Declassified E.O. 12356 Section 3.3/NND No. 785021

ACC AC/38.1/TN6 10000/148/3474

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0000/148/34774 INLAND WATERWAYS
17 A - AUG. 1945
PORTS (REPORTS)

1941

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HEADQUARTERS ALLIED COMMISSION
APO 394
TRANSPORTATION SUB COMMISSION

Tel. 290
Ref. AC/38.1/10/Tn6

RMB/mvm
24 August 1945

SUBJECT: REPORT OF INLAND WATERWAYS SURVEY

TO : See Distribution

1. General

a. An extensive survey of the present condition of available means of transportation on the Po River, tributary rivers and joining canals was made. Several meetings were held and parties interested in this navigation were contacted, after which a conclusion was reached that all Italian interested parties, particularly Italian Government officials, are working on an overall plan to rebuild fully not only all the damage along the river, but also at the same time take advantage of modern means to improve greatly navigation facilities in comparison with pre-war standards. Such a program necessarily would require several years for completion. In the meantime, particularly the present and very near future, very little additional traffic could be developed.

b. Since it is intended to improve transportation conditions in Northern Italy now by using all possible means, it was recommended and requested of all concerned that immediate attention be given to repairs, even if on a temporary basis, of all bridges, canals and locks, as well as the salvaging and building of barges and tugs for the Po River service. In this connection, we understand that several shipyards and other similar building companies have sent to the Industry Sub Commission Office in Milan lists of their requirements which, it is presumed, are based on the overall needs for the program of complete rebuilding and improvement of navigation facilities on the Po River. Possibly, because of the extent of these requirements, no immediate action will be taken by the Industry Sub Commission, thereby interfering with the temporary program which is necessary in order to increase the Po River navigation at this time. It is suggested that, as a matter of collaboration, the Industry Sub Commission keep the Transportation Sub Commission informed of shipbuilding material requirements requested through them in order that recommendations be made by the Transportation Sub Commission to coordinate efforts for the fullest utilization of the Po River navigation now and in the very near future.

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2. Milan Meetings

a. A meeting was held in the office of the Transportation Sub Commission Advanced Echelon in Milan on 4 August with Lt. Col. Harris, Major Talbot and Major Constable of that office present. Others present were Ing. Eugenio Salvi of the Genio Civile Milan Office, Captain A. Tosi, Italian Ministry of Marine Liaison Officer to Movements Division, AC Rome and Mr. R. M. Bazzanella, Chief, Ports & Warehouse Division, AC Rome.

b. Another meeting was held in the same office on 6 August with only Major Constable of that office present due to the fact that Lt. Col. Harris and Major Talbot had left for Rome. Also attending this meeting were: Ing. Lauzi of the Italian Ministry of Public Works and Ing. Ughi of Genio Civile.

c. Information gathered shows that in the region directly under the immediate supervision of Milan (including Lago Maggiore, East of the Ticino River, North of the Po River between junctions of the Ticino-Po Rivers and Oglio-Po Rivers on to Lago Garda), there is at present little traffic due mainly to shallow waters which are as low as 70 cms. between Pavia and Cremona. Traffic between Milan-Lago Maggiore is southbound one-way traffic.

d. The lock at Miorina is in need of gates. We were informed that some lock gates for another lock had been built and were available in Bologna. While at Bologna, this was investigated and it was found that the firm of Alessandro Calzoni had built these gates for the Miorina Lock. The gates were fully completed and ready for installation. In 1941, these gates were ordered built by the Consorzio del Ticino who later stated that the gates were no longer needed and could be sold by the builders elsewhere. We secured blue prints of the gates and same are being sent to Lt. Col. Harris, with copy of this report, in order that the matter may be taken up with Consorzio del Ticino and Genio Civile and the gates installed. An extension on each side of the inside wall of the Miorina Lock is also necessary.

e. At Tornavento, there is an incomplete lock which should be completed if the Lago Maggiore Navigation is to be increased. At present, only one wall of the lock is built. Another wall and the gates need to be constructed. This will take between 5 and 6 months to complete. Perhaps the gates built for the Miorina Lock could be used instead at the Tornavento Lock as this lock is more important. This, however, is a technical matter for the Genio Civile to decide.

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f. Extensive dredging is required north of the Miorina Lock and minor dredging at other points on the Lago Maggiore route. There are several obstructions, some of which have already been removed.

g. Traffic on Lago Maggiore southbound to Milan consists of chalk, firewood and granite and from other points on the same route, particularly Turbigo, sand and gravel badly needed for reconstruction work. This traffic is only feasible southbound because of the strong current which makes it possible for loaded barges to navigate without any other assistance. Northbound, the empty barges are brought up towed by tractors. It is estimated that between 35 and 40 - 100 ton barges and 4 to 5 tractors are now available for this traffic. This is a part of the proposed Navigation Plan of 1941. Navigation from Venice to Locarno would have made possible shipments of coal from the Ruhr Valley, via water to Basel, thence via rail to Locarno, thence via barges all the way to Venice.

h. At present, there is an active movement from Turbigo to Milan via the Naviglio Grande. Two-way traffic between Milan and Pavia with barges up to 100 tons is now in operation. Northbound barges are pulled by manpower, horses and other means but southbound barges need no assistance.

i. Calls were made on Comitato Industriale delle Costruzioni Navali and Compagnia Industrie Navali Armamento. These firms are primarily interested in shipbuilding on a large scale. It is estimated that 4 - 100 ton steel barges, 30 meters long, 5 meters beam, 1.25 meters deep with a 1 meter draft can be built per month, provided the necessary materials are available.

j. Barge Owners Pool Operation: The Transportation Sub Commission Advanced Echelon in Milan has held some meetings with eight barge owners in an effort to form an association which would be called "Consorzio per la Navigazione Interna Alta Italia" with headquarters in Milan. Up to the time this survey was made (6 August) no definite arrangements had been made to form this consorzio. Lt. Col. Harris tried to contact some of the proposed members while we were in Milan in order that we could discuss this matter with them, but they could not be located. However, Lt. Col. Harris is doing all possible to bring about the definite formation and operation of this Consorzio. When it is done, a full report will be sent to this office.

k. Lt. Col. Harris suggested that a call be made on Col. C. P. Bolick, Public Works Sub Commission, Milan, to acquaint him with our survey work in order that he would be in a position to render all possible assistance in connection with reconstruction work. Col. Bolick assured us that this office had and would continue to cooperate with the Genio Civile.

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3. Venice Meetings

a. On our way to Venice, a stop was made at Verona to call on Ing. Agostini, with the Italian Ministry of Transport in charge of reconstruction survey of the Po River, who had asked AC Rome that this be done. Ing. Agostini was having difficulty in obtaining a Circulation Permit from AMG Verona. While there, this matter was arranged for him. This permit, however, allocates to him only 100 liters of gasoline per month. In view of the vast territory he has to cover and the bad condition of some of the roads along the Po River, this allocation is not sufficient to meet his needs. Therefore, arrangements should be made by the Italian Ministry of Transport to supply him with the necessary additional gasoline to enable him to do his work.

b. Ing. Agostini was requested to meet us in Venice to attend a meeting and also to accompany us on a further survey of the Po River from Venice to Parma and other points concerned with inland navigation.

c. A meeting was called on 11 August at the office of the Magistrato alle Acque in Venice. This office is in charge of inland waterways from Porto Sdobba to the Mincio River, north of the Po River. The Po River is not under the jurisdiction of the Magistrato alle Acque. However, due to a general strike of Government employees in Venice, it was not possible to hold this meeting. The meeting was postponed until the afternoon of 14 August, upon our return from Trieste. When the meeting was held, the following were present:

Ing. Tognozzi, President, Magistrato alle Acque
Dott. Boni, Vice-President, Magistrato alle Acque
Ing. Sacchi, General Inspector
Ing. Paveini, General Inspector
Ing. Pavanello, General Inspector
Ing. Brunelli, Chief Engineer, Rovigo Province
Ing. Agostini, Italian Ministry of Transport
Major McClure, AC Port Liaison Officer
Captain Tosi, Ministry of Marine Liaison Officer
Mr. Bazzanella, Ports & Warehouse Division, AC.

d. Information obtained at this meeting indicated the following services now in operation.

1) The Venice-Porto Sdobba canal was recently put into operation as far as Grado, although this navigation is affected by narrow passages which have been opened through obstructions caused by demolitions. Before this

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canal was damaged by war action, 600 ton barges operated freely. However, at present only 300 ton barges are in operation. Draft along the canal is reported to vary between 3 and 3½ meters. During the months of May and June 1945, it is reported that 27,356 metric tons moved over this inland canal. This canal connects with the Sile River, Piave River, Livenza River, Lemene River, Tagliamento River, Stella River and the Adige River.

2) The Venice-Chioggia-Brondolo-Po Canal is now operating as far as Cavanella/D'Adige and from this point cargo has to be transshipped and carried overland a distance of about 400 meters. In May/June 1945, the traffic on this canal amounted to 2,961 metric tons. Damage by war action is heavy along this route from and including Cavanella/D'Adige to where this canal joins the Po River. The draft along this canal is reported to be 2 meters.

3) The Venice-Padua-Este Canal is operating only from Venice to Padua with 100 ton barges, due to shallow draft. However, 300 ton barges can operate when conditions permit. The Padua-Este line is not in operation due to war damage.

4) The Bataglia-Brondolo Canal is not in operation also due to war damage. The Adige River service from the sea to Legnago is operating between Badia and Cavanella/D'Adige. However, traffic is carried on only between short sections along the route with 50 and 100 ton barges.

e) We were informed that during the month of July, traffic had increased greatly and reconstruction work was and will continue to be given high priority. It appears that the territory under the jurisdiction of the Magistrato alle Acque is now operating as well as can be expected under the existing conditions and it is presumed that as time goes on, it will continue to improve.

f) The recently formed Associazione Nazionale Navigazione Interna, composed of barge owners, is in operation in accordance with AMG Order #21 of 3 August 1945 and appears to be functioning well. It was not possible to secure tariffs but some rates now in effect were secured and are as follows:

Light weight cargo (straw/hay)	2	lire per quintal per ton
Heavy weight cargo, full load	.50	" " " " "
Low priced cargo	.45	" " " " "
General cargo	.75	" " " " "

Barges under 50 tons capacity are charged the above rates plus 10%. Barges up to 50 tons capacity are allowed one day

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for loading and one day for discharging; up to 120 tons capacity, two days; up to 200 tons capacity, three days; after which periods, demurrage is charged at the rate of 1 lira per quintal per day.

g) Subsequent to this meeting, a tour of inspection was made with Ing. Agostini from Venice to Bologna, stopping at Cavanella/D'Adige. At this place, present means of cargo transshipment were surveyed. Cargo comes down the Adige River and is discharged on the left bank of the river where it is loaded into carts or carried by manpower a distance of about 1 kilometer to the Canale di Valle where it is again loaded into barges. It is proposed to build a Decauville line from the left bank of the Adige River direct to loading place on the right bank of Canale di Valle, a distance of about 400 meters. This would save a lot of time and labor and would have a tendency to increase traffic. Approximately 30 days would be required to finish this project, after approval by Genio Civile has been secured and after the field through which this Decauville track would be laid is cleared of mines. The firm interested in the job has all necessary materials to do the work. However, mine clearing is up to the Military Authorities. The rates being charged for this transshipment of cargo are: 50 Lire for light weight cargoes such as hay and straw and 25 Lire for heavier or bagged commodities. If the proposed Decauville line is built, these rates would be greatly reduced.

h) Other short stops were made to look over war destruction of bridges and obstructions to navigation lying on the beds of the River and Canals.

4. Bologna - We called on the firm of Alessandro Calzoni. We were informed that notwithstanding war action, the damage to their plant had not been serious and they are now in a position to resume operations up to 90% of their pre-war activities. In order to avoid destruction by the Germans, the machinery was dismantled and sent to different places for hiding. Most of the machinery has been returned and set up. They only need window glass to finish putting their plant in working condition ready for operation, and raw materials to begin operations. A list of the raw materials needed has already been submitted to the Industry Sub Commission in Milan. After this call, we proceeded to Parma where a meeting in the office of Genio Civile was held.

5. Parma

a. The Parma office, known as Circolo Superiore D'Ispeziono per il Po, informed us that they have complete jurisdiction of all maintenance of inland waterways from

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where the Po meets the Adriatic Sea to Alessandria, Piedmont Province, as well as connecting rivers and canals along this route, including Lago Maggiore/Milan, Lecco/Milan and Canale Ferraresi. The branch offices at Ferrara, Reggio Emilia, Modena, Piacenza, Alessandria, Pavia, Milan, Cremona and Mantova must report to Parma regarding work to be done in their immediate territory so that the proper survey may be made before work is authorized. Dredging in the Po River and the Mincio River as far as Mantova and on the Ferrara Canals is directly under the Parma office, but dredging in Lago Maggiore/Milan and Milan/Lecco is under the supervision of the local Genio Civile offices.

b. At present, there are 3 suction dredges available and no bucket dredges, out of 13 suction dredges and 3 bucket dredges which were available in pre-war days. There are only 2 tugs available in working condition. There are 7 or 8 sunken tugs, seriously damaged and without motors.

c. The lack of coordination between the Parma-Po Office and the Italian State Railways has been eliminated insofar as rebuilding of the Piacenza, Cremona and Casalmaggiore bridges is concerned. The Parma office is greatly handicapped in their work due to lack of means of transportation which is essential in connection with surveys and supervision of reconstruction work. Therefore, it is very necessary that they be supplied with ample facilities to carry on with their work.

d. Po River navigation under Parma jurisdiction is now operating from the Ticino-Po junction to Piacenza with barges drawing 70 cmts., from Piacenza to Cremona with barges drawing 70 cmts., from Cremona to Casalmaggiore with barges drawing 80 cmts., from Casalmaggiore to Borgoforte with barges drawing 80 cmts., from Borgoforte to Ostiglia, as far as Governolo with barges drawing 80 cmts., and from Governolo to Ostiglia with barges drawing 120 cmts. However, when obstructions on the river at Ostiglia are removed, the draft on the river from Governolo to Volta Grimana will be increased to 180 cmts. Cargo is transshipped at Piacenza, Cremona, Casalmaggiore, Borgoforte and Ostiglia. However, when removal of obstructions at Ostiglia (now being done) is completed, the Po River will be navigable from Borgoforte to Volta Grimana without transshipment at Ostiglia.

e. Several other small canals which have been put out of operation by war damage were also discussed. It was strongly recommended that reconstruction work on the Po River and other connecting navigable ways be given immediate attention and that necessary repairs, even though on a temporary basis, be carried

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out at once in order to increase traffic. It was definitely pointed out that all possible should be done to speed up work as it is essential that the Po River and connecting waterways be put into maximum operation without delay.

6. Cantiere di Boretto - There is a shipyard here under direct control of the Parma office. An inspection of this shipyard was made together with officials from Parma. It was found that it is fairly well equipped and substantial work can be done here. At present, they are working on the suction dredge "Oglio" which has a dredging capacity of 500 cubic meters per hour and is almost ready for operation, awaiting only for the River to rise in order that she may be floated. They are also repairing the bucket dredger "Lombardia" with a dredging capacity of 40 cubic meters per hour. It will be about a month before this dredger is ready for operation. This shipyard employs 55 laborers at present. However, this number could be increased if all the necessary raw materials were available. There is a great need for a 100 ton floating crane which, under present inland navigation conditions, could be sent there. However, it was suggested that a 25 ton crane be secured and sent there and they could easily build the required pontoons. It is believed that this would be more feasible.

7. Mantova - This is the River terminal for barges carrying coal from Venice. It is a small river port; however, it could be used as a distributing point for coal destined for factories and plants in the surrounding area, thereby saving rail transportation to some extent.

8. Pontelagoscuro - The bridges at this point have been reconstructed and now it is possible for barges to discharge at this terminal which was a very important one before the war. Between Pontelagoscuro and Ferrara, there was an important industrial section which is being reconstructed gradually. Therefore, coal shipments, which now can be discharged at Pontelagoscuro, will be very essential in the reconstruction of this industrial section.

9. Recommendations

a. It is recommended that special attention be given to the supervision of the activities of all Italian agencies in connection with the rehabilitation of the inland waterways mentioned in this report. During visit made, all concerned were requested to give this reconstruction work highest priority since it is very important that all possible work be done now before winter conditions interfere. As stated

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herein, the programs and plans made by the Italian Government agencies are based on a complete rehabilitation of the inland waterways which is a very necessary project. However, if we are to get any use from the inland waterways, it is necessary that the Italian Government agencies make plans for temporary repairs which will facilitate inland waterway navigation now, even though later on when conditions permit, these temporary repairs may have to be done away with in favor of permanent reconstruction.

b. It is also recommended that in line with the suggestion of Lt. Col. Harris, Advanced Echelon of the Transportation Sub Commission in Milan, that some member of AC, preferably a member of the Public Works Sub Commission be assigned to the Milan Advanced Echelon to take full charge of the supervision and activation of this reconstruction work. Otherwise, it is feared that the enthusiasm and offer of cooperation developed during the making of this survey may not give us the required results.

10. In conclusion, we wish to report that the cooperation and assistance rendered by Captain A. Tosi, Ministry of Marine Liaison Officer with Movements Division, was of great value in securing information herein submitted.

R. M. BAZZANELLA, Chief
Ports & Warehouse Division

DISTRIBUTION
External
Col. C. P. Bolick, Public Works S/C, Milan
Lt. Col. M. Harris, Transportation S/C, Milan
Major E. B. Corby, Transportation Officer, Venezia Region
Italian Ministry of Public Works, Rome
Italian Ministry of Transport, Rome
Internal
Director, Transportation S/C
Industry S/C
Public Works S/C (Att. Capt. Shepard)
Movements Division, Tn S/C
Shipping Branch, Tn S/C
Captain A. Tosi, Ministry of Marine Liaison Officer

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NOTE: Maps of the different inland waterways navigation are now available at the Ports & Warehouse Division Office.

cc: Capt. Bowes, PLO, Venice

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HEADQUARTERS ALLIED COMMISSION
APO 394
TRANSPORTATION SUB COMMISSION

Tel. 290
Ref. AC/38/7/Tm6

RMB/mvm
25 July 1945

SUBJECT: Inland Waterways

TO : See Distribution Below

1. For your further information, attached are copies of translations of additional survey reports furnished us by the Italian Ministry of Public Works as follows:

a. Restoration to Service of Milan - Lake Maggiore (Locarno) Inland Waterways.

b. Summary - Works Relating to Inland Navigation in Northern Italy.

c. List - Work to be Done to Improve Navigation in Navigli and Fiumi, Lombardia.

d. Parma - Report on the Conditions of Navigability of the Po on the Damage to the Dredging Equipment and to the Fixed Defenses at the Navigation Curves.

e. Report - Repairs to the Inland Navigation Works of the Compartment of the Magistrato delle Acque Damaged by War Action.

f. List - Works for Renewal of Inland Navigation in the Area of the Compartment of the Magistrato alle Acque Damaged by War Action.

g. Ferrara - Report on Lines of Inland Navigation in the Province of Ferrara with Summarized Indication of Damage Suffered through War Action.

Attachments:
As stated above.

R. M. BAZZANELLA, Chief
Ports & Warehouse Division

DISTRIBUTION:
Lt. Col. J. W. Baker - Movements Division
Col. Curtis, Port Commandant, Venice
Maj. Laraman - Shipping Branch
Maj. Talbot - Headquarters AMG, Lombardia Region
Capt. Shepard - Public Works S/C

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TRANSLATION

TRANSLATION

RESTORATION TO SERVICE OF MILAN - LAKE MAGGIORE (Locarno) INLAND WATERWAYS

The waterway Milan - Lake Maggiore using the Naviglio (canal) Grande, the industrial canals of Turbigo, Tornavento, Vizzola and the river Ticino up to the Lake, with the works built in past years could be restored to efficiency with a few works and with relatively small expense.

The following works are necessary:

1) To complete with equipment an opening of the canals of access and of exit at the lock built at the Miorina Dyke. (The equipment, that is to say, the lockgates and relative mechanisms, are ready at the depot of a Firm of Bologna.)

2) The building, in the section of the Ticino river between the "Miorina" and "Pamperduto", of towage canals with rope ways at the rapids of Miorina, Cagaratta and Porto di Varallo Pombia. Put the towing path in order.

3) Lengthen by about meters 6.00 the length of the lock of Pamperduto making use of the existing walls.

4) Complete the lock of Tornavento, building one of the two longitudinal walls (that of the lower bank) and put in place the equipment which is now ready.

5) Rebuild - eventually - the two bridges on the Grande canal, which at present are of two arches which are somewhat limited and may be dangerous.

6) Place the Basin of Porta Ticinese in a position to deal with the greater traffic which the connection with the Grande canal with Lake Maggiore would bring.

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The Provincial Administration of Milan has recently promoted the planning of the above-mentioned works with the idea of giving to the city of Milan a new means of transportation which, owing to shortage of transportation means existing before the war, would alleviate the present difficulties, especially those relating to transportation of building material (marbles, stones, quarry debris for wall foundations in place of bricks) and coal.

The above-mentioned Administration intends to interest the State to consider the work as "re-establishment of a navigable waterway,

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registered (as in fact it is) in the second class", and therefore to the total charge of the State as laid down in Art. 6 of the Law No. 959 of 11 July 1913.

In this regard, it is remarked:

a) that the work as per Nos. 1 and 4 are, according to contract, for the account of the concessionnaire Concerns who, owing to war conditions, were authorized to postpone the work.

b) that the works mentioned in No. 6 should be for the account, so it seems, of the State, the Province and the Municipality of Milan.

c) that only the work at Nos. 2, 3 and 5 should be at the expense of the State.

From a first investigation made by the Provincial Administration, it would appear that the line could be put again in service within six months, and its possibility, bearing in mind the speed of the canals, of the number, dimensions, types and dislocation of the locks, and use of lighters of 80 to 100 Tons, admitting navigation 275 days of the year and illumination of the more difficult sections, would be theoretically 550,000 tons per year.

Should trade start exclusively above Sesto Calende, that is to say on the Lake, as seems to be possible, it would be added to that which starts along the Grande canal (sand and quarry gravel) and which reaches the Pavia canal (sand of the Ticino and Po) which has exceeded 500,000 tons annually.

Consequently, the Basin of Port Ticinese should be put in trim to see through the total volume of above-mentioned trade.

The line would be used only for goods coming down from the Lake to Milan, and night navigation would be limited to empty craft.

In regard to the possibility of using the line for coal transportation from the German basins to Milan (via Basle-Locarno), it is pointed out that transportation by the waterway from Locarno to Milan would, under present circumstances, economize on the use of numerous railway cars.

Further the coal delivered at the Basin of Porta Ticinese, instead of the railway station, could be suitably destined to the depots and plants not favored with railway sidings.

At the moment we have not details of the expenditure needed for the above-mentioned work.

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In order of size, it may be affirmed that:

1) the work to be at the State's expense may be estimated at about 10 to 15 million lire;

2) the work for the account of State, Province and Municipality of Milan would be about 30 million lire;

3) the work at the expense of concessionnaire Concerns, 30 to 40 million;

4) the setting up of the fleet of steel 100-ton craft (130), of tractors and tugs about 100 million lire.

MILAN, 5 July 1945

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20 July 1945

TRANSLATION

Works Relating to Inland Navigation in Northern Italy

SUMMARY

1.	Work necessary for renewal and betterment of navigation on the Lombard canals and rivers ..... Lire		22,882,000
	These works have been proposed and approved by the Allied Military Government.		
2.	Restoring service on the waterway Milan - Lago Maggiore.		
	Works to be charged to the State		35,000,000
	Works to be charged to the Concessionnaires.		30,000,000
3.	Repairs to the inland navigation works of the area under the Magistrato delle Acque ..		158,000,000
4.	Urgent works of repairs and hydraulic defenses and for the navigability of the Po		23,000,000
5.	Works for salvage, refloating and repairs of the craft of the dredging equipment (dredgers, hopper barges, tugs, etc.) of the Po Office.		25,000,000
	N.B. The present value of the dredging equipment amounts, according to calculations of the above Office to Lire 400,000,000.		
6.	Repair works to the lines of inland navigation in the Province of Ferrara		31,500,000
		Lire	325,382,000

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MINISTRY OF PUBLIC WORKS

OFFICE OF GENIO CIVILE

MILAN

****

INLAND NAVIGATION - SECOND CLASS OPERATIONS

****

Work to be done to improve navigation in
Navigli and Fiumi, Lombardia

L I S T

MILAN, 5 July 1945

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TRANSLATION

No. of priority	WORK TO BE CARRIED OUT	ESTIMATED COST	TIME REQUIRED FOR CARRY WORK WORKING DAYS
		Lire	
1	Clearing & cleaning of the Martesana Canal at the Autumn drying	2,000,000	Duration of work : day Workmen per day Total days workmen
2	Special clearing & cleaning of the Canals Grands,Bereguardo, Pavia and the Basin of Porta Ticinese	2,000,000	Duration of work : days Workmen per day TBtal days workmen
3	Improving the bottom along the Paderno Canal	1,340,000	Duration of work :days Workmen per day Total days workmen
4	Dredging of the right branch of the Adda river at the locality called Paradiso of the Commune of Cornate d'Adda	1,500,000	Duration of work: days Workmen per day Total days workmen
5	Reinforcement of the rocky cliff, which is threatening to subside to right of the Adda at Trezzo	2,000,000	Duration of work : day Workmen per day Total days workmen
6	Divers repairs of damage due to war action on the Canals Grande,Pavia and the Gaggi Dyke	3,542,000	Duration of work : day Workmen per day Total days workmen
7	Relaying of telephone lines along the Po with new sections beyond Vaprio	2,500,000	Duration of work: days Workmen per day Total days workmen
8	Reinforcement of defences of left bank of the Po river and tributaries classified in various sections	8,000,000	Duration of work :days Workmen per day Total days workmen
	TOTAL	22,882,000	

N.B. The above works are included in a program already submitted to and approved by t
carrying out is estimated within the year 1945.

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TRANSLATION

	ESTIMATED COST	TIME REQUIRED FOR CARRYING OUT WORK WORKING DAYS		STATE OF PLANNING
	Lire			
nal	2,000,000	Duration of work : days Workmen per day Total days workmen	30 200 6000	Survey to be completed Presentation within July 1945
ls of	2,000,000	Duration of work : days Workmen per day TBtal days workmen	30 200 6000	ditto
Canal	1,340,000	Duration of work :days Workmen per day Total days workmen	50 30 1500	Presented to A.M.G. for approval, 6 July 1945
a f	1,500,000	Duration of work: days Workmen per day Total days workmen	100 20 2000	ditto
is Adda	2,000,000	Duration of work : days Workmen per day Total days workmen	120 40 4800	Survey made and plans being drawn up. To be presented within July 1945
ion on yke	3,542,000	Duration of work : days Workmen per day Total days workmen	120 50 6000	Survey to be completed. Presentation within Sept. 1945
o	2,500,000	Duration of work: days Workmen per day Total days workmen	100 20 2000	Presentation within Sept. 1945
of in	8,000,000	Duration of work :days Workmen per day Total days workmen	400 100 40000	Presentation within Oct. 1945
	22,882,000			

a program already submitted to and approved by the Allied Military Government, and their
the year 1945.

1958

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TRANSLATION

TRANSLATION

MINISTRY OF PUBLIC WORKS
SENIOR OFFICE OF INSPECTION FOR THE PO
ROYAL CORPS OF CIVIL ENGINEERS
AUTONOMOUS SECTION FOR THE PO

P A R M A

REPORT ON THE CONDITIONS OF NAVIGABILITY OF THE PO AND ON THE DAMAGE TO THE DREDGING EQUIPMENT AND TO THE FIXED DEFENSES AT THE NAVIGATION CURVES.

1) Present Situation of Conditions of Navigation on the Po.

Due to war action, the navigable line of the Po from Pavia to the lock of Volta Grimana, km. 357, (the fixed bridges, rail and road were destroyed), is divided now into seven sections varying in length from 35 to 71 kilometers.

Inspite of this condition, craft of limited draft may pass from one section to another, even when the river level is low, by carrying out difficult manoeuvers at the fallen bridges.

It is now possible to navigate with a draft of 0.70 meters from Pavia to Cremona; draft of 0.80 meters from Cremona to the mouth of the Mincio; draft of 1.20 meters from the mouth of the Mincio to the lock of Volta Grimana, and then with boats of 100 tons from Pavia to the mouth of the Mincio loaded with 60 to 70 tons of goods; with boats of 100,200,250 tons loaded up to 120 tons from the mouth of the Mincio to the Volta Grimana lock.

As is seen, in case of absolute necessity without waiting for increases in the river level, it is possible to navigate, sacrificing economic conveniencey. When the river level rises, the carrying capacity of the craft will also increase.

One of the greater obstacles to navigation, at the moment, is the debris of the blown up bridges which make the bottom (bed) of the river dangerous.

It is necessary to remove these remains at earliest, both in regard to safety and possibilities of navigation as well as for the regular flow of water, because in the event of floods dangerous situations would arise to the embankment defenses through undue rise of water above the bridges.

Headquarters Emilia Region AMG, Public Works & Utilities Division, requested our Office to arrange for the clearance of bed of the Po

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river by removing the debris and masonry of the blown up bridges.

This work has been organized arranging the first contracts, but a long time is necessary to prepare for the starting of the work because of lack of coordination between this Office and the initiative of the Administrations of the State Railways and of the State and Provincial Roads. Also because in some cases, the Railways have allotted to undertake bridge building, also the removal of wrecks, without informing this Office. This is due to the fact that the Po zone is under two AMG Regions (Bologna and Milano).

The difficulty of communications prevents repeated contacts with the several principal Offices in order to establish and clarify the respective competency for the various works with sufficient speed.

It must be stated that the work of clearing the bridges blown up at Cremona, Casalmaggiore, Borgoforte, Ostiglia, Pontelagoscuro will require an expenditure of about 60,000,000 Lire using 70,000 working days and could be finished by February 1946.

Another obstacle to navigation is represented by the temporary pontoon bridges built on the initiative of local Bodies with remains of military materal and which cannot be opened.

At present there are four: two at Piacenza, one at Borgoforte, and one at Pontelagoscuro, and they will be increased as craft dispersed along the Po are recovered.

It is indispensible that measures be taken by the competent Authorities and by the AMG so that the bridges be modified with sections which can be opened, temporarily suspending traffic over the bridges during the manoeuvers of opening and closing.

It is further to be stated that between the mouth of the Mincio and Mantova, it is impossible to navigate now with 600 ton lighters, because the new lock of Governolo is partly damaged, and because the curves on the Mincio, in this section, do not allow for the passage of lighters of such size.

Finally, it is pointed out that along the Po there are boatmen and lightermen accustomed to carry on navigation, even by towing from tow path, and a large number of them would find re-employment as soon as navigation is renewed.

2) Damage to the Dredging Equipment under Care of this Office.

The strength of flonting material of the Autonomous Section for the Po was 560 craft, valued as per inventory, inclusive of equipment and reserve material, at 30,000,000 Lire (1941), including tugs, dredgers, boats, pontoons, etc.

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Through war action almost all the above has been damaged or sunk, and these were dislocated along the river from Pavia to the lock of Volta Grimana (Km. 357), so that only 5% is still in efficiency.

The first works of gathering in and of refloating are now being carried out at a total of 1,000,000 Lire. For putting into service all the craft, an expenditure of 25,000,000 Lire and 25,000 working days is estimated.

This work is of indispensible character and of urgent necessity, since we must take advantage of the periods of low water, summer and winter, to prevent the loss of this material, today salvable, and whose present value is about 400,000,000 Lire.

The dredging equipment is indispensible to improve the navigation of the river during low water periods and to clear the navigable channel of the river from the innumerable wrecks of craft and vehicles sunk through war action.

We have to state that this office at present has in working condition two tugs of 60 HP, four boats of 100 tons each, three boats of 300 tons and four suction dredgers. This material is now being used for salvage work and for getting in the damaged craft, which, after repairs, will be used for river navigation.

From information received, it appears that the Societa Barcari of Mantova has at its disposal a tug and 20 boats of 150 tons each, and that they are repairing many others.

The Societa A.N.N.I. (Associazione Nazionale Navigazione Italiana, Calle dei Fruri 913) has been formed again in Venice. This organization is composed of all the navigators of the Po and can dispose of all efficient craft for river navigation.

3) Damage to the Defenses on the 47 Navigation Curves (excluding the hydraulic works of 2nd class which are under several offices of the Genio Civile).

The embankment defenses at the navigation curves have been damaged in part through war action and German wreckers, principally by taking away in various spots the stone covering which protects the sandy bank, and the overturning of works through bombardments.

If repairs are not arranged for immediately, using again in part the stones which are recoverable along the banks, the stability of the whole of the defenses would be compromised with danger of the ruin of all the works by action of river floods. Therefore, the

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following work is proposed:

a) Work which absolutely cannot be postponed: At the curves Nos. 36, 34, 32, 30, 28, 26, 25, 24, 23, 21, 19, 8, 6, 4 to be carried out by salvaging on the spot and putting in place the stone work at an estimated cost of 3,000,000 Lire. The works are already under allotment at a sum of 1,400,000 Lire and as soon as the AMG will have approved the remainder, that too will get under way. It is expected to finish all this work within the month of November this year, using 15,000 working days.

b) Urgent Works - Works of replacement of parts of works destroyed by bombardments or damaged at the navigation curves Nos. 33, 27, 23, 20 are to be done at a total sum of 4,000,000 Lire and requiring 10,000 working days.

These works should be started in August and finished by December, but it is necessary to supply stone and small stone from the Appenine and alpine torrents, at an average distance of 70 kilometers from the zones of use.

It is indispensable to allot at least three trucks with trailers for the transportation of this material, otherwise the work cannot be carried out (it is understood that with the trucks it is necessary to allot petrol and lubricants).

c) Stock Required of Broken Stones & Rubble Stone:- On the 47 curves, it is necessary for their ordinary and extraordinary upkeep and for stocks of urgency in the case of floods to hold, as before the war, a stock of about 20,000 cubic meters of broken stones and rubble stone, which were taken away and dispersed by German wreckers, for the building of roads and places of call on the riber. This material is not recoverable, so there is an absolute lack of it.

The supply of this stock is not of greatest urgency, but is indispensible to renew the stocks because they represent a guarantee of efficiency of the defenses.

The damage caused by the dispersal of material may be calculated at 16,000,000 Lire and the collection of it will take up 20,000 working days.

THE CHIEF ENGINEER
(Giulio Chiodarelli)

PARMA, 6 July 1945.

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TRANSLATION

MINISTRY OF PUBLIC WORKS

MAGISTRATO ALLE ACQUE

Repairs to the Inland Navigation Works of the Compartment of the Magistrato delle Acque Damaged by War Action.

REPORT

The damage caused by the war to the navigation works of the inland waterways in the area of the Magistrato delle Acque cannot be estimated, even roughly, unless careful surveys are carried out, allowing especially for the foundations of the masonry works, etc., ascertaining the real static conditions of the damaged built works.

The carrying out of such indispensable surveys presupposes the disposal of adequate means of transport (cars and especially bicycles) which today part of the Offices do not possess, inspite of the insistant requests made to the local and Allied Authorities. It is obvious that without such means, it will not be possible to proceed to draw up plans and later direct the work to be done.

Most of the work to be done concerns ferro-concrete works, supplied with unsubstitutable metallic parts and relative devices for manoeuvering. Another difficulty to overcome will be the rapid and timely supply of relative material (cement, soft steel, section irons, bricks, etc.) without which the principal works cannot even be started. The interested Offices, fully aware of the importance of the problem, are already carrying out those works which are possible in the present situation and which will allow, in some sections of the waterways a reduced inland navigation. These, however, are short sections and the renewal of navigation would be only partial. It is to be noted that the technical time indicated in the attached compendium presupposes the actual and immediate disposal of the means and material required.

Passing on to the detail of the work, this may be thus summarized:

1) Venetial Coastal Line:

a) The locks of Benazzana to left and right of river Tagliamento are damaged, especially the gates and relative mechanisms.

b) The tow paths and relative foot bridges are damaged.

c) The signalling apparatus of the section of the Lagoon of Marano is almost completely destroyed.

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d) The walls and the gates of the locks right and left of the river Piave at Revedoli and Cortellazzo are damaged (No. 3 & 4).

e) It will be further necessary to remove the numerous craft sunk in the various sections of the line, since their presence prevents navigation.

f) Finally, it will be necessary to remove the material obstructing the bed and the silt formed through lack of maintenance due to the war. For this work, some dredgers and relative fuel are required.

2) Po-Brondolo Navigable Line.

a) The following locks are damaged: Brondolo, Cavanella d'Adige left (especially serious), right, Volta Grimana (Nos. 5, 6, 7, 8). The damage is caused principally in the distribution of sections of side walls, serious damage to the metallic gates, swing bridges, lifting bridges and relative mechanisms.

3) Venice-Padua Line.

a) The following locks are damaged: Moranzani, Dolo and Stra (Nos. 9, 10, 11). The first was struck at the gates, the others have their side walls damaged seriously as well as accessory works.

b) The cable across the river Brenta at Stra is seriously damaged, and this is the key for feeding the Brenta and the Piovego canals which form this line.

c) The remains of the metallic girder of the road bridge at the mouth of the Piovego must be removed.

4) Line Padua-Battaglia-Chioggia.

a) Supports of the center arch (No. 13) were destroyed by a bomb, carrying away all the superstructure, the metallic sluices and the relative mechanism. This repair is indispensable because the sluices regulate navigation both in the upper and in the lower canals.

b) The Battaglia lock (No. 14), as such is intact, but the opening and closing mechanisms are damaged.

5) Goro Po Line/Gnocca Po.

a) The two locks towards the Goro Po and towards the Gnocca Po are damaged, and the bridge in connection with the left bank

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of the Venetian lagoon drainage has fallen into the bed.

6) Po Canal Bianco Line.

a) It is necessary to repair the Cavanella-Po lock so as to be able to use this line during the repairs of the Volta Grimana lock.

7) Secondary Lines.

a) Over the rivers Stella, Aussa, Corno, it is necessary to rebuild some foot bridges which give continuity to the tow path, and to remove the artificial obstructions made by the Germans at the mouths of these small rivers.

b) Brian Canal Lock: damaged, as also the sluices and the swing bridge, at the metallic parts, the walls and the operating mechanism.

c) Adigetto and Scortico canal: these require removal of rubble fallen into the bed due to bombing of neighboring houses.

8) Navigable rivers:

a) On the river Lemene the lift bridge of Marango must be repaired.

b) On the river Livenza the Caorle lift bridge must be repaired, and the bed at the bridges of Salute and S. Stino (rly.) must be cleared.

c) Piave river: must remove the bridges of Grisolera and S. Dona, road and rail.

d) Adige river: to renew navigation, it is necessary to remove the metallic girders of the demolished bridges of Cavanella d'Adige, rail and road, Cavarzere rail, Boara Polesine road and rail, Ca Morosini and Badia.

9) To carry out these works as per compendium attached, there is extimated an expenditure of 158,000,000 Lire as follows:

a)	Venetial coastal line	Lire	41,133,500
b)	Po-Brondolo		54,800,000
c)	Padua-Venice		10,696,000
d)	Padua-Battaglia-Chioggia		2,895,000
e)	Goro Po-Gnocco Po		11,200,000
f)	Po-Canal Bianco		4,000,000
g)	Secondary Lines		9,300,000
h)	Navigable rivers		23,000,000
	To make a round figure		975,500
	TOTAL.....		158,000,000

1945

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In the compendium, Priority I indicates the works indispensable to renew the most important lines; Priority II for the less important works, and Priority III those works which, though indispensable, are not of a real urgent character.

THE PRESIDENT

(signed) Waldis

VENICE, 12 July 1945

MINISTRY OF PUBLIC WORKS

MAGISTRATO ALLE ACQUE

Works for renewal of inland navigation in the area of Compartimento the Magistrato alle Acque damaged by ~~war action.~~

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LIST

VENICE, July 12nd, 1945

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1967

Declassified E.O. 12356 Section 3.3/NND No. 785021

No.	DESCRIPTION OF WORK	Estimated cost	Working days	Time required	Priority
	Forward.....	124.824.500.-			
	VII - Secondary waterways.				
36	Reconstruction foot bridges, tow paths of rivers Como and Stella	1.800.000.-	1200	4 months	2nd
37	Removal obstructions at mouths of the Corno, Stella & Aussa	1.500.000.-	1500	4 "	1st
38	Clearance rubble along the Adigetto, Loreo canal & Scortico	6.000.000.-	9000	12 "	2nd
	VIII- NAVIGABLE RIVERS				
39	Removal bridges on river Adige	15.000.000.-	15000	6 months	1st
40	Removal bridges on river PIAVE	5.000.000.-	5000	6 "	1st
41	" " " " LIVENZA	3.000.000.-	3000	3 "	1st
	TOTAL.....	157.024.500.-			
	To make a round figure	975.500.-			
		158.000.000.-			

1961

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...ated cost	Working days	Time required	Priority	State of planning	REMARKS
24.500.-					
00.000.-	1200	4 months	2nd	To be made	
00.000.-	1500	4 "	1st	" " "	
00.000.-	9000	12 "	2nd	" " "	
0.000.-	15000	6 months	1st	" " "	Necessary also in regard to effect of flood dangers.
0.000.-	5000	6 "	1st	" " "	do
0.000.-	3000	3 "	1st		do
4.500.-					
5.500.-					
0.000.-					

1961

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No.	DESCRIPTION OF WORK	Estimated cost	Working days	Time Required	Pri
	Forward	95.933.500.-			
	III° - Line PADOVA-VENEZIA				
20	Moranzani lock - Repairs to gates	100.000.-	100	1 month	1
21	Dolo lock	2.000.000.-	2000	6 months	1
22	Stra lock	2.500.000.-	3000	6 "	1
23	Stra supports - Renewal old boom	198.000.-	3000	6 "	1
24	Stra supports - metallic parts new boom	300.000.-	300	2 "	1
25	Repairs to Stra supports	5.000.000.-	5000	12 "	2
26	Clearance Stra & Dolo lock	400.000.-			
27	Renewal iron bridge on the Piovego at Stra	198.000.-	500	1 month	1
	IV° - PADOVA-BATTAGLIA-CHIOGGIA line.				
28	Removal obstruction Cagnola canal, Bovolenta bridge	195.000.-	500	1 month	2
29	Repairs suppott Arco di Mezzo	16500.000.-	2000	3 months	
30	Battaglia lock	1.000.000.-	1500	3 "	
31	Removal Buffi bridge on Este Monselice canal	200.000.-	600	1 "	
	V - GORO PO line- GNOCCA PO				
32	Goro Po lock	6.000.000.-	8000	12 months	
33	Removal Venetian drainage bridge	3.800.000.-	5000	12 "	
34	Gnocca Po lock - removal bridge	1.400.000.-	2000	8 "	
	VI - PO line - BIANCO canal				
35	Cavanella Po lock	4.000.000.-	5000	6 months	
	Carry forward	124.824.500.-			

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umated cost	Working days	Time Required	Priority	State of planning	REMARKS
933.500.-					
100.000.-	100	1 month	1st	To be made	
000.000.-	2000	6 months	1st	" " "	
500.000.-	3000	6 "	1st	" " "	
198.000.-	3000	6 "	1st	" " "	Being carried out
300.000.-	300	2 "	1st	Being carried out	
000.000.-	5000	12 "	2nd	" " "	
400.000.-					Being carried out
198.000.-	500	1 month	1st	Done	
195.000.-	500	1 month	2nd	Done	
500.000.-	2000	3 months	1st	To be done	
000.000.-	1500	3 "	2nd	" " "	
200.000.-	600	1 "	2nd	" " "	
000.000.-	8000	12 months	3rd	To be done	
800.000.-	5000	12 "	3rd	" " "	
400.000.-	2000	8 "	3rd	" " "	
000.000.-	5000	6 months	1st	" " "	
824.500.-					

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No.	DESCRIPTION OF WORK	Estimated cost	Working days	Time required	Priority
	I st - VENETIAL COASTAL CANAL				
1	Rebuilding foot bridge Valle Fantani	400.000.-	400	2 months	1st
2	Putting in order Bevazzana lock - Left and manoeuvre hut	3.000.000.-	2000	4 months	1st
3	Rebuilding towing path	1.000.000.-	1500	3 "	1st
4	Salvage craft lying on bottom	300.000.-	300	2 "	1st
5	Renewal signal devices, etc.	3.000.000.-	2000	6 "	1st
6	Removal silt	3.000.000.-	1000	5 "	1st
7	Bevazzana lock-right- Iron gates and divers repairs	2.500.000.-	2000	6 "	1st
8	Brian supports	5.000.000.-	5000	1 year	2nd
9	Revedoli lock - Repairs	268.000.-	300	2 months	-
10	Revedoli lock - Clearance access canals, etc.	500.000.-	500	2 "	2nd
11	Permanent works of Revedoli lock	3.000.000.-	3000	6 "	1st
12	Cortellazzo lock	165.000.-	200	2 "	-
13	Cortellazzo lock - rebuilding gates and general repairs	3.000.000.-	3000	12 "	1st
14	Clearance of whole navigable waterway	6.000.000.-	6000	3 "	1st
15	Dredging and necessary excavation	10.000.000.-	10000	1 year	1st & 2n
	II - PO LINE - BRONDOLO				
16	Brondolo lock	400.000.-	2000	3 months	1ST
17	Cavanella Adige lock- left	27.400.000.-	40000	18 "	1st
18	Cavanella Adige lock - right	19.400.000.-	25000	12 "	1st
19	Volta Grimana lock	7.600.000.-	10000	8 "	1st
	Carry forward	95.933.500.-			

1973

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Estimated cost	Working days	Time required	Priority	State of planning	REMARKS
400.000.-	400	2 months	1st	To be done	
3.000.000.-	2000	4 months	1st	" " "	
1.000.000.-	1500	3 "	1st	" " "	
300.000.-	300	2 "	1st	" " "	
3.000.000.-	2000	6 "	1st	" " "	
3.000.000.-	1000	5 "	1st	" " "	Dredgers & relative fuel required.
2.500.000.-	2000	6 "	1st	" " "	
5.000.000.-	5000	1 year	2nd	Done	
268.000.-	300	2 months	-	-	Work is being carried on.
500.000.-	500	2 "	2nd	-	Work is being carried on.
3.000.000.-	3000	6 "	1st	To be done	
165.500.-	200	2 "	-	-	Work is being carried on
3.000.000.-	3000	12 "	1st	To be done	
6.000.000.-	6000	3 "	1st	Is being done	
10.000.000.-	10000	1 year	1st & 2nd	To be done	
400.000.-	2000	3 months	1ST	To be done	
27.400.000.-	40000	18 "	1st	" " "	
19.400.000.-	25000	12 "	1st	" " "	
7.600.000.-	10000	8 "	1st	" " "	
95.933.500.-					

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TRANSLATION

TRANSLATION

MINISTRY OF PUBLIC WORKS

OFFICE OF THE CIVIL ENGINEERING DEPARTMENT

FERRARA

REPORT ON LINES OF INLAND NAVIGATION IN THE PROVINCE OF FERRARA WITH SUMMARIZED INDICATION OF DAMAGE SUFFERED THROUGH WAR ACTION.

A. Inland navigation in this Province is carried on through the following waterways:

1. River Po in the section from the Mantova Province border at Stellata down to the junction of the Goro Po at Serravalle from Brera for a length of 64 km.

2. River Goro Po from Serravalle down to the mouth at the sea near Gorino for a length of 43 km.

3. Boicelli canal from the Pontelagoscuro lock which connects it with the Po down to the mouth of the Volano canal near Ferrara for a length of 6 km.

4. Volano canal from Ferrara to the mouth in the sea in the water pocket of Goro, for a length of 70 km.

5. Primaro canal from S. Nicolo to the mouth in Volano near Ferrara for a length of 18 km.

The above inland waterways form the navigable line classified as second class and the upkeep is done by the State, Ministry of Public Works.

B. From this principal line other unclassified navigable canals branch off as follows:

1. Canal flowing out of the reclaimed zone of Burana da Ferrara at Bondeno, of the length of 15 km.; maintenance by the Consorzio Interprovinciale of Burana.

2. Drainage canal Leone with branch off for Iolanda di Savoia, for a length of 10 km.; maintenance by the Consorzio della Grande Bonificazione Ferrarese.

3. Marozzo and Palotta da Codigoro at Porto Garibaldi Canals for a length of 20 km.; maintenance by the Municipalities of Comacchio and Lagosanto.

Through war action, the said waterways have suffered damage to bridges, locks and movile sluices in such manner that it is no

1979

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longer possible to make use of them, not even in a small way. This is not only due to the debris which obstruct them, but also in view of the heavy damage caused to the Pontelagoscuro lock which has been put out of use, and to the inefficiency of the movile sluices in the Volano, half collapsed, so it is impossible to keep enough water in the canals for sufficient draft for navigation.

C. In relation to the brief exposition of facts above, it is necessary, for the renewal of navigation, to carry out the reconstruction of the movile sluices of Valpagliaro and Tieni and of the heads below the aforementioned locks, besides various repairs to the lock of Pontelagoscuro on the Po and that of Marozzo on the canal of the same name, and at the same time, the following obstructions must be cleared:

1. For the river PO:

   a. Take away from the bed the metallic girder of the road bridge at Pontelagoscuro.

   b. Salvage craft sunk in the lock of Pontelagoscuro and cargo which the sunken boats contain.

2. For the Boicelli Canal:

   a. Free the bed of parts of 5 bridges of ferroconcrete; destroyed.

   b. Renewal of embankments in several places.

3. For the Volano Canal:

   a. Clearance of bed containing parts of 25 blown up bridges, of which 5 are ferroconcrete and 20 are steel with abutments in masonry.

   b. Clearing of wooden piles placed in the bed at Passo Pomposa to build a footbridge.

   c. Renewal of embankment in several places.

   d. Repairing some sections of tow paths.

4. For the Primaro Canal:

   a. Clearance from the bed of parts of 8 blown up bridges, of which 5 are ferroconcrete, 1 of steel with abutments in masonary and 2 with ferroconcrete girders and abutments in masonary.

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5. For the canals Marozzo and Valotta:

a. Clearance from the bed of the remains of 3 blown up bridges, of which 2 are masonry and one of ferroconcrete.

b. Removal of obstructions in the Marozzo canal near Comacchio.

6. For the Leone Canal:

a. Clearance of parts of 2 blown up bridges from bed.

7. Drainage canal of Burana:

a. Clearance of bed obstructed by blown up bridge.

D. In particular the damage suffered by inland waterway works, to mention the most important damage, is as follows:

1. Pontelagoscuro lock: - This important lock at the right embankment of the Po river, built together with the Boicelli canal to place the Volano in communication with the Po river, is formed by the lock basin with six cabins, three to the right and three to the left containing the manoeuvering mechanisms, both hand and electric, and a small plant for pumping water with three electric pumps and electric transformer set, has suffered the following damage:

a. Masonry work: - Destruction of two manoeuver cabins, one of the second group on the left, and the other of the third group on the right, and damage to that of the third group to the left, and destruction of part of the abutment (left) of the road bridge crossing the lock at the top of the embankment of the Po, for a height of 10 linear meters. The coping, windows and doors on the second floor of the building containing the conducting plant are partially destroyed, as well as the dividing walls and a concrete wall left of the basin of the arrival of water.

b. Metallic work: - Two cast iron columns are broken together with the manoeuvering flywheels of the second group to the left. The metallic sluices of the conducting plant are only bent but the relative manoeuvering apparatus is broken. Ten iron beams are deformed, five of which have been pierced in various points and have lost their oak packing. Part of the steel corbel of the aerial rope railway for manoeuvering the sluices has also been destroyed.

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c. Electric Equipment: - The connecting line with the transformer set has been destroyed for a length of about 150 linear meters and the trellis pylon supporting the line has been badly bent. The connecting cables crossing over the lock connecting up the manoeuver sets are broken and in part missing. All the electric lines of the aerial rope railway have been destroyed, and the rest of the above-mentioned electric plants are all to be overhauled. In the transformer cabin, a trellis has been badly bent, and two transformers broken, and one of the three motors is damaged. Further, the whole of the electric plant regarding the lock, etc. has been damaged and must be overhauled.

2. Valpagliaro Lock:

a. Masonry Work: - The road bridge at downstream end of the lock is blown up and the walls underneath the bridge have falled down to their foundations. The right cabin to right downstream with manoeuver devices is destroyed and the other three slightly damaged.

b. Metallic Work: - In the destroyed cabin, the flywheels of the two columns are broken, the whole electric of said cabin is destroyed, and the motor, the resistance and the automatic brakes are damaged. One of the end poles of the electric line of the bridge crane is destroyed and the line itself damaged, as well as the cables crossing the lock for electric connection of the cabine.

c. Mobile sluice of Valpagliaro: - Alongside the lock is the mobile sluice to keep above it, at the upper head, the height of water necessary for navigation. It has six openings with abutments in masonry and intermediate piers in ferroconcrete. The 12 abutments, 2 per pier, are manoeuvered both by hand and electrically, with electric motor and hydrodynamic plant. There is a steel bridge at the lower head of the lock on the prolongation of the abutments. Following on the falling of the bridge, mined and blown up by the Germans, all the abutments were completely destroyed, as well as the manoeuvering cabin in masonry, the concrete poles damaged, the vents of the sluices broken and lifting mechanism damaged, the oil pipes damaged, the motor, various devices and the electric plant are damaged.

As regards the masonry work, the lock must be entirely rebuilt, except for two intermediate cisterns which may be eventually utilized, but in regard to the metallic parts, only the sluices can be used, after repairs and ranging in workshop.

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3. Tieni Lock:

a. Masonry: - The road swing bridge, lower end of the lock, was blown up, and in falling carried away the side walls of the lock up to the manoeuvering set of the gates which have fallen into the water. The top of the left wall of the lock is damaged throughout its length through holes for mines.

b. Mobile Sluice:- Alongside the lock is the mobile sluice to keep, above the lock, the depth of water necessary for navigation. It has six arches with abutments in masonry and intermediate steel trusses, besides overhead bridge for manoeuvering and transit. The two central arches are closed by four sluices worked both by hand and mechanically by means of an electric motor and of a hydrodynamic plant. The remaining four arches are closed by wooden rafters worked by hand through pulleys and inverted bow and chain girder. There is a steel bridge below the lock on the extension of the abutments.

Following on the fall of the bridge, the abutments are completely destroyed, the steel trusses are partly twisted, the motor compartment destroyed, and the oil pipes and the electric plant damaged.

In regard to masonry, the lock is to be entirely rebuilt. In regard to metallic work, the four metallic sluices and the relative mechanism can be used, after the required adjustments and repairs in workshop.

4. Marozzo Lock - An antiquated lock with wooden gates, for craft of small tonnage. After the blowing up of the bridge, at the upper head of the lock, the gates do not work, and it is believed that masses of masonry falled into the bed prevent the working of the gates.

E. For carrying out all the above described work, for removing obstructions in the canals, it is estimated, based on current prices, that the following sums will be required:

1.	For the Fontelagoscuro Lock and annexed water works	Lire 10,000,000
2.	For the Valpagliaro lock and annexed mobile sluice.....	4,000,000
3.	For the Tieni lock and annexed mobile sluice	5,000,000
4.	For the Marozzo lock	500,000
5.	For cleaning/clearing the bed of the canals from parts of blown-up bridges, for taking away pile foundation grills and removal and salvage sunken craft, etc.....	12,000,000
	TOTAL	31,500,000

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It is superfluous to point out that for the renewal of the locks and sluices it is understood that the work of specialized firms which possess adequate means for this class of work is necessary, and therefore in consideration of the time required for such complex works, it is proposed that a gradual carrying out be effected, commencing from the canals which pass through districts which need it most, in such way as to allow a renewal of navigation, even in intermediate sections of great local interest.

The zone of Comacchio, owing to its position, suffers most from the suspension of inland navigation, since its population drew their greatest resources from trade through that navigation. Therefore, precedence should be given in carrying out this work, to this zone to renew the navigation in the canals Marozzo - Pallotta and in the Volano below Codigoro in such way that Comacchio could again start inland waterway communication with the neighboring centers of Lagosanto, Codigoro and with the Venetian zones.

Such work could be reduced to the removal of debris of three blown-up bridges and other obstructions from the bed of the Marozzo canal near Comacchio; in renewing the lock of Marozzo; in the removal from the bed of the Volano of the remains of a blown up bridge and extraction of the foundation gril at the bottom of the bed at Passo Pomposa.

The first set of work, based on present prices, would be a further expenditure of only 3,000,000 Lire.

THE CHIEF ENGINEER

FERRARA, 8 June 1945. (signed)

R. Formichi

Declassified E.O. 12356 Section 3.3/NND No. 785021

TRANSPORTATION SUB COMMISSION
Ports & Warehouse Division

INTER OFFICE MEMO

Tel. 290
Ref. AC/38/4/Tn6

RMB/mvm
9 July 1945

SUBJECT: Inland Waterways - Po River

TO : Movements Division
(Att. Col. M. J. Sieff)

1. For your information and retention, attached are copies of the following:

a) Letter, dated 1 June 1945, from Comitato Industriale Delle Costruzioni Navali, Milano.

b) Letter, dated 26 May 1945, from Compagnia Industrie Navali Armamente, Milano.

c) Memorandum, dated 23 May 1945, from Arden Bastogi, Milano.

d) Letter, dated 25 May 1945, from Comitato Industriale Delle Costruzioni Navali, Milano, with attached report entitled "Project of a Service for the Transportation of Goods on the River Po and Tributary Streams".

2. A signal was sent to the Transportation Officer, Milan requesting that he contact the above firms and send in his report. Upon receipt of this report, you will be further informed.

R. M. BAZZANELLA, Chief
Ports & Warehouse Division

Attachments:
As stated in para 1.

* Attached to Kendorf file & taken by RMB on trip North.

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Declassified E.O. 12356 Section 3.3/NND No. 785021

ALLIED FORCE LOCAL RESOURCES SECTION
AFHQ

Postal Address:
AFLRS (FLAC), APO 512.
Telephone: ROME 66063

28 June 1945

LRS/71/253

SUBJECT: River Transportation.

TO : HQ ALCOS Transportation Sub-Commission.

1. Inclosed correspondence has been received at this office and is forwarded as being of possible interest to the Transportation Sub-Commission.

T. R. S.

THOMAS R. GIBBON, Col., AUS.
Chief of Section (US).
A.F.L.R.S.

5 Incls

To: P & W. Div
for action & retention

3219

COMITATO' INDUSTRIALE
DELLE COSTRUZIONI NAVALI

Foglio N.

Seguito lettera

934

Milano, First of June 1945.

To the
Allied Military Government,
Corso Matteotti, 9,
Milano.

And for knowledge to the
Central Economical Commission
Industrial Section
Corso Matteotti, 12,
Milano.

Dear Sirs,

We would refer to our letter of the 25th ult., with which we had the pleasure of sending you a construction program of steel and wooden barges planned with a view to carry out quickly a program of river transport services on the River Po and tributary streams.

The Ansaldo shipyards inform us that at the Mortara (Pavia) station there are 21 rail-road trucks loaded with various naval materials, among which 12 river tow-boats with 120 H.P. motors, built by the Ansaldo works at Sestri for account of the German Command and sent from Sestri to Milano. These tow-boats are completely finished or need very little completion work. All this material has been blocked where it lies with the known order of the National Liberation Committee.

We would call to your attention the advisability, in case there are no other reasons against it, of reserving these tow-boats for the projected Po River transport services, and therefore would ask that you be good enough to get it free, as it would have to be transported by rail (on the Mortara-Milano-Pavia line) or by lorry to the Ansaldo shipyard at Pavia, where the towboats would be quickly put in working conditions.

Awaiting to establish to whom this material belongs, with reference to the definition of the financial side of the contract given out by the German Command to the Ansaldo Company, this latter one could be appointed holder and keeper of the sequestered materials.

While we recommend that you be good enough to take in consideration our request, we would point out again the necessity of enlivening a traffic and trade current by means of the river services in the tract between Milano and Venezia, where presumably for a rather long time it will not

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Declassified E.O. 12356 Sec. 3.3/NND No. 785021

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While we recommend that you be good enough to take in consideration our request, we would point out again the necessity of enlivening a traffic and trade current by means of the river services in the tract between Milano and Venezia, where presumably for a rather long time it will not be possible to have a regular railroad service.

Yours faithfully,

COMITATO INDUSTRIALE
DELLE COSTRUZIONI NAVALI
Il Commissario

Declassified E.O. 12356 Section 3.3/NND No. 765021

COMITATO INDUSTRIALE
DELLE COSTRUZIONI NAVALI

Foglio N. _____

Seguito lettera _____

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Milano, 1° Giugno 1945

AL GOVERNO MILITARE ALLEATO
C.so Matteotti N.9
M I L A N O

e. p.c.

COMMISSIONE CENTRALE ECONOMICA
Sezione Industria
C.so Matteotti N.12
M I L A N O

Ci riferiamo alla lettera in data 25/5 u.s. N.1176 con la quale abbiamo accompagnato a Codesto Comando un programma di costruzione di chiatte in ferro e in legno per la pronta attivazione di un programma di servizio di navigazione sul fiume Po e affluenti.

Ci viene ora segnalato dalla Soc. Ansaldo che alla stazione di Mortara (Pavia) si trovano 21 vagoni carichi di materiale navale vario fra cui 12 motorimorchiatori fluviali muniti di motore I20 HP. costruiti per conto delle Autorità Germaniche dallo stabilimento Ansaldo Sestri e da questo spediti a Milano. Questi rimorchiatori, si trovano o del tutto ultimati o hanno bisogno di minimi lavori di completamento. Questo materiale è stato bloccato ove si trova con la nota ordinanza del C.L.N.

Questo Comitato si pregia ora richiamare l'attenzione di Codesto Comando sulla opportunità

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Declassified E.O. 12356 Section 3.3/NND No. 785021

C.so Matteotti N.9

M I L A N O

e. p.c.

COMMISSIONE CENTRALE ECONOMICA

Sezione Industria

C.so Matteotti N.12

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./.

Declassified E.O. 12356 Section 3.3/NND No. 785021

ove altre ragioni non ostino, di adibire questi rimorchiatori al progettato servizio di navigazione sul Po, e perciò ne domanda l'autorizzazione di sblocco appena fosse libero questo materiale dovrebbe essere trasportato per mezzo ferrovie (linea Mortara-Milano-Pavia-) o autocarro al Cantiere dell'Ansaldo in Pavia ove i rimorchiatori sarebbero rapidamente messi in condizione di poter entrare in servizio.

In attesa di poter stabilire a chi competa la proprietà di detto materiale, in relazione anche allo stato amministrativo della commessa germanica verso la Soc. Ansaldo, l'Ansaldo stessa potrebbe essere nominata detentrice o sequestrataria di questi beni.

Nel raccomandare vivamente l'accoglimento di questa proposta, facciamo nuovamente presente l'opportunità di stimolare una corrente di traffico e di approvvigionamento mediante la navigazione fluviale nella zona da Milano a Venezia, ove per un tempo presumibilmente lungo non si potrà riavere un servizio ferroviario normale.

COMITATO INDUSTRIALE
DELLE COSTRUZIONI NAVALI
Il Commissario
C. Bacceda

CB/sw.

Declassified E.O. 12356 Section 3.3/NND No. 785021

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COMITATO INDUSTRIALE
DELLE COSTRUZIONI NAVALI
Il Commissario

CB/sw.

2266

Declassified E.O. 12356 Section 3.3/NND No. 785021

TELEFONI 84.991 - 152.776

CAPITALE SOCIALE L. 1.000.000

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Compagnia Industrie Navali Armamento

SOCIETÀ PER AZIONI

SEDE SOCIALE TRIESTE VIA GALATTI 20

COSTRUZIONI NAVALI MECCANICHE - NAVIGAZIONE

MILANO

Rif. CB/PM

Milano 26th May 1945.

VIA F.lli GABBA, 8

To the
Allied Military Government,
Corso Matteotti, 9,
Milano.

ND

Dear Sirs, River transport services between Venice and Milano.

With reference to the wish of your Captain Thrustell, we have pleasure in giving you following information on the possibility of establishing river transport services by barges between Milano and Venice.

Navigability of the Po River.

The Po River is navigable:

from Venice	to	Mantova	with	600	Tons barges	) all metrical
" Mantova	"	"	"	200	" "	) tons of
" Cremona	"	Piacenza & Pavia	"	100	" "	) carrying
" Pavia	"	Milano	"	100	" "	) capacity

The first rapids going upriver, of not considerable size, are to be met at Piacenza.

The Po River does not flow through Pavia, and it is the Ticino River that coming from the "Lago Maggiore" lake reaches the Po River at a point called "Confluente".

The Po River is not navigable all year long for 100 tons barges, under the present conditions.
Milano can be reached from Pavia through the so-called "Naviglio Grande" River, which has various basins that allow the passage [illegible] tons.

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Declassified E.O. 12356 Section 3.3/NND No. 765021

Ref. CB/PM

Milano 26th May 1945.
VIA F.lli GABBA,6

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Allied Military Government,
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" Pavia	"	Milano	"	100	" "	

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The Po River is not navigable all year long for 100 tons barges, under the present conditions.
Milano can be reached from Pavia through the so-called "Naviglio Grande" River, which has various basins that allow the passage of boats up to 100 tons.

2265

N.B. Piacenza - Milano

U.P.& C. 197209

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RECEIVED
27 JUN 1945
AFRS

The situation set forth above is the one existing at present.

In order to warrant the efficiency of the service, it would be necessary to dredge continuously the section between Piacenza and Milano, and thus it would be possible to keep the service going between these two towns.

The so-called "Naviglio Grande" River flows through Milano , and passes also through Abbiategrasso, Robesso, Cuggiono, Turbigo, reaching the River Ticino, which originates from the"Lago Maggiore" lake.

Building of the barges.

The barges working at present on the river generally belong to sand quarry owners and are not well suited for the transportation of general cargo. It would therefore be advisable to replace them all with new suited for a well organized service.

It has therefore been contemplated to build anew a veritable fleet of boats suited for the purpose in view, installing a motor on one out of each boats. These boats to be of a standardized type of easy and economical construction.

The program would therefore be that the C.I.N.A. - Compagnia Industrie Navali Armamento, in addition to carrying out it's own program, should survey the construction of barges to be built by other shipyards with which it has already taken accords, and thus it would be possible to turn out within the end of December 1945 approximately:

76 barges - corresponding to 19 convoys, totalling

7600 tons of carrying space

In order to carry out this program we would need:

800	cubic	metres	of pine and spruce wood
50	metric	tons	of electrodes for electrical welding
32	"	"	" rivets
10	"	"	" bolts
130	"	"	" cast iron and steel castings
1400	"	"	" steel plates about 4 M/M thick
80	"	"	" " " " 6 " "
80	"	"	" angle steel 40 x 40 x 5 M/M

Declassified E.O. 12356 Section 3.3/NND No. 785021

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1400	"	"	" steel plates about 4 M/M thick
80	"	"	" " " " 8 " "
80	"	"	" angle steel 40 x 40 x 5 M/M
200	"	"	" cement
36	"	"	" paint

Roads & Bridges

2264

The conditions of the Po River as they are now would not allow to carry out a service with boats of the size mentioned above, due to the low depth of the river, as the river bottom is obsturcted by waste matter, shoals, gravel, which could be removed by dredging.

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We shall be glad to supply any further information or details you may need, and trusting to hear from you favourable at an early date, we remain,

Youra faithfully,

COMPAGNIA INDUSTRIE NAVALI ARMAMENTO
C. I. N. A.
Il Vicepresidente
ARDEN PIETRO BASTOGI

Declassified E.O. 12356 Section 3.3/NND No. 785021

Yours faithfully,

COMPAGNIA INDUSTRIE NAVALI ARMAMENTO
C. I. N. A.
Il Vicepresidente
ARDEN PIETRO BASTOGI

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Declassified E.O. 12356 Section 3.3/NND No. 785021

ARDEN
BASTOGI
ARMATORE
1a Flli. Gabba 8 - Tel. 84991

Milan, May 23, 1945.

RIVER TRANSPORT SERVICES BETWEEN THE ADRIATIC SEA AND MILANO.

The need of transport services is so urgent that we do not deem it as necessary to illustrate the principal reasons for the necessity of quickly setting up a well organised river transport service from Trieste and Venice, through Mantova and Cremona, to Milano.

This program has been studied at various times by many experts in the past, however on a basis quite different from ours, i.e. contemplating to build up a very costly canal system in the Po River region, from Venice to Milano, to be completed within at least five years, at a minimum cost, estimated in the year 1930, of half a billion Lire.

We do not entertain such imposing plans, and are basing our program on what the river and canals of the Po River region would allow at present.

1. Navigability.

The navigability of the Po River depends on the dredging possibilities. The Po River tributary streams carry at flood times all kind of waste matter, mud and gravel, which gradually form shoals that do not allow the passage of even small tonnage crafts.

This difficulty could be easily overcome by placing at the mouths of the tributary streams a certain number of dredges, six or seven in all, to work continuously and keep free the passages. These dredges are already on hand at the Genio Civile (Civil Engineering) Offices at Mantova, Pavia, Cremona and of other towns on the river.

2. Conditions of the river barges.

The Po River barges belong chiefly to sand quarry owners, who use them for transporting sand from the Po River and from Abbiategrasso to Milan. They are not suited for the transportation of general cargo, being of ancient built (years 1920 - 1925), and having been constructed by artisans, who never considered the technical necessities of the river navigation.

3.Types of boats to be built.

We contempla te building a standardized type of 85 tons barge (carrying capacity), suited for river, port and coasting service, of easy construction, with no curved surfaces, series built, which all would enable us to turn out a veritable fleet of barges within a comparatively short time.

The tetal number of barges to be built would amount to about four hundred units, totalling approximately 32000 tons, half of which built for transporting general cargo, and the remainder to be tankers suited for carrying crude and refined oils, lubricating oils, benzine and similars, in bulk.

One out of each four barges to be motorized, with a 110 HP lorry motor, thus allowing an independent towing service and a quick carrying out of the moterization.

It is to be noted that the carrying out of our program would not mean a competition but an easing up of the railroad services, freeing them from considerable quantities of bulk cargoes paying low freight rates, which would be of the utmost importance particularly at present, while the railreads are first of all being confronted with the problem of reorganizing the service and reconstructing or repairing the equipments necessary for the transportation of higher valued and better paying or even special cargoes and of passengers.

4.Landing Points and Wharves.

To enable carrying out our program it would be advisable that the Cremona, Pavia and Milano municipalities or the Italian Ministries concerned, put to our disposal city or state owned land adjoining the river, on which we would set up warehouses, wharves and cranes up to 1½ tons lifting power.

In order to be enabled to load and unload in the meantime, we have been studying a type of barge with the forward part turning down on hinges, allowing to discharge right into trucks standing on the river beach.

We could turn approximately within december of the current year seventy barges totalling 5600 tons, provided the supply of the necessary iron material, amounting to about 1400 tons, proceeds in due order.

We have on our staff experienced shipbuilders and traffic managers and assistants, and shall be glad to supply any detail or information that may be further required.

Declassified E.O. 12356 Section 3.3/NND No. 785021

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Declassified E.O. 12356 Section 3.3/NND No. 785021

COMITATO INDUSTRIALE DELLE COSTRUZIONI NAVALI

(D. L. 315/1944 - D. M. 25/6/1945)

340A

Milano, li 25 Maggio 1945

Via Boccaccio, 47 - Telef. 42.400

Num. di prot. 1176. Allleg. 1

Risposta al foglio N. del

OGGETTO :

COMANDO MILITARE ALLEATO
M I L A N O
C.so Matteotti N.9

Questo Comitato ravvisando l'urgente necessità di contribuire a risolvere il problema dei trasporti ha predisposto un programma di massima per l'attuazione immediata e futura di un servizio fluviale per il trasporto di merci sul fiume Po ed affluenti.

Tale programma viene allegato alla presente lettera.

Anche se si vuol prescindere, nell'attuale momento, dalla regolazione integrale del fiume Po dalle sorgenti alle foci e dei suoi affluenti, questo Comitato è del parere che lo sfruttamento delle vie fluviali sia non solo possibile ma necessario per una ripresa immediata dei traffici, delle industrie e del commercio.

Navigabilità

La navigabilità del Po è possibile, attualmente, nel periodo dell'intero anno dal tratto da Mantova alle foci. Da Mantova a Cremona e da Cremona a Milano vi è in alcuni brevi periodi dell'anno l'impossibilità di transitare con natanti di considerevole portata e ciò fino a quando nell'alveo non saranno aperti degli opportuni canali in alcuni tratti insabbiati.

Si può sempre assicurare che la navigazione da Mantova al mare si può attuare subito, come da Mantova a Milano può effettuarsi con natanti di portata minore, salvo periodi di eccezionale magra.

Varie Società di navigazione si interessano alla realizzazione di tale iniziativa e, per programmi e progetti già predisposti, possono dar subito corso, anche per disponibilità di mezzi finanziari, ai lavori richiesti per conseguire al più presto i detti trasporti fluviali.

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COMANDO MILITARE ALLEATO
M I L A N O
C.so Matteotti N.9

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Mezzi occorrenti

La situazione di fatto consiglia attualmente di prendere in considerazione la costruzione di chiatte per una portata non superiore alle 80/90 tonn., con un'immersione massima di m. 1+/1,10.

Considerata l'attuale potenzialità dei Cantieri è stato predisposto un piano graduale di costruzione delle chiatte, dei rimorchiatori, e dei fuoribordo che permetterebbe di avere a disposizione a fine 1945 un totale di 220 chiatte in ferro e in legno sufficenti per una manipolazione giornaliera di circa 1000 tonn. di merce.

Merci da trasportare

Sono tutte le merci che scaleranno nei porti dell'Adriatico e che saranno dirette nelle provincie della Lombardia e del Piemonte e così i manufatti e le materie prime che da queste regioni dovranno affluire nelle provincie del Veneto e in tutte le regioni dell'Adriatico.

Le merci principali sono: carbone, torba, bauxite, cotone, juta, canapa, olii minerali, lubrificanti, benzina, soda, pelli, semi oleosi, frumenti, vini, legno, fertilizzanti, cellulosa, cascami, zolfo; materiali per edilizia: laterizi, sabbia, cemento, pietre; manufatti di meccanica e di carpenteria, specialmente quelli pesanti ed ingombranti come caldaie, travate per ponti, oltre ai generi di alimentazione, primo tra questi il grano delle provincie di Ferrara, Rovigo, Padova, Mantova, Ravenna, Forlì e Bologna.

Approdi

Lungo il Po le Società interessate riattiverebbero i porti e le banchine necessarie, fra i quali un'importante Porto nella zona di Revere.

Considerazioni economiche

La navigazione fluviale è sempre stata la più economica. Basta solo ricordare che con un autocarro con rimorchio si possono trasportare, allo stato attuale delle strade, circa 8 tonn. di materiale ed in via normale non più di 15 tonn., mentre con un motore della stessa potenza si possono rimorchiare, per via fluviale, circa 4 chiatte della portata di 80 tonn. cadauna e quindi il convoglio è in grado di trasportare 320 tonn. circa di merci.

Fabbisogno materiali

Per la costruzione prevista entro l'anno 1945 di 105 chiatte in ferro e di 115 chiatte in legno i materiali occorrenti saranno approssimativamente;

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tonn.	2.200	di materiali siderurgici
mc.	10.300	di legname quercia, abete e pino
tonn.	70	di elettrodi
"	170	di chiodi e bulloni
"	65	di pittura
"	140	di pece
"	20	di stoppa
"	265	di cemento
"	285	di fusioni di ghisa e acciaio per macchinari.

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COMITATO INDUSTRIALE
DELLE COSTRUZIONI NAVALI

Costituzione Consorzio

Per dare le necessarie garanzie agli Organi di Governo e per esercire in forma disciplinata tali trasporti si ravvisa l'opportunità di costituire un Consorzio tra le ditte interessate alla navigazione sul Po.

Premesso quanto sopra questo Comitato propone: che il programma di massima venga esaminato ed approvato e siano date le necessarie autorizzazioni con opportune garanzie, per la disponibilità del maveriale occorrente.

Allegato N.1 relazione.

COMITATO INDUSTRIALE
DELLE COSTRUZIONI NAVALI
Il Commissario
C. Bartolini

CW/sw.

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Alleg. N.1 relazione.

COMITATO INDUSTRIALE
DELLE COSTRUZIONI NAVALI
Il Commissario
C. Bausan

CW/sw.

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2004

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Minutes of Meeting on Inland Waterways held on 29 June 1945
at 1100 hours in Room 3, 2nd Floor

PRESENT:

Mr. R. M. Bazzanella	Ports & Warehouse Division (Chairman)
Col. M. J. Sieff	Movements Division
Major G. B. Godfrey	Shipping Branch
Capt. Shepard	Public Works Sub Commission
Capt. G. W. E. Warley	Ports Branch
Mr. James B. Hurley	Operations Branch
Mr. A. C. Allman	Ports Branch
Mr. Mellini Enrico	Inspector General, Inland Waterways, Ministry of Transport
Mr. Visentini Marco	Inspector General, Ministry of Public Works
Mr. Mario Bianchi	

Report made by Mr. Mario Bianchi on Inland Waterways was discussed. The Italian Government representatives were requested to make their own survey of the Po River inland waterways immediately and proceed with the necessary repairs to locks and bridges, advising if any work has already been started. It was pointed out that the military pontoon bridges are under military control and their permanent removal or arrangements for partial removal to facilitate inland transportation should be taken up with the corresponding Allied military authorities. This matter will be taken care of by the Ports & Warehouse Division.

It was brought out that Engineer Agostini went North and is awaiting instructions from the Italian Government to make a survey of the Po River inland waterways, but due to the recent change in the Government, it will be necessary that Engineer Agostini be approved by the Allied military authorities in order that he may proceed with this survey. The Ports & Warehouse Division will take this matter up with the Allied military authorities with jurisdiction on this subject. The Italian Government representatives were requested to instruct Engineer Agostini to present himself before the Allied military authorities at Padua in order to expedite matters.

Captain Shepard, representing the Public Works Sub Commission, was requested to keep in close touch with the Italian Ministries of Public Works and Transport in order that his Sub Commission may be fully posted on the progress being made in connection with necessary repairs to be made. It was requested that Public Works Sub Commission should assign their own representative to

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keep in close contact with the Italian engineers in charge of the work. Captain Shepard assured that this could be arranged.

The Italian Government representatives were informed that these inland waterways are very essential and the necessary repairs should be given the highest priority. It was arranged that requisitions for materials needed for these repairs should be screened by the Italian Ministry of Public Works in conjunction with the Public Works Sub Commission and Transportation Sub Commission should be kept fully informed and given an opportunity to pass on these priorities. The Italian Government representatives were requested to submit a list of priorities which they stated would be sent to the Transportation Sub Commission the following day.

It was brought out that the Po River will be under one region and the Canal under another region. Therefore, the necessary repairs will have to be handled accordingly. However, the requisitions for materials for these repairs will be screened according to an over-all plan so that the most important works will be given higher priority.

Mr. Bianchi was requested to have a talk with the attending Italian Government representatives to further explain the basis for his report, which is his own personal view and not the view of the Allied Commission.

Italian Government representatives were asked to furnish a list of all barges available for service in the inland waterways. They agreed to furnish a list of barges in service in 1939 and a list of barges now available.

Col. Sieff stated that he had written to the regional transportation officers and asked for their advice in connection with the operations of inland waterways and upon receipt of replies, the matter will be further discussed with the Italian Ministry of Transport.

R. M. Bazzanella

R. M. BAZZANELLA, Chief
Ports & Warehouse Division

DISTRIBUTION:

Col. M. J. Sieff - Movements Division
Major G. B. Godfrey - Shipping Branch
Mr. Mellini Enrico - Ministry of Transport
Mr. Visentini Marco - Ministry of Public Works
Mr. Mario Bianchi
Capt. Shepard - Public Works Sub Commission

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CONFIDENTIAL

Rome, 11th June 1945

To: Headquarters,
Allied Commission.
Transportation Sub Commission.

INLAND WATERWAYS.

This is a survey of the prevailing conditions in the Venezia and Lombardia Regions and recommendations for efficient re-organisation, carried out by the undersigned at the request of A.C.

1. DAMAGE TO THE INSTALLATIONS.

The damage, caused by both air-raids and German destruction, is very extensive in the lower stretches of the Po river and its surrounding canals. In particular the damage suffered by the all-important locks of Cavanella and Pioppa blocks effectively the main entrance into the river from the Lagoon, and the total destruction on the locks of the Po di Volano make it very difficult to reach Ferrara from the south (Ravenna).

All along the Po river the traffic would be in any case impossible due to the ruins of the bridges, not yet removed, and to a number of pontoon bridges.

Other ruined bridges and minor damage to gates must be removed and repaired before opening waterway traffic to such important inland ports as Rovigo, Padova and Battaglie. It is therefore possible that what steps have been taken locally by the Regional Transportation Sub Commission of A.M.G. might be more effective if similar pressure were brought to bear in Rome on the Ministero dei Lavori Pubblici for a speedy rehabilitation of the inland waterways.

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Until such measures have been taken, the capacity of the waterways system will be considerably reduced, but it must be clearly stated that considerable possibilities exist even at present.

With short hauls by truck or railway, some of the obstacles may be overcome, as in the case of grain amassing or redistribution and coal supplies to Ferrara, Padova and other cities; to brick furnaces and sugar factories scattered over a wide area in the lower Po, in which latter case the huge beet movements may find also a substantial outlet in water transportation.

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2. DAMAGE TO THE FLEET OF BARGES AND TUGS.

This is also very extensive; about 50% of all barges and 75% of all tugs were lost or damaged. The prospect for salvage and repairs is rather good, but the shortage of tugs will be acute.

The tugs upon which the proposed Pool can count to start operations inside this month are the following :-

Trieste	- 80 HP	- Diesel	
Adolfo F.	- 80 "	- "	
Victor	- 67 "	- "	
Carlo Alberto	-120 "	- "	
Torello	-150 "	- "	(ready 15/7/45)
Serons	-120 "	- "	
N.N.	- 40 "	- "	(under construction, ready 31/7/45)
Lucia	- 60 "	- "	
San Secondo	-110 "	- Steam	
Nero	- 40 "	- "	
Governolo	- 80 "	- Diesel	(special wheel-propelled for river navigation; both ready 30/6/45)
Mirasole	-260 "	- Steam	

It is imperative that the tugs, which with their shallow draft (about m.1.40) are specially built for inland water traffic, should not be requisitioned or employed in other sectors of sea activities. It is to be noted that the Senior Sea Transportation Officer - Venice - is in complete agreement with this policy, as his needs for tugs and lighters have been easily covered by the harbour craft tonnage available in Venice.

The barges available, which range in size from 70 to 300 ton cargo-carrying capacity, with an average capacity of 170 tons, are about 130 for a total capacity of 25,000 tons. It is expected, with the help of the Pool earnings (see para 4-G) to salvage and repair, by the end of August, other additional tonnage. It is possible to forecast without undue optimism, approximately 250 barges for a total of 44,000 tons by the end of August.

3. SHIPPING ORGANISATION.

The shipping in the Po valley is still following old-established customs, which it is advisable to respect in an endeavour to re-organise it, in order to obtain active co-opera-

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Usually the owners of the barges sublet their craft to each "capo-barca" (captain) who collects 70% or 75% of the freight and pays all expenses, including traction (horse, tractor or tug). This direct interest of the crew makes it extremely difficult to achieve one of the principal aims, that is the impartial choice of a barge for whatever type of cargo is required for movement. To overcome this difficulty, the German organisations (Speer and Mittlemeer) tried, with catastrophic results, to put the crew on

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a day-to-day pay basis. It is not recommended that this experiment be tried again.

The German organisations, to solve the same problem of retional employment of barges and tugs, chose the system of giving direct contracts only to two of the bigger groups: (the Cooperativa Mantovana Barcari and the Navigazione Fluviale San Marco); the smaller groups were aggregated to these principal ones, who immediately tried to turn this fortunate position to their own advantage.

As a result of this and a similar procedure being adopted by the third large firm, headed by Mr. Bernardi (the shrewdest man in this business) which enjoyed a monopoly of all Consorzio Agrario Movements, the smaller firms were reluctant to enter into a Pool organisation which would only be controlled by the three large firms and in particular by Mr. Bernardi.

It must, however, be remembered that the heaviest relative losses in tugs have been suffered by the indipendent groups; who now find themselves at the mercy of the "Big Three". Also this peculiar situation of privilege makes the bigger organisations reluctant to give up this chance of monopoly.

4. PROPOSED NEW SET UP.

In the light of the foregoing observations, a certain number of conclusions have been reached with a view to speedy rehabilitation of this traffic. The following recommendations are therefore submitted.

A. The traffic in Venezia Region (including Ferrara Province and the lower Po up to Mantova) forms a distinct, separate trend from the traffic in Lombardia (Upper Po and Milan's canal system) both for technical and geographical reasons.

The barges that can reach Pavia and Milan must not exceed 80 - 100 tons maximum dead weight, while barges from 200 tons minimum dead weight are more suitable in the Venezia Region. Therefore, barring transhipment in Mantova, only exceptionally advisable and never economically convenient, all traffic for Milan must be done with specially built barges, usually owned by Milan and Pavia firms.

The formation of two distinct organisations, (a) an Inland Waterways Pool - East and (b) an Inland Waterways Pool - West, is therefore recommended.

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The formation of two distinct organisations, (a) an Inland Waterways Pool - East and (b) an Inland Waterways Pool - West, is therefore recommended.

In order to keep co-ordination and unity between the two organisations, in the Eastern (Venezia) Pool, all bids for through traffic for Milan, as well as all bids for local movements in the Venezia Region itself, should be centralised. Similarly, bids for local traffic in Lombardia Region should be dealt with by the Milan offices of the Western Pool.

B. The Eastern Pool should include all barge owners, pro-rata with their tonnage. The tug owners not to be

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a part of the Pool, as their ships will be taken over on a time-charter basis by the Pool, in order that only movements priorities will dictate their proper use.

C. The allocation to each owner should include all tonnage which he undertakes to salvage, repair and put into operation in a given time (say, six to nine months). In this manner Pool profits will be distributed also as a salvage premium, which will stimulate this activity.

D. The Pool to be managed by a Board of Directors, totaling five members, two of which will be selected by owners of a fleet of more than 3,000 tons D.W., two by owners of smaller fleets and one chosen by A.M.G. - Venezia Region.

The President of the Pool to be selected by all members, owners of a fleet over 1,000 tons and up to 5,000 to have one vote; owners of more than 5,000 tons D.W. to have two votes. Owners of fleets under 1,000 tons should form group in order to vote.

E. All movements of barges to be made only by order of the Pool; all bids to be screened and marked for Priority according to the requests of A.M.G. or other authority.

The Pool Head Offices to be in Venice and a liason office detached in Padova.

F. The Pool to collect all freight and be responsable for tugs and other traction, as well as payment to barge owners according to an agreed tariff. The owners to settle with their crew, according to local customs and in such a manner as to stimulate efficiency and a speedy turn-round of craft.

G. All Pool profits to be divided among owners in the manner above stated.

H. In Lombardia Region the procedure will require to be different. There all firms interested in transportation are generally not owners of the barges, which are hired according to need. It is felt that a Pool should, in this case, group not the small barge owners, but the more responsable firms who can be trusted to control barges in the desired manner.

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A fuller report as to how this procedure should be effected will be submitted at a later date when further information has been obtained.

Mario Bianchi

MARIO BIANCHI.

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MINISTRY OF PUBLIC WORKS

OFFICE OF THE CIVIL ENGINEERING DEPT. FERRARA

REPORT ON LINES OF INLAND NAVIGATION IN THE PROVINCE OF FERRARA WITH SUMMARIZED INDICATION OF DAMAGE SUFFERED THROUGH WAR ACTION.

A Inland navigation in this Province is carried on through the following waterways:

1) River Po in the section from the Mantova Province border at Stellata down to the junction of the Goro Po at Serravalle from Brera for a length of 64 Km.

2) River Goro Po from Serravalle down to the mouth at the sea near Gorino for a length of 43 Km.

3) Boicelli canal from the Pontelagoscuro lock which connects it with the Po down to the mouth of the Volano canal near Ferrara for a length of ~~Km~~. 6. km.

4) Volano canal from Ferrara to the mouth in the sea in the water pocket of Goro, for a length of 70 Km.

5) Primaro canal from ~~Kms~~ S. Nicolò to the mouth in Volano near Ferrara for a length of 18 Km.

The above inland waterways form the navigable line classified as second class and the upkeep is done by the State, Ministry of Public Works.

B From this principal line there branch off other unclassified navigable canals, as follows:

1) Canal flowing out of the reclaimed zone of Burana da Ferrara at Bondeno, of the length of 15 Km., maintenance by the Consorzio Interprovinciale of Burana.-

2) Drainage canal Leone with branch off for Iolanda di Savoia, for a length of 10 Km., maintenance by the Consorzio della Zona

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Brera for a length of 64 Km.

2) River Goro Po from Serravalle down to the mouth at the sea near Gorino for a length of 43 Km.

3) Boicelli canal from the Pontelagoscuro lock which connects it with the Po down to the mouth of the Volano canal near Ferrara for a length of ~~Km.~~ 6. km.

4) Volano canal from Ferrara to the mouth in the sea in the water pocket of Goro, for a length of 70 Km.

5) Primaro canal from ~~Km~~ S. Nicolò to the mouth in Volano near Ferrara for a length of 18 Km.

The above inland waterways form the navigable line classified as second class and the upkeep is done by the State, Ministry of Public Works.

B From this principal line there branch off other unclassified navigable canals, as follows:

1) Canal flowing out of the reclaimed zone of Burana da Ferrara at Bondeno, of the length of 15 Km., maintenance by the Consorzio Interprovinciale of Burana.-

2) Drainage canal Leone with Branch off for Iolanda di Savoia, for a length of 10 Km., maintenance by the Consorzio della Bonificazione Ferrarese. 25

3) Marozzo and Palotta da Codigoro at Porto Garibaldi Canals for a length of 20 Km. maintenance by the Municipalities of Comacchio and Lagosanto.

Through war action, the said waterways have suffered damage to bridges, locks and mobile sluices in such manner that it is no longer possible to make use of them, not even in a small way. This is not only due to the debris which obstruct them, but also in view of the heavy damages caused to the Pontelagoscuro lock

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which has been put out of use, and to the inefficiency of the mobile sluices in the Volano, half collapsed, so it is impossible to keep enough water in the canals ~~water enough~~ for sufficient draft for navigation.

In relation to the brief exposition of facts above, it is necessary, for the renewal of navigation, to carry out the reconstruction of the mobile sluices of Valpagliaro and Tieni and of the heads below the aforementioned locks, besides various repairs to the lock of Pontelagoscuro on the Po and that of Marozzo on the canal of the same name, and at the same time the following obstructions must be cleared:

1) For the river PO:

(a) take away from the bed the metallic girder of the road bridge at Pontelagoscuro;

(b) salvage of craft sunk in the lock of Pontelagoscuro and of the ~~material~~ cargo which the sunken boats contain;

2) For the Boicelli canal:

(a) free the bed of the ~~material~~ parts of 5 bridges in ferroconcrete, fallen down;

(b) renewal of embankments in several places.

3) For the Volano canal:

(a) clearance of bed ~~where there is the material~~ containing parts of 25 blown up bridges, of which 5 in ferro-concrete and 20 in steel with abutments in masonry;

(b) clearing of wooden piles placed in the bed at Passo Pomposa to build a footbridge;

(c) renewal of embankment in several places;

(d) repairing some sections of tow paths.

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canal of the same name, and at the same time the following obstructions must be cleared:

1) For the river PO:

(a) take away from the bed the metallic girder of the road bridge at Pontelagoscuro;

(b) salvage of craft sunk in the lock of Pontelagoscuro and of the ~~material~~ cargo which the sunken boats contain;

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(a) clearance of bed ~~where there is debris~~ containing ~~material~~ parts of 25 blown up bridges, of which 5 in ferro-concrete and 20 in steel with abutments in masonry;

(b) clearing of wooden piles placed in the bed at Passo Pomposa to build a footbridge;

(c) renewal of embankment in deveral places;

(d) repairing some sections of tow paths.

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4) For the Primaro canal:

(a) clearance from the bed of ~~the material~~ parts of 8 blown-up bridges, of which 5 in ferro-concrete, 1 in steel with abutments in masonry and two with ferroconcrete girders and abutments in masonry.

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5) For the canal Marozzo and Palotta:

a) clearance from the bed of the remains of 3 blown-up bridges, of which 2 in masonry and one in ferro-concrete;

b) removal of obstructions in the Marozzo canal near Comacchio.

6) For the Leone canal:

(a) clearance of ~~material~~ parts of two blown-up bridges from bed.

7) Drainage canal of Burana:

(a) Clearance of bed obstructed by blown up bridge.

D In particular the damage suffered by inland waterway works, ~~in~~ - to mention the most important damage, is as follows:

1) Pontelagoscuro lock:

This important lock at the right embankment of the Po river, built together with the Boicelli canal to place the Volano in communication with the Po river, is formed of the lock basin with six cabins, three to the right and three to the left containing the manoeuvring mechanisms, both hand and electric, and a small plant for ~~conducting away~~ pumping water with three electric pumps and electric transformer set, has suffered the following damage:

(a) Masonry work:

Destruction of two manoeuvre cabins, one of the second group on the left, and the other of the third group on the right, and destruction damage to that of the third group to the left, and ~~falling down~~ of part of the abutment (left) of the road bridge crossing the lock at the top of the embankment of the Po, for a height of 10 linear metres.

~~There are partially destroyed~~ The coping, windows and doors on the 2nd. floor of the building containing the conducting plant, are partially as well as the dividing walls and a concrete wall left of the Leone

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6) Clearance of bed obstructed by blown up bridge.

In particular the damage suffered by inland waterway works, ~~is~~ to mention the most important damage, is as follows:

1) Pontelagoscuro lock:

This important lock at the right embankment of the Po river, built together with the Boicelli canal to place the Volano in communication with the Po river, is formed of the lock basin with six cabins, three to the right and three to the left containing the manoeuvring mechanisms, both hand and electric, and a small plant for ~~conducting away~~ Removing water with three electric pumps and electric transformer set, has suffered the following damage:

a) Masonry work:

Destruction of two manoeuvre cabins, one of the second group on the left, and the other of the third group on the right, and damage to that of the third group to the left, and ~~falling down~~ destruction of part of the abutment (left) of the road bridge crossing the lock at the top of the embankment of the Po, for a height of 10 linear metres.

~~There are partially destroyed~~ The coping, windows and doors ~~at~~ over the 2nd. floor of the building containing the conducting plant, are partially as well as the dividing walls and a concrete wall left of the ~~arrivak~~ basin of the arrival of water.

b) Metallic work:

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Two cast-iron columns are broken together with the manoeuvring flywheels of the 2nd. group to the left.
The metallic sluices of the conducting plant are only bent but the relative manoeuvring apparatus are broken.

10 iron beams are deformed, 5 of which have been pierced in various points and have lost their oak packing. ~~There has been~~ also ~~destroyed~~ part of the steel corbel of the aerial ropes railway

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for manoeuvring the sluices. Has also been destroyed.

Electric equipment:

The connecting line with the transformer set has been destroyed for a length of about 150 linear metres, and the trellis pylon supporting the line has been badly bent.

The connecting cables crossing over the lock connecting up the manoeuvre sets are broken and in part missing. All the electric lines aerial rope railway have been destroyed, and the rest of the above-mentioned electric plants are all to be overhauled.

In the transformer cabin a trellis has been badly bent, and two transformers broken, and one of the three motors is damaged. Further, the whole of the electric plant regarding the lock, etc. has been damaged and must be overhauled.

2) VALPAGLIARO LOCK:

a) Masonry work:

The road bridge at downstream end of the lock is blown up, and the walls ~~below the~~ underneath the (~~underneath the~~) bridge have fallen down to their foundations. The right cabin to right downstream with manoeuvre devices is destroyed, and the other three slightly damaged.

b) Metallic work:

In the destroyed cabin the flywheels of the two columns are broken, the whole eletric plant of said cabin is destroyed, and ~~damaged~~ the motor, the resistance, the automatic brakes undamaged ~~Destroyed~~, one of the and poles of the eletric line of the bridge crane, is destroyed and the line itself damaged, as well as the cables crossing the lock for electric connection of the cabins.

c) Mobile sluice of Valpagliaro:

Alongside the lock is the mobile sluice to keep above it, at the ~~the~~ the height of water necessary for navigation. It has six

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two transformers broken, and one of the three motors is damaged. Further, the whole of the electric plant regarding the lock, etc. has been damaged and must be overhauled.

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The road bridge at downstream end of the lock is blown up, and the walls ~~below the~~ underneath the (~~underneath the~~) bridge have fallen down to their foundations; the right cabin to right downstream with manoeuvre devices is destroyed, and the other three slightly damaged.

b) Metallic work:

In the destroyed cabin the flywheels of the two columns are broken, the whole eletric plant of said cabin is destroyed, and ~~damaged~~ the motor, the resistance, the automatic brakes, ~~Destroyed~~ undamaged one of the end poles of the eletric line of the bridge crane, is destroyed and the line itself damaged, as well as the cables crossing the lock for electric connection of the cabins.

c) Mobile sluice of Valpagliaro:

Alongside the lock is the mobile sluice to keep above it, at the upper head, the height of water necessary for navigation. It has six openings with abutments in masonry and intermediate piers in ferro-concrete. The twelve abutments, 2 per pier, are manoeuvred both by hand and electrically, with electric motor and hydrodynamic plant. At the lower head of the lock on the prolongation of the abutments there is a steel bridge.

Following on the falling of the bridge, mined and blown up by the Germans, all the abutments were completely destroyed, as well as the manoeuvring cabin in masonry, the concrete poles damaged, the vents of the sluices broken, and lifting mechanism damaged, the

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the oil pipes damaged, the motor, various devices and the electric plant are damaged.

As regards the masonry work the lock must be entirely rebuilt, except for two intermediate cisterns which may be eventually utilized, but as regards the metallic parts there can be used only the sluices, after repairs and ranging in workshop.

3 TIENI LOCK:

@ Masonry:

The road swing bridge, lower end of the lock, was blown up, and in falling carried away the side walls of the lock up to the manoeuvring set of the gates which have fallen into the water. The top of the left wall of the lock is damaged throughout its length through holes for mines.

(b) MOBILE SLUICE OF TIENI:

Alongside the lock is the mobile sluice to keep, above the lock, the depth of water necessary for navigation. It has six arches with abutments in masonry and intermediate steel trusses, besides overhead bridge for manoeuvring and transit. The two central arches are closed by four sluices worked both by hand and mechanically by means of an electric motor and of a hydrodynamic plant. The remaining four arches are closed by wooden rafters worked by hand through pulleys and inverted bow and chain girder. Below the lock on the extension of the abutments there is a steel bridge.

Following on the fall of the bridge, the abutments are completely destroyed, partly twisted the steel trusses, are partly and twisted the motor compartment destroyed, and the oil pipes and the electric plant damaged.

As regards masonry the lock is to be entirely rebuilt

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Following on the fall of the bridge, the abutments are completely destroyed, ~~partly twisted~~ the steel trusses, are partly ~~and~~ Twisted the motor compartment destroyed, ~~damaged~~ and the oil pipes and the elettric plant. damaged.

In ~~As~~ regards to masonry, the lock is to be entirely rebuilt, ~~and as regards~~ In regards to metallic work, ~~there can be used~~ the four metallic sluices and the relative mechanism, can be used after the required adjustments and repairs in workshop.

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4. MAROZZO LOCK:

An antiquated lock with wooden gates, for craft of small tonnage. After the blowing up of the bridge, at the upper head of the lock, the gates ~~cannot~~ do not work, and it is believed that masses of masonry fallen into the bed prevent the working of the gates.

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E

For the carrying out of all the above described work, for removing obstructions in the canals, it is estimated, basing on current prices, that the following sums will be required:

1) for the Pontelagoscuro lock and annexed water works: Lire 10,000,000

2) for the Valpagliaro lock and annexed mobile sluice " 4,000,000

3) for the Tieni lock and annexed mobile sluice " 5,000,000

4) for the Marozzo lock " 500,000

5) for cleaning/clearing the bed of the canals for the material of blown-up bridges, for taking away pile foundation grills and removal and salvage sunken craft, etc. " 12,000,000

TOTAL: Lire 31,500,000

It is superfluous to point out that for the renewal of the locks and sluices it is understood that the work of specialized firms which possess adequate means for this class of work is necessary, and therefore in consideration of the time required for such complex works, it is proposed that a gradual carrying out be effected, commencing from the canals which pass through districts which most needed it, in such way as to allow a renewal of navigation, even in intermediate sections of great local interest.

The zone of Comacchio, owing to its position, is that which suffers most from the suspension of inland navigation, since its population drew their greatest resources from trade through that navigation.

Should be given in carrying out

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4) for the Marozzo lock " 500,000

5) for cleaning/clearing the bed of the canals for the removal of blown-up bridges, for taking away pile foundation grills and removal and salvage sunken craft, etc. " 12,000,000

TOTAL: Lire 31,500,000

It is superfluous to point out that for the renewal of the locks and sluices it is understood that the work of specialized firms which possess adequate means for this class of work is necessary, and therefore in consideration of the time required for such complex works, it is proposed that a gradual carrying out be effected, commencing from the canals which pass through districts which most needs it, in such way as to allow a renewal of navigation, even in intermediate sections of great local interest.

The zone of Comacchio, owing to its position, ~~it that~~ which suffers most from the suspension of inland navigation, since it's population drew their greatest resources from trade through that navigation.

Therefore ~~from~~ precedence could be given in carrying out this work, to this zone to renew the navigation in the canals Marozzo - Palotta and in the Volano below Codigoro in such way that ~~the~~ Comacchio could again start inland waterway communication with the neighbouring centres of Lagosanto, Codigoro and with the Venetian zones.

Such work could be reduced to the removal of debris of three blown-up bridges and other obstructions from the bed of the Marozzo canal near Comacchio, in renewing the lock of Marozzo, in the removal from the bed of the Volano of the re-

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mains of a blown-up bridge and extraction of the foundation grill at the bottom of the bed at Passo Pomposa.

The first set of work, based on present prices, would be a further expenditure of only 3,000,000 Lirs.

FERRARA, 8 June 1945

THE CHIEF ENGINEER

(sd) R. Formichi

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TRANSLATION

MINISTRY OF PUBLIC WORKS

MAGISTRATO ALLE ACQUE

Repairs to the inland navigation works of the Compartment of the Magistrato delle Acque damaged by War Action.

REPORT

The damage caused by the war to the navigation works of the inland waterways in the area of the Magistrato delle Acque cannot be estimated, even roughly, unless careful surveys are carried out, ~~which allow~~ allowing, especially for the foundations of the ~~works in masonry~~ masonry works etc., ascertaining the real static conditions of the damaged built works.

The carrying out of such indispensable surveys presupposes the disposal of adequate means of transport (cars and especially bicycles) which to-day part of the Offices do not possess, in spite of the insistent requests made to the local and Allied Authorities. It is obvious that without such means it will not be possible to proceed to draw up plans and later direct the work to be done.

Most of the work to be done concerns ferro-concrete works, supplied with unsubstitutable metallic parts and relative devices for manoeuvring, and another difficulty to overcome will be the rapid and timely supply of relative material (cement, soft steel, section irons, bricks, etc.) without which the principal works cannot even be started. The interested Offices, fully aware of the importance of the problem, are already carrying out those works which are possible in the present situation and which will allow, in some sections of the waterways a reduced inland navigation. These, however, are short sections and the renewal of navigation would be only partial.

It must be noted that the technical time indicated in the

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cannot be estimated, even roughly, unless careful surveys are carried out, ~~which allow~~ allowing, especially for the foundations of the ~~works in masonry~~ masonry works etc., ascertaining the real static conditions of the damaged built works.

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Passing on to the detail of the work, this may be thus summarized:

1) Venetian coastal line.

a) the locks of Benazzano to left and right of the river Tagliamento are damaged, especially the gates and relative mechanisms.

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b) the tow paths and relative foot bridges are damaged;

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c) The signalling apparatus of the section of the Lagoon of Marano ~~are~~ almost completely destroyed;

d) The walls and the gates of the locks right and left of the river Piave at Revedoli and Cortellazzo are damaged; (N°3 & 4)

e) it will be further necessary to remove the numerous craft sunk in the various sections of the line, since their presence prevents navigation;

f) finally it will be necessary to remove the material obstructing the bed and the silt formed through lack of maintenance due to the war. For this work some dredgers and relative fuel are required;

2) Po-Brondolo navigable line.

a) The following locks are damaged: Brondolo, Cavanella d'Adige left (especially serious), right, Volta Grimana (Nos. 5, 6, 7, 8); the damage is caused principally in the distribution of sections of side walls, serious damage to the metallic gates, swing bridges, lifting bridges and relative mechanisms;

3) Venice-Padua line.

a) The following locks are damaged: Moranzani, Dolo and Stra (Nos. 9, 10, 11); the first was struck at the gates, the others have their side walls damaged seriously as well as accessory works;

b) the boom across the river Brenta at Stra is seriously damaged, and this is the key for feeding the Brenta and the Piovego canals which form this line;

c) the remains of the metallic girder of the road bridge at the mouth of the Piovego must be removed.

4) Line Padua - Battaglia - Chioggia.

a) Supports of the centre arch (N.13) were destroyed by a bomb, carrying away all the superstructure, the metallic sluices and the relative mechanism; this repair is indispensable because the sluices regulate navigation both in the upper

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2) Po-Brondolo navigable line.

a) The following locks are damaged: Brondolo, Cavanella d'Adige left (especially serious), right, Volta Grimana (Nos. 5, 6, 7, 8). The damage is caused principally in the distribution of sections of side walls, serious damage to the metallic gates, swing bridges, lifting bridges and relative mechanisms;

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c) the remains of the metallic girder of the road bridge at the mouth of the Piovego must be removed.

4) Line Padua - Battaglia - Chioggia.

a) Supports of the centre arch (N.13) were destroyed by a bomb, carrying away all the superstructure, the metallic sluices and the relative mechanism; this repair is indispensable because the sluices regulate navigation both in the upper and in the lower canals;

b) the Battaglia lock (No.14), as such is intact, but the opening and closing mechanisms are damaged.

5) Goro Po line/Gnocca Po:

a) The two locks towards the Goro Po and towards the Gnocca Po are damaged, and the bridge in connection with the left bank of the Venetian lagoon drainage has fallen into the bed.

6) Po-Canal Bianco line./

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6) Po-Canal Bianco line.

a) It is necessary to repair the Cavanella - Po lock so as to be able to use this line during the repairs of the Volta Grimane lock.

7) Secondary lines.

a) Over the rivers Stella, Aussa, Corno it is necessary to rebuild some foot bridges which give continuity to the tow path, and to remove the artificial obstructions made by the Germans at the mouths of these small rivers;

b) Brian canal lock: damaged, as also the sluices and the swing bridge, ~~that is to say~~ at the metallic parts, the walls and the operating mechanism.

c) Adigetto and Scortico canal: these require removal of rubble fallen into the bed due to bombing of neighbouring houses.

8) Navigable rivers:

a) on the river Lemene the lift bridge of Marango must be repaired.

b) On the river Livenza the Caorle lift bridge must be repaired, and the bed at the bridges of Salute and S. Stino (rly.) must be cleared.

c) Piave river: must remove the bridges of Grisolera and S. Donà, road and rail.

d) Adige river: to renew navigation it is necessary to remove the metallic girders of the demolished bridges of Cavanella d'Adige, rail and road, Cavarzere rail, Boara Polesine road and rail, Cà Morosini and Badia.

To carry out these works as per compendium attached there is estimated an expenditure of Lire 158,000,000, as follows:

1) Venetian coastal line	Lire	41,133,500.-
2) Po-Brondolo	"	54,800,000.-
3) Padua-Venice	"	10,696,000.-
4) Padua-Battaglia-Chioggia	"	2,895,000.-

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4) Padua-Battaglia-Chioggia	"	2,895,000.-
5) Goro Po - Gnocco Po	"	11,200,000.-
6) Po - Canal Bianco	"	4,000,000.-
7) Secondary lines	"	9,300,000.-
8) Navigable rivers	"	23,000,000.-
To make a round figure	Lire	975,500.-
TOTAL: . . .	Lire	158,000,000.-

In the compendium ~~are indicated with~~ priority I the works indispensable to renew the most important lines; priority II for the less important works, and with priority III those works which though indispensable are not of a real urgent character.

VENICE, 12 July 1945. THE PRESIDENT (sd) Waldis

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TRANSLATION

MINISTRY OF PUBLIC WORKS
SENIOR OFFICE OF INSPECTION FOR THE PO
ROYAL CORPS OF CIVIL ENGINEERS
AUTONOMOUS SECTION FOR THE PO

P A R M A

REPORT ON THE CONDITIONS OF NAVIGABILITY OF THE PO AND ON THE DAMAGE TO THE DREDGING ~~PARK~~ Equipment AND TO THE FIXED DEFENCES AT THE NAVIGATION CURVES.

1) PRESENT SITUATION OF CONDITIONS OF NAVIGATION ON THE PO.

Due to war action, the navigable line of the Po, from Pavia to the lock of Volta Grimana (Km. 357), (the fixed bridges, rail and road, were destroyed), is divided now into seven sections varying in length from 35 to 71 kilometres.

In spite of this condition, craft of limited draft may pass from one section to another, even when the river level is low, by carrying out difficult manoeuvres at the fallen bridges.

It is now possible to navigate with a draft of m. 0.70 from Pavia to Cremona; draft of m. 0.80 from Cremona to the mouth of the Mincio; draft of m. 1.20 from the mouth of the Mincio to the lock of Volta Grimana, and then with boats of 100 tons from Pavia to the mouth of the Mincio loaded with 60 to 70 tons of goods; with boats of 100 - 200 - 250 tons loaded up to 120 tons from the mouth of the Mincio to the Volta Grimana lock.

As is seen, in case of absolute necessity, without waiting for increases in the river level, it is possible to navigate, sacrificing economic convenience; when the river level rises, the carrying capacity of the craft will also increase.

One of the greater obstacles to navigation, at the moment, are the debris of the blown up bridges which make the bottom (bed) of the river dangerous.

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As is seen, in case of absolute necessity, without waiting for increases in the river level, it is possible to navigate, sacrificing economic convenience. When the river level rises, the carrying capacity of the craft will also increase.

One of the greater obstacles to navigation, at the moment, are the debris of the blown up bridges which make the bottom (bed) of the river dangerous.

It is necessary to remove these remains at earliest, both as regards safety and possibilities of navigation as well as for the regular flow of water, because in the event of floods ~~there would arise~~ dangerous situations would arise to the embankment defences through undue rise of water above the bridges.

Headquarters Emilia Region AMG, Public Works & Utilities Division, requested our Office to arrange for the clearance of bed of the Po river by removing the debris and masonry of the blown up bridges.

This work has been organised arranging the first contracts,

but/

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but a long time is necessary to prepare for the starting of the work because of lack of coordination between this Office and the initiative of the Administrations of the State Railways and of the State and Provincial Roads. Also because in some cases, the Railways have allotted to Undertakings of bridge building, also the removal of relicts, without informing this Office; this is due to the fact that the Po zone is under two AMG Regions (Bologna and Milano).

The difficulty of communications prevents repeated contacts with the several principal Offices in order to establish and clarify the respective competency for the various works, with sufficient speed.

It has to be stated that the work of clearing the bridges blown up at Cremona, Casalmaggiore, Borgoforte, Ostiglia, Pontelagoscuro will require an expenditure of about 60,000,000 (sixty million) Lire using 70,000 working days , and could be finished by February 1946.

Another obstacle to navigation is represented by the temporary pontoon bridges which cannot be opened, built on the initiative of local Bodies with remains of military material.

At present there are four: two at Piacenza, one at Borgoforte, and one at Pontelagoscuro, and they will be increased as craft dispersed along the P o are recovered.

It is indispensible that measures be taken by the competent Authorities and by the AMG so that the bridges be modified with sections which can be opened, temporarily suspending traffic over the bridges during the manoeuvres of opening and closing.

It is further to be stated that between the mouth of the Mincio and Mantova, it is impossible to navigate now with 600-ton lighters, because the new lock of Governolo is partly damaged, and because the curves on the Mincio , in this section, do not allow for the passage of lighters of such size.

Finally it is pointed out that along the Po there are boatmen and lightermen accustomed to carry on navigation, even by towing from tow path, and a large number of them would find

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Finally it is pointed out that along the Po there are boatmen and lightermen accustomed to carry on navigation, even by towing from tow path, and a large number of them would find re-employment as soon as navigation is renewed.

2) DAMAGE TO THE DREDGING PARK UNDER CARE OF THIS OFFICE.

The strength of floating material of the Autonomous Section for the Po was of 560 craft, valued as per inventory, inclusive of equipment and reserve material, at Lire 30,000,000 (1941), included tugs, dredgers, boats, pontoons, etc. 242

Through war action almost all the above has been damaged or sunk,

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and these were dislocated along the river from Pavia to the lock of Volta Grimana (Km. 357), so that only 5% is still in efficiency.

~~There is now being carried on~~ the first works of gathering in and of refloating, ~~for~~ are now being carried out at a total of Lire 1,000,000; for putting into service all the craft, ~~there is estimated an~~ expenditure of Lire 25,000,000, and 25,000 ~~days~~ working days. is estimated

This work is of indispensible character and of urgent necessity, since we must take advantage of the periods of low water, summer and winter, to prevent the loss of this material, to-day salvable, and whose present value is of about 400,000,000 Lire.

The dredging ~~park~~ equipment is indispensible to improve the navigation of the river during low water periods and to clear the navigable channel of the river from the innumerable ~~relicts~~ wrecks of craft and vehicles sunk through war action.

We have to state that this Office at present has in working ~~efficiency~~ condition two tugs of 60 HP, 4 boats of 100 tons each, 3 boats of 300 tons, and 4 suction dredgers. This material is now being used for salvage work and for getting in the damaged craft, which, after repairs, will be used for river navigation.

From information received, it appears that the Società Barcari of Mantova has at it's disposal a tug and 20 boats of 150 tons each, and that they are repairing many others.

~~There has been formed again in Venice~~ The Società A.N.N.I (Associazione Nazionale Navigazione Italiana, Calle dei Frari 913) has been formed again in Venice. This organization is composed of ~~which associates~~ all the navigators of the Po and ~~which~~ can dispose of all efficient craft for river navigation.

3) DAMAGE TO THE DEFENCES ON THE 47 NAVIGATION CURVES (excluding the hydraulic works of 2nd. class which are under several offices of the Genio Civile).

The embankment defences at the navigation curves have been damaged in part through war action and German wreckers, principally by taking away in various spots the stone covering which protects the

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3) DAMAGE TO THE DEFENCES ON THE 47 NAVIGATION CURVES (excluding the hydraulic works of 2nd. class which are under several offices of the Genio Civile).

The embankment defences at the navigation curves have been damaged in part through war action and German wreckers, principally by taking away in various spots the stone covering which protects the sandy bank, and overturning of works through bombardments.

If repairs are not arranged for immediately, using again in part the stones which are recoverable along the banks, ~~there would be compromised~~ the stability of the whole of the defences, with danger of the ruin of all the works by action of river floods, ~~and~~ therefore, the following work is proposed:

a) Work which absolutely cannot be postponed: at the curves Nos. 36 - 34 - 32 - 30 - 28 - 26 - 25 - 24 - 23 - 21 - 19 - 8 - 6 - 4 - to be carried out by salving on the spot and putting in place the stone work, estimated cost ~~Lire~~ 3,000,000. Lire

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The work are already under allotment for a sum of Lire 1400000, and as soon as the AMG will have approved the remainder, that too will be got under way.

It is expected to finish all of this work within the month of November this year, using 15,000 working days.

B) Urgent Works: There are to be effected works of replacement of parts of works destroyed by bombardments or damaged at the navigation curves Nos. 33 - 27 - 23 - 20 - for a total sum of Lire 4,000,000 which will require 10,000 working days.

These works should be started in August and finished by December, but it is necessary to supply stone and small stone from the Appenins and alpine torrents, at an average distance of 70 kilometres from the zones of use.

It is indispensable to allot at least three trucks with trailers for the transportation of this material, otherwise the work cannot be carried out (it is understood that with the trucks it is necessary to allot petrol and lubricants).

C) STOCK REQUIRED OF BROKEN STONES & RUBBLE STONE:

On the 47 curves it is necessary for their ordinary and extraordinary upkeep and for stocks of urgency in the case of floods to hold, as before the war, a stock of about 20,000 cubic metres of broken stones and rubble stone, which were taken away and dispersed by German wreckers, for the building of roads and places of call on the river, and this material is not recoverable, and so there is an absolute lack of it.

The supply of this stock is not of greatest urgency, but is indispensible to renew the stocks because they represent a guarantee of efficiency of the defences.

The damage caused by the dispersal of material may be calculated at Lire 16,000,000 and the collection of it will take up 20,000 working days.

PARMA, 6 July 1945.

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PARMA, 6 July 1945.

THE CHIEF ENGINEER
(Giulio Chiodarelli)

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TO RESTORE TO SERVICE THE MILAN - LAKE MAGGIORE (Locarno) INLAND WATERWAYS.

The water way MILAN - LAKE MAGGIORE using the Naviglio (canal) Grande, the industrial canals of Turbigo, Tornavento, Vizzola and the river Ticino up to the Lake, with the works built in past years could be restored to efficiency with a few works and with relatively small expense.

The following works are necessary:

1) To complete with equipment and opening of the canals of access and of exit at the lock built at the Miorina Dyke (The equipment, that is to say the lockgates and relative mechanisms, are ready at the depôt of a Firm of Bologna).

2) The building, in the section of the Ticino river between the " Miorina " and " Pamperduto ", of towage canals with rope ways at the rapids of Miorina, Cagarotta and Porto di Varallo Pombia. Put in order the towing path.

3) Lengthen by about Metres 6.00 the length of the lock of Pamperduto making use of the existing walls.

4) Complete the lock of Tornavento, building one of the two longitudinal walls (that of the lower bank) and put in place the equipment which is now ready.

5) Rebuild - eventually - two bridges on the Grande canal, which at present are of two arches which are somewhat limited and may be dangerous.

6) Place the Basin of Porta Ticinese in a position to deal with the greater traffic which the connection with the Grande canal with Lake Maggiore would bring.

The Provincial Administration of Milan has recently promoted the planning of the above-mentioned works with the idea of giving

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2) The building, in the section of the Ticino river between the " Miorina " and " Pamperduto ", of towage canals with rope ways ~~xxx~~ at the rapids of Miorina, Cagaratta and Porto di Varallo Pombia. Put in order the towing path.

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The Provincial Administration of Milan has recently promoted the planning of the above-mentioned works with the idea of giving to the city of Milan a new means of ~~carriage~~ transportation which, owing to shortage of ~~means of carriage which existed~~ transport facilities before the war, would alleviate the present difficulties, especially those relating to the ~~carriage~~ transport of building material (marbles - stones - quarry-debris for wall foundations in place of bricks) and coal.

The above-mentioned Administration intends to interest the State to consider the work as "re-establishment of a navigable waterway, registered (as in fact it is) in the second class" and therefore to the total charge of the State as laid down in ~~art~~ Art. 6 of the Law of 11 July 1913 ~~n 959~~ n°959.

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In this regard it is remarked:

a) that the work as per Nos. 1 and 4 are, according to contract, ~~at the charge~~ for account of the concessionnaire Concerns who, owing to war conditions, were authorized to postpone the work.

b) that the works mentioned in No. 6 should be ~~to the charge,~~ for the account so it seems, [redacted] of the State ~~and of~~, the Province and ~~of~~ the Municipality of Milan.

c) that only the work at Nos. 2, 3 and 5 should be at the expenes of the State.

From a first investigation made by the Provincial Administration, it would apnear that the line could be put again in service within six months, and its possibility, bearing in mind the speed of the canals, of the number, dimensions, types and dislocation of the locks, and use of lighters of 80 to 100 Tons, admitting navigation 275 days of the year and illumination of the more difficult sections, would be theoretically of 550,000 tons per annum.

Should trade start exclusively above Sesto Calends, that is to say on the Lake, as seems to be possible, it would be added to that which starts along the Grande canal (sand and quarry gravel) and which reaches the Pavia canal (sand of the Ticino and Po) which has exceeded 500,000 tons annually.

Consequently the Basin of Porta Ticinese should be put in trim to see through the total volume of above-mentioned trade.

The line would be used only for goods coming down from the Lake to Milan, and night navigation would be limited to empty craft.

~~As regards~~ In regard to the possibility of using the line for ~~the carriage~~ transport of coal from the German basins to Milan (via Basle - Locarno), it is pointed out that ~~the carriage~~ transport by the waterway from Locarno to

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As regards the possibility of using the line for ~~the carriage~~ transport of coal from the German basins to Milan (via Basle - Locarno), it is pointed out that ~~the carriage~~ transport by the waterway from Locarno to Milan would ~~allow~~, under present circumstances, economize the use of numerous railway cars.

Further the coal delivered at the Basin of Porta Ticinese, instead of the railway station, could be suitably destined to the depôts and plants not favored with railway sidings.

At the moment we have not details of the expenditure needed for the above-mentioned work.

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In order of size, it may be affirmed that: estimated

1) the work to be at the State's expense may be ~~round about~~ about 10 to 15 million lire;

2) the work to ~~charge~~ of State, Province and Municipality of Milan ~~about~~ would be about 30 million lire;

3) the work at the expense of concessionnaire Concerns, 30 to 40 million

4) the setting up of the fleet of steel 100-ton craft (130), of tractors and tugs ~~round~~ about 100 million lire.

MILAN, 5 July 1945.

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.2.37

WILLIAM, 5 July 1945.

TRANSLATION. 20/7/45

Works relating to Inland Navigation in Northern Italy.

SUMMARY

1 - Work necessary for renewal and betterment of navigation on the Lombard canals and rivers . . . . . Lire 22,882,000
These works have been proposed and approved by the Allied Military Government.

2 - ~~Placing again into~~ Restoring to service on the waterway Milan - Lago Maggiore.
Works to be charged to the State . . . . . " 35,000,000
Works to be charged to the concessionnaires . . " 30,000,000

3 - Repairs to the inland navigation works of the Area under the Magistrato delle Acque . . . . . " 158,000,000

4 - Urgent works of repairs and hydraulic defenses and for the navigability of the Po . . . . . " 23,000,000

5 - Works for salvage, refloating and repairs of the craft of the dredging ~~park~~ equipment (dredgers, hopper barges, tugs, etc.) of the Po Office . . . . . " 25,000,000
N.B. The present value of the dredging ~~park~~ equipment amounts, according to calculations of the above Office, to Lire 400,000,000.-

6 - Repair works to the lines of inland navigation in the Province of Ferrara . . . . . " 31,500,000

Lire 325,382,000

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AF/

RIMESSA IN ESERCIZIO DELLA IDROVIA MILANO = LAGO MAGGIORE

(Locarno) .

* * * * * * * * * * * * * *

L'idrovia MILANO - LAGO MAGGIORE utilizzante il Naviglio Grande, i canali industriali di Turbigo, Tornavento, Vizzola edil fiume Ticino fino al Lago, con le opere costruite in questi ultimi decenni potrebbe essere rimessa in efficienza con poche opere e con relativamente modesta spesa.

E' necessario :

1°) Completare con l'attrezzatura e l'apertura dei canali di accesso e di uscita la conca costruita alla Diga della Miorina (L'attrezzatura, cioé le porte ed i meccanismi, sono pronti presso una Ditta di Bologna) .

2°) Costruire, nel tratto del fiume Ticino fra la " Miorina " e " Pamperduto ", tronchi di canali di alaggio con filarole in corrispondenza alle rapide di Miorina, Cagaratta e Porto di Varallo Pombia) - Sistemare la via alzaia.

3°) Prolungare di circa m. 6.00 la lunghezza utile della conca di Pamperduto utilizzando i muri esistenti.

4°) Completare la conca di Tornavento, costruendo uno dei due muri longitudinali (quello sottosponda) e mettendo in opera le attrezzature già pronte .

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4°) Completare la conca di Tornavento, costruendo uno dei due muri longitudinali (quello sottosponda) e mettendo in opera le attrezzature già pronte .

5°) Ricostruire - eventualmente - due ponti sul Naviglio Grande, che attualmente sono a due luci che sembrano un pò limitati e che possono presentare pericolo.

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6°) Adeguare la Darsena di Porta Ticinese al maggior traffico che comporterà il collegamento del Naviglio Grande con il Lago Maggiore.

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L'Amministrazione Provinciale di Milano si é fatta recentemente promotrice del piano di attuazione delle opere sopra accennate ripromettendosi di dare alla Città di Milano un nuovo vettore di trasporto che nella carenza dei mezzi preesistenti alla guerra permetta di alleviare la difficoltà del momento sopratutto per congogliare materiali da costruzione (marmi - pietre - scarti di cave per murature di fondazione in sostituzione di laterizi) e carbone ⁂.

La suddetta Amministrazione intende di interessare lo Stato perché l'opera sia considerata come "ristabilimento di via navigabile, inscritta(come lo é) alla seconda classe " e perciò a totale carico dello Stato come previsto dall'art. 6 della Legge 11 luglio 1913 N° 959 .

In proposito si osserva :

a) che le opere di cui ai N.ri 1 e 4 sono, a termine di disciplinari a carico degli Enti concessionari i quali, per ragioni contingenti erano stati autorizzati a rimandare le opere .

b) che le opere di cui al N° 6 sembrano dover far carico oltre che allo Stato anche alla Provincia ed al Comune di Milano.

c) Che solo le opere di cui ai N.ri 2 - 3 e 5 dovrebbero far carico allo Stato.

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Dalle prime indagini fatte dalla Amministrazione Provinciale, risulterebbe che la linea potrebbe essere rimessa in efficienza

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in sei mesi e la sua potenzialità, tenuto conto delle velocità dei canali, del numero, dimensioni, tipi e dislocazione delle conche, per natanti da 80 a 100 Tonnellate, ammettendosi la navigazione per 275 giorni all'anno e prevedendo la illuminazione delle conche e dei tronchi più tormentati, sarebbe teoricamente di 550'000.==, Tonnellate annue.

Ove tale traffico si accenda esclusivamente a monte di Sesto Calende, cioé sul Lago, come sembra possibile, esso si sommerà con quello attuale che nasce lungo il Naviglio Grande (sabbia e ghiaia di cava) e che perviene al Naviglio di Pavia (sabbia del Ticino e del Po) che ha superato le 500'000 Tonnellate annue.

In conseguenza la Darsena di Porta Ticinese dovrebbe adeguarsi a tale volume di traffico complessivo

La linea servirebbe solo per traffico discendente dal Lago a Milano e la navigazione notturna sarebbe limitata ai natanti i vuoti .

In merito alla possibilità di utilizzare la linea per il trasporto dei carboni dai bacini ~~Ferroviari~~ Svizzeri a Milano (Via Basilea - Locarno) si può rilevare che il trasporto per vie d'acqua da Locarno a Milano permetterebbe, nelle attuali contingenze di risparmiare l'impiego di numerosi carri ferroviari.

Da altra parte il carbone ~~è~~ reso alla Darsena di Porta Ticinese, anziché alla stazione ferroviaria potrebbe essere conveniente-

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Da altra parte il carbone reso alla Darsena di Porta Ticinese, anziché alla stazione ferroviaria potrebbe essere convenientemente destinata ai depositi ed impianti non raccordati con la ferrovia .

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Non si hanno ancora dati precisi sulle spese necessarie per i

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lavori diansi accennati.

Come ordine di grandezza si può affermare :

1°) I lavori a carico dello Stato potrebbero aggirarsi sui 10 + 15 milioni ;

2°) i lavori a carico dello Stato - Pavia e Comune di Milano sui 30 milioni ;

3°) i lavori a carico degli Enti concessionari in 30 ~~40~~ milioni.

4°) la predisposizione della flotta di barche da 100 Tonnellate in ferro (N° 130) dei trattori e rimorchiatori sulle lire 100 milioni.

MILANO, 5 luglio 1945

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OPERE DI NAVIGAZIONE INTERNA DELL'ALTA ITALIA

Riassunto

1 - Lavori occorrenti per il ripristino e miglioramento della navigazione sui navigli e fiumi lombardi .... £. 22.882.000
questi lavori sono stati proposti ed approvati dal Comando Militare Alleato.

2 - Rimessa in esercizio dell'idrovia Milano-Lago Maggiore.
Lavori a carico dello Stato . . . . . ." 35.000.000
Lavori a carico degli Enti concessionari. . . . . ." 30.000.000

3 - Lavori di riparazione delle opere di navigazione interna del Compartimento del Magistrato alle Acque . . . . . ." 158.000.000

4 - Lavori urgenti di ripristino e di difesa idraulica e per la navigabilità del Po . . . . . ." 23.000.000

5 - Lavori per il ricupero, la raccolta, la rimessa in galleggiamento ed il ripristino delle unità del parco effossorio dell'Ufficio del Po . . . . . ." 25.000.000
- N.B. Il valore attuale del parco effossorio ripristinato ascenderebbe secondo i calcoli dell'Ufficio suddetto a £. 400.000.000.-

6 - Lavori di riparazione per le linee di navigazione interna in Provincia di Ferrara . . . . . " 31.500.000

£. 325.382.000

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giore.

Lavori a carico dello Stato . . . . . " 35.000.000

Lavori a carico degli Enti concessionari. . . . . " 30.000.000

3 - Lavori di riparazione delle opere di navigazione interna del Compartimento del Magistrato alle Acque . . . . . " 158.000.000

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- N.B. Il valore attuale del parco effossorio ripristinato ascenderebbe secondo i calcoli dell'Ufficio suddetto a £. 400.000.000.-

6 - Lavori di riperazione per le linee di navigazione interna in Provincia di Ferrara . . . . . " 11.500.000

£. 325.382.000

2234

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MINISTERO DEI LAVORI PUBBLICI

UFFICIO DEL GENIO CIVILE DI

M I L A N O

OPERE DI NAVIGAZIONE INTERNA DI 2° CLASSE

E L E N C O dei lavori occorrenti pel ripristino e miglioramento della navigazione sui Navigli e Fiumi Lombardi -

M I L A N O li 5 luglio 1945

L'INGEGNERE CAPO
(F.Potenza)

2233

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2061

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N° d'ordine	INDICAZIONE DEI LAVORI	IMPORTO PRESUNTO	TEMPO DI E GIORNATE L
1	Spurghi straordinari del Naviglio Martesana nell'occasione dell'asciutta autunnale.	L. 2.000.000.-	Durata lavori Operai al gi Giornate com
2	Spurghi straordinari dei Navigli Grande, di Bereguardo e di Pavia e della Darsena di Porta Ticinese.	" 2.000.000.-	Durata lavori Operai al gi Giornate com
3	Miglioramento dei fondali lungo il Naviglio di Paderno.	" 1.340.000.-	Durata lavori Operai al gi Giornate com
4	Dragaggio del ramo destro del fiume Adda in località Paradiso del Comune di Cornate d'Adda.	" 1.500.000.-	Durata lavori Operai al gi Giornate com
5	Consolidamento della parete rocciosa minacciante rovina in destra di Adda a Trezzo.	" 2.000.000.-	Durata lavori Operai al gi Giornate com
6	Riparazioni diverse dei danni di guerra ai Navigli Grande - di Pavia e della Diga dei Gaggi.	" 3.542.000.-	Durata lavori Operai al gi Giornate com
7	Ripristino delle linee telefoniche lungo il Po con nuovi tratti di linea oltre Vaprio.	" 2.500.000.-	Durata lavori Operai al gi Giornate com
8	Ricarichi di difesa di sponda sinistra del fiume Po ed affluenti classificate in varie tratte.	" 8.000.000.-	Durata lavori Operai al gi Giornate com
	COMPLESSIVAMENTE	L. 22.882.000.-	

N.B. - I lavori sopra indicati sono compresi in un programma già sottoposto ed a l'esecuzione entro l'anno 1945 -

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IMPORTO PRESUNTO	TEMPO DI ESECUZIONE GIORNATE LAVORATIVE	STATO DEL PROGETTO	ANNOTAZIONI
2.000.000.-	Durata lavori giorni 30 Operai al giorno 200 Giornate complessive 6000	Da eseguirsi i rilievi. Presentazione entro il luglio 1945.	
2.000.000.-	Durata lavori giorni 30 Operai al giorno 200 Giornate complessive 6000	Idem come sopra	
1.340.000.-	Durata lavori giorni 50 Operai al giorno 30 Giornate complessive 1500	Presentato al Comando Alleato per l'approvazione il 6 luglio 1945.	
1.500.000.-	Durata lavori giorni 100 Operai al giorno 20 Giornate complessive 2000	Idem come sopra	
2.000.000.-	Durata lavori giorni 120 Operai al giorno 40 Giornate complessive 4800	Eseguiti i rilievi ed in corso di redazione il progetto. - Presentazione entro luglio 1945	
3.542.000.-	Durata lavori giorni 120 Operai al giorno 50 Giornate complessive 6000	Da eseguire i rilievi. Presentazione entro Settembre 1945.	
2.500.000.-	Durata lavori giorni 100 Operai al giorno 20 Giornate complessive 2000	Presentazione entro settembre 1945.	
8.000.000.-	Durata lavori giorni 400 Operai al giorno 100 Giornate complessive 40000	Presentazione entro ottobre 1945.	
24.882.000.-			

rogramma già sottoposto ed approvato dal Comando Militare Alleato e ne è previsto

M I N I S T E R O D E I L A V O R I P U B B L I C I
CIRCOLO SUPERIORE D' ISPEZIONE PER IL PO
CORPO REALE DEL GENIO CIVILE
SEZIONE AUTONOMA PER IL PO

P A R M A

RELAZIONE SULLE CONDIZIONI DI NAVIGABILITA' DEL PO E SUI DANNI AL PAR CO EFFOSSORIO ED ALLE DIFESE STABILI SULLE CURVE DI NAVIGAZIONE -----

1) - SITUAZIONE ATTUALE DELLE CONDIZIONI DI NAVIGAZIONE SUL PO.-

In conseguenza delle azioni belliche l'asta navigabile del Po, da Pavia alla Conca di Volta Grimana (Km. 357) per la rovina dei ponti stabili, ferroviari e carrettieri, è rimasta suddivisa in set= te tronchi della lunghezza da Km. 35 a Km. 71.-

Nonostante tale condizione, natanti di limitato pescaggio possono passare da un tronco all'altro anche nelle condizioni di ma= gra del fiume, eseguendo difficili manovre in corrispondenza ai pon= ti crollati.-

Si può così ora navigare con pescaggio di mt. 0,70 da Pavia a Cremona, di mt. 0,80 da Cremona a foce Mincio, di mt. 1,20 da foce Mincio alla Conca di Volta Grimana, e quindi con barche fino a 100 Tonn. da Pavia a Foce Mincio caricate con 60-70 Tonn. di merci, con barche da 100-200-250 Tonn. caricate fino a 120 Tonn. da Foce Mincio a Conca Volta Grimana.

Come si vede , in caso di assoluta necessità, senza attende= re incrementi nello stato d'acqua, si può navigare, sacrificando la convenienza economica; quando miglioreranno le condizioni idrometrie che verrà aumentata la capacità di trasporto dei natanti.

Uno degli ostacoli maggiori che si oppongono alla naviga= zione è rappresentato per il momento dai relitti dei ponti crollati che costituiscono pericolose soglie sul fondo.

E' necessario provvedere alla rimozione delle macerie al più presto tanto nei riguardi della navigazione quanto per il buon re

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Nonostante tale condizione, natanti di limitato pescaggio possono passare da un tronco all'altro anche nelle condizioni di magra del fiume, eseguendo difficili manovre in corrispondenza ai ponti crollati.-

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E' necessario provvedere alla rimozione delle macerie al più presto tanto nei riguardi della navigazione quanto per il buon regime del deflusso delle acque, perchè in casi di piene si potrebbero verificare situazioni pericolose per le difese arginali per sopraelevazioni delle piene stesse a monte dei ponti.

Questo Ufficio dal Head Quarters Emila Region Allied Military Government Public Works and Utilities Division Apo n.394 di Bologna ha avuto l'incarico di disporre lo sgombero dell'alveo di Po dalle

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macerie dei ponti.

Si è organizzato il lavoro con la predisposizione dei primi appalti ma occorre parecchio tempo preparatorio per l'inizio dei lavori in quanto manca il coordinamento tra questo Ufficio e le iniziative delle Amministrazioni delle Ferrovie dello Stato e delle Strade Statali e Provinciali, anche perchè in alcuni casi le Ferrovie hanno assegnato ad imprese ricostruttrici di ponti, anche lo sgombero dei relitti, senza che l'Ufficio ne avesse conoscenza, e questo perchè la zona del Po dipende da due Comandi Alleati Regionali (Bologna-Milano).

Le difficoltà dei mezzi di comunicazione non permettono di prendere contatti ripetuti con le sedi dei diversi Uffici per stabilire e chiarire le rispettive competenze dei lavori con grande sollecitudine.

Si informa che i lavori di sgombero per i ponti di Cremona Casalmaggiore, Borgoforte, Ostiglia, Pontelagoscuro richiederanno una spesa di circa 60.000.000 (Sessanta milioni) con l'impiego di 70.000 giornate lavorative di operaio, e potranno essere ultimati entro il febbraio 1946.

Un altro ostacolo alla navigazione è rappresentato dai ponti provvisori in barche non apribili costruiti per iniziativa di enti locali con residui di materiale militare.

Per il momento ne esistono quattro : due a Piacenza, uno a Borgoforte, l'altro a Pontelagoscuro, ma essi aumenteranno in relazione al ricupero delle barche disperse sul Po.

E' indispensabile che vengano presi provvedimenti dalle Autorità competenti e dall'A.M.G. perchè i ponti siano modificati con pontate facilmente apribili e perchè al passaggio dei natanti le manovre vengano eseguite con la sospensione temporanea del passaggio dei veicoli.

Si informa che fra foce Mincio e Mantova non è possibile navigare ora con barche da 600 Tons. essendo rovinate in parte la nuo-

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no assegnato ad imprese ricostruttrici di ponti, anche lo sgombero dei relitti, senza che l'Ufficio ne avesse conoscenza, e questo perchè la zona del Po dipende da due Comandi Alleati Regionali (Bologna-Milano).

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Infine si fa presente che lungo il Po si trovano barcaioli pratici per esercitare la navigazione anche per alaggio e in notevole numero ritroverebbero occupazione qualora venisse ripresa la navigazione.

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2) - DANNI AL PARCO EFFOSSORIO IN CONSEGNA ALL'UFFICIO -

La consistenza dei natanti della Sezione Autonoma per il Po era di 560 natanti, valutata ad inventario, compresi i materiali di scorta, di dotazione, in £. 30.000.000 (1941), comprendeva rimorchiatori, draghe, barche, pontoni ecc.

Per azioni belliche è stata danneggiata o affondata la quasi totalità dei mezzi, che si trovavano dislocati lungo il fiume da Pavia alla Conca di Volta Grimana (Km.357), così solo il 5% è rimasto efficiente.

Sono in corso i primi lavori di raccolta e rimessa in galleggiamento per un importo di £. 1.000.000; per la rimessa in pristino di tutti i natanti si prevede una spesa di £.25.000.000 e la prestazione di 25.000 giornate lavorative di operaio.

I lavori hanno carattere di imprescindibile necessità dovendosi approfittare per l'esecuzione dei periodi di magra, estiva ed invernale, per impedire la perdita dei mezzi, ora ricuperabili, che hanno un valore attuale di circa £. 400.000.000.

Il parco effossorio è indispensabile per migliorare la navigabilità del fiume durante le magre e per sgombrare il canale navigabile stesso da innumerevoli relitti di natanti e di veicoli affondati per azioni belliche.

Si informa che questo Ufficio al presente ha in efficienza due rimorchiatori da 60 HP, N°4 barche da 100 Tonn., N°3 barche da 300 Tonn., N°4 draghe refluenti ; mezzi che ora si utilizzano per i lavori di ricupero e per la raccolta di natanti danneggiati, i quali, successivamente, torneranno utili alla navigazione.

Per informazioni assunte risulta poi che la Società Barbari di Mantova ha disponibili un rimorchiatore e n° 20 barche da 150 Tonn. e che sta rimettendone in efficienza molte altre.

Risulta pure che si è ricostituita in Venezia la Società

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3) - <u>DANNI ALLE DIFESE SULLE 47 CURVE DI NAVIGAZIONE</u> (escluse le opere idrauliche di 2ª categoria che sono di competenza dei diversi uffici del Genio Civile).

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Le difese di sponda sulle curve di navigazione per azioni belliche e per manomissioni praticate da reparti tedeschi sono state in parte danneggiate principalmente con l'asporto in più punti della mantellata di pietrame che protegge il nucleo sabbioso, e per sconvolgimenti dovuti a bombardamenti.

Qualora non si provveda subito alla rimessa in pristino, riimpiegando in parte il pietrame che è ricuperabile lungo le sponde, verrebbe compromessa la stabilità del complesso delle difese con pericolo della rovina delle opere per effetto di piene del fiume, pertanto si prospettano le seguenti necessità:

a) <u>Lavori di indifferibilità assoluta</u> : sulle curve n.36 = 34 = 32 = 30 = 28 = 26 = 25 = 24 = 23 = 21 = 19 = 8 = 6 = 4 = da eseguire con ricupero sul posto e rimessa in opera di pietrame per un complessivo importo di £. 3.000.000.

I lavori sono già in corso di appalto per un importo di £. 1.400.000 e non appena il Comando A.M.G. avrà approvato la rimanenza si procederà all'ulteriore consegna.

Si ritiene di ultimare tutti i lavori predetti entro il mese di novembre c.a. con l'impiego di N.15.000 giornate lavorative.

b) <u>Lavori urgenti</u> : sono da eseguire lavori di ripristino di parte di pennelli sconvolti da bombardamenti o danneggiati sulle curve di navigazione N.33 = 27 = 23 = 20 = per un complessivo importo di L. 4.000.000 che richiederanno N. 10.000 giornate lavorative.

Per questi lavori che dovrebbero essere iniziati nel mese di agosto ed ultimati entro il dicembre occorre però approvigionare pietrame e ciottolo dai torrenti appenninici ed alpini, ad una distanza media di Km. 70 dalle zone di impiego.

E' indispensabile l'assegnazione di almeno tre autocarri con rimorchio per i trasporti, diversamente i lavori non si

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c) Scorte necessarie di pietrame e ciottolo :

Sulle 47 curve di navigazione per la manutenzione ordinaria e straordinaria e per presidi urgenti in caso di piene era-

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no stati approvigionati circa mc. 20.000 di pietrame e ciottolo che vennero asportati e dispersi da reparti tedeschi per costruzione di strade ed approdi e detto materiale non è ricuperabile e viene così a mancare.

Lo approvigionamento non ha carattere di somma urgenza ma è indispensabile la ricostituzione delle scorte perchè esse rappresentano la garanzia della efficienza delle difese stesse.

Il danno che è stato arrecato col disperdimento del materiale si può valutare in £. 16.000.000 e la raccolta di esso impegnerà N. 20.000 giornate lavorative.

PARMA 6 luglio 1945

L'INGEGNERE CAPO
(Giulio Chiodarelli)

Si allegano una corografia al 500.000 con l'indicazione schematica dei lavori e dei danni, ed una al 100.000 con l'indicazione dei lavori di restauro da eseguire sulle curve.

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MINISTERO DEI LAVORI PUBBLICI

MAGISTRATO ALLE ACQUE

Lavori di riparazione delle opere di navigazione interna del Compartimento del Magistrato alle Acque danneggiate da eventi bellici.

R E L A Z I O N E

I danni prodotti dalla guerra alle opere di navigazione interna del Compartimento del Magistrato alle Acque non potranno essere valutati in modo, anche grossolanamente attendibile, se non in seguito ad ulteriori accurati rilievi, i quali acconsentano, specialmente per le fondazioni delle opere d'arte, di accertare le reali condizioni statiche dei manufatti danneggiati.

L'esecuzione di tali indispensabili rilievi presuppone la disponibilità di adeguati mezzi di trasporto (automezzi e specialmente biciclette) che oggi parte degli Uffici non possiede, nonostante le insistenti richieste, già fatte da tempo, alle Autorità locali ed alleate: è ovvio che senza tali mezzi non sarà possibile procedere alla redazione dei progetti e successivamente alla direzione dei lavori.

Trattandosi poi di lavori riguardanti in gran parte opere di cemento armato, munite di insostituibili parti metalliche e relativi meccanismi di manovra, altra difficoltà da superare sarà il tempestivo approvvigionamento dei relativi materiali (cemento, ferro omogeneo, profilati, mattoni, ecc.) senza dei quali non si potrà dare neppure inizio alle opere principali. Gli Uffici interessati, stanno già eseguendo [illegible]

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R E L A Z I O N E

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p.s.

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che i tempi tecnici indicati nell'umito prospetto presuppongono la effettiva ed immediata disponibilità dei mezzi e dei materiali occorrenti.

Passando al dettaglio dei lavori essi si possono così riassumenre:

1) <u>linea Litoranea veneta</u> (A-B della umita corografia):

a) sono danneggiate, specie nelle porte a vento e meccanismi relativi, le conche di Benazzana in sinistra e destra del fiume Tagliamento (n° 1 e 2 della corografia);

b) sono pure danneggiate le vie alzaie ove queste esistono e le relative passerelle;

c) sono quasi completamente distrutti i manufatti di segnalamento nel tratto interessante la Laguna di Marano;

d) pure risultano danneggiate nelle strutture murarie e nelle porte le conche in sinistra e in destra del fiume Piave a Revedoli e Cortellazzo (n.ri 3 e 4);

e) occorrerà inoltre provvedere alla rimozione dei numerosi natanti affondati lungo i vari tratti della linea, la cui presenza impedisce la navigazione;

f) infine sarà necessario provvedere allo sgombero dei materiali ostruenti l'alveo e dei depositi formati in questi anni di manutenzione forzatamente trascurata. Queste opere presuppongono la disponibilità di qualche draga e relativo combustibile.

2°) <u>Linea navigabile Po-Brondolo</u> -(tratto C-D della corografia):

a) sono danneggiate le conche di: Brondolo, Cavanella d'Adige sinistra (particolarmente grave), destra, Volta Grimana (n.ri 5,6, 7,8), i danni consistono principalmente nella distribuzione di tratti di muro di fiancata, in gravi avarie alle porte metalliche vinciane, a ponti girevoli o sollevabili e relativi meccanismi di manovra;

3°) <u>linea Venezia-Padova</u> - (tratto E-F) della corografia):

a) sono danneggiate le conche di: Moranzani, Dolo e Stra (n.ri 9,

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1°) Linea Litoranea Veneta (A-B della unita corografia):

a) sono danneggiate, specie nelle porte a vento e meccanismi relativi, le conche di Venazzana in sinistra e destra del fiume Tagliamento (n° 1 e 2 della corografia);

b) sono pure danneggiate le vie alzaie ove queste esistono e le relative passerelle;

c) sono quasi completamente distrutti i manufatti di segnalamento nel tratto interessante la Laguna di Marano;

d) pure risultano danneggiate nelle strutture murarie e nelle porte le conche in sinistra e in destra del fiume Piave a Revedoli e Cortellazzo (n.ri 3 e 4);

e) occorrerà inoltre provvedere alla rimozione dei numerosi natanti affondati lungo i vari tratti della linea, la cui presenza impedisce la navigazione;

f) infine sarà necessario provvedere allo sgombero dei materiali ostruenti l'alveo e dei depositi formati in questi anni di manutenzione forzatamente trascurata. Queste opere presuppongono la disponibilità di qualche draga e relativo combustibile.

2°) Linea navigabile Po-Brondolo -(tratto C-D della corografia):

a) sono danneggiate le conche di: Brondolo, Cavanella d'Adige sinistra (particolarmente grave), destra, Volta Grimana (n.ri 5,6, 7,8), i danni consistono principalmente nella distribuzione di tratti di muro di fiancata, in gravi avarie alle porte metalliche vinciane, a ponti girevoli o sollevabili e relativi meccanismi di manovra;

3°) linea Venezia-Padova - (tratto E-F) della corografia):

a) sono danneggiate le conche di: Moranzani, Dolo e Stra (n.ri 9, 10,11) la prima è stata colpita nelle porte le altre presentano gravi danni nei muri di fiancata e delle opere accesorie;

b) è gravemente danneggiata la briglia attraverso il fiume Brenta a Stra che costituisce la chiave dell'alimentazione del naviglio

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Brenta e del Piovego costituenti la suddetta linea;

c) si dovrà provvedere alla rimozione dei resti della travata metallica del ponte stradale allo sbocco del Piovego in Brenta (n°12 della corografia;

4°) Linea Padova - Battaglia -Chioggia - (tratto F-G-H della corografia):

a) sostegno arco di mezzo (n°13) è stato distrutto da una bomba tutta la soprastruttura, le paratoie metalliche ed il meccanismo di manovra; la relativa riparazione è indispensabile perchè il sostegno regola la navigazione sia nei canali superiori che di quelli inferiori;

b) la conca di Battaglia (n°14); intatta come vaso e porte è danneggiata nei meccanismi e nel casello di manovra.

5°) Linea Po- di Goro - Po di Gnocca (lett. 1 della corografia):

a) sono danneggiate le due conche verso il Po di Goro e verso il Po di Gnocca ed è crollato in alveo il ponte in corrispondenza dell'argine sinistro dello scolo Veneto.

6°) linea Po-Canal Bianco (lettera 1) della corografia);

a) necessita di riparare la conca di Cavanella - Po anche per poter usufruire di questa linea durante la riparazione della conca di Volta Grimana.

7°) Linee secondarie:

a) nei fiumi Stella, Aussa, Corno (lettera M,N,O) occorre ricostruire alcune passerelle che danno continuità alla via alzaia e rimuovere gli ostacoli artificiali creati alle foci dei corsi di acqua predetti dai tedeschi;

b) sostegno al canale Brian (n°15) è danneggiata la conca, le paratoie del sostegno ed il ponte girevole, sia nelle parti metalliche che nelle murarie e nei meccanismi di manovra;

c) naviglio Adigetto e Scortico (lett. P.Q.) è necessario rimuovere le macerie cadute in alveo in seguito ai bombardamenti delle case adiacenti.

8°) Fiumi navigabili:

a) fiume Lemene è necessaria la riparazione del ponte sollevabile

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Linea Padova - Battaglia -Chioggia - (tratto F-G-H della corografia):

a) sostegno arco di mezzo (n°13) è stato distrutto da una bomba tutta la soprastruttura, le paratoie metalliche ed il meccanismo di manovra; la relativa riparazione è indispensabile perchè il sostegno regola la navigazione sia nei canali superiori che di quelli inferiori;

b) la conca di Battaglia (n°14); intatta come vaso e porte è danneggiata nei meccanismi e nel casello di manovra.

5°) Linea Po- di Goro - Po di Gnocca (lett. 1 della corografia):

a) sono danneggiate le due conche verso il Po di Goro e verso il Po di Gnocca ed è crollato in alveo il ponte in corrispondenza dell'argine sinistro dello scolo Veneto.

6°) linea Po-Canal Bianco (lettera 1) della corografia);

a) necessita di riparare la conca di Cavanella - Po anche per poter usufruire di questa linea durante la riparazione della conca di Volta Grimana.

7°) Linee secondarie:

a) nei fiumi Stella, Aussa, Corno (lettera M,N,O) occorre ricostruire alcune passerelle che danno continuità alla via alzaia e rimuovere gli ostacoli artificiali creati alle foci dei corsi di acqua predetti dai tedeschi;

b) sostegno al canale Brian (n°15) è danneggiata la conca, le paratoie del sostegno ed il ponte girevole, sia nelle parti metalliche che nelle murarie e nei meccanismi di manovra;

c) naviglio Adigetto e Scortico (lett. P.Q.) è necessario rimuovere le macerie cadute in alveo in seguito ai bombardamenti delle case adiacenti.

8°) Fiumi navigabili:

a) fiume Lemene è necessaria la riparazione del ponte sollevabile del Marango (n.16);

b) fiume Livenza si deve riparare il ponte sollevabile di Caorle e sgomberare l'alveo in corrispondenza dei ponti della Salute, e del ferroviario a S.Stino (n.ri 17,18,19);

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c) fiume Piave si dovrà provvedere alla rimozione dei ponti di: Grisolera, di S.Donà, stradale e ferroviario (n.ri 20,21 e 22);

d) Fiume Adige per il ripristino della navigazione occorre rimuovere le travate metalliche dei ponti demoliti di: Cavanella d'Adige, ferroviario e stradale, Cavarzere ferroviario, Boara Polesine stradale e ferroviario, Cà Morosini e Badia (n.ri 23,24,25,26,27,28 e 29).

Per l'esecuzione dei lavori di ripristino giusta il prospetto allegato è preventivata in linea di larga massima la spesa di £.158.000.000.-

così suddivisa:

1°) Litoranea Veneta	£.	41.133.500.-
2°) Po-Brondolo	"	54.800.000.-
3°) Padova-Venezia	"	10.696.000.-
4°) Padova-Battaglia-Chioggia	"	2.895.000.-
5°) Po di Goro-Po di Gnocca	"	11.200.000.-
6°) Po-Canal Bianco	"	4.000.000.-
7°) Linee secondarie	"	9.300.000.-
8°) Fiumi navigabili	"	23.000.000.-
Per arrotondamento	£.	975.500.-
Tornano	£.	158.000.000.-

Nel prospetto sono indicate con il grado di urgenza 1° le opere indispensabili per riattivare le linee più importanti, col grado 2° quelle delle opere meno importanti e con il grado 3° le opere che pur essendo indispensabili non rivestono carattere di vera urgenza.

Venenzia, lì 12 luglio 1945.

IL PRESIDENTE
F.to Waldis

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Ministry of Public Works

MINISTERO DEI LAVORI PUBBLICI

MAGISTRATO ALLE ACQUE

Works for renewal of inland navigation in the area of
Lavori di ripristino delle opere di navigazione interna del
the damaged by war action
Compartimento del Magistrato alle Acque danneggiate da even
ti bellici -

List

E L E N C O

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MINISTERO DEI LAVORI PUBBLICI

MAGISTRATO ALLE ACQUE

Works for renewal of inland navigation in the area of
Lavori di ripristino delle opere di navigazione interna del
Compartimento del Magistrato alle Acque darneggiate da even
the damaged by war action
ti bellici -

List

E L E N C O

VENEZIA, lì 12 luglio 1945

July

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c/m/l°

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N° Progr.	INDICAZIONE DELL'OPERA	Importo Presunto	Giornate Lavorative
	Riporto	124.824.500.-	
	VII° - VIE SECONDARIE		
36	Ricostruzione Passerelle vie alzaie dei fiumi Corno e Stella	1.800.000.-	1200
37	Rimozione ostacoli alle foci del Corno, Stella e Aussa	1.500.000.-	1500
38	Sgombero macerie lungo l'Adigetto, canale Loreo e Scortico	6.000.000.-	9000
	VIII° - FIUMI NAVIGABILI		
39	Rimozione ponti sul fiume Adige	15.000.000.-	15000
40	Rimozione ponti sul fiume Piave	5.000.000.-	5000
41	Rimozione ponti sul fiume Livenza	3.000.000.-	3000
	TOTALE	157.024.500.-	
	Arrotondamento	975.500.-	
		158.000.000.-	

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Importo presunto	Giornate Lavorative	Tempo occorrente	Grado d'urgenza	Stadio Compilazione progetti	ANNOTAZIONI
824.500.-					
800.000.-	1200	4 mesi	IIº	da fare	
500.000.-	1500	4 mesi	Iº	" "	
000.000.-	9000	12 mesi	IIº	" "	
000.000.-	15000	6 mesi	Iº	" "	Necessary also in regard to effects of flood danger Necessari anche agli effetti dei pericoli per la piena
000.000.-	5000	6 mesi	Iº		do. idem
000.000.-	3000	3 mesi	Iº		do. idem
024.500.-					
975.500.-					
000.000.-					

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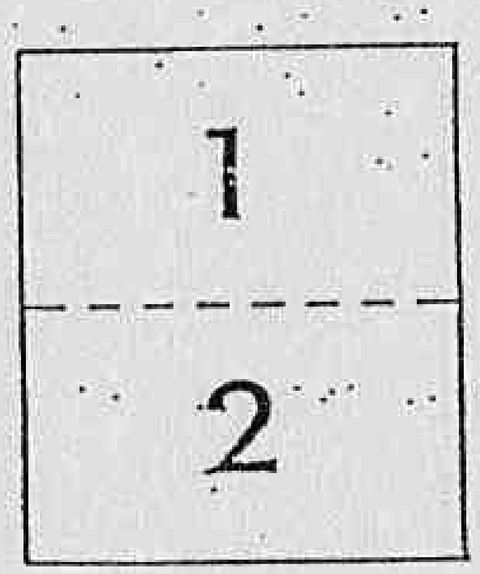
Declassified E.O. 12356 Section 3.3/NND No. 785021

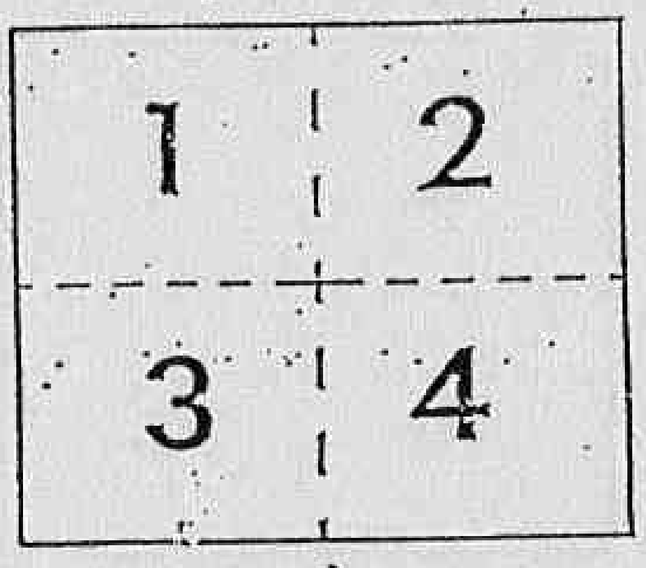
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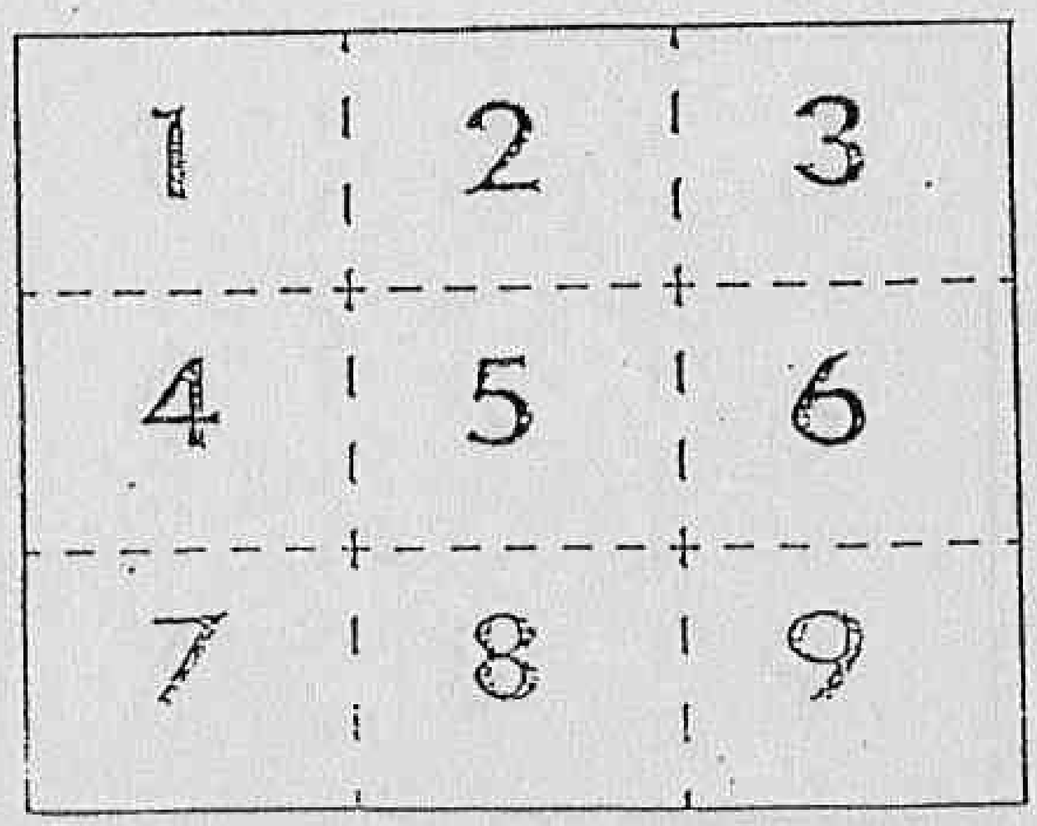
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MAPS AND CHARTS TOO LARGE TO FILM
ON ONE EXPOSURE ARE FILMED CLOCKWISE
BEGINNING IN THE UPPER LEFT CORNER,
LEFT TO RIGHT, AND TOP TO BOTTOM.

SEE DIAGRAMS BELOW.







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N° Progr.	INDICAZIONE DELL'OPERA	Importo Presunto	Giornate Lavorative
	Riporto	95.933.500.-	
	III° - LINEA PADOVA-VENEZIA		
20	Conca Moranzani - Riparazione porte	100.000.-	100
21	Conca di Dolo	2.000.000.-	2000
22	Conca di Stra	2.500.000.-	3000
23	Sostegno di Stra - Riattivazione vecchia briglia . . .	198.000.-	3000
24	Sostegno di Stra - Parti metalliche briglia nuova . . .	300.000.-	300
25	Riparazione sostegno Stra	5.000.000.-	5000
26	Sgombero conca Stra e Dolo	400.000.-	
27	Rinnovazione ponte in ferro sul Piovego a Stra	198.000.-	500
	IV° - LINEA PADOVA-BATTAGLIA-CHIOGGIA		
28	Rimozione ingombro Canale Cagnola ponte Bovolenta . . .	195.000.-	500
29	Riparazione sostegno Arco di mezzo	1.500.000.-	2000
30	Conca di Battaglia	1.000.000.-	1500
31	Rimozione Ponte Buffi sul canale Este Monselice	200.000.-	600
	V° - LINEA PO DI GORO - PO DI GNOCCA		
32	Conca Po di Goro	6.000.000.-	8000
33	Rimozione ponte scolo veneto	3.800.000.-	5000
34	Conca Po di Gnocca - rimozione ponte	1.400.000.-	2000

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Importo Presunto	Giornate Lavorative	Tempo occorrente	Grado d'urgenza	Stadio Compilazione progetti	ANNOTAZIONI
95.933.500.-					
100.000.-	100	1 mese	I°	Da fare	
2.000.000.-	2000	6 mesi	I°	" "	
2.500.000.-	3000	6 mesi	I°	" "	In corso di esecuzione
198.000.-	3000	6 mesi	I°		
300.000.-	300	2 mesi	I°	In corso	
5.000.000.-	5000	12 mesi	II°	" "	In corso di esecuzione
400.000.-					
198.000.-	500	1 mese	I°	fatto	
195.000.-	500	1 mese	II°	fatto	
1.500.000.-	2000	3 mesi	I°	da fare	
1.000.000.-	1500	3 mesi	II°	" "	
200.000.-	600	1 mese	II°	" "	
6.000.000.-	8000	12 mesi	III°	da fare	
3.800.000.-	5000	12 mesi	III°	" "	
1.400.000.-	2000	8 mesi	III°	" "	

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22	Conca di Stra	2.500.000.-	[illegible]
23	Sostegno di Stra - Riattivazione vecchia briglia . . .	198.000.-	3000
24	Sostegno di Stra - Parti metalliche briglia nuova . . .	300.000.-	300
25	Riparazione sostegno Stra	5.000.000.-	5000
26	Sgombero conca Stra e Dolo	400.000.-	
27	Rinnovazione ponte in ferro sul Piovego a Stra	198.000.-	500
	IV° - LINEA PADOVA-BATTAGLIA-CHIOGGIA		
28	Rimozione ingombro Canale Cagnola ponte Bovolenta . . .	195.000.-	500
29	Riparazione sostegno Arco di mezzo	1.500.000.-	2000
30	Conca di Battaglia	1.000.000.-	1500
31	Rimozione Ponte Buffi sul canale Este Monselice	200.000.-	600
	V° - LINEA PO DI GORO - PO DI GNOCCA		
32	Conca Po di Goro	6.000.000.-	8000
33	Rimozione ponte scolo veneto	3.800.000.-	5000
34	Conca Po di Gnocca - rimozione ponte	1.400.000.-	2000
	VI° - LINEA PO - CANAL BIANCO		
35	Conca Cavanella Po	4.000.000.-	5000
	da riportare . . .	124.824.500.-	

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[illegible]	[illegible]	[illegible]			Being carried out
198.000.-	3000	6 mesi	I°	In corso	In corso di esecuzione
300.000.-	300	2 mesi	I°	" "	
5.000.000.-	5000	12 mesi	II°	Bene fatto	Being carried out
400.000.-					In corso di esecuzione
198.000.-	500	1 mese	I°	Bene fatto	
195.000.-	500	1 mese	II°	Da fare	
1.500.000.-	2000	3 mesi	I°	" "	
1.000.000.-	1500	3 mesi	II°	" "	
200.000.-	600	1 mese	II°	Da fare	
6.000.000.-	8000	12 mesi	III°	" "	
3.800.000.-	5000	12 mesi	III°	" "	
1.400.000.-	2000	8 mesi	III°	" "	
4.000.000.-	5000	6 mesi	I°	" "	
124.824.500.-					

MINISTERO DEI LAVORI PUBBLICI

MAGISTRATO ALLE ACQUE

Lavori di ripristino delle opere di navigazione interna del Compartimento del Magistrato alle Acque danneggiate da even ti bellici -

E L E N C O

VENEZIA, li 12 luglio 1945

c/z/1

Declassified E.O. 12356 Section 3.3/NND No. 765021

Lavori di ripristino delle opere di navigazione interna del Compartimento del Magistrato alle Acque danneggiate da even ti bellici -

E L E N C O

VENEZIA, li 12 luglio 1945

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No. N. Progr.	Description of Work INDICAZIONE DELL'OPERA	Estimated cost Importo Presunto	Working days Giornate Lavorative
	Venetian Coastal Canal **I° - LITORANEA VENETA**		
1	Rebuilding foot bridge **Ricostruzione passerella Valle Pantani**	400.000.-	400
2	Putting in order Bevazzana lock - left and manoeuvre hut **Ripristino Conca Bevazzana-Sinistra e casa manovratore** .	3.000.000.-	2000
3	Rebuilding towing path **Ripristino vie alzaie**	1.000.000.-	1500
4	Salvage craft lying on bottom **Ricupero natanti in alveo**	300.000.-	300
5	Renewal signals &c etc. **Ripristino manufatti segnalazione**	3.000.000.-	2000
6	Removal silt **Rimozione interrimenti**	3.000.000.-	1000
7	Bevazzana lock - right - Iron gates & divers repairs **Conca di Bevazzana destra - Porte in ferro e riparazioni varie**	2.500.000.-	2000
8	Brian lock repairs **Sostegno Brian**	5.000.000.-	5000
9	Revedoli lock - Repairs **Conca di Revedoli - Riparazioni**	268.000.-	300
10	Revedoli lock - Clearance access canals, etc. **Conca di Revedoli - Sgombero vaso e canali di accesso** . .	500.000.-	500
11	Permanent repair of Revedoli lock **Sistemazione definitiva delle conca di Revedoli**	3.000.000.-	3000
12	Cortellazzo lock **Conca di Cortellazzo**	165.500.-	200
13	Cortellazzo lock - rebuilding gates & general repairs **Conca di Cortellazzo - ricostruzione porte e sistemazione generale**	3.000.000.-	3000
14	Clearance of whole navigable waterway **Sgomberi su tutta la linea navigabile**	6.000.000.-	6000
15	Dredging & necessary excavation **Dragaggio ed escavi di ripristino**	10.000.000.-	10000

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Estimated cost Importo Presunto	Working days Giornate Lavorative	Time required Tempo occorrente	Priority Grado d'urgenza	State of Planning Stadio Compilazione Progetto	Remarks ANNOTAZIONI
400.000.-	400	2 mesi	I°	da fare	
.000.000.-	2000	4 mesi	I°	" "	
.000.000.-	1500	3 mesi	I°	" "	
300.000.-	300	2 mesi	I°	" "	
.000.000.-	2000	6 mesi	I°	" "	
.000.000.-	1000	5 mesi	I°	" "	Occorrono draghe e relativi combustibili -
.500.000.-	2000	6 mesi	I°	" "	
.000.000.-	5000	1 anno	II°	Fatto	
268.000.-	300	2 mesi	-	-	Lavoro in corso
500.000.-	500	2 mesi	II°	-	Lavori in corso
.000.000.-	3000	6 mesi	I°	da fare	
165.500.-	200	2 mesi	-	-	Lavoro in corso
.000.000.-	3000	12 mesi	I°	Da fare	
.000.000.-	6000	3 mesi	I°	In corso	
.000.000.-	10000	1 anno	I° e II°	Da fare	

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5	Ripristino manufatti segnalazione	3.000.000.-	2000	6 me
6	Rimozione interrimenti	3.000.000.-	1000	5 me
7	Conca di Bevazzana destra - Porte in ferro e riparazioni varie	2.500.000.-	2000	6 me
8	Sostegno Brian	5.000.000.-	5000	1 an
9	Conca di Revedoli - Riparazioni	268.000.-	300	2 me
10	Conca di Revedoli - Sgombero vaso e canali di accesso . .	500.000.-	500	2 me
11	Sistemazione definitiva della conca di Revedoli	3.000.000.-	3000	6 me
12	Conca di Cortellazzo	165.500.-	200	2 me
13	Conca di Cortellazzo - ricostruzione porte e sistemazione generale	3.000.000.-	3000	12 me
14	Sgomberi su tutta la linea navigabile	6.000.000.-	6000	3 me
15	Dragaggio ed escavi di ripristino	10.000.000.-	10000	1 an
	IIº - LINEA PO - BRONDOLO			
16	Conca Brondolo	400.000.-	2000	3 me
17	Conca Cavanella Adige Sinistra	27.400.000.-	40000	18 me
18	Conca Cavanella Adige Destra	19.400.000.-	25000	12 me
19	Conca di Volta Grimana	7.600.000.-	10000	8 me
	Da riportare	95.933.500.-		

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3.000.000.-	2000	6 mesi months	I°	" "	Dredges & relative fuel required Occorrono draghe e relativi combustibili -
3.000.000.-	1000	5 mesi months	I°	" "	
2.500.000.-	2000	6 mesi months	I°	" "	
5.000.000.-	5000	1 anno year	II°	Done Fatto	
268.000.-	300	2 mesi months	-	-	work is being carried on Lavoro in corso
500.000.-	500	2 mesi months	II°	-	Lavori in corso
3.000.000.-	3000	6 mesi months	I°	To be done da fare	
165.500.-	200	2 mesi months	-	-	Work is being carried on Lavoro in corso
3.000.000.-	3000	12 mesi months	I°	To be done Da fare	
6.000.000.-	6000	3 mesi months	I°	In being done In corso	
10.000.000.-	10000	1 anno year	I° e II°	To be done Da fare	
400.000.-	2000	3 mesi months	I°	To be done Da fare	
37.400.000.-	40000	18 mesi months	I°	" "	
19.400.000.-	25000	12 mesi months	I°	" "	
7.600.000.-	10000	8 mesi months	I°	" "	
95.933.500.-					

MINISTERO DEI LAVORI PUBBLICI
UFFICIO DEL GENIO CIVILE DI FERRARA

RAPPORTO SULLE LINEE DI NAVIGAZIONE INTERNA IN PROVINCIA DI FERRARA CON INDICAZIONE SOMMARIA DEI DANNI SUBITI IN SEGUITO AGLI EVENTI BELLICI -

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La navigazione interna di questa Provincia si svolge attraverso le seguenti vie d'acqua:

1°) Fiume Po nel tratto dal confine mantovano a Stellata fino alla biforcazione del Po di Goro in località Serravalle di Berra per una lunghezza di km. 64 -

2°) Fiume Po di Goro da Serravalle fino allo sbocco in mare presso Gorino per una lunghezza di km. 43 -

3°) Canale Boicelli dalla conca di Pontelagoscuro che lo congiunge col Po fino allo sbocco nel canale Volano presso Ferrara per una lunghezza di km. 6 -

4°) Canale Volano da Ferrara allo sbocco in mare nella sacca di Goro per una lunghezza di km. 70 -

5°) Canale Primaro dalla botte di S. Nicolò allo sbocco in Volano presso Ferrara per una lunghezza di km. 18 -

I suindicati corsi d'acqua costituiscono la linea navigabile [illegible] e sono in manutenzione allo Stato.

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La navigazione interna di questa Provincia si svolge attraverso le seguenti vie d'acqua:

1°) Fiume Po nel tratto dal confine mantovano a Stellata fino alla biforcazione del Po di Goro in località Serravalle di Berra per una lunghezza di km. 64 -

2°) Fiume Po di Goro da Serravalle fino allo sbocco in mare presso Gorino per una lunghezza di km. 43 -

3°) Canale Boicelli dalla conca di Pontelagoscuro che lo congiunge col Po fino allo sbocco nel canale Volano presso Ferrara per una lunghezza di km. 6 -

4°) Canale Volano da Ferrara allo sbocco in mare nella sacca di Goro per una lunghezza di km. 70 -

5°) Canale Primaro dalla botte di S. Nicolò allo sbocco in Volano presso Ferrara per una lunghezza di km. 18 -

I suindicati corsi d'acqua costituiscono la linea navigabile classificata di 2ª classe e sono in manutenzione allo Stato, Ministero dei Lavori Pubblici.

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Da questa linea principale si diramano altri canali navigabili non classificati, e propriamente:

1°) Canale emissario della bonifica di Burana da Ferrara a Bondeno della lunghezza di km. 15, in manutenzione al Consorzio Interprovinciale di Burana -

2°) Canale di bonifica Leone con diramazione per Iolanda di Savoia per una lunghezza di km. 10, in manutenzione al Consorzio della Grande Bonificazione Ferrarese -

3°) Canali Marozzo e Palotta da Codigoro a Porto Garibaldi per una lunghezza di km. 20, in manutenzione ai Comuni di Comacchio e Lagosanto.

In seguito agli eventi bellici le dette vie d'acqua hanno subito danni ai manufatti, ponti, conche e chiuse mobili in modo che non è più possibile servirsene, neppure in misura ridotta, non soltanto per le macerie che le ingombrano, ma anche in seguito a forti danni subiti dalla conca di Pontelagoscuro che l'hanno messa fuori servizio ed alla inefficienza delle chiuse mobili nel Volano, semicrollate, per cui non è più possibile mantenere nei canali i tiranti d'acqua necessari alla navigazione.

In relazione a quanto esposto in succinto, per il ripristino della navigazione di cui trattasi occorre procedere alla

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2°) Canale di bonifica Leone con diramazione per Iolanda di Savoia per una lunghezza di km. 10, in manutenzione al Consorzio della Grande Bonificazione Ferrarese -

3°) Canali Marozzo e Palotta da Codigoro a Porto Garibaldi per una lunghezza di km. 20, in manutenzione ai Comuni di Comacchio e Lagosanto.

In seguito agli eventi bellici le dette vie d'acqua hanno subito danni ai manufatti, ponti, conche e chiuse mobili in modo che non è più possibile servirsene, neppure in misura ridotta, non soltanto per le macerie che le ingombrano, ma anche in seguito a forti danni subiti dalla conca di Pontelagoscuro che l'hanno messa fuori servizio ed alla inefficienza delle chiuse mobili nel Volano, semicrollate, per cui non è più possibile mantenere nei canali i tiranti d'acqua necessari alla navigazione.

In relazione a quanto esposto in succinto, per il ripristino della navigazione di cui trattasi occorre procedere alla ricostruzione delle chiuse mobili di Valpagliaro e Tieni e del-

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le testate a valle delle conche omonime nonchè a riparazioni varie alla conca di Pontelagoscuro sul Po e a quella di Marozzo sul canale omonimo e contemporaneamente rimuovere le seguenti ostruzioni:

1°) pel fiume Po:

a) estrazione dall'alveo della travata metallica del ponte per strada statale a Pontelagoscuro;

b) recupero di natanti affondati entro la conca di Pontelagoscuro ed estrazione dei materiali che contenevano le barche affondate -

2°) pel canale Boicelli:

a) sgombero dell'alveo dai materiali dei 5 ponti in cemento armato, crollati;

b) ripresa di scarpate arginali in diversi punti.

3°) pel canale Volano:

a) sgombero dall'alveo dei materiali dei 25 ponti crollati, dei quali 5 in cemento armato e 20 in ferro con spalle in muratura;

b) estrazione di pali di legno infissi nell'alveo a Passo Pomposa per costruzione di una passerella;

c) ripresa di scarpate di banchine in punti diversi;

d) sistemazione di alcuni tratti di strade alzaie.

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a) estrazione dall'alveo della travata metallica del ponte per strada statale a Pontelagoscuro;

b) recupero di natanti affondati entro la conca di Pontelagoscuro ed estrazione dei materiali che contenevano le barche affondate -

2°) pel canale Boicelli:

a) sgombero dell'alveo dai materiali dei 5 ponti in cemento armato, crollati;

b) ripresa di scarpate arginali in diversi punti.

3°) pel canale Volano:

a) sgombero dall'alveo dei materiali dei 25 ponti crollati, dei quali 5 in cemento armato e 20 in ferro con spalle in muratura;

b) estrazione di pali di legno infissi nell'alveo a Passo Pomposa per costruzione di una passerella;

c) ripresa di scarpate di banchine in punti diversi;

d) sistemazione di alcuni tratti di strade alzaie.

4°) pel canale Primaro:

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sgombero dell'alveo dei materiali degli 8 ponti crollati, dei quali 5 in cemento armato, 1 in ferro con spalle in muratura e due con travata in cemento armato e spalle in muratura.

5°) pei canali Marozzo e Palotta:

a) sgombero dall'alveo dei materiali di 3 ponti crollati di cui 2 in muratura e 1 in cemento armato;

b) rimozione di cavedoni esistenti nel canale Marozzo presso Comacchio.

6°) pel canale Leone:

sgombero dell'alveo dei materiali dei 2 ponti crollati.

7°) pel canale emissario di Burana:

sgombero dell'alveo dai materiali di un ponte crollato.

In particolare, i danni riportati dai manufatti più importanti sono i seguenti:

1°) Conca di Pontelagoscuro:

Questa importante opera d'arte a cavaliere dell'argine destro del fiume Po, costruita assieme al canale Boicelli per mettere in comunicazione il Po con il Volano, costituita dal vaso vero e proprio con sei cabine, tre a destra e tre a sinistra, contenenti i meccanismi di manovra sia a mano che elettricamente, e da un piccolo impianto di derivazione d'acqua con tre elet-

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a) sgombero dall'alveo dei materiali di 3 ponti crollati di cui 2 in muratura e 1 in cemento armato;

b) rimozione di cavedoni esistenti nel canale Marozzo presso Comacchio.

6°) pel canale Leone:

sgombero dall'alveo dei materiali dei 2 ponti crollati.

7°) pel canale emissario di Burana:

sgombero dell'alveo dai materiali di un ponte crollato.

In particolare, i danni riportati dai manufatti più importanti sono i seguenti:

1°) Conca di Pontelagoscuro:

Questa importante opera d'arte a cavaliere dell'argine destro del fiume Po, costruita assieme al canale Boicelli per mettere in comunicazione il Po con il Volano, costituita dal vaso vero e proprio con sei cabine, tre a destra e tre a sinistra, contenenti i meccanismi di manovra sia a mano che elettricamente, e da un piccolo impianto di derivazione d'acqua con tre elettropompe e cabina elettrica di trasformazione, ha subito propriamente i seguenti danni:

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Opere Murarie:

Distruzione di due cabine di manovra delle porte, una del secondo gruppo di sinistra, e l'altra del terzo gruppo di destra e lesioni in quella del terzo gruppo di sinistra e poi ancora crollo di parte della spalla sinistra del Ponte stradale attraversante la conca in corrispondenza della sommità dell'arginatura del Po, per un altezza di ml. 10.

Risultando anche parzialmente distrutti il coperto e gli infissi al 2° piano del fabbricato dell'impianto di derivazione, nonchè i muri divisori e uno sperone di calcestruzzo in sinistra del bacino d'arrivo dell'acqua.

Opere metalliche:

Sono state rotte due colonne di ghisa con i relativi volantini di manovra del 2° gruppo di sinistra.

Le paratoie metalliche dell'impianto di derivazione, si sono soltanto deformate e si sono rotti invece i relativi apparecchi di manovra.

Si sono deformati n° 10 panconi in ferro, 5 dei quali sono stati forati in vari punti con asportazione delle guarnizioni in quercia. E' stato distrutto anche parte del cavalletto in ferro estremo di sostegno della ferrovia aerea di manovra dei panconi.

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stradale attraversante la conca in corrispondenza della sommità dell'arginatura del Po, per un altezza di ml. 10.

Risultando anche parzialmente distrutti il coperto e gli infissi al 2° piano del fabbricato dell'impianto di derivazione, nonchè i muri divisori e uno sperone di calcestruzzo in sinistra del bacino d'arrivo dell'acqua.

Opere metalliche:

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Le paratoie metalliche dell'impianto di derivazione, si sono soltanto deformate e si sono rotti invece i relativi apparecchi di manovra.

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Attrezzature elettriche:

La linea di collegamento con la cabina di trasformazione è

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stata distrutta per una lunghezza di circa ml. 150 ed è stato contorto il traliccio di sostegno di tale linea.

I cavi di collegamento trasversali della conca dei diversi gruppi di manovra delle porte, sono rotti ed in parte mancanti. Tutte le linee elettriche della ferrovia aerea sono state distrutte, e la rimanente parte dei suaccennati impianti elettrici è tutta da revisionare.

Nella cabina di trasformazione si è poi contorto un traliccio e si sono rotti due trasformatori, ed è pure rimasto danneggiato uno dei tre motori. Anche tutto l'impianto elettrico riguardante la derivazione dal Po è rimasto danneggiato e deve essere revisionato.

2°) Conca di Valpagliaro:

Opere murarie:

Crollato il ponte stradale sulla testata a valle della conca e crollati i muri di fiancata sottostanti al ponte fino al piano di fondazione, distrutta la cabina destra a valle di manovra e danneggiate lievemente le altre tre.

Opere metalliche:

Rotti i volantini di manovra delle due colonnette nella cabina distrutta, distrutto tutto l'impianto elettrico di detta cabina e danneggiati il motore, la resistenza, i freni auto-

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canti. Tutte le linee elettriche della ferrovia aerea sono state distrutte, e la rimanente parte dei suaccennati impianti elettrici è tutta da revisionare.

Nella cabina di trasformazione si è poi contorto un traliccio e si sono rotti due trasformatori, ed è pure rimasto danneggiato uno dei tre motori. Anche tutto l'impianto elettrico riguardante la derivazione dal Po è rimasto danneggiato e deve essere revisionato.

2°) Conca di Valpagliaro:

Opere murarie:

Crollato il ponte stradale sulla testata a valle della conca e crollati i muri di fiancata sottostanti al ponte fino al piano di fondazione, distrutta la cabina destra a valle di manovra e danneggiate lievemente le altre tre.

Opere metalliche:

Rotti i volantini di manovra delle due colonnette nella cabina distrutta, distrutto tutto l'impianto elettrico di detta cabina e danneggiati il motore, la resistenza, i freni automatici. Distrutto uno dei pali di testata della linea elettrica del ponte grue, e danneggiata la linea stessa nonchè i cavi

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attraversanti la conca per il collegamento elettrico delle cabine.

Chiusa mobile di Valpagliaro:

Affiancata alla conca esiste la chiusa mobile per mantenere a monte di essa il pelo d'acqua necessario alla navigazione. E' a sei luci con spalle in muratura e pile intermedie in cemento armato. Le 12 paratoie, 2 per luce, sono manovrate tanto a mano quanto meccanicamente a mezzo di motore elettrico e di impianto idrodinamico. A valle della chiusa sul prolungamento delle spalle esiste un ponte in ferro.

In seguito al crollo del ponte, minato e fatto saltare dai tedeschi, sono rimaste distrutte completamente le spalle, la cabina di manovra in muratura, lesionate le pile in calcestruzzo, spaccati i gargani delle paratoie deformate, e contorti i vitoni di sollevamento, danneggiate le tubazioni dell'olio, il motore, vari congegni di manovra e l'impianto elettrico.

In quanto a parte muraria la chiusa è da ricostruire al completo fatta esclusione di due pile intermedie che possono eventualmente essere utilizzate, ma per le metalliche possono essere utilizzati le paratoie ed altro, previa riparazione e rettifica in officina.

Conca di Tieni:

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monte di essa il pelo d'acqua necessario alla navigazione. E' a sei luci con spalle in muratura e pile intermedie in cemento armato. Le 12 paratoie, 2 per luce, sono manovrate tanto a mano quanto meccanicamente a mezzo di motore elettrico e di impianto idrodinamico. A valle della chiusa sul prolungamento delle spalle esiste un ponte in ferro.

In seguito al crollo del ponte, minato e fatto saltare dai tedeschi, sono rimaste distrutte completamente le spalle, la cabina di manovra in muratura, lesionate le pile in calcestruzzo, spaccati i gargani delle paratoie deformate, e contorti i vitoni di sollevamento, danneggiate le tubazioni dell'olio, il motore, vari congegni di manovra e l'impianto elettrico.

In quanto a parte muraria la chiusa è da ricostruire al completo fatta esclusione di due pile intermedie che possono eventualmente essere utilizzate, ma per le metalliche possono essere utilizzati le paratoie ed altro, previa riparazione e rettifica in officina.

Conca di Tieni:

Opere murarie:

Crollato il ponte stradale girevole esistente sulla testata a

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valle della conca, col crollo del ponte sono caduti i muri di fiancata della conca fino alla sede di manovra delle porte che sono cadute in acqua. Danneggiata la sommità del muro di sinistra della conca per tutta la sua lunghezza con fori prodotti da mine.

Chiusa mobile di Tieni:

Affiancata alla conca esiste la chiusa mobile per mantenere a monte di essa il pelo d'acqua necessario alla navigazione. E' a sei luci con spalle in muratura e cavalletti in ferro intermedi, nonchè ponte sovrastante per la manovra e transito. Le due luci centrali sono chiuse da quattro paratoie manovrate tanto a mano quanto meccanicamente a mezzo di motore elettrico e di impianto idrodinamico. Le rimanenti quattro luci sono chiuse da panconcelli in legname manovrati a mano a mezzo di paranchi e trave pescatore. A valle della chiusa sul prolungamento delle spalle esiste un ponte in ferro.

In seguito al crollo del ponte sono rimaste completamente distrutte le spalle, divelti in parte i cavalletti in ferro e distrutta la cabina del motore, danneggiate le tubazioni dell'olio e l'impianto elettrico.

Come opere murarie la chiusa è da ricostruire al completo e come opere metalliche possono essere utilizzate le

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Chiusa mobile di Tieni:

Affiancata alla conca esiste la chiusa mobile per mantenere a monte di essa il pelo d'acqua necessario alla navigazione. E' a sei luci con spalle in muratura e cavalletti in ferro intermedi, nonchè ponte sovrastante per la manovra e transito. Le due luci centrali sono chiuse da quattro paratoie manovrate tanto a mano quanto meccanicamente a mezzo di motore elettrico e di impianto idrodinamico. Le rimanenti quattro luci sono chiuse da panconcelli in legname manovrati a mano a mezzo di paranchi e trave pescatore. A valle della chiusa sul prolungamento delle spalle esiste un ponte in ferro.

In seguito al crollo del ponte sono rimaste completamente distrutte le spalle, divelti in parte i cavalletti in ferro e distrutta la cabina del motore, danneggiate le tubazioni dell'olio e l'impianto elettrico.

Come opere murarie la chiusa è da ricostruire al completo e come opere metalliche possono essere utilizzate le quattro paratoie metalliche ed i relativi meccanismi di manovra, previo le opportune rettifiche e riparazioni in officina.

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Conca di Marozzo:

Manufatto antiquato con portoni in legno, per natanti di piccola portata. In seguito al crollo del ponte, sulla testata a monte della conca, le porte non funzionano più, e si ritiene che massi di muratura caduti in alveo impediscano la manovra delle porte stesse.

Sia per l'esecuzione di tutti i lavori sopradescritti, che per le rimozioni delle costruzioni nei canali si prevede potranno occorrere, in base agli attuali prezzi correnti, le seguenti somme:

1°) per la conca di Pontelagoscuro e annessa idrovora L. 10.000.000=

2°) per la conca di Valpagliaro e per l'annessa chiusa mobile L. 4.000.000=

3°) per la conca di Tieni e annessa chiusa mobile L. 5.000.000=

4°) per la conca di Marozzo L. 500.000=

5°) per l'espurgo dell'alveo dei canali dai materiali dei ponti crollati, per estrazione palafitte e rimozione cavedoni e ricupero natanti affondati L. 12.000.000=

In totale L. 31.500.000=

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ne che massi di muratura caduti in alveo impediscano la manovra delle porte stesse.

Sia per l'esecuzione di tutti i lavori sopradescritti, che per le rimozioni delle costruzioni nei canali si prevede potranno occorrere, in base agli attuali prezzi correnti, le seguenti somme:

1°)	per la conca di Pontelagoscuro e annessa idrovora	L. 10.000.000=
2°)	per la conca di Valpagliaro e per l'annessa chiusa mobile	L. 4.000.000=
3°)	per la conca di Tieni e annessa chiusa mobile	L. 5.000.000=
4°)	per la conca di Marozzo	L. 500.000=
5°)	per l'espurgo dell'alveo dei canali dai materiali dei ponti crollati, per estrazione palafitte e rimozione cavedoni e ricupero natanti affondati	L. 12.000.000=
	In totale	L. 31.500.000=

Reputasi superfluo far rilevare che per il ripristino delle conche e delle chiuse si intende che occorre l'opera di ditte

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specializzate che posseggano mezzi adeguati per opere del genere e quindi in considerazione del tempo occorrente per tali complessi lavori, si propone una esecuzione graduale cominciando dai canali attraverso zone che ne hanno più bisogno, in modo da consentire una ripresa della navigazione anche in tratti intermedi di grande interesse locale.

La zona del Comacchiese per la sua posizione è quella che risente maggiormente della sospensione della navigazione interna; poichè la sua popolazione ritraeva le maggiori risorse dal commercio della navigazione.

Potrebbe quindi darsi la precedenza nell'esecuzione ad un primo gruppo di lavori per riattivare la navigazione nei canali Marozzo - Palotta e nel Volano inferiormente a Codigoro in modo che il centro di Comacchio potesse riattivare le comunicazioni con i centri vicini di Lagosanto, Codigoro e con le zone del Veneto.

Tali lavori potrebbero ridursi alla rimozione dell'alveo del canale Marozzo delle macerie di tre ponti crollati e alla rimozione di cavedoni in vicinanza di Comacchio; nella riattivazione della conca di Marozzo, nella rimozione dall'alveo del Volano dei materiali di un ponte in ferro crollato e nell'estrazione di palafitte esistenti nell'alveo a Passo

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do da consentire una ripresa della navigazione anche in tratti intermedi di grande interesse locale.

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Tali lavori potrebbero ridursi alla rimozione dell'alveo del canale Marozzo delle macerie di tre ponti crollati e alla rimozione di cavedoni in vicinanza di Comacchio; nella riattivazione della conca di Marozzo, nella rimozione dall'alveo del Volano dei materiali di un ponte in ferro crollato e nell'estrazione di palafitte esistenti nell'alveo a Passo Pomposa.

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Detti primi lavori, in base agli attuali prezzi correnti, importano per altro una spesa di sole L. 3.000.000=.

FERRARA, li 8 GIUGNO 1945

L'INGEGNERE CAPO
(R. Formichi)

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L'INGEGNERE CAPO

(R. Formichi)

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Major Talbot
Received 8/6/45.

[illegible] JUNE 7TH 1945.

[illegible]

TO THE ALLIED MILITARY GOVERNMENT
[illegible]
[illegible]
[illegible]
MILAN.

[illegible]

TO THE ATTENTION OF MAJOR TALBOT.

[illegible]

[illegible]
TO.

THE PRINCIPAL ITEMS COVERED BY THE FOLLOWING ARE:-

1) [illegible]

2) [illegible]

3) [illegible]

4) [illegible]

5) [illegible]

6) [illegible]

[illegible]

Encl. (1)

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Milan, 7th June 1949.

NOTES ON A CONTROL BOARD FOR RIVER TRANSPORT SERVICE.

1) Navigation and the existing means.

In order to obtain without loss of time all Milano, Piacenza and Cremona river traffic under one jurisdiction, it would be advisable that they elect one representative, officially authorized to represent them on a River Control Board, formed to deal with all problems regarding commercial nature and river transport services, for each of these three river ports.

This representative would be a member of the commercial section of said control board.

Each member would be authorized to discuss, jointly with the other members of the commercial section, all matters regarding traffic, working of the ports, and similar, setting forth his viewpoints and possible existing difficulties.

These three members, one each for the provinces of Milano, Cremona and Piacenza, could be relieved from their appointment when at a later time there would be appointed to the board the representatives of the navigation companies who would be formed in accord with the larges Piedmont, Liguy and Lombardy industries, which are all logically keenly interested in the building of new river ports in order to put in this service, particularly for the transportation of the raw materials needed by their factories. Already have more doctrine in this regard.

2) Dredging of the mouths of the tributary streams Lambro and Olona in order to make navigation possible.

The Control Board ought to urge that dredging be carried out at the necessary points, this within the shortest possible time, in order to free the passage for the barges, without having to depend from the Genio Civile.

3) Construction of the new 100 Tons steel and wooden barges.

While carrying out with the greatest urgency the above mentioned first two points of the program, the Control Board could start endeavouring to trace and locate all the necessary materials, steel

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the technical section of the board would have to survey the construction of the boats in order to get them built as soon as possible. It would be advisable to adopt a standardised type of barge, planned expressely for the service in view, with particular regard to the navigability and safety requirements, as for instance fire extinguishing means, position lights, etc.

4) and 5) Arranging of embankments and new canalization works.

While the dredging takes place and the river transport service is being started as existing conditions allow with the boats on hand, it would be necessary to keep in view all problems connected with the arranging of the embankments, of the weirs, etc., which would have to be studied by the engineer of the canals with together with the building engineer of the Control Board in charge.

These two engineers would have to study and project, in accordance with the whole Technical and Commercial Sections of the Control Board, the eventual new constructions works for the partial canalization where necessary in order to keep navigation going.

6) Connection with the "Lago Maggiore" lake.

The problem of effecting the connection with the "Lago Maggiore" lake is of the greatest importance and ought to be kept in view with the object of studying it and solving it as soon as circumstances allow, in consideration of the very good traffic possibilities offered by that region, principally by the timber sections and the quarts quarries.

Technical section of the Control Board.

1) Naval Engineer.

To survey the building of the barges and the quick carrying out of the construction work at the various shipyards and workshops. To take care of all technical problems regarding the dredges and other floating crafts.

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2) Building Owner.

To study and work out all projects, estimates, reports, surveys, enquiries and similar regarding problems of first urgency connected with erecting of the embankments, repairing of the dikes, waterways corrections, etc.

3) Civil Engineer.

To take care of the works of the embankments, of the carrying out of the drafts, of the arranging of the embankments, and similar, in accordance with the building Engineer.

Commercial Section of the Control Board.

4) Representatives of the river barge owners.

To represent the river barge owners of the various provinces and to deal in accord with the representatives of the commercial and maritime and of the navigation companies on the river with freight and charter rates and similar.

5) Representatives of the maritime and commercial interests.

To the same extent of the maritime and river traffic branch, with special regard to freight contracts, charter parties, transport insurances, averages, and similar, to discuss with all river barge owners and river navigation companies all necessary problems arising and to act as commercial expert and adviser or arbitrator for any differences that should arise.

6) Representatives of the river navigation companies.

The river navigation companies, as already set forth, would have to be formed in accordance with the industrial interests concerned, and would have their representative on the commercial section of the control board, who would have the same rights as the river barge owners.

It must be pointed out that all differences would have to be resolved jointly by the whole of each single section, and that all decisions would have to be taken after hearing fully all parties concerned.

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A delegate appointed by the Allied Military Government would have to settle all differences brought before the two sections and to decide, in accord with them, as to all measures to be taken, and also would have to recapitulate and present to the Allied Military Government all difficulties and disagreements that should arise, keeping said Government informed as to the progress of work, and receiving all orders that said Government should deem it be necessary to issue.

All problems would have to be discussed with the Allied Military Government through said delegate.

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HEADQUARTERS ALLIED COMMISSION
APO 394
TRANSPORTATION SUB COMMISSION

Tel.: 290
Ref. AC/38/6/rm6

RMB/mvm
16 July 1945

SUBJECT: Inland Waterways

TO : See Distribution Below

1. Attached is copy of translation made of Report on Conditions of Inland Navigation in the Padana Valley, dated 30 June 1945 and submitted to us by Angrogio Agostini, Engineer of the Ministry of Transport.

R. M. MAZZANELLA, Chief
Ports & Warehouse Division

Attachment:
As stated above

DISTRIBUTION:
Col. M. J. Sierf - Movements Division
Col. Curtis, Port Commandant, Venice
Maj. Larasen - Shipping Branch
Maj. Talbot - Headquarters AMG, Lombardia Region
Capt. Shepard, Public Works S/C

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TRANSLATION

TRANSLATION

30 June 1945

MINISTRY OF TRANSPORT

Inspector General of Civil Motorization and Transportation
Under Concession

Office of Studies on Inland Navigation
VERONA

REPORT ON CONDITIONS OF INLAND NAVIGATION IN THE PADANA VALLEY JUNE 1945

A. Premise

The most important carriage of goods on the inland waterways of North Italy is to and from the port of Venice, where there is special equipment for handling the transshipment of bulk goods between sea-going vessels and inland waterway craft.

Traffic is carried on in the North-East direction along the Venetian coastline up to the zone of Monfalcone through the provinces of Venice, Treviso and Udine, and to the South-West along the Venetian lagoon, through the connecting canal between the port of Venice and the river Po, and then along the river Po up to the mouth of the Mincio river and, going up the Mincio, to the wharf of Porto Catena di Mantova.

This long waterway, theoretically accessible to craft of 600 tons capacity, interests the provinces of Venice, Rovigo, Ferrara and Mantova, and has two important branches accessible to craft of about 300 tons capacity, which call at the river wharves of the provinces of Padova and Treviso.

Other transportation of a certain importance, especially of agricultural produce and building material, was carried on along the waterways of minor importance of the provinces of Udine, Treviso, Padova, Rovigo, Verona and Ferrara.

The waterways of the province of Ferrara (Po of Valano, Po of Primaro and the Burana Canal) are of special importance for fair size movements, particularly agricultural produce.

These are in communication with the river Po at Pontelagoscuro, and then with the principal navigable line mentioned above, by means of the recently built Boicelli canal, which connects the Volano Po near Ferrara with the main course of the Po at Pontelagoscuro, and along which has been built the industrial zone

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of Ferrara, with several industrial workshops of considerable importance.

Covering this transportation which is carried on, as has been seen, along the Po from the mouth of the Mincio to the sea and along the rivers and canals of the lower Padana Valley, there is an organization with Head Office in Venice.

Another zone, in which inland waterways are efficient and sufficiently well organized, has Milan as terminus and is served by: the Naviglio (Canal) Martesana, which connects the city of Milan with the navigable section of the Adda river above Vaprio, and which, after carrying out works of small size, could allow the continuation of navigation to Lake Como, the source of the Adda river; the Naviglio Grande, which connects the city of Milan with the Ticino river (issuing from Lake Maggiore), navigable up to Sesto Calende; the Naviglio of Pavia, which allows transport between Milan and the last section of the Ticino river, navigable down to its mouth.

Through the Naviglio of Pavia and the river Po, transports of a certain importance have been carried on in the past and even during the recent war between Milan and Venice. Under normal conditions, this transportation cannot be considered economically convenient owing to the limitations of size of craft due to the low depth of water in certain sections of the river Po. In fact, from the mouth of the Ticino to the mouth of the Adda river, the minimum depth of water in the dry season is about metre 0.80; while from the mouth of the Mincio, the minimum depth in the dry season is about one metre.[1]

These minimum depths must be considered as now reduced to metre 0.70, due to the slowing down and then suspension of dredging work carried on along the Po before the war.

It is not to be excluded that in the present special circumstances, the opportunity may be taken into consideration again of effecting the carriage of goods along this waterway with a view of contributing to the solution of the serious problem of supplying the city of Milan, which is very difficult now, owing to the scarcity of land transport. But to this end, it is necessary to dispose of the proper means which at present are not to be found in sufficient quantity, that is to say, low draft/of such dimensions which would allow them to pass through craft the locks of the Naviglio of Pavia. (Naviglio Pavese)

Further, it would be necessary to supply each craft with an outboard motor of sufficient power to allow them to go up the river at a suitable speed, as it is impossible to form convoys

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1. Report on North Italy Inland Navigation, XVth International Navigation Congress, Venice, Sept. 1931, page 78.

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along the Po in the section above Borgoforte and especially from Cremona to the mouth of the Ticino due to the twists and turns of the river, and the impossibility of securing tugs of sufficient strength which, at the same time, would draw only 70 centimetres (2 ft. 4 in.).

A solution of the problem could perhaps be obtained by using engines with an aerial propellor, which appear to have been used recently in Hungary with satisfactory results.

Transports of considerable importance are carried out on the principal Lakes of Lombardy, that is to say, on Lake Maggiore, on the Italian side of Lake Lugano, on Lake Como, on Lake Iseo and on Lake Garda.

Lake Maggiore and Lake Como can be easily put into communication, as will be seen further on, with the network of the waterways which meet at Milan.

On all these lakes, there are public navigation services, conceded for the carriage of passengers and goods and in addition transportation with privately owned ships of various sizes is carried on.

The fleets and the material used for these services have suffered very serious damage from war action, but I do not consider this as a subject for the present report.

B. Condition of the Waterways Leading to Venice.

From the data supplied to me by the "Magistrato alle Acque" of Venice, it appears that all the navigable waterways which go from the Venetian Lagoon northwards and give access to the various river wharves of the provinces of Treviso and Udine are in good condition. There are only some wrecks of sunken craft, already under removal. The lock, giving access to the Brian Canal, is damaged and cannot be used for some time.

The Canal Naviglio Brenta, which gives access to the river wharf of Padova and to several other intermediate ones of some importance, is navigable only from Venice to Mira at present. The swivel bridge, 3 km. from Mira, is damaged in such a way as to render manoeuvering impossible.

The Dolo and the Stra locks, besides the cable of the Brenta south of Stra, which regulate the navigation on the Naviglio Brenta, the River Brenta and the Piovego Canal, are all heavily damaged.

The principal navigable line of communication between the Venetian Lagoon and the Po has suffered serious damage and the left lock of Cavanella (across the river Adige) is impassable and has been almost completely destroyed. It will require about

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two years to rebuild. The right lock of Cavanella is also damaged, but is still in workable condition. At the moment, however, it can be passed through by craft drawing only one metre. 2/

The lock of Volta Grimana, giving access to the Po, is in fair condition.

Navigation between the Po and the Venice Lagoon could be renewed shortly, with craft of small tonnage, on the route Volta Grimana-Cavanella d'Adige-mouth of the Adige-mouth of the Brenta-Brondolo.

It would, however, be necessary to dredge the mouths of the Adige and the Brenta, which are presumably silted, and it is also necessary to remove the remains of the road bridge and the railway bridge, destroyed by aerial bombardment, which obstruct the channel in the section between Brondolo and the mouth.

It is to be noted, furthermore, that navigation should, therefore, take place on about 3 km. of sea, and would have to be suspended in the not infrequent case of heavy weather which would prevent safe navigation on the sea forflat-bottomed craft used for inland navigation.

For the renewal of navigation on the Po, it is necessary in the first place to restart upkeep work and dredging of the river bed, and to this end, it is necessary to place the Circolo Superiore d'Ispezione for the Po, with Head Office in Parma and the dependent Autonomous Section of the Genio Civile in a position to work.

These Offices have orders from AMG of Bologna to remove all obstructions to navigation caused by war action along the bed of the river, that is to say, the remains of the several bridges blown up and other fixed works which had been created for war purposes, besides removal of sunken craft. These Offices dispose of an important organization, including the yard of Boretto (Reggio Emilia), which was well supplied with the necessary means for the maintenance of the river bed and could be efficiently used for removing the above-mentioned obstructions. They have 10 dredgers, 7 of which are steam suction dredgers of a capacity of 400 cubic metres excavation per hour of sandy material; 14 tugs, 10 of which have steam engines and 4 diesel; 8 steel boats of 100 tons dw.; 5 of 300 tons dw.; 3 of 600 tons dw.; and 4 lighters of 100 tons for carriage of fuel oil. Part of these tugs and boats could be very usefully used for the carriage of goods of public interest.

All this material has suffered considerable damage due to war action, but in general, it is possible to proceed rapidly to place

2/ See note on last page.

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it again in operation, provided the necessary means are supplied. It appears, furthermore, that this organization is not able to work except in a very reduced way because they lack the material for repairs and even are without the allotments of P.O.L. for their automobiles, which the technical personnel need in order to survey the condition of the river on the long section assigned to that Office for maintenance, and to survey the condition of the various craft, dredgers and material strewn all along the river.

The first thing to do, therefore, is to give urgent instructions to allot a suitable quantity of petrol to that Office. Further, the following are required, for the working of the Boretto Yard and the various means of work: allotments of light and heavy diesel oil for the furnaces; coal for the dredgers and steam engines in general; steel plates for repairs; pitch and tar for repairing wooden craft; electrodes and material for electric welding and lubricants.

The technical personnel of the above Office foresee that, if they could have at their disposal the necessary material, then in six or seven months all obstacles along the river bed, which at present obstruct navigation, could be removed in accordance with the orders of AMG Bologna.

The work of this technical organization is obviously indispensable, not only for a possible re-opening of water transport up to Milan, which I mentioned above, but also for the continuation of efficient and organized navigation on the lower branch of the Po below the mouth of the Mincio.

Another obstruction in connection with navigation on the Po is formed by the pontoon bridges which have been built by the Allied Armies in such a way as to render their opening difficult for the passage of craft. This can be done now but with the result that road traffic would be help up for many hours.

These bridges are four in number; two at Piacenza (one for military traffic and one for civilian traffic), one at Borgoforte and one at Pontelagoscuro. A fifth is planned at Casalmaggiore. It is necessary that they be supplied, corresponding with the current, with sections easily movable in such manner as to allow the opening in the course of a few minutes to permit the passage of craft.

The pontoon bridge of Pontelagoscuro has, furthermore, the serious inconveniency of having been built at the wharf on the right bank of the river, in such manner as to obstruct loading and unloading at this important landing place.

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Further, it must be pointed out, in regard to the bridges over the Po, that it will be necessary to specify exactly the width and maximum height above water level of the craft that can pass through the wooden pier railway bridge which is being built between Revere and Ostiglia, and to give public notice in connection therewith for the guidance of the interested parties.

C. Condition of Craft on the Waterways which reach Venice.

From investigations carried out by me in 1941-1942 to prepare the application of the Navigation Code, I found that craft of over 25 tons dw. navigating on this network of waterways were then about 700 in number.

About a hundred of these craft belonged to several firms which owned a fair number each. The remainder belonged to owners of one or two craft at maximum, who were united in cooperatives or companies with the task of undertaking carriage of goods and distributing such carriage among the members, who were generally the boatmen themselves.

An association which will group together all the cooperatives and transport concerns, at present formed by owners of craft, is now being created at Venice. In this way, a trust of inland navigation with terminus at Venice will be formed.

The present condition of craft is unfavorable since the efficient craft number only 170 (all, however, of over 80 tons dw.) with a total dw. of 25,235 tons (average dw. about 150 tons). Further, there are another 155 craft with a total dw. of 25,060 tons (average dw. about 160 tons) damaged and in part sunk, but salvable.

These craft belong to the members of the above-mentioned associations, and it may be said that there are a further 50 craft, suitable for river navigation, which do not belong to concerns or members of the association. However, these craft are for special uses and, therefore, not usable for transports of public interest.

In regard to tugs, the associates own only 6 in efficiency, three with engines of over 100 HP and three with engines of lower HP.

In order to reach a rapid renewal of navigation, it is of urgent necessity to supply the means to repair the damaged craft, which are, as is seen, in number almost equal to those efficient, and possibly also the means to build new ones.

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To attain this end, it is necessary to place at the disposal of the Yards the raw material for the relative work and especially common spruce and beech wood, which at present can be purchased only on the black market at 15,000 Lire per cubic metre (35 cu.ft.); caulking pitch, which can be purchased only at 40 Lire per kilo; oakum which costs 120 Lire per kilo, and galvanized nails which are quoted, always on the black market, at about 70 Lire per kilo.

Such prices obviously cannot be met by the craft owners who, in general, have small means.

Further, it has been referred to me that labor working in the yards is undisciplined, and laborers are always asking for higher wages. In view of the notable public interest of these repairs to craft for inland navigation, it would be necessary to introduce special discipline for these workmen.

Also, it is necessary to supply the means required to repair and replace in operation the nine tugs laid up, as mentioned above, but in this regard, I will be undertaking further investigations. Later, the quantities of above-mentioned material (timber, pitch, oakum, nails) which will be required to put the 155 repairable craft in working order, can be ascertained, at least approximately.

Finally, it would be advisable to expedite procedure for reimbursement of war damages to the craft owners, many of whom would otherwise be unable to put their craft in order.

D. Condition of Waterways with Terminus at Milan

The waterways, giving access to the city of Milan, are all in good navigable condition and have not suffered war damage.

It is pointed out particularly that it is necessary to carry on dredging works, already planned by the competent Office of the Genio Civile, to allow the passage of craft or even only of rafts at the rapids along the river Adda near Calolzio Corte.

Such works would permit transportation of timber and firewood from the zone north of Lake Como to Milan along Lake Como, the navigable section of the Adda up to Trezzo and the Naviglio Martesana.

Works of greater importance are planned to better navigation conditions of the river Ticino at the mouth of Lake Maggiore, so as to allow transportation of a certain importance between the Lake and Milan through the river Ticino and the Naviglio Grande.

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E. Condition of Craft Circulating on the Waterways with Terminus at Milan.

From survey made, as above mentioned in the years 1941-42, it was found that there were only about 50 boats of over 25 tons dw. on the Lombard canals. It may be that several boats were omitted from the summary survey than made, but the number would be very small since inland navigation transports were being reduced considerably in the years preceding the war, owing to competition from road and rail.

Thirteen tugs belong to firms resident in the provinces of Milan and Pavia, but they all navigate on the Po (because on the Lombard waterways, tugs cannot be used) and it appears that at present, many are laid up and some damaged by war action.

I did not find that any craft circulating on the Lombard canals had suffered from aerial attacks.

According to information received from the Transportation Officer of AMG at Milan, it appears that negotiations are in progress for the building of about 100 wooden boats, which would be delivered in four successive lots of 25 each. They would have the specifications required for water transport between Venice and Milan; that is, maximum depth fully laden of one metre, reducible to 70 centimetres with limited cargo, length and width such as to allow their passage through the locks of the Naviglio Pavese.

F. Equipment of Places of Call.

Owing to the high cost of labor, it is absolutely necessary, for a suitable utilization of inland navigation, to supply mechanical means for handling bulk goods, in loading and unloading craft, at least at the most important places of call, with the aim of shortening the stay at such places and thereby increasing the use of craft, as is essential due to their shortage.

To this end, it will be necessary to furnish fixed cranes at some river calling places which are connected with the main railway lines, where, it is foreseen, there will be a considerable and practically continuous flow of goods, and to have, furthermore, ten or so cranes with grabs of about 2 tons, on pontoons of a draft not over one metre, to be used at the landing places wherever there is the temporary necessity of unloading or loading goods in large quantities.

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Fixed loading and unloading plant could be suitably set up first at:

1) The Mantova (Porto Catena) landing place along the Mincio, the equipment for which is already under consideration by the S.A.E.R., concessionaires of the Mantova-Peschiera railway. This landing place, connected with the railway system, could be used especially for the discharge and storing of coal arriving from the port of Venice and destined in part to Lombardy and in part to Venetian regions.

2) The landing place of Pontelagoscuro (Ferrara) along the Po, which is connected with the main railway station, but for the moment there is only a road connection as the railway line Bologna-Ferrara-Pontelagoscuro has not yet been put in working order. This landing place could be very suitably used, both for the discharge of coal coming from Venice and bound for the Emilia region, and for the loading of agricultural produce arriving there from the Ferrara district and bound for Venice.

3) The landing place of Porto Nogaro (Udine), already connected with a special rail to the station of S. Giorgio di Nogaro, could be used for the discharge of coal and other goods arriving from the port of Venice and bound for the province of Udine.

4) The basin of Porta Ticinese at Milan, in which there are only some privately owned mechanisms for the discharge of sand and gravel. The equipment of this landing place, terminus of the Naviglio Grande and of the Naviglio Pavese, will be particularly useful if the transportation plan, above mentioned in this report, can be carried out between Venice and the Lower Po, and the city of Milan.

G. Conclusions

In order to have efficient inland navigation in the Padana Valley and neighboring zones in the shortest possible time, it is essential to:

1) Supply the Hydraulic Administration, that is, the Magistrato alle Acque of Venice and the Circolo Superiore d'Ispezione for the Po, Head Office in Parma, with the necessary means to remove existing obstructions caused by war action along the rivers and navigable canals.

2) Supply the craft owners, eventually through the relative organization, with the means required to put the tugs and sunken craft in order and possibly for the building of new craft.

3) Build the required craft, necessary to start transportation

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between Milan and Venice in an efficient manner and to settle the technical problem of their propulsion along the Po.

4) Undertake the supplying of equipment at the landing places mentioned in this report.

(signed)
AMBROGIO AGOSTINI ENG.

THE CHIEF INSPECTOR

VERONA, 30 June 1945.

NOTE (see page 4)

As all craft usable for navigation in the Lower Padana Valley are of over 100 dw. and draft fully laden about 2 metres, it is necessary to undertake repairs of the right lock of Cavanella in such manner as to have a depth of at least two metres in order to renew navigation efficiently, even if along the temporary line as suggested in pages 4 and 5.

TRANSLATION OF REPORT made by Ing. Agostini, Inspector General of Inland Waterways, Ministry of Transports, Inspectorate General of Civil Motorisation and Transportation under Concession. Office of Studies on Inland Navigation,

V E R O N A

REPORT on the conditions of Inland Navigation in the Padana Valley in June 1945.

A) ~~PRAISE~~;

(1) The most important carriage of goods on the inland waterways of North Italy ~~begins or ends in~~ is to and from the port of Venice, ~~where~~ there is special equipment ~~suitable for~~ for handling the transhipment of bulk goods between sea-going vessels and inland waterway craft.

(2) Traffic is carried on in the North-East direction along the Venetian coastline up to the zone of Monfalcone through the provinces of Venice, Treviso and Udine, and to the South-West along the Venetian lagoon, through the connecting canal between the port of Venice and the river Po, and then along the Po river up to the mouth of the Mincio river and, going up the Mincio, to the wharf of Porto Catena di Mantova.

(2) This long waterway, theoretically accessible to craft of 600 tons ~~burden~~ capacity, interests the provinces of Venice, - Rovigo, - Ferrara, and Mantova, and has two important branches accessible to craft of about 300 tons ~~burden~~ capacity which call at the river wharves of the provinces of Padova and Treviso.

(3) Other transports of a certain importance, especially of agricultural produce and building material, ~~were~~ carried on along the waterways of minor importance of the Provinces of Udine, - Treviso, - Padova, - Rovigo, - Verona, and Ferrara.

(4) The waterways of the province of Ferrara (Po of Volano, Po of Primaro and the Burana Canal) ~~have~~ are of special importance for the movement of [illegible] size, particularly agricultural

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goods between sea-going vessels and inland waterway craft.

(1) Traffic is carried on in the North-East direction along the Venetian coastline up to the zone of Monfalcone through the provinces of Venice, Treviso and Udine, and to the South-West along the Venetian lagoon, through the connecting canal between the port of Venice and the river Po, and then along the Po river up to the mouth of the Mincio river and, going up the Mincio, to the wharf of Porto Catena di Mantova.

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(5) These are in communication with the River Po at Pontelagoscuro, and then with the principal navigable line mentioned above, by means of the Boicelli canal recently built, which connects the Volano Po near Ferrara with the main course of the Po at Pontelagoscuro, and along which has been built the industrial zone of Ferrara, with several industrial workshops of considerable importance.

covering/

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(5) Covering this transportation which is carried on, as has been seen, along the Po from the mouth of the Mincio to the sea and along the rivers and canals of the lower Padana Valley, there is an organization with a Head Office in Venice.

(7) Another zone, in which inland waterways are efficient and sufficiently well organised, ~~which has Head Office in~~ has Milan as terminus and is served by the Naviglio (Canal) Martesana, which ~~xxxxxxxx~~ connects the city of Milan with the navigable section of the Adda river above Vaprio, and which, after carrying out works of small size, could allow the continuation of navigation to the Lake of Como, ~~xxxxxxxxxxxxxx~~ the source of the Adda river; ~~from~~ the Naviglio Grande, which connects the city of Milan with the Ticino river (issuing from Lake Maggiore), navigable up to Sesto Calende; ~~and from~~ the Naviglio of Pavia, which allows transport between Milan and the last section of the Ticino river, ~~which~~ navigable down to its mouth.

(6) Through the Naviglio of Pavia and the river Po ~~there have been carried on in the past~~, and even during the recent war, transports of a certain importance have been carried on between Milan and Venice. Under normal conditions this transportation cannot be considered economically convenient owing to the limitations of size of craft due to the low depth of water in certain sections of the Po river. In fact, from the mouth of the Ticino to the mouth of the Adda river, the minimum depth of water in the dry season is about metre 0·80; while from the mouth of the Mincio ~~xxxxx~~ the minimum depth in the dry season is about one metre.[1] (Report of North Italy Inland Navigation, XVth. International Navigation Congress - Venice, Sept. 1931, page 78).

Footnote

[1] These minimum depths must be considered as now reduced to 0·70, due to the slowing down and then suspension of

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of ~~xxixxxxxx~~ small size, could allow the continuation of navigation to the Lake of Como, ~~xfxxxixxxxxxxix~~ the source of the Adda river, ~~from~~ the Naviglio Grande, which connects the city of Milan with the Ticino river (issuing from Lake Maggiore), navigable up to Pesto Calende; ~~and from~~ the Naviglio of Pavia, which allows transport between Milan and the last section of the Ticino river, navigable down to its mouth.

(5) Through the Naviglio of Pavia and the river Po ~~there have been carried on in the past~~, and even during the recent war, transports of a certain importance have been carried on between Milan and Venice. Under normal conditions this transportation cannot be considered economically convenient owing to the limitations of size of craft due to the low depth of water in certain sections of the Po river. In fact, from the mouth of the Ticino to the mouth of the Adda river, the minimum depth of water in the dry season is about metre 0·80; while from the mouth of the Ticino ~~to~~ the minimum depth in the dry season is about one metre.[1] (Report on North Italy Inland Navigation, XVth. International Navigation Congress - Venice, Sept. 1931, page 78). Footnote

[1] These minimum depths must be considered as now reduced to 0·70, due to the slowing down and then suspension of dredging work carried on along the Po before the war.

It is not to be excluded that in the present special circumstances, the opportunity may be taken again into consideration of effecting the carriage of goods along this waterway with a view of contributing to the solution of the serious problem of supplying the city of Milan, which is very difficult now, owing to the scarsity of land transport. But to this end, it is necessary to dispose of the proper means,

Which

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which at present ~~do not exist in~~ are not to be found in sufficient quantity, ~~and~~ that is to say, low draft craft ~~and~~ of such dimensions which would allow ~~of~~ them to pass through the locks of the Naviglio of Pavia. (Naviglio Pavese).

Further, it would be necessary to supply each craft with an outboard motor of sufficient power to allow them to go up the river at a suitable speed, as it is impossible to form convoys along the Po in the section above Borgoforte and especially from Cremona to the mouth of the Ticino due to the twists and turns of the river, and the impossibility of securing ~~xxxxx~~ tugs of sufficient strength ~~and~~ which at the same time would draw only 70 centimetres. (2 ft. 4 in.).

A solution of the problem could perhaps be obtained by using engines with an aerial ~~xxxx~~ propellor, which appear to have been used recently in Hungary with satisfactory results.

Transports ofconsiderable importance are carried out on the principal Lakes of Lombardy, ~~and~~ that is to say, on Lake Maggiore, on the Italian side of Lake Lugano, on Lake Como, on Lake Iseo and on Lake Garda.

Lake Maggiore and Lake Como can be easily put into communication, as will be seen further on, with the net work of the waterways which meet at Milan.

On all these Lakes there are public navigation services, ~~regularly~~ conceded for the carriage of passengers and goods and ~~besides there are carried on private transports with~~ in addition transportation with ~~xxxx~~ tion ~~xxxx~~ privately owned ships of various sizes. is carried on.

The fleets and the material used for these services have suffered very serious damage from war action, but I do not consider ~~xx~~ this is a subject for the present report..

B) CONDITIONS OF THE WATERWAYS LEADING TO VENICE.

From the data supplied to me by the "Magistrato

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A solution of the problem could perhaps be obtained by using engines with an aerial ~~xxxx~~ propellor, which appear to have been used recently in Hungary with satisfactory results.

Transports of considerable importance are carried out on the principal Lakes of Lombardy, ~~xxx~~ that is to say, on Lake Maggiore, on the Italian side of Lake Lugano, on Lake Como, on Lake Iseo and on Lake Garda.

Lake Maggiore and Lake Como can be easily put into communication, as will be seen further on, with the net work of the waterways which meet at Milan.

On all these Lakes there are public navigation services, ~~regularly~~ conceded for the carriage of passengers and goods and ~~besides there are carried out private transports with~~ in addition transportation with privately owned ships of various sizes. is carried on.

The fleets and the material used for these services have suffered very serious damage from war action, but I do not consider ~~xx~~ this is a subject for the present report.

B) CONDITION OF THE WATERWAYS LEADING TO VENICE.

From the data supplied to me by the "Magistrato delle Acque" of Venice, it appears that all the navigable waterways which goes from the Venetian Lagoon northwards and gives access to the various river wharves of the Provinces of Treviso and Udine ~~is~~ are in good condition. There are only some ~~relicts~~ wrecks of sunken craft, already under removal. ~~and the~~ The lock, ~~which~~ giving access to the Brian Canal, is damaged ~~and~~ and for some time cannot be used.

The Canal Naviglio Brenta, which gives access to the river/

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river wharf of Padova and to several other intermediate ones of some importance, is at present navigable only from Venice to Mira; the swivel bridge, at 3 Km. from Mira, is damaged in such way as to render manoeuvring impossible.

The Dolo and the Strà locks, besides the ~~locks~~ locks of the Brenta south of Strà, which regulate the navigation on the Naviglio Brenta, the River Brenta and the Piòvego Canal, are all heavily damaged.

The principal navigable line of communication between the Venetian Lagoon and the River Po has suffered serious damage ~~xxxxxxxxxxxxxxx~~ and the left lock of Cavanella (across the river Adige) is ~~xxxxxxxxx~~ impassable and has been almost completely destroyed ~~and to rebuild~~. It will require about two years' work. The right lock of Cavanella is also damaged, but still in workable condition. At the moment, however it can be passed through by craft drawing only one metre. (2) (See note on next page).

The lock of Volta Grimana, giving access to the river Po, is in fair condition.

Navigation between the Po and the Venice Lagoon could be renewed shortly, with craft of small tonnage, on the route Volta Grimana - Cavanella d'Adige - mouth of the Adige - mouth of the Brenta - Brondolo.

It would, however, be necessary to dredge the mouths of the Adige and ~~of~~ the Brenta, which are presumably silted, and it is also necessary to remove the remains of the road bridge and ~~of~~ the railway bridge, destroyed by aerial bombardment, ~~and~~ which obstruct the channel in the section between Brondolo and the mouth.

It is to be noted, furthermore, that navigation should, ~~xxxx~~ take place on about 3 km. of sea, and ~~xxxxxxxx~~ would have to be suspended in the not infrequent case of heavy weather ~~not allowing of~~ which would prevent safe navigation on the sea for

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Pellestrina Lagoon and the river Po has suffered serious damage ~~between~~ and the left lock of Cavanella (across the river Adige) is ~~impassable~~ impassable and has been almost completely destroyed. ~~It is to be rebuilt~~ It will require about two years to rebuild. The right lock of Cavanella is also damaged, but still in workable condition. At the moment, however, it can be passed through by craft drawing only one metre. (2) (See note on page ~~35~~).

The lock of Volta Grimana, giving access to the river Po, is in fair condition.

Navigation between the Po and the Venice Lagoon could be renewed shortly, with craft of small tonnage, on the route Volta Grimana - Cavanella d'Adige - mouth of the Adige - mouth of the Brenta - Brondolo.

It would, however, be necessary to dredge the mouths of the Adige and ~~&~~ the Brenta, which are presumably silted, and it is also necessary to remove the remains of the road bridge and ~~of~~ the railway bridge, destroyed by aerial bombardment, ~~and~~ which obstruct the channel in the section between Brondolo and the mouth.

It is to be noted, furthermore, that navigation should, ~~xxxx~~ take place on about 3 km. of sea, and ~~[illegible]~~ would have to be suspended in the not infrequent case of heavy weather ~~not allowing of~~ which would prevent safe navigation on the sea for flat-bottomed craft used for inland navigation.

For the renewal of navigation on the Po, it is necessary in the first place to restart upkeep work and dredging of ~~&~~ the river bed, and to this end, it is necessary to place the Circolo Superiore d'Ispezione for the Po, with Head Office in Parma and the dependant Autonomous Section of the Genio Civile in a position to work. 2197

These Offices have orders from ~~the~~ AMG of Bologna to ~~effect~~/

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~~effect the~~ removal of all obstructions to navigation ~~xxxxxxx~~ caused by war action along the bed of the river, ~~and~~ that is to say, the remains of the several bridges blown up and other fixed works which had been created for war purposes, besides removing ~~of the~~ sunken craft. These Offices dispose of an important organization, including the yard of Boretto (Reggio Emilia), which was well supplied with the necessary means for the maintenance of the river bed and ~~which~~ could be efficiently used for ~~the above-mentioned~~ removing the above-mentioned obstructions. ~~that is~~ They have ten dredgers, seven of which are steam suction dredgers, of a capacity of 400 cubic metres excavation per hour of sandy material; 14 tugs, of which ~~13~~ have steam engines, and four diesel; ~~eight~~ steel boats of 100 tons dw, 5 of 300 tons dw and four lighters of 100 tons for carriage of fuel oil. Part of these tugs and boats could be very usefully used for the carriage of goods of public interest.

All this material has suffered considerable damage due to war action, but in general, it is possible to proceed rapidly to place ~~it~~ again in operation, provided the necessary means are supplied. ~~place at its disposal~~. It appears, ~~that~~ furthermore, that this organization is not able to work except in a very reduced way because they lack the material for repairs and even are without the allotments of P.O.L. for their automobiles, of which the technical personnel have need in order to survey the conditions of the river on the long section assigned to ~~that~~ Office for maintenance, and to survey the conditions of the various craft, dredgers and material ~~xxxxxx~~ strewn all along the river.

The first thing to do is therefore to give urgent instructions to allot to that Office a suitable quantity of petrol. Further, the following are required, for the working of the Boretto yard and heavy light diesel oil

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They have ten dredgers, seven of which are steam suction dredgers, of a capacity of 400 cubic metres excavation per hour of sandy material; 14 tugs, of which have steam engines, and four diesel; eight steel boats of 100 tons dw, 5 of 300 tons dw and four lighters of 100 tons for carriage of fuel oil. Part of these tugs and boats could be very usefully used for the carriage of goods of public interest.

All this material has suffered considerable damage due to war action, but in general it is possible to proceed rapidly to place it again in operation, provided the necessary means are supplied. It appears furthermore that this organization is not able to work except in a very reduced way because they lack the material for repairs and even are without the allotments of P.O.L. for their automobiles with which the technical personnel need in order to survey the conditions of the river on the long section assigned to that Office for maintenance, and to survey the conditions of the various craft, dredgers and material strewn all along the river.

The first thing to do is therefore to give urgent instructions to allot to that Office a suitable quantity of petrol. Further, the following are required, for the working of the Boretto yard and the various means of work, allotments of light and heavy diesel oil for the furnaces, coal for the dredgers and steam engines in general; steel plates for repairs; pitch and tar for repairing wooden craft; electrodes and material for electric welding and lubricants.

The technical personnel of the above Office foresee that, if they could have at their disposal the necessary material,

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then/

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than in six or seven months all obstacles ~~xxixxxx~~ along the river bed, ~~xxx~~ which at present obstruct navigation, could be removed, in accordance with the orders of (Bologna/AMG.

The work of this technical organisation is obviously indispensable, not only for a possible re-opening of water transport up to Milan, which I mentioned above, but also for the continuation of ~~the~~ efficient and organised navigation on the lower ~~xxxxxxx~~ branch of the Po below the ~~xxxxx~~ mouth of the Mincio.

Another obstruction in connection with navigation on the Po is formed by the pontoon bridges which have been built by the Allied Armies in such a way as to render (difficult their opening) for the passage of craft, ~~which~~ This can but be done now, with the result that road traffic would be held up for many hours.

~~xxxxxx

Another obstruction in connection with navigation on the Po is formed by the pontoon bridges which have been built by the Allied Armies in such a way as to render difficult their opening for the passage of craft, which could be done now at last with the result that road traffic would be held up for many hours.

These bridges, are four in number; two at Piacenza (one for military traffic and one for civilian traffic), one at Borgoforte and one at Pontelagoscuro; a fifth is planned at Casalmaggiore. It is necessary that they be supplied, in correspondence with the current, with sections easily movable in such manner as to allow the opening in the course of a few minutes to permit the passage of craft.

The pontoon bridge of Pontelagoscuro has, furthermore, the serious inconveniency of having been built at the wharf for [illegible] on the right bank of the river, in such manner as to obstruct loading and unloading at this important landing place.

It must further be pointed out, in regard to the bridges over the Po, that it will be necessary to specify exactly the width and maximum height above water level of the craft that can pass through the wooden pier railway bridge which is being built between Revere and Catiglia, and to give public notice in connection therewith for the guidance of the interested parties.

c/

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C) CONDITION of ~~XXXXXXX~~ CRAFT ON THE WATERWAYS WHICH REACH VENICE.

From investigations carried out by me in 1941 - 1942 to prepare the application of the Navigation Code, I found that ~~the~~ craft of over 25 tons dw. navigating on this net of waterways were then about 700 in number

About a hundred of these craft belonged to ~~a small number~~ several firms which ~~own~~ owned a fair number, each. The remainder belonged to owners of one or two craft at maximum, who were united in ~~xxx~~ cooperatives or companies with the task of undertaking carriage of goods and distributing such carriage among the members, who were generally the boatmen themselves.

~~There is now being formed at Venice~~ An association which is now being formed at Venice will group together all the cooperatives and transport concerns which at present ~~are~~ formed by owners of craft, ~~forming~~ in this way a trust of inland navigation with terminus at Venice is being created at Venice. will be formed.

The present conditions of craft are unfavourable since the efficient craft ~~are~~ number only 170 (all, however, of ~~xxxxxx~~ over 80 tons) ~~for~~ with a total dw. of 25,235 (average dw. 150 tons about). Further, there are other 155 craft ~~for~~ with a total dw. of 25,060 tons (average dw. 160 tons about) damaged and in part sunk, but salvable.

These craft belong to the members of the above-mentioned associations, and it may be said that there are a further 50 craft, suitable for river navigation, which do not belong to concerns or ~~persons~~ members of the association. However these craft are for special uses and, therefore, not usable for transportations ports of public interest.

In regards to tugs, the associates own only six in efficiency, ~~of which~~ three with engines of over 100 HP and three with

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carriage of goods and distributing such carriage among the members, who were generally the boatmen themselves.

~~There is now being formed at Venice~~ An association which is now being formed at Venice will group together all the cooperatives and transport concerns, which ~~are~~ at present are formed by owners of craft, is being created at Venice. ~~forming~~ In this way a trust of inland navigation with terminus at Venice will be formed.

The present conditions of craft are unfavorable since the efficient craft number only 170 (all, however, of ~~[redacted]~~ over 80 tons dw.) with a total dw. of 25,235 (average dw. 150 tons about). Further, there are other 155 craft with a total dw. of 25,060 tons (average dw. 160 tons about) damaged and in part sunk, but salvable.

These craft belong to the members of the above-mentioned associations, and it may be said that there are a further 50 craft, suitable for river navigation, which do not belong to concerns or ~~persons~~ members of the association. However these craft are for special uses and, therefore, not usable for transportation ~~xxxxxxx~~ ports of public interest.

In regard to tugs, the associates own only six in efficiency, ~~of which~~ three with engines of over 100 HP and three with engines of lower HP.

~~xxxxx~~ In order to reach a rapid renewal of navigation, it is ~~xxxxxxxxxxxx~~ of urgent necessity to supply the means ~~with which~~ to repair the damaged craft, which are, as is seen, in number almost equal to those efficient, and possibly also the yards to build new ones. 2194

To attain this end, it is necessary to place at the disposal of the Yards the raw material for the relative work and especially/

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especially common spruce and beech wood, which at present can be purchased only on the black market at ~~the price of~~ 15,000 Lire (~~fifteen thousand~~) per cubic metre (35 cu. ft.); caulking pitch, which can be purchased only at (Lire 40) per Kilo; oakum which costs 120 Lire per kilo, and galvanized nails which are quoted, always on the black market, at about 70 Lire per kilo. ~~Such~~ prices obviously cannot be ~~sustained~~ by the craft owners, who, in general, have small means.

Further, it has been referred to me that labour working in the yards is undisciplined, and ~~is~~ labourers are always asking for higher wages. In view of the notable public interest of these repairs ~~to~~ to craft for inland navigation, it would be necessary to introduce a special discipline for these workmen.

Also it is necessary to supply the means required to repair and replace in ~~efficiency~~ the nine tugs laid up, as mentioned above, but in this regard, I will be undertaking further investigations. Later, ~~there can be ascertained, at least approximately,~~ the quantities of above-mentioned material (timber, pitch, oakum, nails) which will be required to put in working order the 155 repairable craft can be ascertained, at least approx. Finally, it would be advisable to expedite procedure for reimbursement of war damages to the craft owners, many of whom otherwise would be unable to put their craft in order.

D) CONDITIONS OF WATERWAYS WITH TERMINUS AT MILAN

The navigable waterways, giving access to the city of Milan, are all in good condition and have not suffered war damage.

It is pointed out particularly that it is necessary to carry on dredging

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wages. In view of the notable public interest of these repairs ~~xxxx~~ to craft for inland navigation, it would be necessary to introduce ~~a~~ special discipline for these workmen.

Also it is necessaryto supply the means ~~necessary~~ required to repair and replace in ~~efficiency~~ the nine tugs laid up, ~~and~~ as mentioned above, but in this regard, I will be undertaking further investigations; later, ~~there can be ascertained, at least approximately,~~ the quantities of above-mentioned material (timber, pitch, oakum, nails) which will be ~~necessary~~ required to put in working order; ~~the 155 repairable craft~~ can be ascertained, at least approx.

Finally ~~xxxxxxxxx~~, it would be advisable to ~~accelerate~~ expedite procedure for reimbursement of war damages to the craft owners, many of whom otherwise would be unable to put their craft in order.

D) CONDITIONS OF WATERWAYS WITH TERMINUS AT MILAN

~~xxxxxxxx~~ ~~As regards~~ The waterways, giving access to the city of Milan, navigable ~~they~~ are all in good condition and have not suffered war damage.

There ~~It~~ is pointed out particularly that it is necessary to ~~carry on the necessity of~~ ~~and~~ dredging works, already planned by the competent Offics of the Genio Civile, to allow the passage of craft or even only of rafts at the rapids along the river Adda near Calolzio Corte.

Such works would ~~allow of the~~ permit transportation ~~xxxxxxx~~ to Milan along Lake Como, the navigable section of the Adda up to Trezzo and the Naviglio Martesana, (of timber and firewood from ~~the~~ zone north of Lake Como.) 93

Works of greater importance are planned ~~xx~~ to better navigation conditions of the river Ticino at the mouth at Lake Maggiore, so

as/

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as allow ~~a~~ transporation of a certain importance between the Lake and Milan through the river Ticino and the Naviglio Grande.

E) CONDITION OF CRAFT CIRCULATING ON THE WATERWAYS WITH TERMINUS AT MILAN:

From survey made, as above mentioned, in the years 1941-1942, it was found that ~~the~~ there were only about 50 boats of over 25 tons dw. on the Lombard canals ~~were only about fifty.~~ It may be that several boats ~~were~~ were omitted from left out of the summary survey then made, but ~~certainly they would be a very limited number of craft~~ the number would be very small since inland navigation transports were being considerably reduced in the years preceding the war, owing to competition from road and rail.

Thirteen tugs belong to firms resident in the provinces of Milan and Pavia, but they navigate ~~on~~ on the Po (because on the Lombard waterways, tugs cannot be used) and it appears that many are ~~at present~~ at present laid up and some damaged by war action.

I do not find that any craft circulating on the Lombard canals has suffered from aerial ~~offences~~ attacks.

According to information ~~Reply~~ received from the Officer Transportation Officer of ~~the~~ A.M.G. at Milan, it appears that ~~there are in hand negotiations~~ negotiations are in progress for the building of about ~~one hundred~~ 100 wooden boats, which would be delivered in four successive lots of 25 each, ~~and~~ They would have the ~~characteristics~~ specifications required for ~~the~~ water transport between Venice and Milan; ~~and~~ that is, maximum depth fully laden of one metre, reducible to 70 centimetres with limited cargo, length and width such as to allow their passage through the locks of the Naviglio Pavese.

F) EQUIPMENT OF PLACES OF CALL. ~~advanced~~

necessary

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~~mainly they would be a very limited number of craft~~ number would be very small since ~~xxxxxx xxxtx~~ inland navigation transports were ~~xxxxxx being~~ considerably reduced in the years preceding the war, owing to competition from road and rail.

Thirteen tugs belong to firms resident in the provinces of Milan and Pavia, but they ~~all~~ navigate on the Po (because on the Lombard waterways, tugs cannot be used) and it appears that many are ~~at present~~ laid up and some damaged by war action. At present,

I do not find that any craft circulating on the Lombard canals has suffered from aerial ~~attacks~~ attacks.

~~From news~~ According to information received from the ~~Officer~~ Transportation Officer of ~~the~~ A.M.G. At Milan, it appears that ~~there are in hand negotiations~~ negotiations are in progress for the building of about ~~one hundred~~ 100 wooden boats, which would be delivered in four successive lots of 25 each, ~~and~~ They would have the ~~characteristics~~ specifications required for ~~the~~ water transport between Venice and Milan; ~~and~~ that is, maximum depth fully laden of one metre, reducible to 70 centimetres with limited cargo, length and width such as to allow their passage through the locks of the Naviglio Pavese.

F) EQUIPMENT OF PLACES OF CALL.

Owing to the high cost of labour, it is absolutely ~~indispensable~~ necessary for a suitable utilization of inland navigation, to supply mechanical means for ~~the~~ handling ~~of~~ bulk goods, ~~xxxxxx~~ in ~~is~~ loading or ~~discharging~~ unloading craft, at least at the most important places of call, ~~and that is also~~ with the aim of shortening the stay at such places and ~~therefore~~ increasing the use of craft, as is essential due to the shortage ~~of such craft~~.

To this/

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To this end, it will be necessary to furnish fixed cranes at some river calling places which are connected with the main railway lines, where, it is foreseen, there will be a considerable and practically continuous flow of goods, and to have, furthermore, ten or so cranes with grabs of about 2 tons, on pontoons of a draft not over one metre, to be used at the landing places wherever there is the temporary necessity of ~~discharging~~ unloading or loading goods in large quantities.

& Fixed loading and ~~discharging~~ unloading plant could be suitably ~~planned~~ set up ~~in the~~ first ~~place~~ at:

1) The Mantova (Porto Catena) landing place along the Mincio, for the equipment ~~of~~ which ~~there~~ is already under consideration ~~a plan studied~~ by the S.A.E.R., concessionaires of the Mantova-Peschiera railway. This landing place, ~~already~~ connected with the main railway system, could be used especially for the discharge and storing of coal arriving from the port of Venice and destined in part to Lombardy and in part to Venetia regione.

2) The landing place of Pontelagoscuro (Ferrara) along the Po, which is ~~also~~ connected with the main railway station, but for the moment ~~can be used only by road~~ there is only road connection as the railway line Bologna - Ferrara - Pontelagoscuro ~~cannot~~ has not yet been put in working order. This landing place could be very suitably used, both for the discharge of coal coming from Venice and bound for the Emilia region, as for the loading of agricultural produce arriving there from the Ferrara district and bound for Venice.

3) The landing place of Porto Nogaro (Udine), already connected with a special rail to the station of S. Giorgio di Nogaro, ~~which~~ could be used for the discharge of coal and other goods

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placed set up ~~in this~~ first ~~place~~ at:

1) The Mantova (Porto Catena) landing place along the Mincio for the equipment ~~for~~ of which ~~there~~ is already ~~a plan studied~~ under consideration by the S.A.E.R., concessionaires of the Mantova-Peschiera railway. This landing place, ~~already~~ connected with the railway system, could be used especially for the discharge and storing of coal arriving from the port of Venice and destined in part to Lombardy and in part to Venetia Tridentina.

2) The landing place of Pontelagoscuro (Ferrara) along the Po, which is ~~also~~ connected with the main railway station, but for the moment ~~can be used only by road~~ there is only road connection as the railway line Bologna - Ferrara - Pontelagoscuro ~~cannot~~ has not yet be put in working order. This landing place could be very suitably used, both for the discharge of coal coming from Venice and bound for the Emilia region, and for the loading of agricultural produce arriving there from the Ferrara district and bound for Venice.

3) The landing place of Porto Nogaro (Udine), already connected with a special rail to the station of S. Giorgio di Nogaro, ~~which~~ could be used for the discharge of coal and other goods in arrival from the port of Venice and bound for the Province of Udine.

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4) The ~~dock~~ basin of Porta Ticinese at Milan, in which there are only some mechanisms privately owned for the discharge of sand and gravel. The equipment of this landing place, terminus of the Naviglio Grande and of the Naviglio Pavese, will be particularly useful if ~~there be carried out the plan of~~ the transportation plan, between Venice and the Lower Po, and the city of Milan, ~~mentioned~~ above mentioned in this report, can be carried out

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~~mentioned in this report.~~

C O N C L U S I O N S

In order to ~~enter~~ have efficient ~~inxthexshortestxpossiblextime~~ inland navigation in the Padana Valley and neighbouring zones in the shortest possible time, it is essential to:

1) Supply the Hydraulic Administration, ~~and~~ that is, the Magistrato alle Acque of Venice and the Circolo Superiore d'Ispezione for the Po, ~~with~~ Head Office in Parma, with the necessary means to remove existing obstructions caused by war action along the rivers and navigable canals.

2) Supply ~~to~~ the craft owners, eventually through the relative organisation, with the means required to put in ~~motion~~ the tugs and craft ~~in order~~ sunken, and possibly for the building of new craft.

3) ~~To carry out, in an efficient manner, transport~~ Start transportation between Milan and Venice it is necessary to Build the required craft, and settle the technical problem of their propulsion along the Po.

Necessary to start transportation between Milan & Venice in an efficient manner

4) Undertake the supplying of equipment of the landing places mentioned in this report.

Verona, 30 June 1945.

THE CHIEF INSPECTOR

(sd) Amgrogio Agostini Eng.

NOTE (see page 4) As all craft usable for navigation in the Lower Padana Valley are of over 100 dw. and draft fully laden about 2 metres, it is necessary to undertake repairs of the right lock of Cavanella in such manner as to have a depth ~~of water~~ of at least two metres in order to renew navigation efficiently, even along the temporary routs ~~suggested~~ listed as in page

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the rivers and navigable canals.

2) Supply ~~to~~ the craft owners, eventually through the relative organisation, with the means required to put in ~~service~~ the tugs and craft ~~in order~~ sunken, and possibly for the building of new craft.

3) ~~To carry out, in an efficient manner, transport~~ Start, in an efficient manner, transportation between Milan and Venice it is necessary to build the required craft, and to settle the technical problem of their propulsion along the Po.

Necessary to start transportation between Milan - Venice in an efficient manner

4) Undertake the equipment ~~of~~ supplying of the landing places mentioned in this report.

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NOTE (see page 4) As all craft usable for navigation in the Lower Padana Valley are of over 100 dw. and draft fully laden about 2 metres, it is necessary to undertake repairs of the right lock of Cavanella in such manner as to have a depth ~~of water~~ of at least two metres in order to renew navigation efficiently, even along the temporary ~~route~~ like as suggested ~~on~~ in pages 4 and 5.

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CONFIDENTIAL

Rome, 11th June 1945

To: Headquarters,
Allied Commission.
Transportation Sub Commission.

INLAND WATERWAYS.

This is a survey of the prevailing conditions in the Venezia and Lombardia Regions and recommendations for efficient re-organisation, carried out by the undersigned at the request of A.C.

1. DAMAGE TO THE INSTALLATIONS.

The damage, caused by both air-raids and German destruction, is very extensive in the lower stretches of the Po river and its surrounding canals. In particular the damage suffered by the all-important locks of Cavanella and Pioppa blocks effectively the main entrance into the river from the Lagoon, and the total destruction on the locks of the Po di Volano make it very difficult to reach Ferrara from the south (Ravenna).

All along the Po river the traffic would be in any case impossible due to the ruins of the bridges, not yet removed, and to a number of pontoon bridges.

Other ruined bridges and minor damage to gates must be removed and repaired before opening waterway traffic to such important inland ports as Rovigo, Padova and Battaglie. It is therefore possible that what steps have been taken locally by the Regional Transportation Sub Commission of A.M.G. might be more effective if similar pressure were brought to bear in Rome on the Ministero dei Lavori Pubblici for a speedy rehabilitation of the inland waterways.

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This is a survey of the prevailing conditions in the Venezia and Lombardia Regions and recommendations for efficient re-organisation, carried out by the undersigned at the request of A.C.

1. DAMAGE TO THE INSTALLATIONS.

The damage, caused by both air-raids and German destruction, is very extensive in the lower stretches of the Po river and its surrounding canals. In particular the damage suffered by the all-important locks of Cavanella and Pioppa blocks effectively the main entrance into the river from the Lagoon, and the total destruction on the locks of the Po di Volano make it very difficult to reach Ferrara from the south (Ravenna).

All along the Po river the traffic would be in any case impossible due to the ruins of the bridges, not yet removed, and to a number of pontoon bridges.

Other ruined bridges and minor damage to gates must be removed and repaired before opening waterway traffic to such important inland ports as Rovigo, Padova and Battaglie. It is therefore possible that what steps have been taken locally by the Regional Transportation Sub Commission of A.M.G. might be more effective if similar pressure were brought to bear in Rome on the Ministero dei Lavori Pubblici for a speedy rehabilitation of the inland waterways.

Until such measures have been taken, the capacity of the waterways system will be considerably reduced, but it must be clearly stated that considerable possibilities exist even at present.

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With short hauls by truck or railway, some of the obstacles may be overcome, as in the case of grain amassing or redistribution and coal supplies to Ferrara, Padova and other cities; to brick furnaces and sugar factories scattered over a wide area in the lower Po, in which latter case the huge beet movements may find also a substantial outlet in water transportation.

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2. DAMAGE TO THE FLEET OF BARGES AND TUGS.

This is also very extensive; about 50% of all barges and 75% of all tugs were lost or damaged. The prospect for salvage and repairs is rather good, but the shortage of tugs will be acute.

The tugs upon which the proposed Pool can count to start operations inside this month are the following :-

Trieste	- 80 HP	- Diesel	
Adolfo F.	- 80 "	- "	
Victor	- 67 "	- "	
Carlo Alberto	-120 "	- "	
Torello	-150 "	- "	(ready 15/7/45)
Sarcns	-120 "	- "	
N.N.	- 40 "	- "	(under construction, ready 31/7/45)
Lucia	- 60 "	- "	
San Secondo	-110 "	- Steam	
Nero	- 40 "	- "	
Governolo	- 80 "	- Diesel	(special wheel-propelled
Mirasole	-260 "	- Steam	for river navigation; both ready 30/6/45)

It is imperative that the tugs, which with their shallow draft (about m.1.40) are specially built for inland water traffic, should not be requisitioned or employed in other sectors of sea activities. It is to be noted that the Senior Sea Transportation Officer - Venice - is in complete agreement with this policy, as his needs for tugs and lighters have been easily covered by the harbour craft tonnage available in Venice.

The barges available, which range in size from 70 to 300 ton cargo-carrying capacity, with an average capacity of 170 tons, are about 130 for a total capacity of 25,000 tons. It is expected, with the help of the Pool earnings (see para 4-G) to salvage and repair, by the end of August, other additional tonnage. It is possible to forecast without undue optimism, approximately 250 barges for a total of 44,000 tons by the end of August.

3. SHIPPING ORGANISATION.

The shipping in the Po valley is still following old-established customs, which it is advisable to respect in an

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Victor	- 67	"	-	"
Carlo Alberto	-120	"	-	"
Torello	-150	"	-	" (ready 15/7/45)
Serems	-120	"	-	"
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3. SHIPPING ORGANISATION.

The shipping in the Po valley is still following old-established customs, which it is advisable to respect in an endeavour to re-organise it, in order to obtain active co-operation from all parties concerned towards greater efficiency.

Usually the owners of the barges sublet their craft to each "capo-barca" (captain) who collects 70% or 75% of the freight and pays all expenses, including traction (horse, tractor or tug). This direct interest of the crew makes it extremely difficult to achieve one of the principal aims, that is the impartial choice of a barge for whatever type of cargo is required for movement. To overcome this difficulty, the German organisations (Speer and Mittlemeer) tried, with catastrophic results, to put the crew on

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a day-to-day pay basis. It is not recommended that this experiment be tried again.

The German organisations, to solve the same problem of rational employment of barges and tugs, chose the system of giving direct contracts only to two of the bigger groups: (the Cooperativa Mantovana Barcari and the Navigazione Fluviale San Marco); the smaller groups were aggregated to these principal ones, who immediately tried to turn this fortunate position to their own advantage.

As a result of this and a similar procedure being adopted by the third large firm, headed by Mr. Bernardi (the shrewdest man in this business) which enjoyed a monopoly of all Consorzio Agrario Movements, the smaller firms were reluctant to enter into a Pool organisation which would only be controlled by the three large firms and in particular by Mr. Bernardi.

It must, however, be remembered that the heaviest relative losses in tugs have been suffered by the independent groups; who now find themselves at the mercy of the "Big Three". Also this peculiar situation of privilege makes the bigger organisations reluctant to give up this chance of monopoly.

4. PROPOSED NEW SET UP.

In the light of the foregoing observations, a certain number of conclusions have been reached with a view to speedy rehabilitation of this traffic. The following recommendations are therefore submitted.

A. The traffic in Venezia Region (including Ferrara Province and the lower Po up to Mantova) forms a distinct, separate trend from the traffic in Lombardia (Upper Po and Milan's canal system) both for technical and geographical reasons.

The barges that can reach Pavia and Milan must not exceed 80 - 100 tons maximum dead weight, while barges from 200 tons minimum dead weight are more suitable in the Venezia Region. Therefore, barring transhipment in Mantova, only exceptionally advisable and never economically convenient, all traffic for Milan must be done with specially built barges, usually owned by Milan and Pavia firms.

The formation of two distinct organisations, (a) an Inland Waterways Pool - East and (b) an Inland Waterways Pool - West, is therefore recommended.

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The formation of two distinct organisations, (a) an Inland Waterways Pool - East and (b) an Inland Waterways Pool - West, is therefore recommended.

In order to keep co-ordination and unity between the two organisations, in the Eastern (Venezia) Pool, all bids for through traffic for Milan, as well as all bids for local movements in the Venezia Region itself, should be centralised. Similarly, bids for local traffic in Lombardia Region should be dealt with by the Milan offices of the Western Pool.

B. The Eastern Pool should include all barge owners, pro-rata with their tonnage. The tug owners not to be

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a part of the Pool, as their ships will be taken over on a time-charter basis by the Pool, in order that only movements priorities will dictate their proper use.

C. The allocation to each owner should include all tonnage which he undertakes to salvage, repair and put into operation in a given time (say, six to nine months). In this manner Pool profits will be distributed also as a salvage premium, which will stimulate this activity.

D. The Pool to be managed by a Board of Directors, totaling five members, two of which will be selected by owners of a fleet of more than 3,000 tons D.W., two by owners of smaller fleets and one chosen by A.M.G. - Venezia Region.

The President of the Pool to be selected by all members, owners of a fleet over 1,000 tons and up to 5,000 to have one vote; owners of more than 5,000 tons D.W. to have two votes. Owners of fleets under 1,000 tons should form group in order to vote.

E. All movements of barges to be made only by order of the Pool; all bids to be screened and marked for Priority according to the requests of A.M.G. or other authority.

The Pool Head Offices to be in Venice and a liason office detached in Padova.

F. The Pool to collect all freight and be responsable for tugs and other traction, as well as payment to barge owners according to an agreed tariff. The owners to settle with their crew, according to local customs and in such a manner as to stimulate efficiency and a speedy turn-round of craft.

G. All Pool profits to be divided among owners in the manner above stated.

H. In Lombardia Region the procedure will require to be different. There all firms interested in transportation are generally not owners of the barges, which are hired according to need. It is felt that a Pool should, in this case, group not the small barge owners, but the more responsable firms who can be trusted to control barges in the desired manner.

A fuller report as to how this procedure should be

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A fuller report as to how this procedure should be effected will be submitted at a later date when further information has been obtained.

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