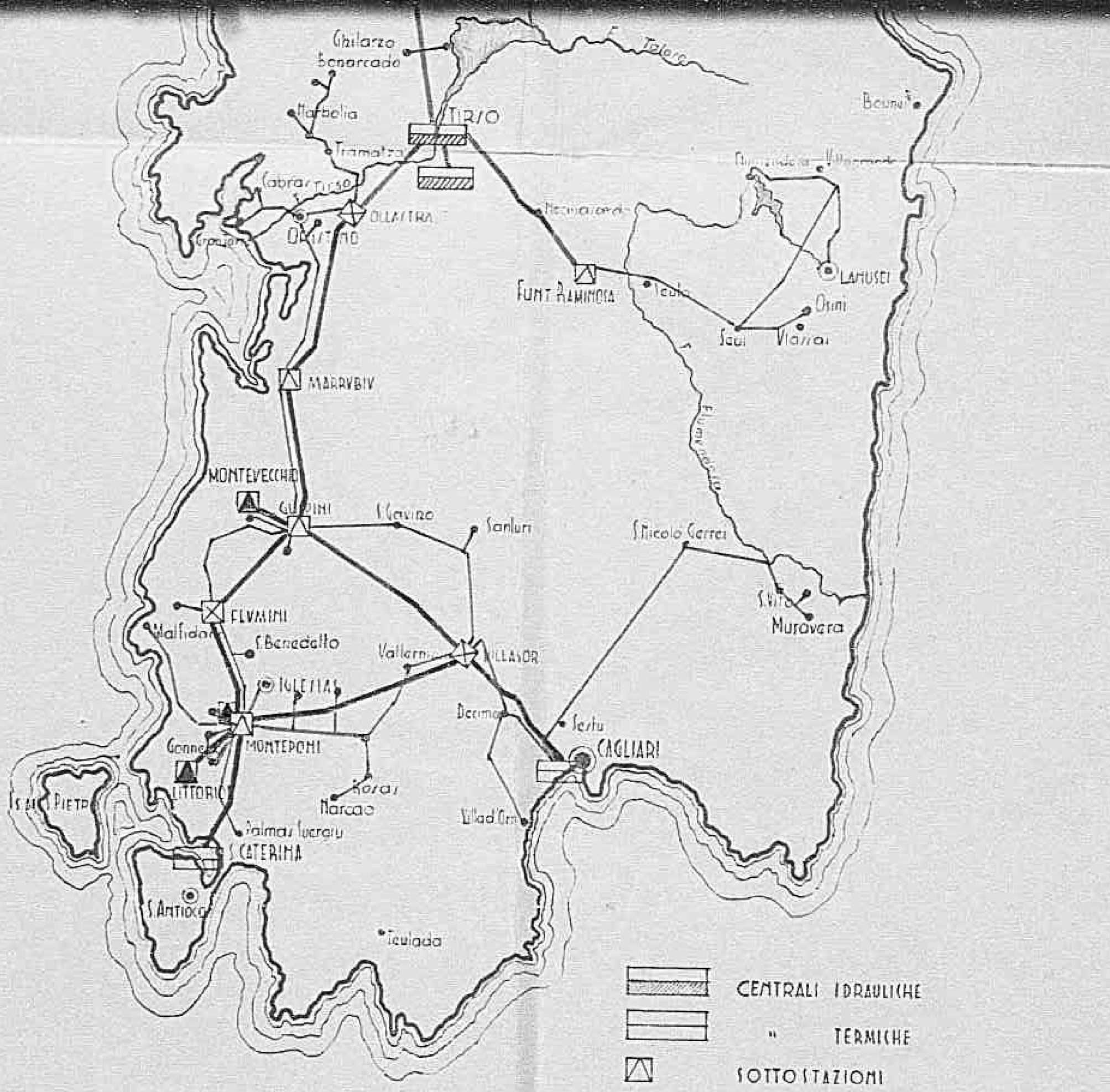
Mod 244 - 2/41 - 2000

VISTI:

LINEE DI TRASPORTO E DISTRIBUZIONE DI PROPRIETA' DELLA SOC. ELETTRICA SARDA



Declassified E.O. 12356 Section 3.3/NND No. 785019



SCALA 1:750.000

ARBOREA 20 - 1 - 44

Declassified E.O. 12356 Section 3.3/NND No. 785019

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III° - Centrale del Coghinas

a) Numero due gruppi turbina-alternatore - numero due gruppi turbina-dinamo.

b) Potenza apparente di ogni unità:
- n°2 gruppi turbina-alternatore da KVA.7.500
- n°2 gruppi turbina-dinamo da 6.000 Kw.

A ogni gruppo turbina-dinamo è anche collegato un alternatore volano da 2.000 KVA.

c) Fattore di potenza per tutti gli alternatori: cosØ = 0,8

d) Potenza dei motori primi:
- n°4 unità da 8.100 Kw.

e) Altezza media di caduta sotto la quale funziona l'impianto: m.90

f) Voltaggio:
- degli alternatori: 5 KV.
- delle dinamo: 0,3 KV.

g) Giri al minuto: 500

h) Fabbrica costruttrice:
delle turbine: S.Giorgio -
degli alternatori da 7.500 KVA.:Compagnia Generale di Elettricità
degli alternatori da 2.000 KVA.: San Giorgio -
delle dinamo: Brown Boveri.

i) Altezza massima della diga: m.58

736

l) Capacità complessiva del serbatoio: 250.000.000 mc.

m) Capacità complessiva in Kwh.del serbatoio: 40.000.000 Kwh.

n) Riserve nel serbatoio al 19/1/44:

quota m.155,11 sul mare (m.d'altezza d'acqua utile per la produzione di energia: 15,11)

metri cubi di acqua: 124.000.000

Kwh. circa 17 milioni.

Dati presumibili delle condizioni nelle quali si troverà il serbatoio alla fine della stagione delle pioggie (aprile 1944):

Mod 244 e - 2/41 - 2000

VISTI:

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E' in funzione all'andamento della stagione e al consumo di energia elettrica. Ammesso un afflusso al serbatoio pari alla media dei vari anni, si può ritenere in via di orientamento che alla fine della stagione delle pioggie il livello del lago sarà verso le quote massime.

o) Tutte le unità sono in efficienza.

7°) Sottostazioni di trasformazione

Nominativo	Trasformatori	Rapp. di trasform.	Potenza unitaria KVA.	Potenza totale KVA.	Cosφ di targa
CAGLIARI	3	7000/5000	7.500	22.500	0,8
GUSPINI	3	70000/15000	4.000	12.000	0,75
MONTEPONI	2	70000/15000	5.000	10.000	0,8
MARRUBIU	2	70000/15000	3.000	6.000	0,8
CHILIVANI	1	70000/15000	1.350	1.350	0,8
SASSARI	2	70000/15000	2.750	5.500	0,8
F.RAMINOSA	2	70000/15000	4.000	8.000	0,8

Note:

a) Benchè si richiedano i dati delle sottostazioni della potenza di almeno 2.000 KVA si è ritenuto d'indicare anche la sottostazione di Chilivani di KVA.1.350, data la sua importanza.

b) Fra le sottostazioni è stata enumerata quella della centrale termica di Cagliari perchè quando la centrale è ferma, come attualmente, essa funziona da sottostazione per l'alimentazione di Cagliari di alcune linee a 15 KV.

SOCIETÀ ELETTRICA SARDA
IL DIRETTORE

Mod 244 - 2/41 - 2000

VISTI:

Declassified E.O. 12356 Section 3.3/NND No. 785019

ALLIED MILITARY GOVERNMENT
INTER OFFICE MEMO

From: MINING DIVISION, Rm. No. 46

SUBJECT: Electric Power Plants - Sardinia. FILE No 412.4

TO : Electric Power Mission, Rm. No. 40. 13 January 1944

1. In a letter dated 7 January 44 received today from Lt. Colonel Koenig, Chief, Mining Division, regarding the electric power plants in Sardinia he states:

"Tell Col. Growdon that I did not have time to see the electric plants (and no transportation, incidentally), but I submitted a complete questionnaire to the Electric Company, the answers to which will be sent to me at Naples. This will give him the dope he needs. I am sorry about this, but I had to come here to button up my immediate problems."

For the Chief, Mining Division:

CARROLL S. CARTER,
Lieutenant Colonel, C. E.,
Executive Officer, Mining Division.

Declassified E.O. 12356 Section 3.3/NND No. 785019

SOCIETA ELETTRICITA SARDA

3 January 1 944

ANSWER TO QUESTIONAIRE OF JANUARY 8, 1944
FROM THE ELECTRIC POWER MISSION

---

1) The following information is furnished by the Engineer Director of the Societa Elettricita Sarda.
2) We ae very happy to cooperate, and are at your disposition
3) Attached is a map of Sardinia: the legend shows all the necessary information.
4) The map also contains the information asked in par. #4
5) Thermal Plants

1. Thermal electric plant of S.Gilla, Cagliari.
   a) 2 Turbine alternators
   b) Apparent power of ea. unit
      1 Turbine alternator 7,500 KVA
      1 " " 11,000 KVA
   c) Power factor Cos .8
   d) Rated output of each unit
      1 Turbine alternator Tosi-Marelli 6000 KW
      1 Turbine " Stal. 8800 KW
   e) Pressure 27 Kq/cmq - Vapor Temperature 375 C.
   f) Voltage 5 KV
   g) R.P.M. 3000
   h) Constructed by: - 7500 KVA Tosi Marelli
      11000 KVA Stal
   i) Boilers - 4 - 2 generates 17 ton/h of vapor; 2 of 30 ton/h
   l) Type of combustion; minute coal burnedon Riley type grates
   m) The 7500 KVA Tosi Marelli is not in service because the high pressure turbine is broken (the housing of the Rotar & Stator; Deformation of the shaft)

II Thermal Electric plants of S.Caterina - Palmas - Suergiv.
   a) 4 Turbine Alternators
   b) Apparent power of ea:
      2 alternators at 12500 KVA
      1 " " 11000 KVA
      1 " " 1900 KVA
   c) Power factors Cosi 8
   d) Rated capacity
      2 at 12500 KW
      1 at 8800 KW
      1 at 1500 KW
   e) Pressure and Temperature
      3 units 37 Kq/cmq - 400 C.
      1 unit 27 Kq/cmq - 375 C.
   f) Voltage 5 KV
   g) R.P.M. 3000
   h) Constructed by:
      2 of 12500 KVA Tosi - Brown - Boveri
      1 of 11000 KVA Stal
      1 of 1900 KVA Statal

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i) Boilers - 4 - Generates 50 ton/h of vapor
l) Combustion; pulverized coal
m) The 4th Boiler and the 3rd transformer are out of service due to damage of the station during an air raid.

Note

a) There is a small odd thermal plant at Sassari with gas motors due to its unimportance we have not gone into the details. It is in good condition.

b) To assure the operation of the thermal plants it is necessary to supply fuel and spare parts. Our urgent needs are:
Fosfate of Soda, sulfiric acid for accumulators, lubricating oils insulators and spare parts.

6) Hydro Plants

I. Tirso - ist jump.

a) 4 Turbine alternators
b) Rated capacity
2 at 9000 KVA
2 at 5500 KVA
c) Power Factor Cosi 7 for all the units.
d) Rated capacity
2 at 4000 KW
1 at 5300 KW
1 at 6600 KW
e) All prime movers are reaction turbine, type Francis
f) Av. head 40.7 meters
g) Voltage of each unit 5 KV
h) RPM 427
i) Turbines constructed by S.Giorgio
5500 KVA Alternator - Metropolitan Vichers
9000 KVA " - Compagnia Generale di Elettricita
l) Max. height of Dam 70 meters (From Fondation)
m) Total Capacity of Resevoir 400,000,000 mc
n) Total Capacity in kvh of the resevoir 30,000,000 of Kwh
o) Reserve in resevoir 19/1/44
90,62 m above sea level (height of water usable for production of energy 10.62 m)
Cubic m. of water about 130,000,000
Kwh about 9,400,000

732

These are the presumable conditions of the Resevoir at the close of the rain season (April 1944):
The plants are in operation relatively with the raing season and to the consuption of electric power.
Assuming an average flow to the resevoir it is believed that by the end of the raing season the level of the lake will react its maximum height if the military authorities consent to such a level.

p) All the units are inefficient operation
q) The Inflow of Tirso was limited at the begining of the war, all obstruction was removed in April 1942. It was limited to a quota of 90 in may 1943, at present, examinatdon is being made with the military authorities to estabilish a quota for the lake.

II Hydro Plants Tdrso 2 Jump.

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a) 1 Turbine alternator
b) Apparent Power, 4500 KVA
c) Power factor Cosi 0.7
d) Rated capacity 4000 KW
e) The first motor is a turbine of propeller type
f) Av. Head 16 meters
g) Voltage 5 KV
h) RPM 214
i) Constructed by:
Turbine - San Giorgio
Alternator Brown Boveri
l) Max height of dam 26 meters
m) Daily capacity ised from Resevoir 1,100,000 mc
The plant however utilizes the inflow from the first of the plant is about 11,000,000 Kwh

n) The units are in efficient operation

III Hydro-plant of Coghinas

a) 2 Turbine alternators; 2 Turbine Dinamo
b) Apparent power of units
2 Turbine Alternators 7500 KVA
2 Turbine Dinamo 6000 KVA
On each unit of the Turbine Dinamo there is an alternator (flywheel) 2000 KVA

c) Power factor of alternators Cosi 8
d) Rated capacity
4 units of 8100 KW
e) Av. Head 90 meters
f) Voltage of alternators 5 KV
" " Dinamo 0.3 KV
g) RPM 500
h) Constructed by:
Turbines - S.Giorgio
Alternators 7500 KVA - Compagnia Generale di Elettricita
" 2000 KVA - San Giorgio
Dinamo - Brown Boveri
i) Max height of dam 58 meters
l) Total capacity of resevoir 250,000,000 mc
m) " " in Kwh of Resevor 40,000,000 Kwh
n) Reserve in resevoir on 19/1/44
155.11 meters above sea level (height in meters of the water usable for production 15.11 m.)
Cubic meters of water 124,000,000
Kwh about 17,000,000.

731

Presumable information of conditions which will exist at the close of the rainy season (April 1944):
The plant is in operation relatively to the season and to the consuption of electric energy.
Given an average inflow to the resevoir it is believed that by the end of the rainy season the level of the lake will reach its maximum height.
o) All the units are in efficient operation.

7) Transformer Substations

Name	Trans.	Ration of trans	KVA	Total KVA	Cos. of Plate.
Cagliari	3	7000/5000	7,5000	22,500	0.8

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Guspini	3	70,000/15,000	4,000	12,000	0,75
Monteponi	2	70,000/15,000	5,000	10,000	0.8
Marrùbiv	2	70,000/15,000	3,000	6,000	0.8
Chilivani	1	70,000/15,000	1,350	1,350	0.8
Sassari	2	70,000/15,000	2,750	5,500	0.8
F.Raminosa	2	7,000/15,000	4,000	8,000	0.8

Note:

a) Although we were asked to furnish information on all station above 2000 KV we have also enclosed the 1,350 KVA substation of Chivilani.

b) We have also mentioned the Thermal plant of Cagliari because when the plant is not in operation, as at present, it serves as a substation feeding Cagliari thru the 15000 KV lines.

SOCIETA ELETTRICA SARDA

730

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SARDINIAN POWER

SOCIETA ELETTRICITA SARDA

3 January 1 944

ANSWER TO QUESTIONAIRE OF JANUARY 8, 1944
FROM THE ELECTRIC POWER MISSION

---

1) The following information is furnished by the Engineer Director of the Societa Elettricita Sarda.
2) We as very happy to cooperate, and are at your disposition
3) Attached is a map of Sardinia: the legend shows all the necessary information.
4) The map also contains the information asked in par. #4
5) Thermal Plants

1. Thermal electric plant of S.Gilla, Cagliari.
   a) 2 Turbine alternators
   b) Apparent power of ea. unit
      1 Turbine alternator 7,500 KVA
      1 " " 11,000 KVA
   c) Power factor Cos 8
   d) Rated output of each unit
      1 Turbine alternator Tosi-Marelli 6000 KW
      1 Turbine " Stal. 8800 KW
   e) Pressure 27 Kg/cmq - Vapor Temperature 375 C.
   f) Voltage 5 KV
   g) R.P.M. 3000
   h) Constructed by: - 7500 KVA Tosi Marelli
      11000 KVA Stal
   i) Boilers - 4 - 2 generates 17 ton/h of vapor; 2 of 30 ton/h
   l) Type of combustion; minute coal burnedon Riley type grates
   m) The 7500 KVA Tosi Marelli is not in service because the high pressure turbine is broken (the housing of the Rotar & Stator; Deformation of the shaft)

II Thermal Electric plants of S.Caterina - Palmas - Suergiv.
   a) 4 Turbine Alternators
   b) Apparent power of ea:
      2 alternators at 12500 KVA
      1 " " 11000 KVA
      1 " " 1900 KVA
   c) Power factors Cosi 8
   d) Rated capacity
      2 at 12500 KW
      1 at 8800 KW
      1 at 1500 KW
   e) Pressure and Temperature
      3 units 37 Kg/cmq - 400 C. - 525# @ 752°F.
      1 unit 27 Kg/cmq - 375 C. - 384# @ 707°F
   f) Voltage 5 KV
   g) R.P.M. 3000
   h) Constructed by:
      2 of 12500 KVA Tosi - Brown - Boveri
      1 of 11000 KVA Stal
      1 of 1900 KVA Statal

729

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110,200 #/HR.

h) Boilers - 4 - Generates 50 ton/h of vapor
l) Combustion; pulverized coal
m) The 4th Boiler and the 3rd transformer are out of service due to damage of the station during an air raid.

Note

a) There is a small old thermal plant at Sassari with gas motors due to its unimportance we have not gone into the details. It is in good condition.

b) To assure the operation of the thermal plants it is necessary to supply fuel and spare parts. Our urgent needs are: Fosfate of Soda, ~~sulfiric~~ Sulfuric acid for accumulators, lubricating oils, insulators and spare parts. (Phosphate) {storage batteries}

6) Hydro Plants

I. Tirso - ist jump.

a) 4 Turbine alternators
b) Rated capacity
2 at 9000 KVA
2 at 5500 KVA
c) Power Factor Cosf .7 for all the units.
d) Rated capacity
2 at 4000 KW
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1 at 6600 KW
e) All prime movers are reaction turbine, type Francis
f) Av. head 40.7 meters (Check this)
g) Voltage of each unit 5 KV
h) RPM 427
i) Turbines constructed by S.Giorgio
5500 KVA Alternator - Metropolitan Vickers
9000 KVA " - Compagnia Generale di Elettricita
l) Max. height of Dam 70 meters (From Fondation)
m) Total Capacity of Reservoir 400,000,000 mc
n) Total Capacity in kvh of the reservoir 30,000,000 of Kwh
o) Reserve in reservoir 19/1/44
90,62 m above sea level (height of water usable for production of energy 10.62 m)
Cubic m. of water about 130,000,000
Kwh about 9,400,000

728

These are the presumable conditions of the Reservoir at the close of the rain season (April 1944):
The plants are in operation relatively with the raing season and to the consuption of electric power.
Assuming an average flow to the reservoir it is believed that by the end of the raing season the level of the lake will reach its maximum height if the military authorities consent to such a level. (rainy)

p) All the units are inefficient operation
q) The Inflow of Tirso was limited at the begining of the war. all obstruction was removed in April 1942. It was limited to a quota of 90 in May 1943. at present, examination is being made with the military authorities to establish a quota for the lake.

II Hydro Plants Tirso 2 Jump.

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a) 1 Turbine alternator
b) Apparent Power, 4500 KVA
c) Power factor Cosi 0.7
d) Rated capacity 4000 KW
e) The first motor is a turbine of propeller type
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g) Voltage 5 KV
h) RPM 214
i) Constructed by:
Turbine - San Giorgio
Alternator Brown Boveri
l) Max height of dam 26 meters
m) Daily capacity used from Reservoir 1,100,000 mc
The plant however utilizes the inflow from the first of the plant is about 11,000,000 Kwh
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a) 2 Turbine alternators; 2 Turbine Dinemo
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On each unit of the Turbine Dinamo there is an alternator (flynheel) 2000 KVA
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4 units of 8100 KW
e) Av. Head 90 meters
f) Voltage of alternators 5 KV
" " Dinamo 0.3 KV
g) RPM 500
h) Constructed by:
Turbines - S.Giorgio
Alternators 7500 KVA - Compagnie Generale di Elettricita
" 2000 KVA - San Giorgio
Dinamo - Brown Boveri
i) Max height of dam 58 meters
l) Total capacity of reservoir 250,000,000 mc
m) " " in Kwh of Reservoir 40,000,000 Kwh
n) Reserve in reservoir on 19/1/44
155.11 meters above sea level (height in metems of the water usable for production 15.11 m.)
Cubic meters of water 124,000,000
Kwh about 17,000,000.

727

Presumable information od conditions which will exist at the dose of the rain season (April 1944):
The plant is in operation relatively to the season and to the consuption of electric energy.
Given an average inflow to the reservoir it is believed that by the end of the raing season the level of the lake will reach its maximum height.
o) All the units are in offacient operation.

7) Transformer Substations

Name	Trans.	Ration of trans	KVA	Total KVA	Cos. of Plate.
Caaglieri	3	7000/5000	7,5000	22,500	0.8

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Guspini	3	70,000/15,000	4,000	12,000	0,75
Monteponi	2	70,000/15,000	5,000	10,000	0.8
Marrùbiv	2	70,000/15,000	3,000	6,000	0.8
Chilivani	1	70,000/15,000	1,350	1,350	0.8
Sassari	2	70,000/15,000	2,750	5,500	0.8
F.Naminesa	2	7,000/15,000	4,000	8,000	

Note:

a) Although we were asked to furnish information on all station above 2000KVV we have also enclosed the 1,350 KVA substation of Chivilani.

b) We have also mentioned the Thermal plant of Cagliari because when the plant is not in operation, as at present, it serves as a substation feeding Cagliari thru the 15000 KV lines.

SOCIETA ELETTRICA SARDA

72

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copy

US CONFIDENTIAL & IMPORTANT CIPHER MESSAGEIN. SIGS. NO. 2292

TO: FLAMBO FOR GE GUETERBACH, CARTER

FROM: KORNIG AGU-3 WM 212 05

SEND WORD TO GILLESPIE THAT COAL MINING COMPANY IN SARDINIA REPRESUS THAT ITS AGENT AT CROTONE BUY UP TO 90 ADDITIONAL TONS OLIVE OIL WITH FUNDS NOW AT HIS DISPOSAL PART TWO FOR CROWDEN THE SOCIETA CERAMICA INDUSTRIALE AT CAGLIARI CAN MAKE REFRACTORY BRICK ON EITHER HIGH SILYIA OR HIGH ALUMINAND CONTENT. PLANT NOW SHUT DOWN AND REQUIRED FANFS TO GET STARTED AND TRUCKS TO TRANSPORT RAW MATERIALS FROM CLAY PITS IF YOU REQUIRE ANY OF THIS MATERIAL SUGGEST YOU SEND OFFICER WITH AUTHORITY TO FIRST ENTER INTO PURCHASE CONTRACT WITH COMPANY SECOND TO OBTAIN FUNDS FROM ALLIED FINANCIAL AUTHORITY THIRD ORDERS FROM PROPER MILITARY AUTHORITIES TO OBTAIN THRU MILITARY SUB COMMISSION OFFICER IN ASARDINIA SUFFICIENT ITALIAN ARMD TRUCKS.

REQUESTS -

Funds

Army.

SMC. DIST. ACTION. M&S ADV(3)

IMPORTANT CONFIDENTIAL SMC TOR 051810A HVL.

725

Declassified E.O. 12356 Section 3.3/NND No. 785019

HEADQUARTERS
ALLIED CONTROL COMMISSION
ELECTRIC POWER MISSION

WLC/vsr

AC/150/EPH

5 December 1946

SUBJECT: Sardinian Electric Power Facilities

TO : Colonel D. S. Adams

1. It will be desirable to visit Sardinia to survey the electric power facilities and to determine if any of these facilities may more advantageously be used elsewhere.

2. It is understood that one steam plant, of recent construction, is not operating and may contain equipment and materials which are needed in the Sicilian stations.

3. It is requested that travel orders be issued to enable this survey to be made.

WALKER L. CIDLER
Lieut. Col., A. U. S.

724

1012