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Impact of Development of Offshore Oil: East Coast of South American Case Study

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IMPACT OF DEVELOPMENT OF OFFSHORE OIL: EAST COAST OF SOUTH AMERICA CASE STUDY

MARINE AFFAIRS SEMINAR

DEPARTMENT OF MARINE AFFAIRS

By

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INTRODUCTION

This paper is my response to a feeling that is quite common in developing countries:

> We are so constrained by economical problems that we can't afford to get worried about the environment. Limitations to the legitimate development of our own resources and capabilities in the benefit of our own people should not be imposed on us by the already "developed countries."

I am not going to produce an answer; my time and the information available are very limited. Also, this task will demand a quite complete team of researchers to cover all the aspects involved in such a big area of the world as the Southwest Coast of the Atlantic Ocean.

I am not an environmentalist, my background is in the industry's field. But I think it is necessary to establish a bridge that may help to unify criterias of both worlds, developed and developing.

The more we concentrate information and the more we call the attention of people to the future problems of indiscriminate development, the more we advance towards the rational utilization of the Marine Environment and the Coastal Zone in a worldwide perspective.

In some way the environmental concern is a consequence of a high standard of life. Countries and people become aware

of the problem of rational utilization of resources, when they can afford to do it. Unfortunately the consequences of the past actions are sometimes irreversible and when a country realizes what is going on, there is little more to do that may compensate the damage.

Developed countries are now trying to call the attention of developing countries and trying to show them the consequences of their own indiscriminate developments, but I think that also developed countries should try more specifically to analyze and understand the process that is going on in these developing parts of the world. Not just a cool evaluation, an inventory and a prediction, but yes, this process, in the benefit of all the world should include the analysis of what people from developing countries feel and why they feel it that way. What can be done to concilliate the developing situation of a region with the managerial principles and the Coastal Zone Management criterias? What can be applied without imposing a tax to development in any particular case?

As a help to this understanding I have translated selected parts of an article published in the Number 1183 Dec. 21, 1974, of Manchete (Rua do Russell, 84 - Rio de Janeiro) a well known Brazilian magazine. The article refers to the reactions of people and some other consequences in the Brazilian coastal city of Campos after the official announcement of a major oil finding 50 miles offshore their

own coasts in December, 1974.

Campos dos Goitacases, is living with its 321.370 inhabitants the excitement of the oil discovery. Before the drilling ship Petrobras II confirmed the existence of the giant oil field of Garoupa, Campos' pride was lost far away in the past: it had been the first city in South America to use electricity for its public light service. Such unusual and important event was inaugurated the 24th of June of 1883 with the presence of the Emperor Peter II and his wife. After almost one century Campos' pride is again reinforced by an exceptional event: the existence in its continental shelf of fabulous oil reserves.

At the airport, only a while ago sporadically visited by little turistic planes, the busy helicopters fly back and forth carrying the excited engineers and technicians from Petrobras, newsmen and high government officials, many of them showing the happiness of someone that won the lottery. In the same airport journalists of all the country are permanently established waiting the news from the oil fields.

In the center of the city people are no longer discussing the existence or not of oil, the topics are now different: Will the city because of the oil fields become a national security zone? Surely in Campos a new oil refinery will be located, or maybe a petrochemical unit . . . People gather to look at an oil sample exhibited in a show window, simultaneously the loudspeakers are playing a samba

melody that refers to "our oil." In the front pages of the newspaper Monitor Campista with 140 years of life, the third in Brazil according to age, it can be read: "This is the Petroleum Cycle! This is Brazil's redemption!"

In the house of the active Mayor of Campos, Jose Carlos Vieira Barbosa, happiness explodes thru the many Champagne bottles being opened one after the other. With all his family around, the Mayor exhibits a hand covered with oil from Garoupa, at the same time that a sample is being passed hand by hand like a relic. "This is not only the happiness of a citizen of Campos," says the mayor, "this is the emotion of someone that sees oil coming out in the moment our country needs it desparately. Now we can handle the future with a lots of confidence."

The town of Campos will not be directly benefited by the oil fields in its coastal zone, but the Mayor expects to obtain some funds to improve the city's budget. With a lot of pride he explains that Campos with less than 400.000 inhabitants, has 110.000 students. "In a short time we will eliminate the illiteracy and our University in addition to its Medical, Law, Odontology, and Phylosophy Schools will include centers for Engineering and Infirmary. To obtain that we need in addition to the good prices for Sugar, lots of oil, isn't that so?"

One of Campos outstanding landowners, farmer and breeder, Mr. Nelson Lamego, thinks that not only oil will

maintain this land in the newspapers front pages, "Our white Gold, Sugar, is also there." "After the very good prices for Sugar, now we have Oil."

This week-end the first direct beneficiaries of the oil boom in Campos were the owners of the city's hotels. The best hotels were filled with tourists attracted by the notice and many newsmen had to work hard to get a place where to sleep. But also other changes are being detected after the oil discovery as one of Campos newspapers, A Noticia informs:

> Maybe the best evidence of the oil existence for the campistas, is the abrupt valorization of land in the beaches of Sao Tome Lighthouse. A piece of land of 600 square meters (approx. 1/8 acre) that had an average value of $500 in January 1973 is now as an average in $2100, and nobody wanted to sell before the official announcement of Petrobras.

Organization of the Study

To analyze this Coastal Management problem it is convenient to have a regional overview of the entire South Atlantic Coast (South America). Go over some of its physical characteristics, the state of development of the offshore oil industry, the volum e of its activities, and other related data, the recreational and the fishing industries, the population and its characteristics. This will develop a regional comprehension which is absolutely necessary to have in mind before analyzing the problems of any particular situation created in a country or an area of

a country of the Southwest Atlantic Coast.

After covering, very generally, all these features the aims of my research will be concentrated on the Uruguayan Coastal Zone problem.

Many reasons support my selection of Uruguay as final target; first, being a natural of the country my knowledge of the local framework is the best, but this is not the main reason.

Summary of Findings

Uruguay in some way could be considered a scale model for the rest of the coast in comparison with its two giant neighbors Argentina and Brazil. This particular circumstance may be very helpful in one sense, it is possible that due to the little extension of its coast (300 K. of oceanic shore) and considering that the government very recently has adopted several decisions to promote the use of the resources of the Coastal Zone, the problems of the incompatibility of the multiple uses will quickly develop and call the attention of the decision makers. This situation is in some way already created. A ten million dollar loan for the construction of an oil discharge terminal was granted last year to Uruguay but the incompatibility of some of the terms of this project with the offshore exploration (exploitation) agreement to be signed by the Uruguayan government and Chevron Oil Company, has generated a conflictual situation.

But the important question concerning the Uruguayan Coast lies in connection to its natural outstanding conditions for recreational uses.

One of my purposes is to address issues concerning both the general question of developing shoreline management policies and the possible impacts of the Development of Offshore Oil industry on a coastline that supports a high percentage of the recreational and touristic activities of the three countries: Argentina, Brazil, and Uruguay, particularly because the unique regional characteristics that the Uruguayan Atlantic shore presents. By the other side the fishing industry may be strongly developed if we remember that estimates show that the Rio de Plata oceanic front is considered one of the remaining unexploited fishing grounds of the world.

The growing variety, intensity and rate of increase in demands placed upon coastal zone areas in general around the world, helps, in addition to other local changes, to support the prediction that even in momentarily economically depressed areas as both Uruguay and Argentina are now, rapid developments along the coast may happen, and possibly in explosive form.

A rapid industrial development may upset all the pre-established regulations and before they are irreversible it is a good question to analize if the due considerations are given to environmental preservation and aesthetical values.

The land-water interface of the shoreline is one of the most biologically productive areas on earth. At the same time, it is one of the most fragile in ecological terms.

The situation as far as Coastal Zone Management in both Uruguay and Argentina can be classified as the old traditional viewpoint that focused on a single resource at a time such as fish, agriculture, ground water, tourism, and recreational activities, or oil production and this activity's lacking of long-term goals.

Both countries may need to cooperate more on a regional basis to consider siting of onshore facilities in the case the offshore oil production possibilities are confirmed. The recreational and economic value of some sites in the Uruguayan coast like Punta del Este are of regional international importance and the impact of an offshore oil development over areas like this, require comprehensive regional planning that may include the placing of onshore facilities for offshore oil development in the industrialized Argentinian margin of the Rio de la Plata, which has also comparatively low value for coastal recreational purposes.

THE PHYSICAL ENVIRONMENT

The Southwest Atlantic Coast, almost 13.000 Kilometers of shore is composed by the addition of the coastlines of only three countries: Brazil with 7400 Kilometers, Argentina with 5000 Kilometers and finally Uruguay with only 350 Kilometers of oceanic shore.

Within this coastline, two major rivers of the world the Amazon and the Rio de la Plata (Amazon is considered first in the world and the Rio de la Plata ranks within the first ten rivers in the world) drain an area of 12 million square Kilometers, sixty per cent of the surface of the entire South American continent, pouring an enormous amount of fresh water and sediments into the Atlantic Ocean.

The continental margin of the Southwest Atlantic Coast has a wide, well developed continental shelf under the two hundred meter isobath. Estimated for Argentina is one million square Kilometers (988.722 Km^2), 80 per cent under 100 meter depth and attaining a maximal distance from the coast of 700 Kilometers (420 miles) in the South. Not so wide but because of longer shoreline, the shelf attains a similar area in Brazilian coasts and finally 70.000 sq. Kilometers belong to Uruguay mostly in the front of the

Rio de la Plata.

The depth of the shelf is less than 50 Meters in most areas except in the offshore areas of northern Brazil and on the Malvinas (Falkland) Shelf. It is very shallow in the Rio de la Plata region. The slope is steep in the northern part of the Patagonian Shelf, but more gentle in the south. Two oceanic basins of almost 6000 M. depth (Brazil Basin and Argentina Basin) are separated by the Rio Grande Ridge (minimum depth 4000m).

The Argentinian-Uruguayan Continental Shelf is one of the largest in the world, locally the sea floor is remarkably level, and regionally it deepens gradually toward the south and seaward. The range of depths at which the shelf break takes place is relatively broad: between 130 and 200 Meters.

The only significant accumulation of fine grained sediments is found in the Rio de la Plata inner estuary and along an elongated depression which extends parallel to the Uruguayan coastline and curves towards the north reaching the outer shelf. This depression is known in the local literature as "Pozo de Fango" (Mud Hole). Most of the topmost layer of sediments on the shelf consists of medium to coarse sands and shells. Definite layers of well preserved shells are found at many sediment cores. The sea floor topography and the type of sediments encountered suggest that currents sweeping the shelf are transporting sediments

from the south, which in turn accumulate off the Rio de la Plata together with suspended sediments which originate in the river drainage system.

A great number of submarine canyons (see map on p.22) identified appear to be dissecting the Slope and Rise and into the oceanic basin.

More than ten canyons were found grouped off the Rio de la Plata. None of these canyons continues across the shelf. The submarine topography and sediment types found in the Río de la Plata outer estuary and in the Continental Slope suggest that the axis of discharge of the river during glacial stages was positioned more to the south than at present.

Evidence of recent tectonic activity along the margin is scarce. A fault striking approximately north-south has been found to the north of the Río de la Plata, Polonio Fault, is mapped along more than 60 N.M.

Only two passages for the Antartic Bottom Water are found both exhibiting depths of 5000 Meters.

Between the massive blocks forming the Rio Grande Rise complex extends the Rio Grande Abyssal Plain. The level sea floor lies at 2195 fathoms and its boundaries are indicated in the physiographic diagram. South of the Sao Paulo Plateau (2800-3400 M.) and between 29°S and 32°S a broad feature locally level, lies at depths ranging between 3600 and 4200 M. and is named the Lower Plateau.

Hydrography.--The shelf areas are influenced by two major currents; in the north the warm Brazil Current, and off-shoot of the South Equatorial Current turning to the south and in the south the cold Falkland Current which carries Antarctic water to the Patagonian-Argentinian Shelf. The latter can be traced along the coast up to Rio de Janeiro where it meets the Brazil Current which leaves the coast and moves southward some distance from the coast. In this area, a water mass of mixed origin and high fertility covers the shelfs. At the boundary of the two currents, eddies and vertical transport of water masses have been observed. In the open ocean, the northern part is occupied by the westward flowing South Equatorial Current and South Subtropical Current; the southern part is characterized by the Westwind Drift; the central part of the South Atlantic is an area of little water movement, the South Atlantic Eddy. At the Subtropical Convergence, which lies in the open ocean at about 40°S. but bends northward off the Patagonian Shelf, surface temperature tends to fall rather sharply by about 4°C. The convergence is not stationary but shows considerable movements. The highest monthly mean surface temperature on the Patagonian Shelf in summer ranges from 6°C off Tierra del Fuego and Falkland Island to 22°C off Rio de la Plata. The lowest monthly means in winter range from c. 3°C to c. 15°C.

The shelf area proper is slightly warmer than the

surface water in the area of the slope as there is a tongue of cold water extending northward some distance from the coast. In the open ocean again water temperatures tend to be higher.

Along most parts of the Brazilian coast, water temperatures are high all the year round, with maximum temperatures off the Amazon mouth, where even the lowest monthly mean is above 27°C. Off Rio de Janeiro monthly means reach 26°C in summer and 21°C in winter.

The Rio de la Plata

According to recent estimates on sediment discharge off Rio de la Plata (Ottman and Urien 1966) it ranks tenth among the major rivers of the world. According to drainage area it ranks second after the Amazon.

The charts with the distribution of grain sizes on page 23 and the Tables give an idea of this river.

Distribution of sand, mud and clay in the Rio de la Plata mouth can be inferred from the chart of grain sizes. The figure shows that the finest fractions (62 microns) occupies a zone near the coast which extends eastward beyond the area mapped.

The sediments finer than 62 microns trend eastward from the river mouth to the vicinity of a trough. This trough is near the convergence of the Malvinas (Falkland) and Brazil currents and probably marks the area in which the

clays from Río de la Plata pass to the Ocean Basin.

The discharge of Río de la Plata depends on tidal and meteorological conditions. Some authors have shown that the wind, predominantely from the southeast, plays the major role in the regime of the river. The tidal circulation of water follows the arcuate shape of the river mouth, but owing to the longshore current the motion of the fine fraction of sediment is toward the north.

The southern coast of the Río de la Plata (Argentina) is bordered by lowlands and is lined with swampy coasts where fields of tall coarse grass enclose the shores.

From Cabo San Antonio (on the mouth of the Rio de la Plata) the Argentine, Atlantic Coast develops fine sand beaches for an extension of 250 Kilometers of coastline.

After the very important and outstanding seaside resort Mar del Plata and going to the south the coastal beaches are interrupted by some Kilometers of cliffs at the encounter of the Tandil and Ventana hills with the ocean coast that form the barranca (scarp) zone. (p. 26 see map)

The seaside resorts of the Argentinian coast are more concentrated from Cabo San Antonio to Bahía Blanca that means the Buenos Aires Province Atlantic shores. Further south the water temperatures are not very appropriate for swimming or bathing even in summer (influence of the cold Malvinas current).

The total length of beaches is probably under 350

Kilometers and not all may be used by the general public for bathing or swimming because of difficulties of access. One of the problems of some of these beaches is the extreme concentration of people as it happens in Mar del Plata where one can hardly turn around.

From Cabo San Antonio (mouth of the Rio de la Plata) to the south there is an uninterrupted line of beaches with sand bars but not all the coast has access roads. The well known ones are San Clemente del Tuyu, Mar de Ajo, Villa Gesell, and Mar Chiquita before Mar del Plata. To the south the line of seaside resorts continues down to Bahia Blanca.

The northern coast of the Rio de la Plata (Uruguayan side) has in all its extension very wide and plain beaches covered by white fine grained quartz sands that extends all the way along the Atlantic coast into Brazil. The coast of southern Brazil is rocky and precipitous in the middle part between Sao Francisco and Tubarao. The alluvial lowland of southwestern Sao Paulo continues southward to form the swampy, flat country around Paranagua and Sao Francisco. (See map on p.25 .) Florianapolis on the western side of a block mountain which is essentially a part of the Zone of the Escarpment but which has been separated from the mainland by the sinking of the coast.

South of Tubarão, and extending into Uruguay almost to Montevideo, the hilly land of the interior is fringed by

a wide coastal zone of alternating sand bars and lagoons, with many sand dunes. The largest of the lagoons are the Lagoa dos Patos and the Laguna Merin. All this water passes out to the ocean through an opening in the sand bar near the port of Rio Grande do Sul.

Several other of these lagoons are found in the Uruguayan coastal plain, some of them adding an excellent landscaping element to the oceanic coasts.

The great advantage of the Uruguayan coast is that its geological conformation has produced a succession of bays interrupted by rocky piers, thus protecting the sand from being washed and attenuating the effect of the open ocean waves.

The access is complete in all the coast and the road system allows very good connections to most of the beaches (see map of coastal roads).

The Climate

A reference about the climate in the coastal zone of Buenos Aires Province is important because it conditions the touristic migrations of the densely populated areas of the city of Buenos Aires and surroundings.

The Humid Pampa may be described in general as a region of mild winters and hot summers. Despite the annual frosts--which incidentally, greatly reduce the number of insect pests as compared with the regions farther north--the

winters are mild, and deep or long continued snow cover is absent. The summers are especially hot in the northwest, but toward the southeast they are cooler. The southeastern part of the region around Mar del Plata and Tandil are distinctly cool because of the presence of the cool Malvinas (Falkland) current.

A comparison of the average temperatures of Buenos Aires and of cities in the eastern part of the United States is instructive. Buenos Aires has about the same temperature in January (73.6°F) as does New York in July (73.5°F). During the winter the average temperature of the coldest month at Buenos Aires (July, 48.9°F) is about the same as that of the coldest month at Charleston, South Carolina (January 49.8°F). The city of Montevideo on the other side of the Río de la Plata more subject to the influence of the ocean waters has an average at warmest month of 72°F approximately the same as the average of the warmest month of Boston and so a little lower than that of Buenos Aires.

The Río de la Plata region and the Humid Pampa also share with eastern North America the characteristic of variable weather. Cold air masses (anti-cyclones) from the south cross the Argentine plains toward the northeast or north, bringing cool or cold weather and clear skies. Along their fronts they meet and force up the warm, humid and relatively light air of tropical origin, thereby producing clouds and rain. (See the diagrams of air mass

movement enclosed.on p 27.

This interaction of air masses is similar to that which takes place in North America where cold air from Canada moves southeastward toward the Gulf of Mexico or the warm Atlantic Ocean, meeting as it advances the more buoyant air which originates at lower latitudes. Along the front of advancing cold air masses the light tropical air forms whirls, which rotate in clockwise direction in South America. Along the immediate cold front especially violent local up-currents of warm, moist air produce thunderstorms. During the passage of these various kinds of air masses the weather changes from cloudy, warm, muggy, and depressing, to clear, cool, dry and bracing. The people of this region distinguish between the "norte" or sultry north wind, and the pampero, or invigorating wind which comes across the pampa. These southern weather changes are a problematic factor for offshore operations, drilling or even fishing.

About southern Brazil we can say that it partially shares the effects of these air masses movements. Contrasts of climate along the coast are not so abrupt as on the highlands. The climatic conditions in summer show only minor differences between the Atlantic Port of Santos and the Rio Grande do Sul port. There are the same gray skies, the same heavy rainfall, the same high temperatures. The average temperature of the warmest month at Santos is 77.9°F, at Blumenau 75.9°F, at Porto Alegre 76.5°F. But winters are

definitely cooler in the South. The coldest month at Santos averages 66.0°F,at Blumenau 58.3°F, and at Porto Alegre 56.3°F.

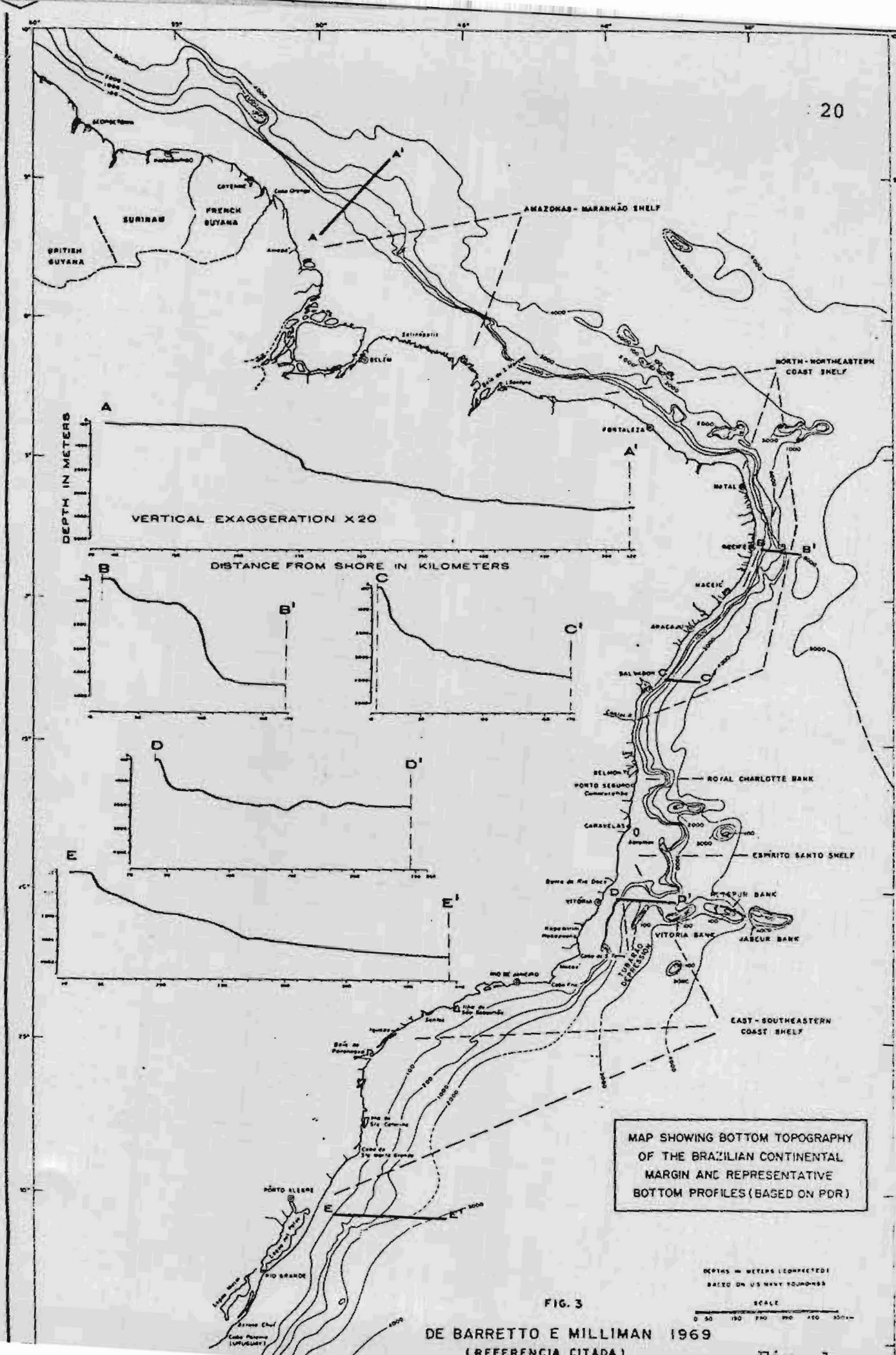


FIG. 3

DE BARRETTO E MILLIMAN 1969
(REFERENCIA CITADA)

Fig. 1

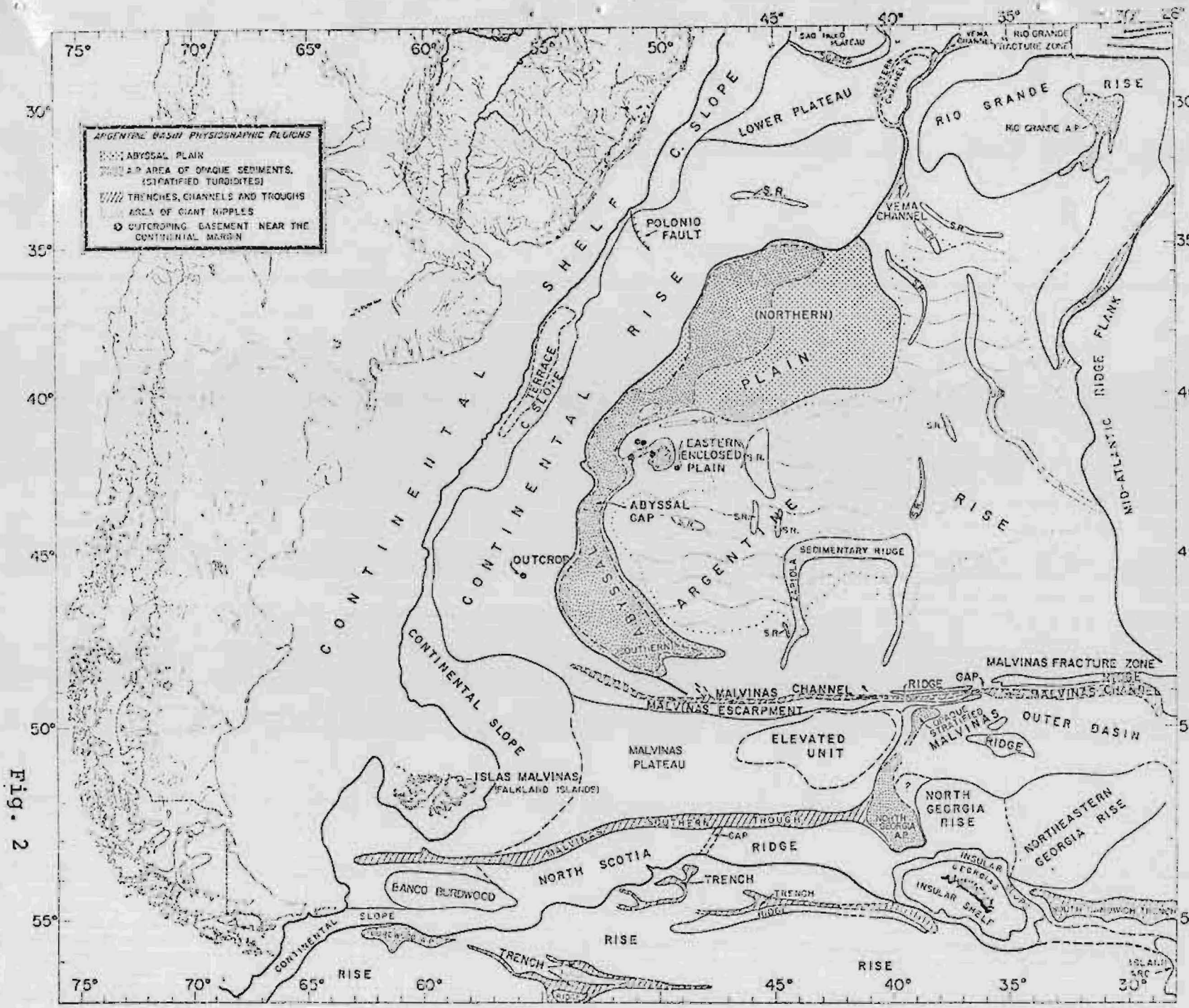


Fig. 2

FIG. 1. Physiographic diagram of the Argentine Basin and related provinces.

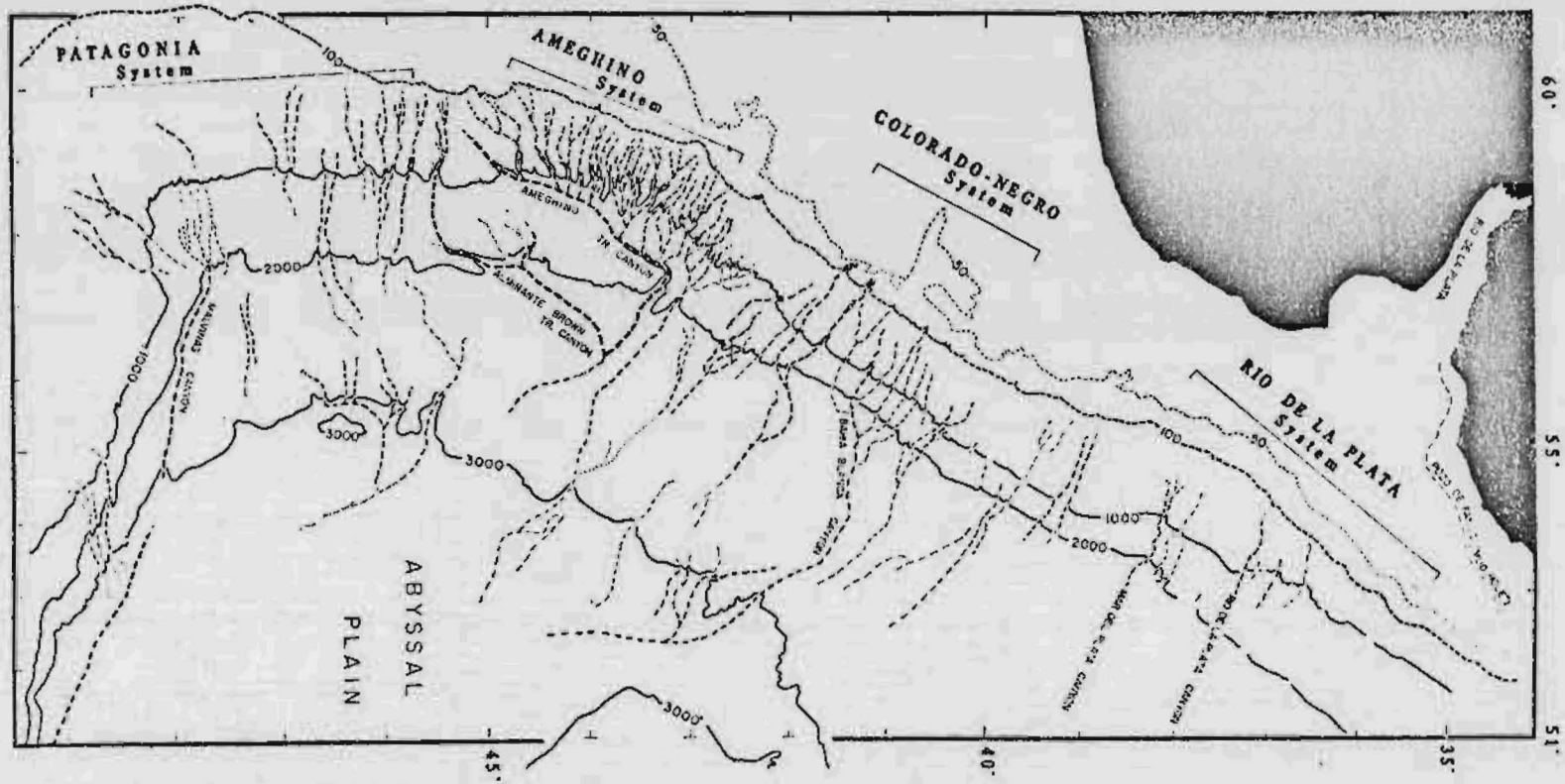


FIG. 7. Schematic of the canyon systems.

Fig. 3

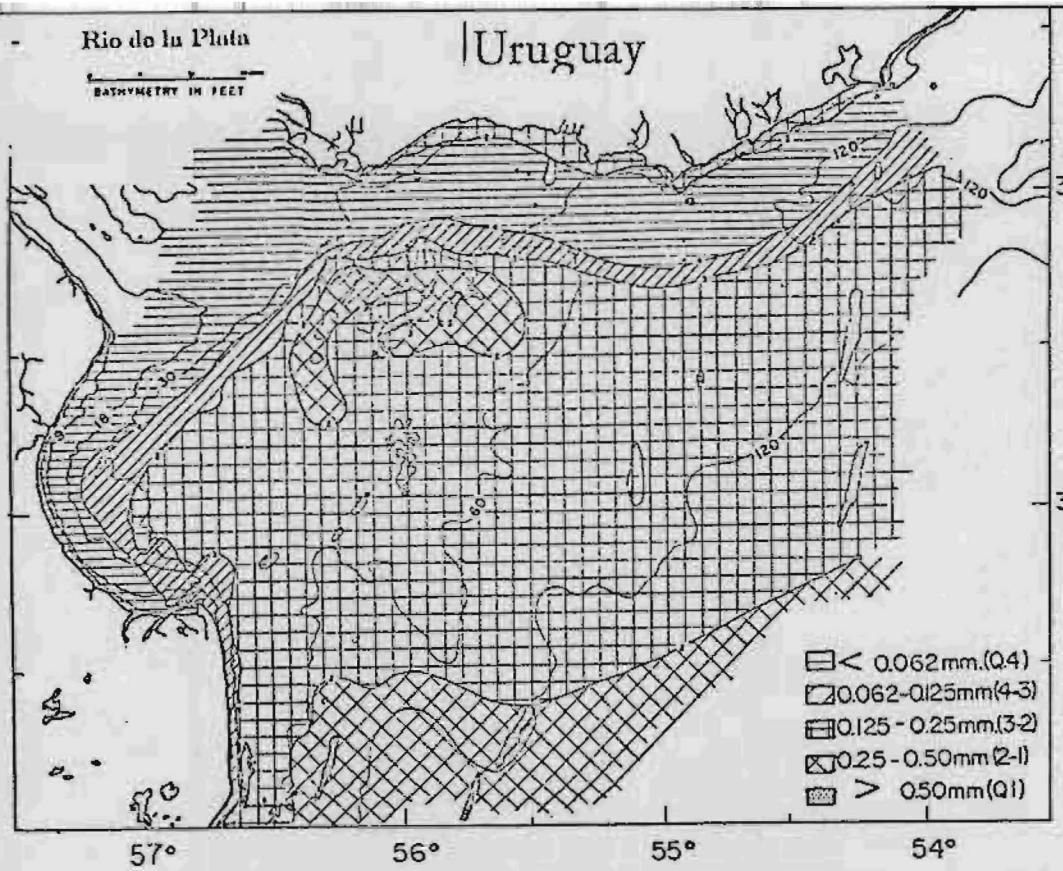


FIG. 5. Sediment grain sizes on the Rio de la Plata estuary and adjacent shelf (after Ottman and Urien, 1966).

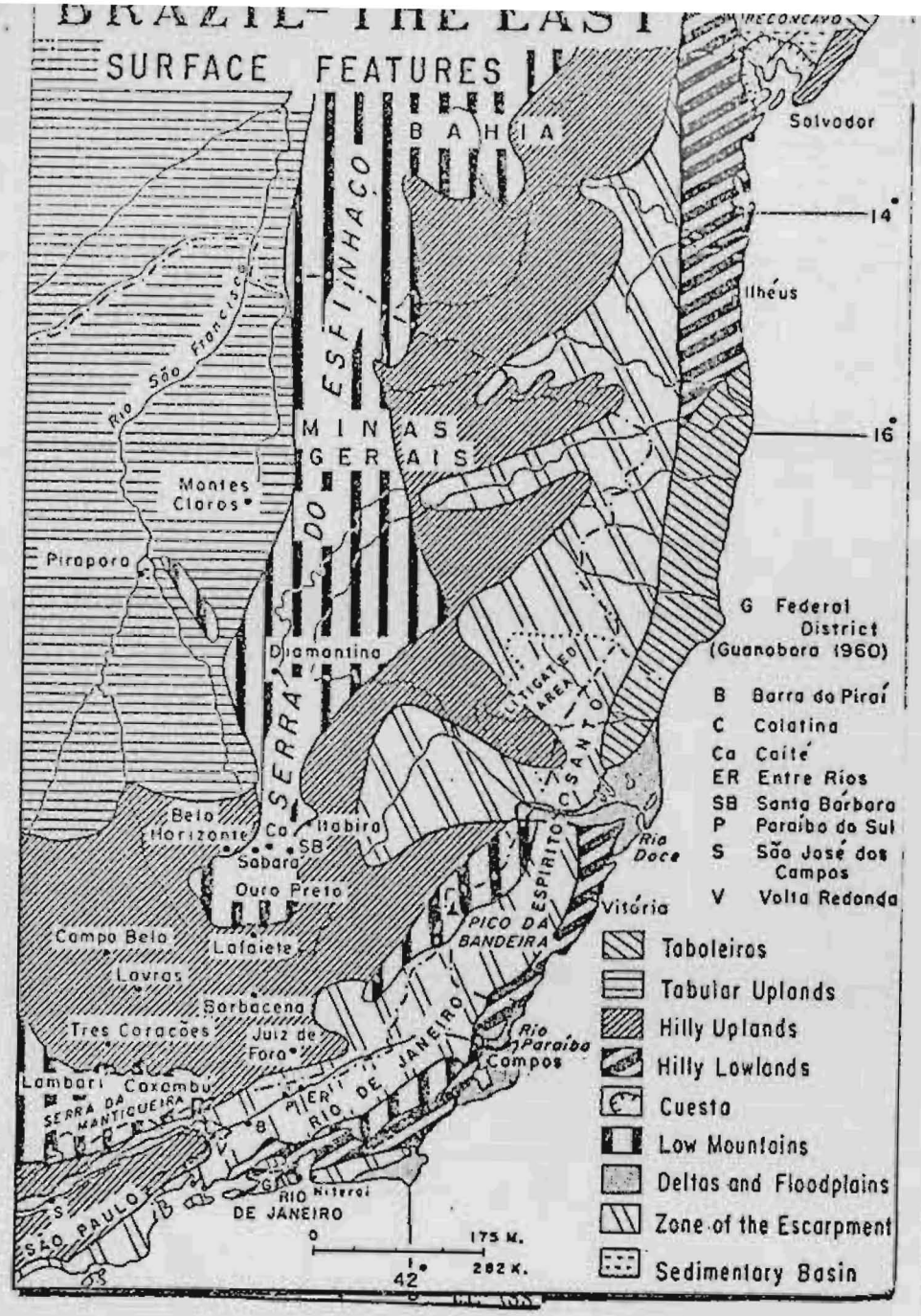
TABLE 1. COMPARATIVE BASIC DATA OF RIVERS IN ORDER OF ANNUAL WATER DISCHARGE

River	Annual water discharge 10^9 m³	Annual sediments discharge 10^6 tons	Max. water discharge m³/sec	Min. water discharge m³/sec	Reference
Amazon	3,000	900	203,000	—	NEDECO (1959)
Congo	1,400	70	65,000	27,000	
Mississippi	600	600	76,500	3,500	
Argentine Rivers					
Rio de la Plata	730	73	23,000	—	OTTMAN and URIEN (1966)
Rio Negro	29.5	13.6	1,346	508	SECRETARIA DE AGUAY ENERGIA ELECTRICA (ARGENTINA)
Rio Santa Cruz	21.3	—	905	342	
Rio Colorado	4.2	6.9	252	55	
Rio Chubut	1.5	—	89	34	

The World's Principal Rivers, Ranked According to Drainage Area

river	drainage area			length		mean discharge					
	extent		percent of world's land area	mi	km	(000 cu ft/sec)	(000 cu m/sec)	rank order	percent of world total	cu ft/sec/sq mi	cu m/sec/sq km
	(000 sq mi)	(000 sq km)									
Amazon	2,722	7,050	4.8	4,000	6,437	6,350	180	1	19.2	2.33	.0255
Rio de la Plata-Paraná	1,600	4,144	2.8	2,485	4,000	777	22	5	2.3	0.48	.0052
Congo	1,314	3,457	2.3	2,914	4,700	1,458	41	2	4.4	1.11	.0121
Nile	1,293	3,349	2.3	4,132	6,650	110	3	—	0.3	0.09	.0009
Mississippi-Missouri	1,244	3,221	2.2	3,741	6,020	650	18	8	2.0	0.52	.0057
Ob-Irtysh	1,149	2,975	2.0	3,362	5,410	558	15	10	1.7	0.49	.0053
Yenisey	996	2,580	1.7	3,442	5,540	671	19	6	2.0	0.67	.0073
Lena	961	2,490	1.7	2,734	4,400	575	16	9	1.7	0.60	.0065
Yangtze	756	1,959	1.3	3,434	5,494	1,200	34	4	3.6	1.59	.0174
Niger	730	1,890	1.3	2,600	4,180	215	6	—	0.7	0.29	.0032
Amur	716	1,855	1.3	1,755	2,824	438	12	10	1.3	0.61	.0066
Mackenzie	711	1,841	1.2	2,635	4,241	400	11	—	1.2	0.56	.0061
Ganges-Brahmaputra	626	1,621	1.1	1,800	2,897	1,360	38	3	4.1	2.17	.0237
St. Lawrence-Great Lakes	565	1,463	1.0	2,500	4,023	360	10	—	1.1	0.64	.0069
Volga	525	1,360	0.9	2,293	3,690	282	8	—	0.9	0.54	.0058
Zambezi	514	1,330	0.9	2,200	3,540	251	7	—	0.8	0.49	.0053
Indus	450	1,166	0.8	1,790	2,880	194	5	—	0.6	0.43	.0047
Shatt al-Arab (Tigris-Euphrates)	430	1,114	0.8	1,700	2,740	49	1	—	0.1	0.11	.0012
Nelson	414	1,072	0.7	1,600	2,570	81	2	—	0.2	0.20	.0021
Murray-Darling	408	1,057	0.7	2,350	3,780	14	0.4	—	0.04	0.04	.0003
Tocantins	350	906	0.6	1,000	1,610	360	10	—	1.1	1.03	.0112
Danube	315	816	0.6	1,770	2,850	254	7	—	0.8	0.81	.0088
Columbia	258	668	0.5	1,210	1,950	247	7	—	0.7	0.96	.0104
Rio Grande	172	445	0.4	1,885	3,040	3	0.08	—	0.01	0.02	.0001
Rhine	62	160	0.1	820	1,320	78	2	—	0.2	1.26	.0137
Rhône	37	96	—	500	800	60	2	—	0.2	1.62	.0177
				210	340	3	0.08	—	0.01	0.75	.0082

Fig. 4


BRAZIL-THE EAST
SURFACE FEATURES
RECONCAVO
Salvador
BAHIA
14°
Ilhéus
16°
Rio São Francisco
MINAS GERAIS
SERRA DO ESPINHAÇO
Montes Claros
Piraporo
Diamantina
LITIGATED AREA
SANTO
Belo Horizonte
Sabara
Ouro Preto
Rio Doce
Vitória
PICO DA BANDEIRA
ESPIRITO
Campo Belo
Lafaiete
Lavras
Barbacena
Tres Corações
Juiz de Fora
Rio Paraíba
Campos
Lambari
Caxambu
SERRA DA MANTIQUEIRA
RIO DE JANEIRO
SÃO PAULO
Niterói
0 175 M.
42° 282 K.
G Federal District (Guanabara 1960)
B Barra do Piraí
C Colatina
Ca Caité
ER Entre Rios
SB Santa Barbara
P Paraíba do Sul
S São José dos Campos
V Volta Redonda
Taboleiros
Tabular Uplands
Hilly Uplands
Hilly Lowlands
Cuesta
Low Mountains
Deltas and Floodplains
Zone of the Escarpment
Sedimentary Basin

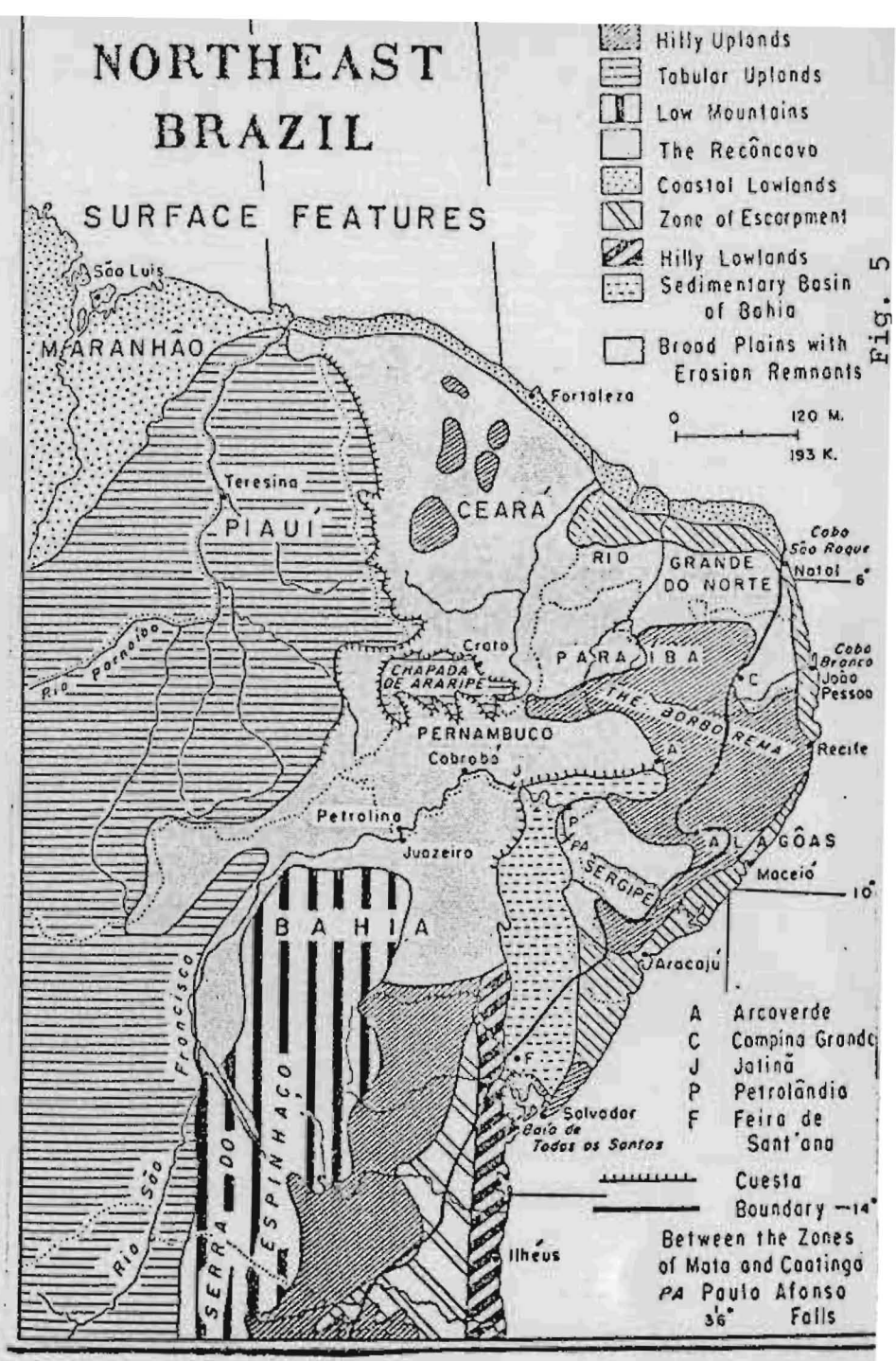
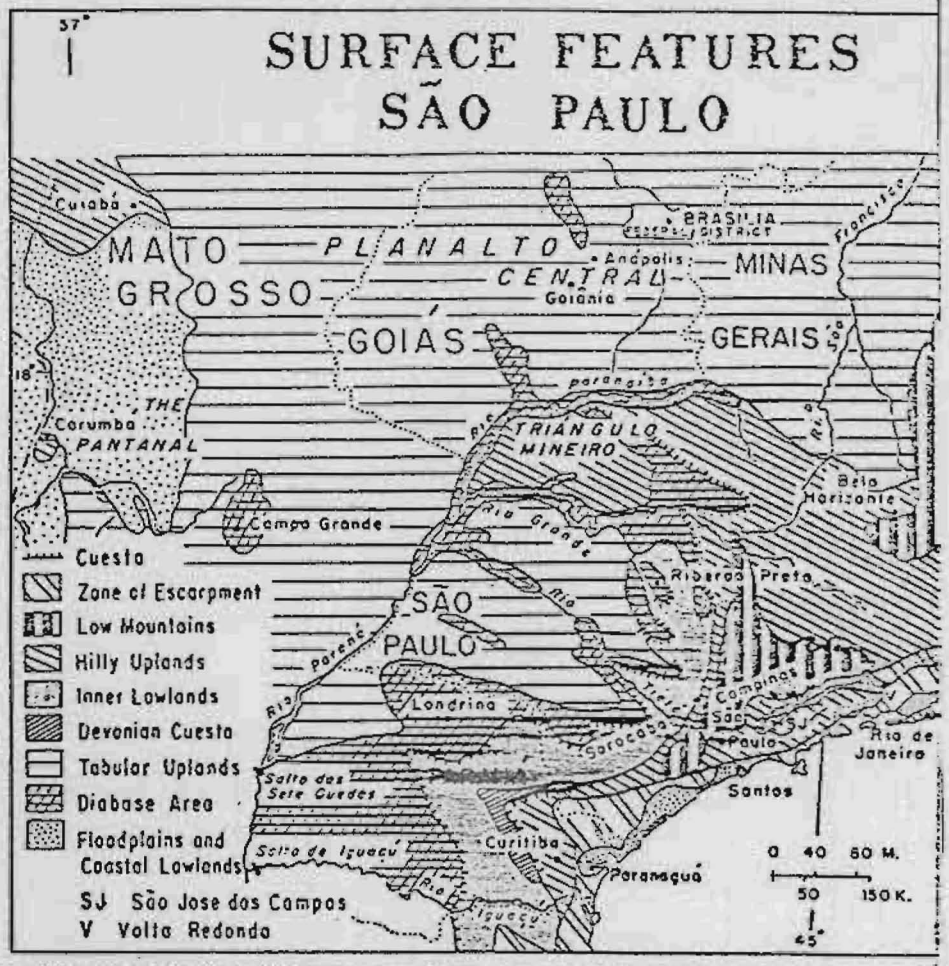

NORTHEAST BRAZIL
SURFACE FEATURES
Hilly Uplands
Tabular Uplands
Low Mountains
The Recôncavo
Coastal Lowlands
Zone of Escarpment
Hilly Lowlands
Sedimentary Basin of Bahia
Broad Plains with Erosion Remnants
São Luis
MARANHÃO
Fortaleza
0 120 M.
193 K.
Teresina
PIAUÍ
CEARÁ
RIO GRANDE DO NORTE
Cabo São Roque
Natal
6°
Rio Parnaíba
Crato
CHAPADA DE ARARIPE
PARAIBA
Cabo Branco João Pessoa
THE BORBOREMA
PERNAMBUCO
Recife
Cobrobó
Petrolina
Juazeiro
SERGIPE
ALAGÔAS
Maceió
10°
BAHIA
Aracajú
Rio São Francisco
SERRA DO ESPINHAÇO
Salvador
Baía de Todos os Santos
Ilhéus
A Arcoverde
C Campina Grande
J Jatinã
P Petrolândia
F Feira de Sant'ana
Cuesta
Boundary —14°
Between the Zones of Mata and Caatinga
PA Paulo Afonso Falls
36°

Fig. 5


SURFACE FEATURES
SÃO PAULO
57°
Cuiabá
MATO GROSSO
PLANALTO CENTRAL
Anápolis
Goiânia
BRASILIA FEDERAL DISTRICT
MINAS GERAIS
GOIÁS
18°
Corumba
THE PANTANAL
TRIANGULO MINEIRO
Belo Horizonte
Campo Grande
Rio Grande
Ribeirao Preto
SÃO PAULO
Rio Paraná
Londrina
Campinas
São Paulo
SJ
Rio de Janeiro
Sorocaba
Salto das Sete Quedas
Santos
Salto de Iguaçu
Curitiba
Paranaguá
Rio Iguaçu
0 40 80 M.
50 150 K.
45°
Cuesta
Zone of Escarpment
Low Mountains
Hilly Uplands
Inner Lowlands
Devonian Cuesta
Tabular Uplands
Diabase Area
Floodplains and Coastal Lowlands
SJ São Jose dos Campos
V Volta Redonda


57°
BRAZIL-THE SOUTH
Cuesta
Low Mountains
Hilly Uplands
Inner Lowlands
Diabase Area
Devonian Cuesta
Tabular Uplands
Zone of Escarpment
Floodplains and Coastal Lowlands
Rio Paraná
Londrina
So
SP
Sa
Salto das Sete Quedas
PARANA
Curitiba
Salto de Iguaçu
Rio Iguaçu
Paranaguá
São Francisco
SANTA CATARINA
Blumenau
Rio Uruguai
Florianópolis
28°
RIO GRANDE DO SUL
Santa Maria
Tubarão
Coxias
São Leopoldo
Uruguaiana
Jacuí
30°
Pelotas
Lagoa dos Patos
Rio Grande do Sul
J Joinville
P Porto Alegre
Sa Santos
So Sorocaba
SP São Paulo
S Sant'ana do Livramento
SURFACE FEATURES
0 40 80 M.
50 150 K.

Fig. 6

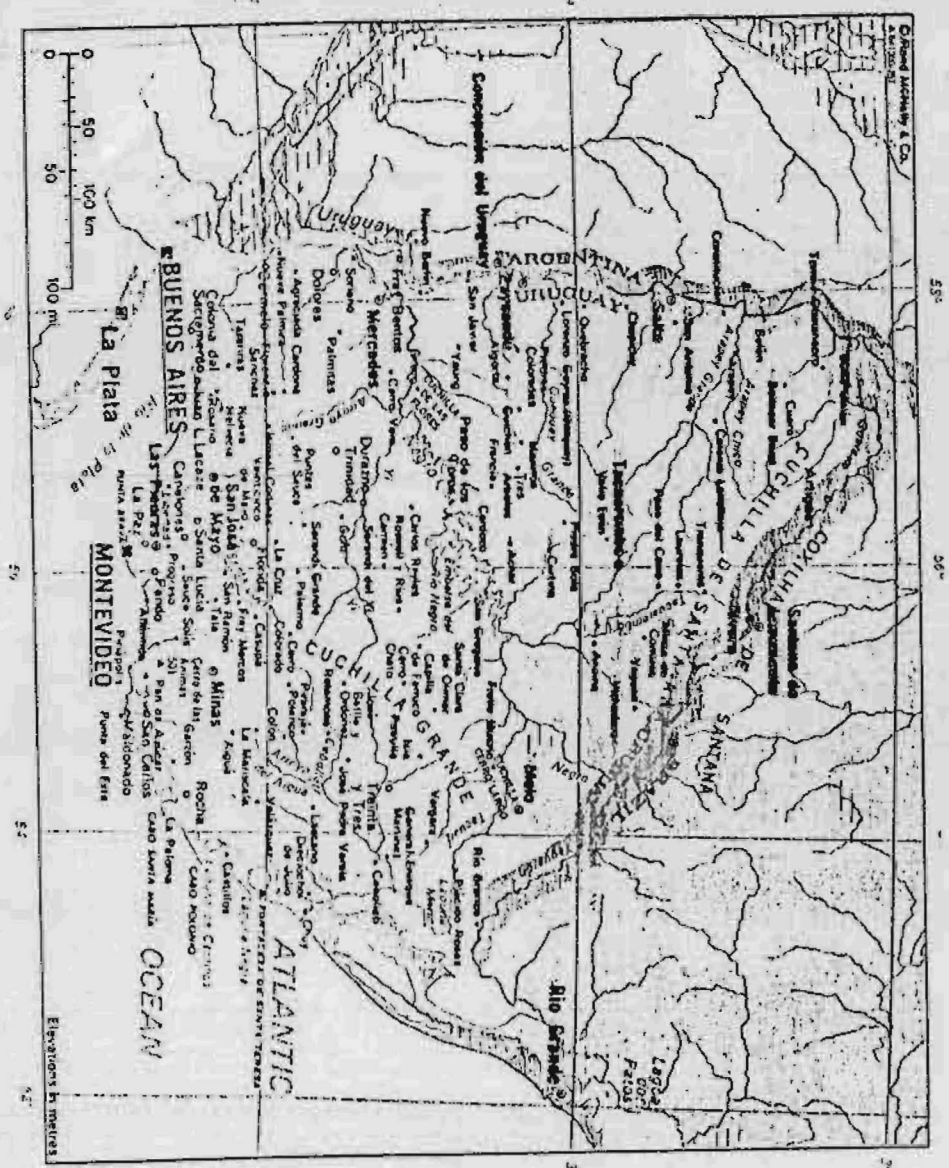
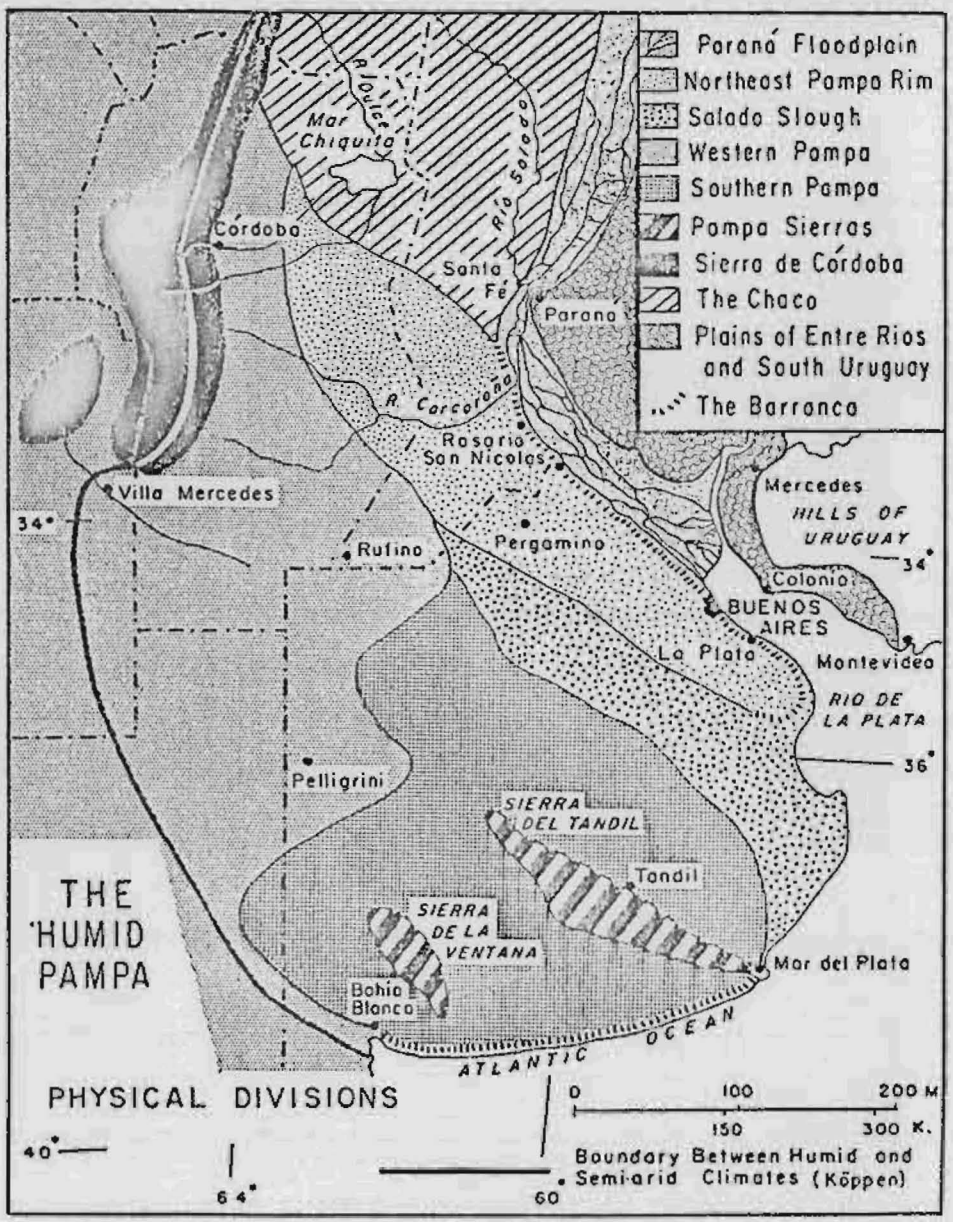

URUGUAY
ARGENTINA
BUENOS AIRES
La Plata
MONTEVIDEO
Las Piedras
Uruguay R.
Río de la Plata
Concepción del Uruguay
Mercedes
Dolores
Fray Bentos
Paso de los Toros
Tacuarembó
Durazno
Trinidad
Florida
Sarandí del Yí
Minas
Rocha
Treinta y Tres
Melo
Río Negro
Río Grande
Lago Merín
CUCHILLA GRANDE
CUCHILLA DE HAEDO
CUCHILLA DE SANTA ANA
ATLANTIC OCEAN
Elevations in metres

Fig. 7


Paraná Floodplain
Northeast Pampa Rim
Salado Slough
Western Pampa
Southern Pampa
Pampa Sierras
Sierra de Córdoba
The Chaco
Plains of Entre Rios and South Uruguay
The Barranca
Mar Chiquita
Río Salado
Córdoba
Santa Fé
Parana
R. Carcarana
Rosario
San Nicolas
Villa Mercedes
Rufino
Pergamino
Mercedes
HILLS OF URUGUAY
Colonia
BUENOS AIRES
La Plata
Montevideo
RIO DE LA PLATA
Pelligrini
SIERRA DEL TANDIL
Tandil
SIERRA DE LA VENTANA
Mar del Plata
Bahia Blanca
ATLANTIC OCEAN
THE HUMID PAMPA
PHYSICAL DIVISIONS
34°
36°
40°
64°
60°
0 100 200 M
150 300 K.
Boundary Between Humid and Semi-arid Climates (Köppen)

Map 70

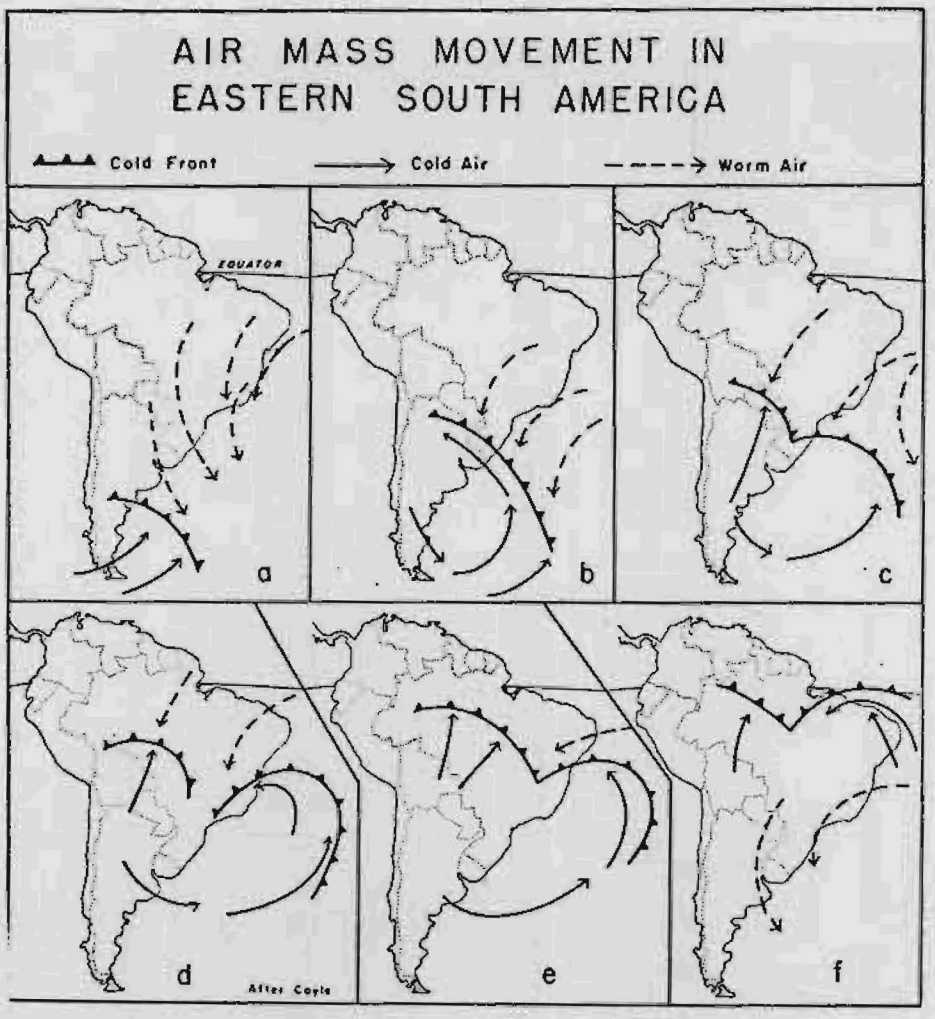

AIR MASS MOVEMENT IN
EASTERN SOUTH AMERICA
Cold Front
Cold Air
Warm Air
EQUATOR
a
b
c
d
e
f
After Coyle

Fig. 8

THE FISHING INDUSTRY

General information about the estimated Fish Resources is necessary to evaluate the importance that the fishing industry may evolve to acquire if propicious circumstances are developed in Argentina and particularly in Uruguay.

Primary Production
(F. A. O.--The Fish Resources of the Ocean--
J. A. Gulland)

There are no summary reviews on primary production of the area. Some researchers found (Volkoumsky 1966) high primary production in the Malvinas (Falkland) area (c. 50 $mgC/m^3/day$) similar to those in the South Georgia region. Primary production decreases if one moves north but increases again in the estuary of Rio de la Plata (c. 130 $mgC/m^3/day$, but presumably in a very shallow euphotic zone).

El Sayed (1966) reported higher primary production off the Argentinian coast than in the Drake Passage and Weddell Sea. According to Mandelli and Orlando (1966), the Malvinas Current is amongst the most productive area of the world oceans and also carries a permanent high phytoplankton biomass.

From the values obtained, one might estimate that annual primary production in the Falkland Current is more

than 200 gc/m^2 in the central part (about 40-44°S) and less than half as much in the southern parts.

Fish Stocks and Fisheries

The Fisheries

Brazil

Fishing along the northern and central coast is mainly pursued by small craft using various types of seine nets, long-lines and traps. Along the southern coast and extending well onto the Patagonian Shelf considerable bottom trawling is done by larger vessels. Sardine, whose catches fluctuate markedly, croaker (particularly corvina) and hake (merluza) are the most important species. Total marine catch in 1968 was reported as 340.000 tons--nearly three times the reported quantity in 1956. In 1972 Brazil captured 580.700 metric tons which is the .83 per cent of the world total. There is a growing fishery for shrimp in the Amazon region, though the shrimp fisheries off central and southern Brazil are no longer expanding.

A consequence of lack of planification in the Brazilian fishing industry was the situation created by the unlimited expansion of the coastal facilities, fishing terminals and the size of the fishing fleets in South Brazil without a careful evaluation of the M. S. Y. in the zone.

At present time there is a surplus of fishing capacity. This situation became critical after the boundaries between

Uruguay and Argentina were defined and the Brazilian vessels had to operate on restricted conditions over the fishing grounds near the Rio de la Plata.

Uruguay

The fishery is carried out mostly by bottom trawl on a small but increasing scale. Reported landings in 1967 were some 10,000 tons, mainly various bottom fish hake (merluza), croaker (corvina blanca) and sciaenidae (percadilla). Reported landings for 1971 were 14.400 tons, 1972--20.600 and 1973, 17.700 tons.

The new governmental policies stressed as a special national interest the expansions of the fishing industry. They are expecting to develop for the year 1980 a fishing potential of 200.000 tons per year with a total of 1500 persons affected to fishing activities.

This lapse is considered as a maximum. The government is also seeking to obtain financial aid from the I. B. D. (El Pais Febrero 20 de 1975).

Some modern units are being incorporated recently to the fishing fleet. A "National Plan for Fisheries Development" has been established. The F. A. O. has based in Montevideo a research and training fishing vessel that since 1973 is under Uruguayan flag and for an undefined period is to be under Uruguayan control.

Summary of the Uruguayan legal process with respect

to the fishing industry the regulations and the "limited entry" system established by the Junta Nacional de Pesca:

Sept. 21, 1911--A Law establishes a National Service of fisheries.

Sept. 21, 1945--A very ambitious law creates new competences for the S. O. Y. P. (Oceanographic and Fisheries Service).

Dec. 12, 1968--Binational agreement for fisheries and preservation of fishing stocks with Brazil.

Dec. 3, 1969--Decree Exec. Power extending the territorial sea to the 200 miles.

Dec. 29, 1969--Law on the same items and including also the Fisheries Regulations, declaring the national interest in the exploitation, preservation and research of the sea resources.

Dec. 24, 1970--Decree establishing a National Commission on Fisheries Development.

Aug. 26, 1971--Decree establishing regulations on the proceeding law.

Oct. 28, 1971--Decree with additional regulations on the same law.

Sept. 13, 1973--Decree approving the general proceedings on the "Fishing Industry Regulations" and accepting a type of limited entry system.

The important consequences of this process are in some of the definitions contained in the "National Fishing

Policy Act."

1. It is clearly established that any growth on this industrial sector will be conducted to the outside market "natural destinatary of this production."

2. Considering the unprotected situation of an almost completely export oriented industry it is proposed that a well defined organization and planning process should follow the development of the Fishing Industry to the level compatible with the production possibilities of the Uruguayan coasts.

3. It is well established that the lack of adequate landing facilities is another constraint to the uncontrolled development. A parallelism between size of the fishing fleet and growth of facilities is proposed.

4. The preference of exporting elaborated products is established.

5. Any foreign investment should be oriented so as to concilliate high yield expectancies with the conservation of the natural stocks.

6. Foreign loans are available thru this governmental policy to initiate the construction in national yards of fishing units.

7. The government also supports the obtention of foreign loans for the acquisition of fishing units by national groups.

8. The regulations are established to homogenize the

size and capabilities of the different authorized fishing boats. The number of units is also regulated on the precedence order of proposals.

As far as Coastal Zone Management, the development of the fishing industry to the proposed level, even if conducted thru a very regulated and ordered process may bring out problems of superimposition over other activities. Particularly the case of interference with recreational industry should be considered if land facilities are to be established in sites different than the Port of Montevideo. If offshore oil is detected thru the drilling programs that are going to be run in 1976 the situation may become more complex (but not impossible to solve).

Argentina

Total marine catch in 1968, 210,000 tons doubled since 1962. For 1973 total marine catch was 270.135.7 metric tons with a great increase over the 211.417.7 metric tons in 1972. This has been the highest cipher that has ever been recorded.

Mar del Plata continues to be the main fishing port of Argentina with the 80 per cent of the total capture in the country.

The remaining 20.3% was distributed between the ports of: Quequen, San Antonio Oeste, Puerto Madryn and Bahia Blanca.

The main capture was based on hakes (merluza) with 151.392 metric tons that means an increase of 43.2% over the year before. Then followed: anchovy with 34.345 m.t.; other species are the hawkfish, croaker, etc.

The fishing fleet is composed of 110 vessels and during the year 1972-73 an increment of 24 new units was registered.

The main part of the catch is taken by trawlers of various sizes, though there is some linening and pair fishing.

Off Argentina, the major winter fishing is for hake (merluza) in the area 35-38°S. In summer, the centre of the fishery moves southward to 38-42°S. The exploitation of anchovy is concentrated in late winter and spring in the Mar del Plata area. As soon as mackerel invades the coast waters, the fishery is directed to the latter only (during summer, until end March).

The utilization in Argentina of the hawkfish (castaneta) for fish meal increased greatly up to 1966 (68,000 tons) but fell to only 4,000 tons in 1968 possibly due to too heavy fishing (in 1973 it came up to 11.279 metric tons).

Very good catches of salmon de mar (Pinguipes spp.) are being obtained near Rawson (Patagonia), and possibilities of further expansion exist. Shrimp catches, particularly of the langostino have been declining steadily in Argentina. There are important fisheries for molluscs, especially mussels (Mytilus spp.) and seaweeds are also harvested.

Commercialization.--The internal consumption of fishing products, fresh or canned, is about half the production. Exportation is still an important part of the fishing industry development in the country. The amount in dollars of exports was $14 million.

Other General Data
(Brazil, Uruguay, Argentina)

Statistics

The statistical information available for the entire coast is not entirely satisfactory. Species breakdown is given, but sometimes there are obvious inconsistencies from year to year. The problem is being studied by a working party of Carpos (The Southwest Atlantic Fisheries Advisory Committee a subsidiary body of F. A. O.).

Species

The most important species in terms of abundance are:

Engraulis anchoita - anchovy, anchoita

Clupea fuegensis - Falkland herring

Scomber japonicus marplatensis - mackerel

Sardinella aurita - Sardine

Micropagon spp. - Croaker (corvina)

Merluccius merluccius hubbsi - hake; merluza

Micromesistius australis - poutassou, polaca

Illex sp. - squid

Macruronus magellanicus - long tailed hake, merluza de cola

TABLE

ESTIMATES FOR THE POTENTIAL OF BRAZIL
(ANNUAL IN '000 TONS)

Area	Demersal	Pelagic
5°N - 2°S	250	250
2°S - 13°S	50	50
13°S - 23°S	100	100
23°S - 29°S	100	200
29°S - 33°S	125	300
33°S - 34°S	200	
Total	825	1,000

Uruguay - Argentina (Estimates of Potential)

The shelf area of open sea from 35°S (Rocha--Uruguay) to 40°S includes the rich fishing grounds of Mar del Plata and Bahia Blanco. Some figures for Cabo San Antonio area show an abundance of 14 tons/km^2.

Schmidt's average for the total shelf to 35°-41°S is 20 tons/km^2 in winter. The main species is hake, of which one expedition caught up to 20 tons/hour. In 1967 there was intense fishing by U.S.S.R. with a jump to 650,000 tons. Some confirmation of a high standing stock and potential is provided by the fact that these large catches of 1967 do not seem to have had any drastic effect on the catch per unit of the regular fleet. The estimate potential for the zone is

1.2 million tons approximately.

Further south the stocks are virtually unexploited.

TABLE

BIOMASS AND ESTIMATED POTENTIAL YIELDS OF DEMERSAL FISH ON THE ARGENTINIAN-URUGUAYAN SHELF

S.Lat.	Width of Shelf (km)	Shelf Area ('000 km^2)	Average Catch/hr.	Biomass ('000 tons)	Potential ('000 tons)
35-41	300	230	2.3	3,960	1,200
41-45	400	175	0.5	750	150
45-51	500	330	0.8	2,270	450
51-54	700	230	1.6	3,170	650
54-55	300	35	0.2	60	10
Total		1,000		10,130	2,460

Allowing for other species, a very rough estimate for the potential of pelagic fish south of 32°S is 4 million tons.

Indications of Unexploited Stocks

Myctophids were found in large abundance over the slope in the area 32°-36°S. A single haul of a pelagic trawl was reported as yielding 12 tons.

Squid has a similar distribution to hake, which feeds intensively on squid. The major concentrations of squid do

not seem to reach as far to the south as hake does. Highest echo abundances and catches were found off Rio de la Plata and Mar del Plata both on the shelf and the slope.

Too little is known about myctophids and squid to put any figures, but they likely reach at least some hundreds of thousands of tons.

Summary of estimates for potential annual catches ('000 tons):

(a) Demersal				
	Brazil	various	825	
	Argentina-Uruguay			
		hake	1,500	
		poutassou	1,000	3,000
		various	500	
(b) Pelagic				
	Brazil	various		
	Argentina-Uruguay			
		anchovy	750	
		herring	1,250	2,500
		various	500	

THE OIL INDUSTRY

The three coastal countries: Brazil, Uruguay, and Argentina, that share the Eastern Atlantic Margin of South America are heavily dependent on oil imports and they seem to have no alternative in the short term but to explore and develop offshore oil-gas resources. Also, according to different experts offshore oil is the greatest potential available and in a case like Uruguay the only possible source of oil-gas.

The oil price increases have worsened the income distribution between Third World countries, to the particular detriment of countries like Uruguay whose weak economical situation over the previous years was already of very serious concern. Brazil stands out as having the most massive increase in oil costs of any developing country ($1,100 million) but enjoys fast-growing exports of manufactures with substantial reserves and plenty of scope for outside borrowing, at least in 1974.

Argentina with a quite developed onshore oil production is consuming more oil than it produces, and the statistical data show that this situation will be worsened. It can be estimated for 1980 in ten times the 1972 oil imports which were $55 million dollars. See Table .

Argentina almost 90 per cent self sufficient in the past but with decreasing inland reservoirs was importing in 1974 almost two million tons of crude.

Brazil with 180.000 b/d of domestic production has to cover its 1974, 800.000 b/d consumption, and finally Uruguay depends 100 per cent on imports to provide its domestic oil demands that amount to three million tons per year. (See Tables).

According to public reports, technical and economical publications, the three countries are considering seriously all the possibilities available to define the existence of major offshore oil fields.

The offshore oil research in these countries has gone thru different periods which shows the evolution of the continued interest in research of oil/gas potential. The first efforts can be traced as far as 1957 and 1961 and were conducted in joint operations by the Lamont Geological Observatory and the Argentinian Navy. Brazil's State Oil Company Petrobras began to explore its continental shelf after the 60's when the disencouraging results in the Amazon Basin began to slow down the volume of onshore activities.

All this composed exploration and research geophysical surveys conducted to define the existence of at least twenty sedimentary basins in the Atlantic margin of South America. Some of them a prolongation of onshore basins, some other, isolated offshore events. (See map of sedimentary basins, p.).

TABLE

OIL IMPORTS 1972-1980 $ MILLION

Countries	Actual 1972	1973	1974	1980 Projected Low	Medium	High
Argentina	55	40	80	430	520	605
Brazil	425	540	1.425	2,925	3,530	4,150
Uruguay	40	60	160	285	345	405

Source: World Bank estimates, January 1974.

TABLE

INCREMENTAL OIL IMPORT EXPENDITURES DUE TO EFFECT OF PRICE INCREASE SINCE 1970 $ MILLION

Countries	Actual 1972	1973	1974	1980 Projected Low	Medium	High
Argentina	11	15	60	335	425	515
Brazil	96	222	1,085	2,360	2,965	3,585
Uruguay	9	25	120	230	290	350

TABLE

	Economic Indicators			Increase in Oil Bills 1973/74			Aid Receipts 1972	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Income per Capita 1971 $	GNP Growth 1965-71 % p.a.	Population 1971 Mil.	Value $ Million (a)	As % 1972 Imports	As % of 1971 G.N.P.	Gross D.A.C. Aid $ Mill.	Aid per Capita $
Brazil	460	5.1	95	1.116	23	2.5	118.4	1.2
Uruguay	750	0.7	3	107	57	4.9	23.5	7.8

Brazil

Their importance as big oil producers has not yet been demonstrated for most of these basins. The country that has been conducting a voluminous exploration effort is Brazil. The expenditures of these operations may amount to hundreds or even some billions of dollars and only recently the results are beginning to prove the expectancies.

In the Brazilian margin we can find fourteen sedimentary basins. The exploration effort has been intense and conducted by the state oil company Petrobras. Sergipe-Alagoas and Reconcavo are already producing oil. Last year a very important discovery was announced by Petrobras in the offshore basin of Campos. In addition to the importance of the reported discovery the advantage of being near to the

consuming centers like Rio de Janeiro is obvious.

The domestic production is expected to be raised within the next three years to 500.000 b/d.

Intentions of the Brazilian government to open its offshore areas to exploration and exploration by international companies were published during 1974 but possibly the Campos oil finding will reasure the position of domestic exploration.

Argentina

The Argentinian continental margin includes seven well defined sedimentary basins in its shelf. (See map p.). These basins attain all more than 6000 meters of sediment thickness but only one is productive proved (Folfo de San Jorge). The two other that have been explored under the regulations of the Energy Law (Ley de Hidrocarbons - 1967) are Salado and Colorado. The great interest on these basins layed on the proximity to the highly industrialized region of Buenos Aires. The exploration effort that included in addition to seismic works, some drilling has shown no evidence of petroleum potential.

Argentina is now increasing its activity in seismic explorations thru the state oil company Y. P. F. Some offshore drilling contracts have been negotiated and a slight optimism pushes offshore operations to a continuous but slow build-up.

The possibilities of finding major oil fields in the

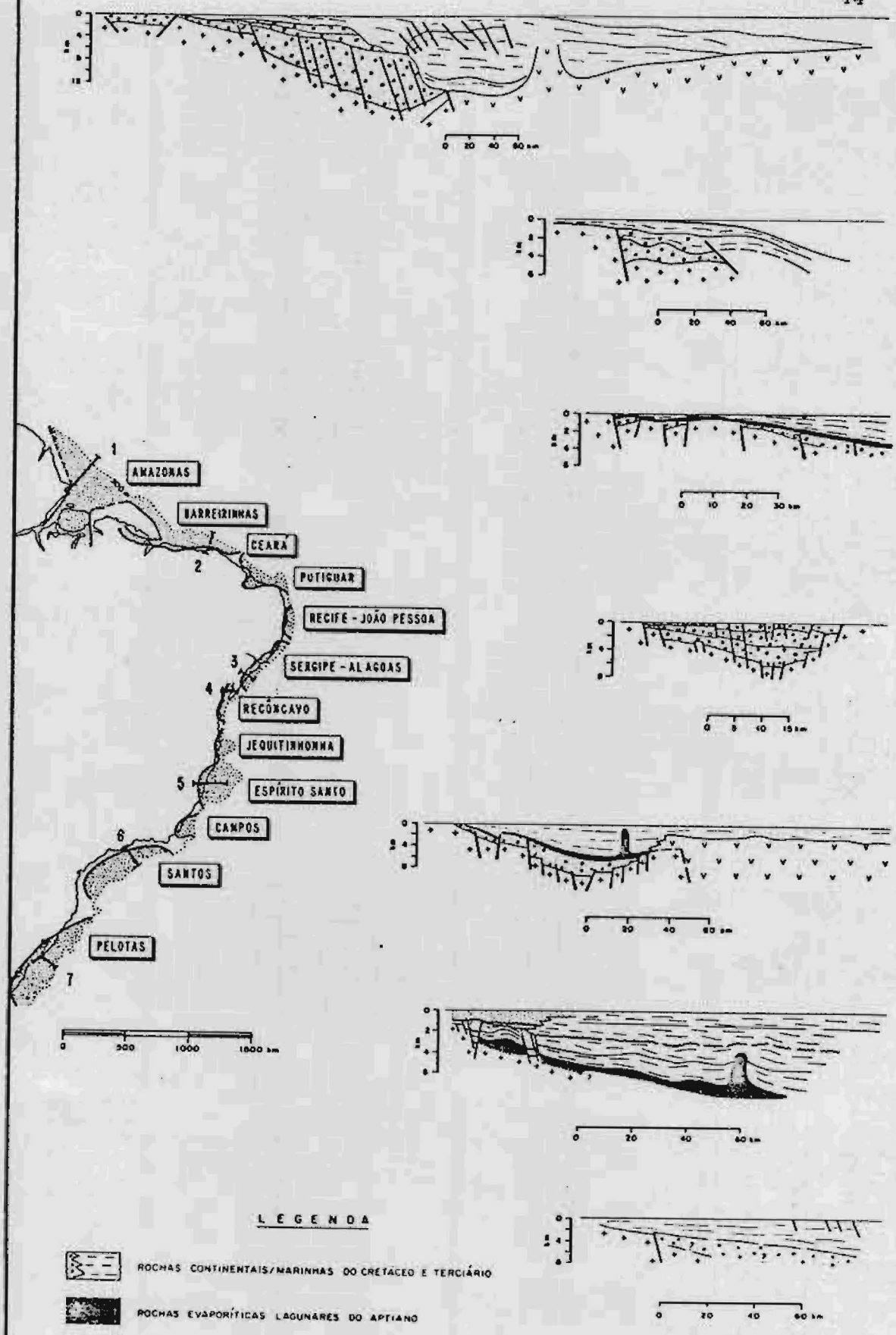
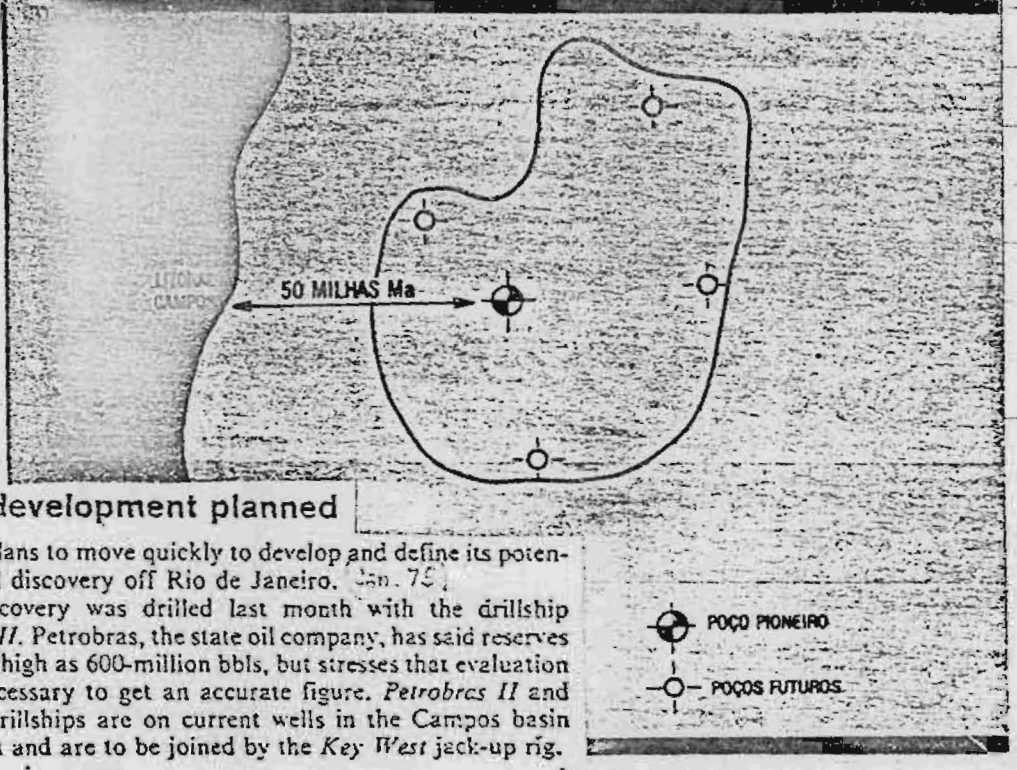

1
2
3
4
5
6
7
AMAZONAS
BARREIRINHAS
CEARÁ
POTIGUAR
RECIFE - JOÃO PESSOA
SERGIPE - ALAGOAS
RECÔNCAVO
JEQUITINHONHA
ESPÍRITO SANTO
CAMPOS
SANTOS
PELOTAS
0 500 1000 1800 km
LEGENDA
ROCHAS CONTINENTAIS/MARINHAS DO CRETÁCEO E TERCIÁRIO
ROCHAS EVAPORÍTICAS LAGUNARES DO APTIANO
ROCHAS CONTINENTAIS DO JURÁSSICO SUPERIOR E CRETÁCEO INFERIOR
ROCHAS BASÁLTICAS
ROCHAS DO EMBASAMENTO CRISTALINO

Fig. 9

Fig. 12



Quick development planned

Brazil plans to move quickly to develop and define its potential big oil discovery off Rio de Janeiro. Jan. 75

The discovery was drilled last month with the drillship *Petrobras II*. Petrobras, the state oil company, has said reserves may be as high as 600-million bbls, but stresses that evaluation will be necessary to get an accurate figure. *Petrobras II* and *Cyclone* drillships are on current wells in the Campos basin strike area and are to be joined by the *Key West* jack-up rig.

Fig. 10

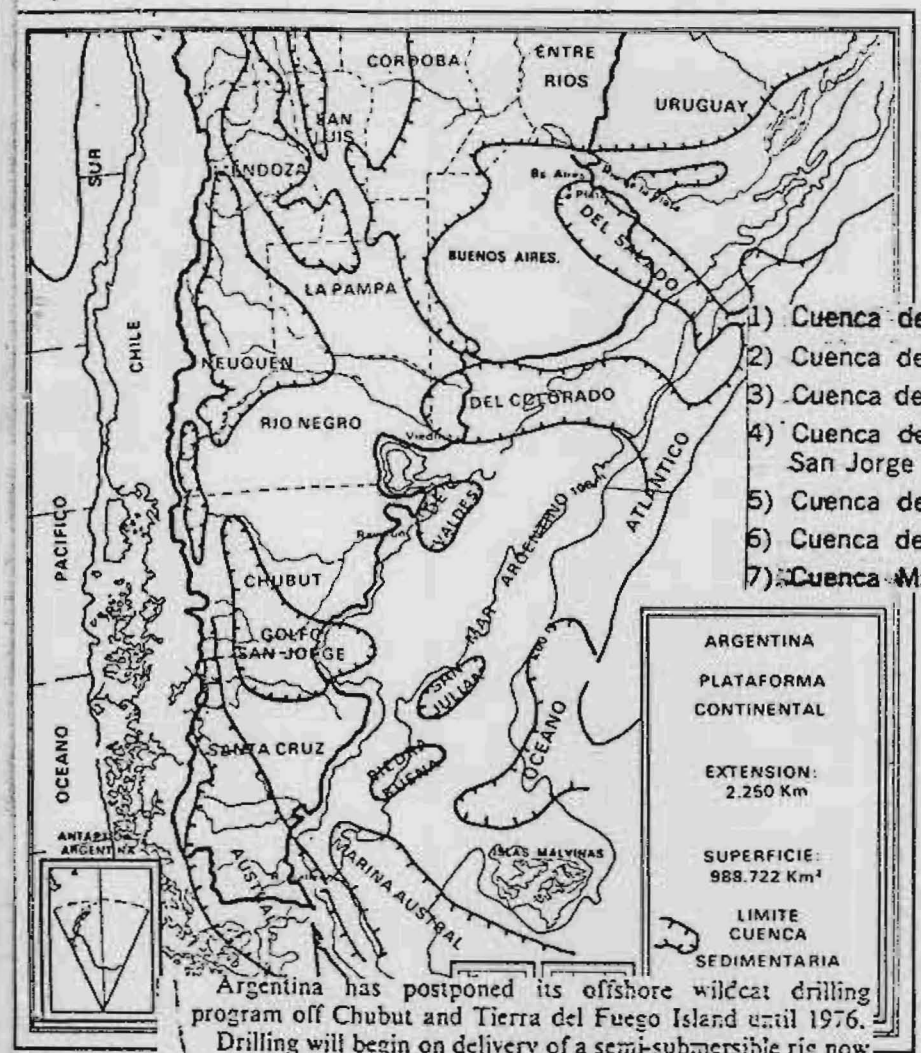
continental shelf facing the Rio de la Plata's mouth cannot be ignored, several geological considerations support this assumption.

CHART III

ARGENTINAS OFFSHORE BASINS

Basin	Geological Age	Thickness of Sedimentary Coverage	Depositional Environment	Petroleum Possi-bilities
Salado	Early Cretaceous	6000 M.	Marine-Continental Shelf	Good to Fair
Colorado	Early Cretaceous	6500 M.	Early Lake and River followed by Marine Continental Shelf	Fair to Good
S. Jorge	Early Cretaceous	6500 M.	Lagunar - followed by Continental Wetlands	Proved

PLATAFORMA CONTINENTAL ARGENTINA



1) Cuenca del Salado
2) Cuenca del Colorado
3) Cuenca de Valdéz
4) Cuenca del Golfo San Jorge
5) Cuenca de San Julián
6) Cuenca de Piedrabuena
7) Cuenca Marina Austral

Argentina has postponed its offshore wildcat drilling program off Chubut and Tierra del Fuego Island until 1976.

Drilling will begin on delivery of a semi-submersible rig now under construction. It was ordered by Argentina's Yacimientos Petrolifero Fiscales (YPF) from Ideca Oil International, Inc., of Panama. The drilling delay was caused by sinking of *Ranger II*, a jack-up rig, in the Caribbean last year while en route to Buenos Aires.

CONCURSO Nº SAMBOROMBO

CUENCA DEL SALADO

I KERR MC GEE
II UNION OIL
III SUN OIL

I-III AGIP
II HUNT

BAHIA BLANCA

CUENCA DEL COLORADO

GOLFO SAN JORGE

COMODORO RIVADAVIA

I SINCLAIR
II AGIP
III TENNECO
IV AGIP

Uruguay

The offshore oil interest was developed early after certainty of negative results on the onshore areas was attained in 1958. (See map of coast and continental shelf p. 50.) Almost coincidentally by 1958 the first geophysical works in the Argentinian and part of the Uruguayan margin were being conducted by the Lamont Institute and the Argentinian Navy. In 1967 after offshore areas were leased by the Argentines the Uruguayan government and its agencies like the State oil company ANCAP became ready to introduce in the offshore activities.

From 1968 on, there is a continuous policy that has gone thru the several stages of the evaluation of the offshore oil possibilities and looks forward to the exploitation.

The State oil company of Uruguay ANCAP controlled the geophysical surveys that under contract were carried out by foreign contractors. This process allowed a primary evaluation of the offshore basins. Detecting the presence of part of the Pelotas Basin that comes from Brazil into Uruguay and other sedimentary enclosures of very interesting thickness.

After this process was finished, two important problems were to be solved, the definition of international boundaries with Argentina in the continental margin and the development of an appropriate legal framework to facilitate the

operations of any foreign company that may become interested in the further exploration and eventual exploitation of oil-gas in the Uruguayan Shelf.

These legal and administrative conditions were in force before the end of 1973. (See Appendix, p. Key dates on Uruguay's 200 miles Territorial Sea claim.)

During 1974 the Government of Uruguay made an international call for companies interested in the exploration-exploitation of the offshore areas.

At this moment Chevron Oil Company is negotiating the final terms of the first agreement to be signed with the Uruguayan government to drill on the shelf. This agreement will surely be signed before the end of 1975.

RUGUAY—Six of the 11 oil firms
t qualified to bid for offshore oil
hts are international majors: Shell
ternational, Esso (two subsidiaries),
evron, Gulf Oil and Texaco. The
ers: U.S. Shell, Spain's Hispanoil,
n Oil, Ocean Exploration and Cana-
an Superior.

Three offshore blocks are offered
der Peruvian-type production terms.
idders are to propose minimum work
d investment commitments (PIW—
ly 10,p.12). They may bid for one,
o or all three blocks and must buy
r $200,000 the seismic data commis-
ened by Uruguay. Bids are to be
pened Feb. 3, 1975.

URUGUAY

BUENOS AIRES

RIO DE LA PLATA

MONTEVIDEO

Cabo Polonio

Cabo San Antonio

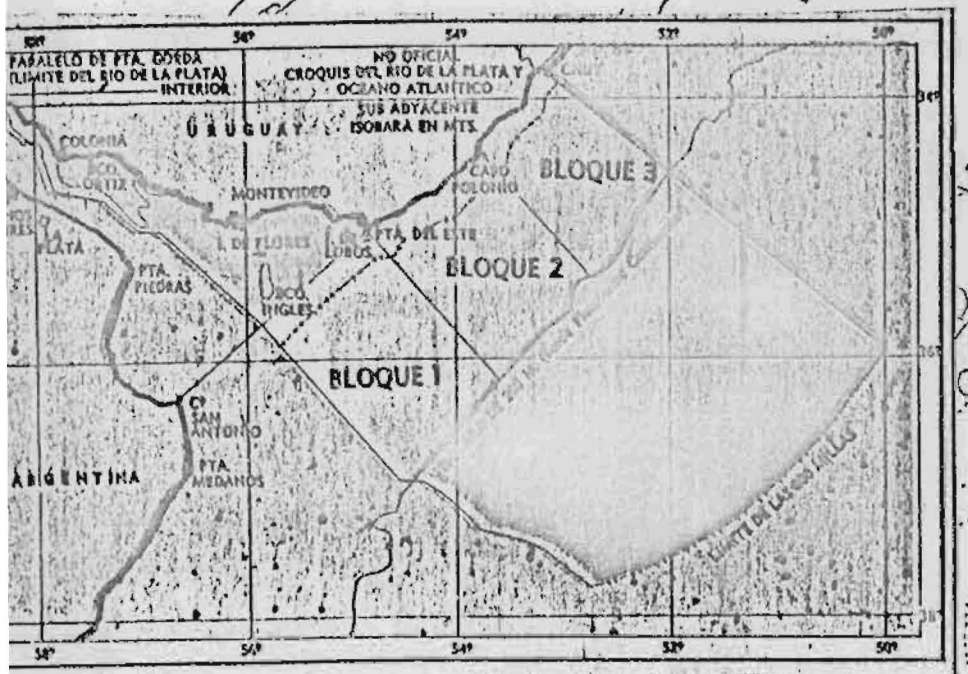
Cabo Corrientes

20

500

50

URUGUAY—Argentina and Paraguay are both showing interest in using the projected deepwater offshore oil unloading terminal for imported crude oil. Construction bids have been invited for the long-planned facility in the Atlantic (PIW—Jan.3'73,p.8). It will include a floating buoy that can take tankers up to 100,000 tons, linked by submarine-and-onshore pipelines to on-shore storage and the Montevideo refinery.



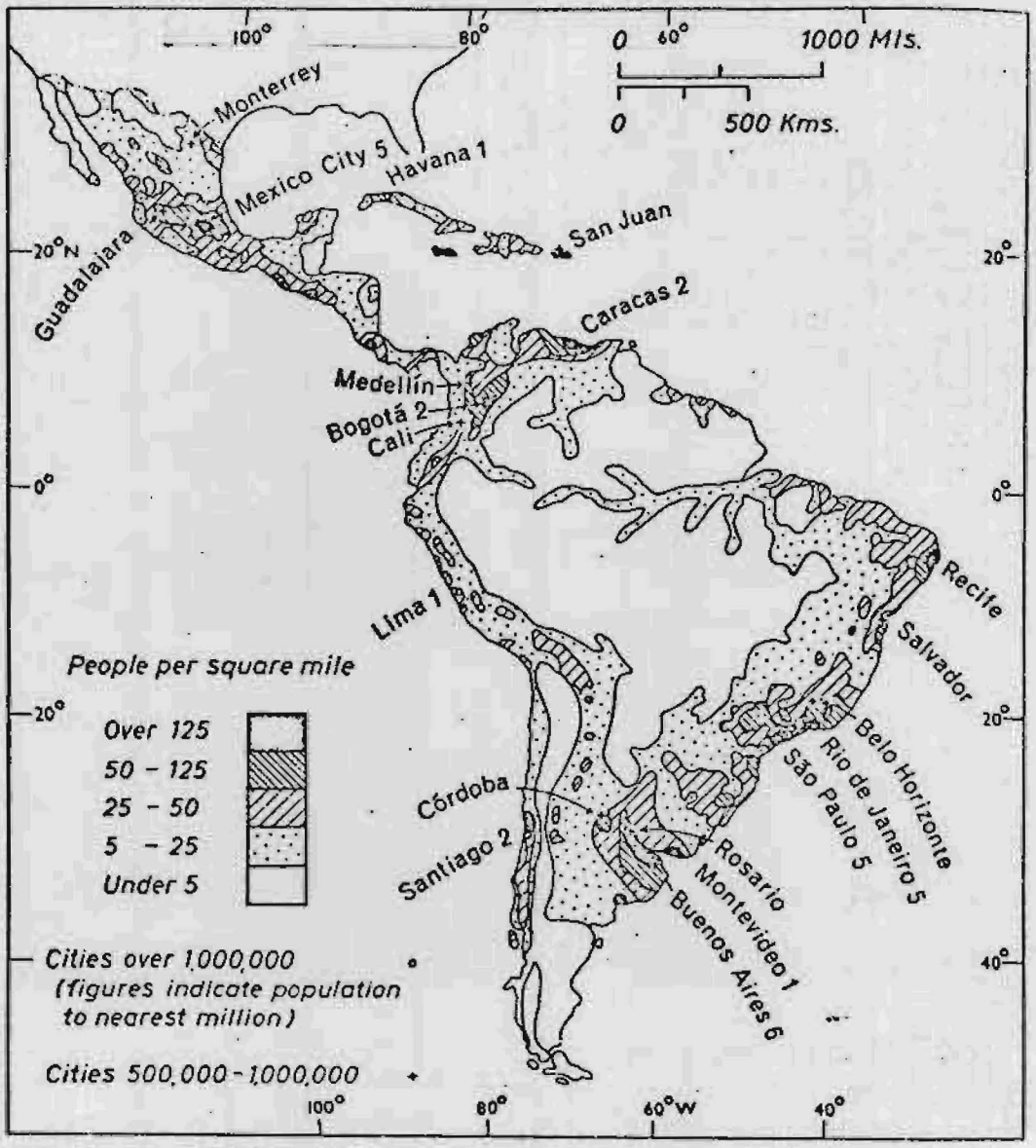
...a dentro de la cual se realizará la explo...ración de hidrocarburos en aguas territoriales ...guayas. El sector a explorar y eventualm...ente explotar, está dividido en tres bloques ...a estudiar por etapas.

Human Environment Brazil

Southern Brazil, Uruguay and Argentina are quite comparable in the ethnic composition of their populations.

The first is characterized by the well developed German and North Italian settlements (first groups were in the region as far as 1822) combined with Portuguese descendents and near San Pablo of big Japanese colonies. The European colonists are credited in this part of Brazil with the creation of the spark of energy that produced the extraordinary development of the South. It is common to hear that the South is the engine that is pulling all Brazil, which reflects the extraordinary industrial development of this part of the country and as a consequence the expansion to all Brazil.

Part of the actual economical prosperity was induced by a well planned effort of the government. As a result Brazil is pulling out itself to become one of the powerful nations of the world. The population is still increasing with a high birth rate and there are still big differences between the standard of life that an educated person attains with respect to that accessible to the uneducated and untrained people. The first group maybe 40 per cent of Brazil's 110 million population attains an economical standard which can be comparable to the U. S. There is a strong effort to incorporate the rest of the population to the first level, especially thru educational programs.


100°
80°
0 60°
1000 Mls.
0
500 Kms.
Monterrey
Mexico City 5
Havana 1
San Juan
20° N
Guadalajara
Caracas 2
Medellín
Bogotá 2
Cali
0°
Lima 1
Recife
Salvador
People per square mile
20°
Over 125
50 - 125
25 - 50
5 - 25
Under 5
Belo Horizonte
Rio de Janeiro 5
São Paulo 5
Córdoba
Santiago 2
Rosario
Montevideo 1
Buenos Aires 6
Cities over 1,000,000
(figures indicate population
to nearest million)
Cities 500,000 - 1,000,000
100°
80°
60° W
40°

As far as our problems of Coastal Zone Management we can see that the situation becomes more complicated because of possible social contrasts, anyway we have a rich and active Brazilian population that demands increasingly the use of the coast as a recreational place. The intensity of this trend is easily detected by the latest statistics on the use of the coast. We are not going to insist on the Brazilian coastal problem where areas like the Guanabara Bay (Rio de Janeiro's location) demands the highest skills to solve its problems. The land values in this city may be ranked in the first places of the world and the combination of a big population with extraordinary aesthetical values and strong industrialization may give the summary of the situation.

What is important in this study is to point out that the high economical level, the newly established communications system, the powerful motor cars industry are all factors that incide to generate a strong migratory touristic current that in the summer tends to avoid the hot weather going to the South. That means an additional interest in the recreational use of the Uruguayan coasts coming from the Brazilian touristic currents. This situation is well established now and in some way the Brazilian touristic current is competing with the traditional Argentinian tourism as seasonal visitors of the Uruguayan coastal summer resorts.

Argentina

The Argentine and Uruguayan people are in overwhelming majority of unmixed European descent. In the Humid Pampa the population is exclusively European, and made up mostly of families arrived since 1853.

The Argentine territory was originally settled from the North (Peru) and from Paraguay but after the rapid increase of newly European inmigration (after 1850), the spread of railroads and agriculture, the growth of Buenos Aires had the effect of creating a new and different kind of population. An economical reorientation took place and all the regions came into the influence of Buenos Aires which became the focus of everything Argentine.

The degree to which the Argentine national life is concentrated in the immediate hinterland of Buenos Aires is extraordinary, especially when we understand that this concentration is a product of the last century. Buenos Aires itself is not only the largest city of Argentina and the largest city in Latin America, but also it is the bigest urban center of the Southern Hemisphere, and second only to Paris among the latin cities of the world.

The Humid Pampa makes up about 22 per cent of the total area of Argentina; yet in this region there are some sixteen million people, about 65 per cent of all the Argentines. In this region are nearly 70 per cent of all the railroads and 84 per cent of all the industrial production

and as some economists figure it the 82 per cent of the productive capacity of Argentina.

This situation is very significative with respect to the recreational and touristic activities that a nucleous of people like this will generate. Particularly when, as we already saw the amount of Atlantic shoreline available in the Buenos Aires Province is quite limited. Another geographical circumstance contributing to generate more tourism from the inland parts of the Humid Pampa, from cities like Rosamo (one million), Santa Fe (500,000) and Cordoba (one million) is that the distance to the ocean is much shorter going to Uruguay. Particularly from 1975 on, when the first two international bridges over the Rio Uruguay will be finished this touristic current will be surely more assured. We should remember that Argentina from the latitude of Buenos Aires (34°S) to its northern border with Bolivia (22°S) is composed of landlocked territories.

Uruguay

Population

The composition of the population is similar to that of Argentina. In and around Montevideo the inhabitants are of pure European descent. They came in large proporation from Italy and Spain but many other European nationalities are represented. In the outlying parts of the country there are enough people with some Indian ancestor or black

ancestor to give the mestizo group in the total population a proportion of the six per cent. There are no pure Indians.

The one cluster of people is centered around Montevideo, a city of more than a million in a country with a total population under three million.

There is a certain industrial development along the Rio Uruguay with cities that do not arrive to have 100.000 people.

The city of Montevideo performs the functions of government, of commerce, and of manufacturing industry. It is also important as a fishing port and as one of South America's major resort centers. Largely patronized by Argentines and easily reached from Buenos Aires by an overnight boat trip or by airplane.

The hotels and casinos of Montevideo are well known and they bring in a substantial income in foreign currency to Uruguay.

The rate and growth for the Uruguayan population is the lowest in all Latin America, the last evaluation done during 1975 gave a number of 2,764,000 inhabitants with almost half of them gathered around the capital city.

This situation has conducted the government to analyze the possibility of stimulating selected inmigration. The last census in 1962 gave a total Uruguay population of 2,596,000 which means 0.5 per cent per annum of growth. The death rate is of 9 per thousand. Possibly the birth rate is

higher. Due to the last years emigration of a great number of citizens that left seeking to maintain their standard of life in countries like Canada, U. S., Australia, the total population might have lost more than 300.000 which will place the birth rate in 1.5 per annum.

As far as education it shares with Argentina the first places in Latin America in the proportion of people that can read and write.

General Economical Pattern of Uruguay

It is our purpose to analyze with some extension the possible impacts of an offshore oil development on the Uruguayan coast. For that reason additional elements are given here about the economical, industrial, legal and political framework of this country.

The Industrial Development

Most of the manufacturing industry is located in Montevideo so in the Southern part of the country.

The difficulties that face the industry in Uruguay are the usual when the domestic market is too small to support a large-scale, low cost manufacturing unit.

The relatively high standard of living enjoyed in and around Montevideo is closely ralated to the earnings from pastoral and agricultural exports; which means a great dependence on external trade. Successive governments have encouraged the development of domestic industry by means of

protective tariffs, import controls, exemptions of machinery from import duties, and preferential exchange rates. But as there are no known local sources of petroleum and coal, and no heavy industries, Uruguay is obliged to import all of its fuel and most of its industrial raw materials and industrial machinery.

These essential supplies have to be paid for with the produce of the ranches and farms and incomes derived from touristic industry.

Efforts are conduced to stimulate other exports but this is only a primary phase.

Pastoral farming is still Uruguay's most important economic activity. Wool and beef are its chief products and the source of about three fourths of its total earnings in foreign currency.

Energy Resources

The low rolling countryside of Uruguay is not generally suited to hydroelectric development. The whole country is supplied of electric power in part by oil burning power plants and by two hydroelectric stations on the Rio Negro, 150 miles away from Montevideo. A third dam is under construction on this river (Palmar) and expected to be producing energy in 1978. This dam is projected for a total output of 300 M. W. and the cost is estimated in 406 million dollars payable in part in long term foreign loans. An

international hydroelectric project is under construction on the Rio Uruguay in joint efforts with Argentina. This dam will start generating energy the last months of 1979 and will be in full production by the end of 1980. The total power output is in the order of 1620 M. W. This is the first international project of this type in South America.

The completion of these two projects will permit Uruguay to dispose surplus electrical energy to be used in new industrial projects. (See Appendix, p.)

Nuclear Energy

A National Commission on Atomic Energy is handling the research of radioactive minerals.

The program has been carried on since two years ago and has reported some interesting findings.

There is no particular study on possible Nuclear Power Plants for Uruguay.

Fossil Fuels

The evaluation of the oil shale potential is being carried on now by the state owned oil company. Several programs of oil exploration onshore were carried out in the past with negative results.

A re-examination of a little sedimentary basin in the nearby of Montevideo is under execution during the rest of 1975 and consists on runing 600 Km, of seismic lines. The expectancies of finding oil are very low.

ENVIRONMENTAL ASPECTS OF POTENTIAL OIL AND GAS DEVELOPMENT ON THE RIO DE LA PLATA CONTINENTAL MARGIN (URUGUAY)

General Conditions

Most of the relevant conditions about the possible oil-gas deposits on the continental margin are unknown or highly variable; even the possible amount of oil and gas is unknown.

But the large amount of data on past effects of offshore petroleum developments in many other parts of the world may be very helpful.

Studies on the effects of oil on marine life and shorelines have been made, both in laboratories or after accidents.

As we already saw, the importance of the Uruguayan coast as far as recreational purposes is quite outstanding, not only for the country but for the region. The type of conditions that the combination of a big estuary like Rio de la Plata interacting with the ocean produces tend to be quite unique. The regional availability of shoreline with conditions favorable to summer bathing and seaside recreation that combine the qualities of this coast are

uncommon. The special biological conditions have favored the existence, in an island near the Uruguayan coast, of one of the largest sea lion colonies in the world, probably attracted by the richness of the marine life in the surrounding waters.

All these circumstances incite to be more cautious on the prevention of the effects of an oil spill and even to set appropriate regulations for the offshore drilling operations.

Logistic Problems

It is important to have in mind that the cero volume of offshore drilling operations in the region is a negative factor as far as security.

By one side there are no locally based enterprises with experience or availability of materials to deal with a sudden and unexpected situation; this acts as a limitative element of the security margin.

As an example it should be remembered that even in California one of the initial causes of Santa Barbara's accident was the lack of high density benthonitic mud on board the drilling rig.

By the other side even when regulations can be set up following standards of other places, the unawareness of the real danger may conduce to negligent actions by the inspectors that may be designed by the authorities.

There will always be a great communication gap between the operator and the local authorities; the last ones will never be sure to what extent they can be more severe with the contractors. The situation of total energy dependency of the country reduces the strength of any national standpoint and favors that of the contractor.

As far as it is known today, drilling operations by Chevron may begin in the first months of 1976 on the selected sites of the Uruguayan continental margin. These sites are all in the block Number One (see map of Uruguayan Shelf, p.50) and near to the mouth of the Rio de la Plata. Distance from the coast is in the order of 50 to 90 miles. This gives a certain margin to control any spill but it should always be kept in mind that the region has no equipment available for prevention.

It is true that from an operational viewpoint the first drillings have only pioneer character and hardly will present a risk.

Studies on Spills Prevention

The attitude of local decision makers towards this type of problem goes from unawareness of the possible consequences to the position of setting up rules and regulations that may not be applicable to the local problems because they are a copy of a set of regulations of other zones.

The fundamental problem lies in how to adopt the regulations. This process requires being backed-up by

some experience and the scientific support to assure the controls and conduct the necessary research.

The local resources to analyze the problem may partially exist if one can combine them. Gather the data from the different sources, and produce more information on circulatory patterns over the estuary and oceanic front. Try to develop models including all the data available, winds, tides, etc. and define with more precision the possible effects, and if there is any zone that should be restricted in its uses. And then play with the different sizes of oil fields, number of wells, productivity, oil qualities, types of exploitation, etc. Some people will think that maybe it is too early to be worried about these effects when we don't even know if there is oil yet.

But the present situation indicates strongly the necessity of carrying out the study of the circulatory patterns of the Rio de la Plata Estuary. Frequently many of the best Uruguayan beaches show the presence of oil contaminants in the sand and water. This means that the problem exists already. Some reports consider this oil is released from the tankers cleaning operations, other sources indicate the big refineries near the city of La Plata on the Argentinian margin of the Rio de la Plata. There is even a slight possibility that this oil may be partially the result of natural sweeps.

The effort to detect the sources of these oil

contaminants must be carried out without delay with the additional advantage of creating a certain knowledge of major circulation problems will help to set rules for the offshore oil operations.

The almost certain installation of a single buoy deepwater oil unloading terminal to be located 15 miles to the north of the well known seaside resort of Punta del Este means an additional element to consider the need of setting preventive plans in the case of oil spills.

Review of Uruguay's Coastal Management Case

Uruguay as a country is going thru an intense reorientation process trying to find actively new bases for its economy. This process includes a well defined trend towards the more intense use of the marine environment and the coastal zone.

This governmental policy conducted to the achievement of international goals and to generate multiple projects concerning the use of the Coastal Zone directly or indirectly.

As a reference the following list is given: "The Rio de la Plata Treaty" signed in Nov. 1973 with Argentina, the extension of the Territorial Sea to 200 miles limit (1969); the development of the "Fishing Industry Act" which recognizes the expansion of the national fishing fleet and the landing facilities; the "Offshore Oil Exploration Policy" establishing the legal principles that will make possible the final explanation and exploitation of the oil-gas resources of the shelf; the installation of an unloading deepwater oil terminal; the studies for the feasibility of the installation of a superport in the Atlantic Coast near the Brazilian boundary; the integral project with Brazil to remodel the zone of the great lagoons in the eastern coast (Proyecto Laguna Merim); Studies on the readaptation of the Port of Montevideo to the new trends on the sea transportation systems; the continued policy to increase the international

touristic currents to the Uruguayan coastal resorts (This will demand the creation of supporting facilities like new hotels and other installations.); exploitation of the sands of some beaches that show a very high content of titanium, zirconium, illmenite, etc.; and some other projects may be proposed in a short time due to the exemptions the government is offering.

When we go thru this list of projects we should keep in mind that they are proposed for a shoreline extension of 200 miles (350 Kilometers). It is easy to imagine that many conflicts between the different uses of the coast will be created, specially when we consider that there is still no skilled personnel in Marine Affairs.

Bases for a Comparison of the East Coast of South America Case with New England and Scotland Case

There is a reasonable similarity between the situation we are analyzing and the New England and Scotland's case. The differences lay more in the possible lower volume of the oil exploitation and other variations that we can qualify as degrees of intensity in the uses of the coastal zone.

This assumption makes it possible to go further on the research of comparable conditions and try to develop a standard base to refer any similar situation.

One element that may devirtuate the comparison is

Conclusions

Because it is a very new phenomenon there are no well defined criterias on "Coastal Zone Management" at the level of government decision makers in almost all South America.

Helping to establish a rationality is in the benefit of the entire world because we can no longer consider the development of independent units with no connections with the rest of the global system.

The need of setting uniform criterias with well established scientific support and at the same time coordinate the efforts of the different countries in common patterns seems obvious. The opportunity seems to be now when still there are no discrepancies and no rules defined.

Recommendations

The recommendation will be then to establish a regional center for Marine Affairs and Coastal Zone Management in the East Coast of South America. This will have the responsibility of advising the governments and coordinating the efforts and regulations for all the region. Keeping a good connection with the well advanced centers for Marine Affairs in the U. S. and Europe and also a constant relation with international organizations like the U. N. Ocean Resources and Economics Bureau.

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APPENDIX A

URUGUAY'S 200 MILES TERRITORIAL SEA CLAIM

KEY DATES IN THE LEGAL PROCESS

1958 April	Geneva Convention
1961 -	Bilateral Declaration - Argentina-Uruguay Convention on the External Limit of the Rio de la Plata.
1963 Feb. 21	Decree on "Territorial Sea" 6 miles width plus 6 miles of contiguous zone with exclusive fisheries rights.
1966 Aug.	Decree - Establishing Nat. Commission in Oceanography.
1966 Dec.	Argentina's Law 17.094 extends sovereignty to 200 miles + seafloor + resources under seafloor - 200 metres depth or technically possible depth (No interference to freedom of navigation and overflight.)
1968 March	Message of Uruguay's Executive Power to the Parliament asking for approval of Geneva Convention 1958.
1968 August	Effective commitment of the National Commission on Oceanography.
1969 May	Extension of the Uruguayan Territorial Sea to 12 miles and exclusive fisheries rights extended up to the external limit of the Shelf.

1969 May	Joint declaration of the Govts. of Brazil and Uruguay concerning maritime boundaries of both countries.
1969 June to Nov.	Sea Resources and Fisheries Law on Parliamentary discussion - Considering a 12 miles Territorial Sea plus exclusive fisheries rights extended to 200 miles.
1969 Dec.	U. S. and U.S.S.R. motion in the U. N. to freeze further expansions of C. state claims.
1969 Dec. 3	Decree - Uruguay extends Territorial Sea to 200 miles innocent passage within first 12 miles - freedom of navig. and overflight for the rest. Exclusive fisheries within first 12 miles. From 12 to 200 miles authorized foreign fishing vessels and national Exploration and Exploitation of Natural Resources under national sov. within 200 miles.
1969 Dec. 29	Law 13833 - essentially similar to former decree. Known as "Natural Resources and Fisheries Law."
1972 July 21	Joint Declaration of Brazilian and Uruguayan governments defining and approving maritime boundaries.
1973 Nov. 19	"Rio de la Plata Treaty" Between Argentina and Uruguay - Defining Boundaries in the river and Oceanic front and common policy of both countries.


URUGUAY
BUENOS AIRES
RIO DE LA PLATA
MONTEVIDEO
Cabo
Polonio
RIO SALADO
Cabo
San Antonio
APPENDIX B
Mar del Plata
Cabo
Corrientes
BAHIA BLANCA
10
20
30
40
500
74
20

REGULATIONS FOR THE FOREIGN INVESTMENTS LAW

ON the 10th. October 1974, the Executive passed a Decree through which the Law of Foreign Investments was standardized. The text of said Law was published in the 4th. issue of this publication. Considering that the above mentioned Decree may be of interest to persons and or institutions we are publishing now its contents.

CHAPTER 1
FOREIGN INVESTORS AND FOREIGN INVESTMENTS

ARTICLE 1. — To the effects of the application of the Law being regulated, it will be understood by foreign investment all capital coming from abroad, with the right of transfering its value, as well as its utilities.

The foreign funds may adopt any given form such as: currency, machine, patents, technical processes, trade marks or other forms that are considered of interest by the Administration.

ARTICLE 2. — The right of transference mentioned above includes the foreign capital whatever be its share within the company.

ARTICLE 3. — Only the physical or judicial persons domiciled abroad, may be owners of the rights and duties emerging from the Law that is being regulated. By domicile it is understood, the residence, or presumed, of the willing of permanence there (Art. 24 and following of the Civil Code) or, in its case, the place where the merchant has his main establishment (Code of Commerce, Art. 40).

CHAPTER 2

ARTICLE 4. — The subjects to which Art. 3 refers to should apply for the authorization of placing foreign investments before the Ministry of Economy and Finances.

ARTICLE 5. — It competes to the Executive Branch to approve in each case the foreign investments in all areas related to the social and economic development, provided its application is compatible with the national interest. The Ministry of Economy and Finances may authorize directly, in exercise of delegated functions, those investments in areas already declared of national interest, and that do not surpass 100.000.0 U.S. dollars or when it concerns complimentary investments not foreseen in the Radication Contract. In spite of the established in the above mentioned expressed and fundamental authorization from the Executive, acting in Council of Ministers, will be required for foreign investments that are destined to the following activities: electricity, hydrocarborous, basic petrochemicals, atomic energy, exploitation of strategic minerals, agriculture, meat industry, financial intermediation, railroads, press, television and those submitted by law to state control. The Executive may, by founded resolution and acting in Council of Ministers, extend the preceeding enumeration when the circumstances so warrant it.

ARTICLE 6. — The authorization to which the previous article refers will necessarily be preceeded by the verdict emanating from an Assesment Unit, that functions within the orbit of the Ministry of Economy and Finance. It will be made up of the following permanent members: two members from the Commission of Programming and Budget, one of which will preside it a delegate from the Ministry of Defense, designated through the proposal of the Chief of Staff: a delegate from the Uruguayan Central Bank and a delegate from the Chamber of Commerce. The Assestment Unit may require of the Ministries as competent organisms, or in its case, to the Chamber of Industries, to designate a representative with the purpose of collaborating with it in matters pertaining to both. Its recommendation will be forwarded to the Ministry of Economy and Finances within a maximum term of 30days to be counted as of the first day of the filling of the request of investment in proper form.

ARTICLE 7. — The Assestment Unit will be charged with the responsability of advising the Executive of the authorization of the foreign investments that meet the present regulations. For it, it is endowed with faculty of negotiating with the proponents the conditions of the contract, determination of the value of the capital and contributions, as well as the form of withdrawal. To determine if the foreign investment is compatible with the national interest, the Assestment Unit will take into consideration the criteria and characteristics of the investment and its adjustment to the basic objectives outlined in the National Economic and Social Development Plan.

Within a period of 60 days from its designation the Assesment Unit must pass to the Ministry of Economy and Finances the technical and economic criteria for the evaluation of proposed foreign investments.

ARTICLE 8. — The Ministry of Economy and Finances will present to the Executive the project submitted by the foreign investors as well as its recommendations cited in Article 6.

The Executive, or in its effect, the Ministery of Economy and Finance, in exercise of delegated functions, may authorize or not the petition of foreign investment and, will likewise, fix the conditions of the contract and the period within which it may be subscribed to. In representation of the State will act the Minister of Economy and Finances or whom he may appoint.

ARTICLE 9. — The rights afforded by the law being regulated are accumulated with those established in Law 14.178 of the 2nd March 1974 (Industrial Promotion).

To the effects, if the foreign investor considers it convenient to seek the benefits established in the Law of Industrial Promotions, he should so manifest it explicitly in the opportunity referred to in Article 4 of these Regulations. In which case, the Assestment Unit that is established by Article 6 of this Decree, should seek directly the opinion of the Assesment Unit cited in Article 2 of the Law 14.178 already mentioned.

The resolution of the Executive authorizing the foreign investment will also pronounce itself on the approval or not of the promotional benefits sought after. In the case that the foreign investor had not made the explicit manifestation to which the second section of this article refers, he may, once the Contract of Radication has been signed, present directly before the Ministry of Industry and Energy a petition to obtain the corresponding promotional benefits.

ARTICLE 10. — Once the Contract of Radication is signed, the Uruguayan Central Bank may procede to register the authorized foreign investment in a special Register to be kept. Previously the foreign investor must certify before the Uruguayan Central Bank his compliance with the introduction of capital from abroad, whatever be its form and date. Besides, the results of the investments must be registered along with the remittance effectuated.

All the registrations must be made in the currency of origin stipulated in the Contract of Radication.

ARTICLE 11. — All modifications of the conditions and obligations contractually assumed, as well as the closing of the Contract of Radication in favor of another foreign investor, will require the same process for its granting.

ARTICLE 12. — The Ministry of Economy and Finances will proceed to the control of the meeting of the assumed obligations of the foreign investors in the respective contract. For it, it may require from the competent organisms the corresponding information and the necessary proceedings.

CHAPTER 3
REMITTANCES OF UTILITIES AND THE TRANSFERENCES OF CAPITALS

ARTICLE 13. — By the authorization of the foreign investment the State guarantees the remittance of the profits and the transference of funds in the proportions and conditions agreed to contractually.

ARTICLE 14. — The Uruguayan Central Bank may not limit the right of the foreign investors to remit their utilities or capitals, and is obliged to guarantee in all cases its convertibility and transferability.

In case that administrative dispositions do not permit the foreign investor free access to the financial market with the object of obtaining the necessary currency exchange that will permit him the remittance of his funds or profits, the Uruguayan Central Bank guarantees the obtainance of said currency. In which case, the currency exchange rate will be that corresponding to the close of the utilities obtention, provided they are bought within a time lapse of 60 days and the provision of funds is made in national currency. Beyond that time period, the exchange rate will be that of the date the remittance is asked, and which should be accompanied by the corresponding funds in local currency. The exchange rate will correspond to that of seller in the financial operations market.

ARTICLE 15. — The foreign investor to effectuate the corresponding exchange operation to the interior should notify the Uruguayan Central Bank, with the time lapse by it, the notice of intention to do so, with a sworn copy of Fund Gains Taxes certified by the General Taxes Office.

ARTICLE 16. — The invested capital may not be retrieved prior to the passing of the 3rd. year from the date of the Contract of Radication, and, in its effect, until the passing of one year from the last capitalization of the profits.

ARTICLE 17. — The remittances that are effectuated to the exterior, will be computed in the first place to the profits made by the company. That which exceeds said profits will be computed to the capital.

CHAPTER 4
CAPITAL WITH RIGHT TO TRANSFERENCE TO THE THE EXTERIOR

ARTICLE 18. — It will be understood by capital with right to transference to the exterior that which is originally authorized or introduced, plus the net profits capitalized, less the capital already remitted and less the net losses: all of it in the currency of origin.

All profits that have not been sent abroad within a period of 2 years, will be considered to the effects of the law that is being regulated, as formally capitalized, as of the date of the corres-

ponding exercise. In the case that in observance of the Contract of Radication the capital should be totally or partially withdrawn in species, either in tangible or intangible goods, it must also be computed in agreement with the rules of tax values.

ARTICLE 19. — The goods introduced as integration of funds may not be valued higher than the current value at point of origin, plus insurance and transportation charges to the country.

Used goods will be valued by the price in place of origin for its equivalent new counterpart minus the corresponding amortization.

If due to the nature of the goods—be they material or immaterial there should not exist a price in place of origin, the value of the introduced goods to the country will be stipulated by common agreement the foreign investor and the management, at the time of celebrating the Contract of Radication or at the date of the effective introduction in its effect, for which the appraiser technicians considered necessary may be consulted at the date of the effective introduction in its effect, for which the appraiser technicians considered necessary may be consulted.

The current price in place of origin must be certified in each case, by the competent Chamber or Institute of the Country of origin, certifying the value of the goods in the market in question, through the properly legalized public accountant document, where the price of the good is registered in the books of the manufacturer in question.

To convert the price and the transport and insurance costs of foreign or national currency, the exchange rate that corresponds to the import of those same goods at the close of the previous day to the date at the Customs Office will be applied.

In all cases not brought forward the rules that regulate the Tax Laws at the celebration of the Contract of Radication will apply.

ARTICLE 20. — The results of the investments will be adjusted, according to the regulations of the Tax-Law, deducing the earnings exempt if there be any nor of the foreign source and, with the deduction of the losses of prior exercises fiscally deduced and of the expenses whose deduction are not permitted.

In the case of investments in actions the results may not be superior to the proportion that corresponds in the total of the society, determined according to the previous section.

The results so determined by the previous sections, will be exchangeable in the currency of origin of the generated capital, at the type of exchange rate in the sellers category at the financial market at the moment of closing the respective economic exercise

CHAPTER 5

CHARGES LEVIED. PROFITS REMITTED TO THE EXTERIOR

ARTICLE 21. — The profits remitted abroad with the omittance of the exercise in which they were generated, that surpass 20 % of the capital with right of transference at the beginning of the same exercise will be charged with a tax of 40 % on that which exceeds the 20 %. It is understood by capital with right to transference that established in Article 18, not computing to the fiscal effects the time period established in Article 16.

To those effects, the checks sent abroad will be charged in the first place to the profits determined in accordance with the final section of Article 20 and obtained in the last exercise:

In both cases provided that its capitalization has not been resolved. When profits have been sent for both exercises already mentioned, the surplus of the sum sent will be computed to the capital.

The paying of the tariff will be practiced buying the capital registered with the profits sent during the same exercise. The tax resulting in foreign currency will be converted in national money at the exchange rate for seller in the financial market at the closing of the exercise.

ARTICLE 22. — The General Tax Office, through its Earning's Taxes Department will collect and fiscalize this charge. It will be liquidated through a sworn statement, and payable on the same opportunity and form that the corresponding taxes.

CHAPTER 6

LOANS

ARTICLE 23. — It will be considered a company of foreign capital, the one whose capital coming from the exterior represents more than 50 % of its capital and has judicial power of decision. All foreign investment is presumed to have judicial power of decision, unless proven to the contrary.

Thus the Executive Branch, with the advice of the Programming and Budget Department may by petition of the investor, declare a company of foreign funds those in which the foreign investment represents less than 50 % of the integrated capital, always that said investment has been obtained according to the rules set in these Regulations.

As it was stated in the previous sections, the proportions between the national capital and foreign capital in a company, will be determined at the close of each exercise in accord with criteria established in Article 18 of the present Regulations.

ARTICLE 24. — The companies to which the preceeding article refers to may not make use of credits of internal financial character of middle to long range term, whatever be its modality. Those operations whose terminations does not exceed a year are considered short term.

ARTICLE 25. — For the utilization of external credits the foreign financial intermediation will be subject to the regulat-23 should, in each case, count with a favorable report from the Assesment Unit referred to in Article 6, and for the international credit of the State, besides, with the expressed authorization of the Executive Branch.

By international credit of the State it is understood, that which has been granted to these or to any judicial person of public right, in consideration of his quality as such.

ARTICLE 26. — The companies of foreign funds that carry on foreign financial intermediation will be subjected to the regulations dictated by the Uruguayan Central Bank.

ARTICLE 27. — The foreign investor should ask the Assesment Unit referred to in Article 6, the authorization to contract financial loans of external origen. The conditions of the loan whose authorization is petitioned should adjust itself to the rules dictated by the Uruguayan Central Bank.

In each case it will be determined if the import of the foreign loan and its conditions are adequate with the foreign investment: and always in accord with the established in this Chapter 6. Such loans as well as the service of amortization and interest, will be inscribed in the currency of origin in the Register to which reference is made in Article 10 of the present Regulations.

ARTICLE 28. — The Uruguayan Central Bank will assure the convertability and tranferability of the amortization and interest corresponding to the external credits used by the foreign investors.

In case that Administrative disposition de not allow the foreign investor a free access to the financial market with the object of obtaining the corresponding foreign currency the Uruguayan Central Bank will provide said currency.

CHAPTER 7

GENERAL DISPOSITIONS

ARTICLE 29. — The foreign funds concerns already established in the country on the day that Law 14,244 of the 26th. July 1974 came into effect whatever be the proportion of it, may adhere to the proposed regime in these rules prior to February 12th. 1975, declaring the foreign capital invested in accord with what is established in Chapter 2 of this Decree. The character of foreign funds of these concerns must be justified through a sworn statement of tennancy of those actions and or the participation of that character. In such case, it will be considered as foreign contribution to the effect of that established by Article 18 the profits adjusted in accord with the fiscal rules and not remitted during the last three exercise.

The foreign capital determined in accord with the preceding sections will be inscribed in the Register referred to in Article 10 of this Decree. The reimbursment of foreign capital in accord with the preceeding sections, may only be effectuated as of the 3rd. year which is counted from the date the Executive Branch resolves that the authorization to conform to this Regime corresponds. The new capital coming from the exterior and its profits, will participate of the regime of these rules and will adjust themselves to the same in accordance to that established in Chapter 2 of this Decree.

ARTICLE 30. — The profits not remitted in the last three exercises, considered in accord with the preceeding article as foreign contributions and adjusted according to the fiscal rules, will be evaluated at the exchange rate of the date of the option.

ARTICLE 31. — The value of the goods and duties of the companies referred to in Article 29 adjust according to the stipulations of Chapter 4 will be determined at the close of the last economic exercise completed prior to the date of issue of this Decree, to the effects of establishing the value of the net patrimony of the Company on that date.

ARTICLE 32. — The companies already established that do not adhere to the established by the preceeding articles will continue to be subjected to the rules in effect on the date of the Law 14,179 of March 28th. 1974.

ARTICLE 33. — In the Contract of Radication the foreign investor will assume the responsibility that the company realizes only activities directly or indirectly authorized.

ARTICLE 34. — They will not prevail for the companies that adhere themselves to the regime of the Law 14.179 of March 28th. 1974 and modifications, the administrative dispositions that limit the distribution of profits.

ARTICLE 35. — The foreign investment and the companies in which it participates, will be subjected to the national judicial regime.

ARTICLE 36. — The dispositions of this Decree will apply only for those companies that take the option of applying for the benefits established in these Regulations.

URUGUAY AL MUNDO

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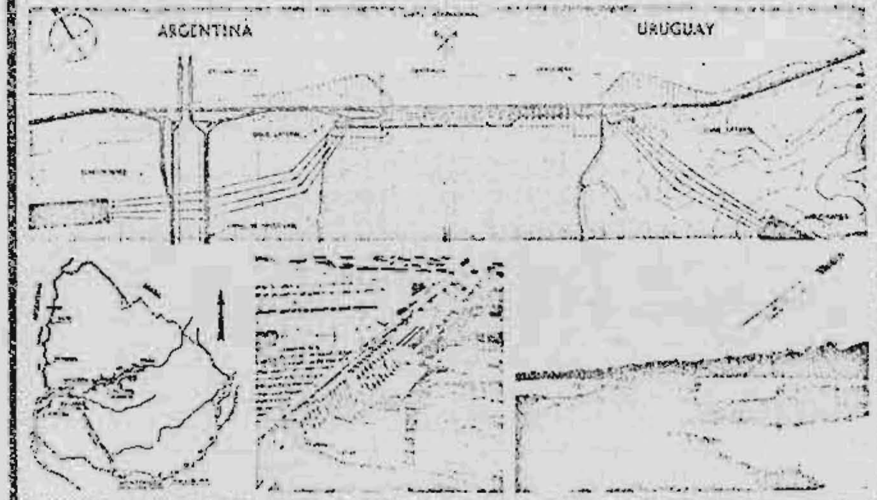
Ministry of the Exterior

SALTO GRANDE & PALMAR

On the Road to Natural Energy Resources



NO country that directs a major part of its efforts towards modern development plans can ignore the energy problems. Energy is the driving force of industry and technological advances. It is a fundamental contributor to the public comfort. These all constitute primary goals of any modern government.

That is why, inspite of its economic limitations and mere two and a half million inhabitants, Uruguay has been toying with the idea of building two important hydroelectric plants for more than 25 years. They will help to save the nation a considerable quantity of money in the purchase of petroleum for its termoelectric generators. The savings will of course serve to finance new enterprises solidly backed by the new energy sources, thus directing the country on a prosperous course.

SALTO GRANDE

An important zone of our neighbor, Argentina, also had similar needs. Result: within the excellent relations that have always been characteristic of the "brothers of La Plata", it was resolved in 1946 to create a Mixed Technical Commission composed of an equal number of delegates from each country. The terms of the Agreement, confirmed on the 27 th. of August of 1958, stipulated that the MTC should regulate all that was pertinent to the utilization, damming and rechanneling of the waters of the Rio Uruguay in the most appropriate zone for it, Salto Grande.

In accord with the Agreement, the MTC realized a great number of studies and investigations (topographic, hydrologic, meteorological and navigational). These designated Ayui as the best location to ubicate the future structures, the selection was later confirmed by further studies.

In 1961 a group of engineering firms (SOFRELEC, EDGEI and SHED) were contracted to elaborate a Technical, Economic and Financial Report and a construction project. Nine years later, the MTC contracted another group of firms. (ACRES INTERNACIONAL, HIDROSUD ARGENTINA S. A., HIDROSUD S. A. and ANALISIS de PROYECTOS S. A.) to actualize the previous project by incorporating into it the latest technological advances and to foresee the possible conveyance of the waters of the Rio Paraná. The studies revealed that the Salto Grande hydroelectric plant was feasible from the economic, technical and financial points of view and that an installation of 1620 MW was fully justified. It was further established that the electric power produced (considerably cheaper than its thermal generated equivalent) would be absorbed by the energy demands of the República Oriental del Uruguay and the Argentinan Littoral.

The expected proceeds, once the plant is functioning, will be sufficient to cover the amortization and credit interest payments, plus the maintenance of a ready reserve to meet with the probable diminutions in sales due to fluctuations in the water flow, and of course the recovery of the National funds. And what is more important, the new Salto Grande hydroelectric plant will permit a savings of approximately 35 million dollars annually in the purchase of petroleum.

Later on, the governments and the MTC revised the project to include two symmetrical generation centers, one on each side of the river. The project revision, as well as the supervision and technical direction of the construction were entrusted to a firm of Northamerican consultants, Main and Associates.

The present project for Salto Grande contemplates two generation centers, each composed of six units, and located on the river margins. The normal water level of retention will be 35 meters with a drop of 25.7m. to the new stream level of 9.3m. The alternators will have a potential of 150MVA, a velocity of 75RPM, a tension of 12.5KW, a frequency of 50HZ and a total output of 1620 MW. Result: the new plant should generate and annual average of 6410GW per year.

The project also contemplates other aspects. The natural environment and the general landscape of the zone will be greatly changed. The scenic beauty of the locality, the irregular outline of the lake and the mild climate will make this a great turistic site.

The project also includes a navigation canal of trapezoidal cross section on the right margin of the river with an approximate length of 13 kilometers and a width of 60 meters. Both extremes will be equiped with water locks to permit water leveling. In the first lock at the Ayui terminal, the water will be lowered from the retention level (c. 35m.) to the canal level (c. 17.5m.). In the Salto Chico terminal, the lock will pass from the canal level (c. 17.5m.) to the river depth (c. 2m.). It is planned to maintain a downstream depth of 2 meters as of Salto Chico to insure proper navigational conditions. In each extreme of the canal there will be an area to serve as a garage so that the boats will have an awaiting zone while there turn to navigate comes up. It should be pointed out that the Rio Uruguay was navigable up to a couple of dozen kilometers prior to Salto Grande and Salto Chico, whose rapids had previously impeded the passage to the passable length of the river course.

The construction of the important dam which is already under way is being completed on schedule. The civil works, as well as, the building of 124 of a planned total of 260 lodges have already been commenced. The first turbines will start generating energy towards the final months of 1979 with full production expected by the end of 1980. The construction will be limited during the first three years to the Uruguayan margin of the river. The dam, the first international construction of its type in South America, will cost the Uruguayan-Argentinan governments a calculated total of approximately 600 million dollars.

THE PALMAR HYDROELECTRIC DAM

This is an exclusively Uruguayan effort. It will be located on the 156.7 kilometer of the Rio Negro, some 150 kilometers downstream of the Baygorria Generation Central. The plant will possess various turbines, alternators and transformers. It will have the necessary facilities to handle freshets and alluvial deposits. The total output will be 330MW generated by three 100MW units, which signifies a surplus in output power potential of 55% over the medial river capacity. The turbines will function with an average water flow of 1200 cubic meters per second with a fall differential of 26 meters. Accessory and complimentary civil works include a Southern access highway, a betterment of the existing Route 14, the building of thirty individual lodges and four collective quarters fully equiped with running water, sanitation, electricity and severage sistem.

The French firm SOFRELEC made a detailed study of this project under the petition of the Palmar Mixed Commission in Octobre of 1973. The study revealed and economic feasibility of consideration. With an average fuel cost (US$ 80/ton) and an increase in demand of 6%/yr., the rentability estimate reaches 19.3%. With the minimum price of the fuel (US$ 60/ton), the rentability estimate is of 16.4% with a 6%/yr. demand increase and with an 9%/yr. demand increase it becomes 17.6%.

Therefore, SOFRELEC concluded: if in April of 1972 the studies demonstrated a favorable perspective with a cost of 25 dollars per ton of fuel the soundness of building Palmar and Salto Grande are fully warranted at present by the actual prices of the fuel whose cost is between 60 and 100 dollars per ton.

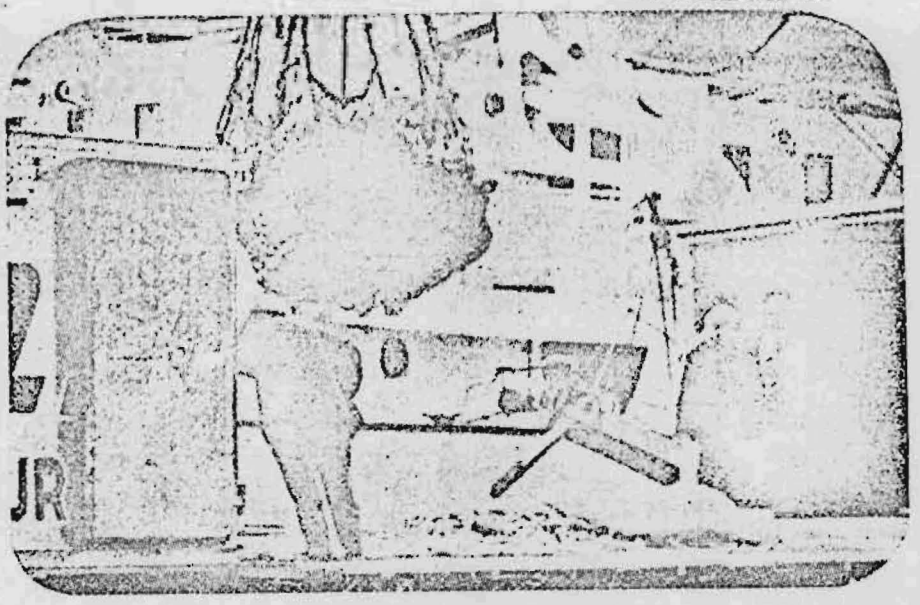
The Palmar Dam Project which is impelled with enormous vigor by the PMC will cost around 406 million dollars of which 192 million will be in foreign currency and 224 million in national currency. The corresponding investments are financed by loans of 10, 15 and 20 years payable as of 1981.

SAVINGS IN FUEL

The savings to be realized by the replacement of the termoelectric generators by the hydroelectric dams of Palmar and Salto Grande are amply shown by the followin figures:

Year	thermal generation	hydro generation		Savings Accumulated in US$
1978	470	217	(Palmar only)	12 240 000
1979	510	300	(Palmar-Salto Grande)	49 [illegible] 000
1980	605	290	" " "	207 440 000
1990	1.150	578	" " "	487 [illegible] 000
1995	1 610	752	" " "	774 720 000
2000	2.240	1 092	" " "	1.213 [illegible] 000

The completion of these two projects will permit Uruguay to dispose of all the needed energy to back the most ambitious development plans. The savings obtained will allow not only the amortization of the hydroelectric plants but will also have a favorable effect on the National Budget.



THE NEW MONTEVIDEO PORT

Not too long (1973), Montevideo's Port was in a sad state of affairs, yet, today that image has received a full revamping. Where in the past most vessels preferred to avoid the Montevideo stop if possible it has now become common for ships to come into port to unload their cargoes bound for other countries.

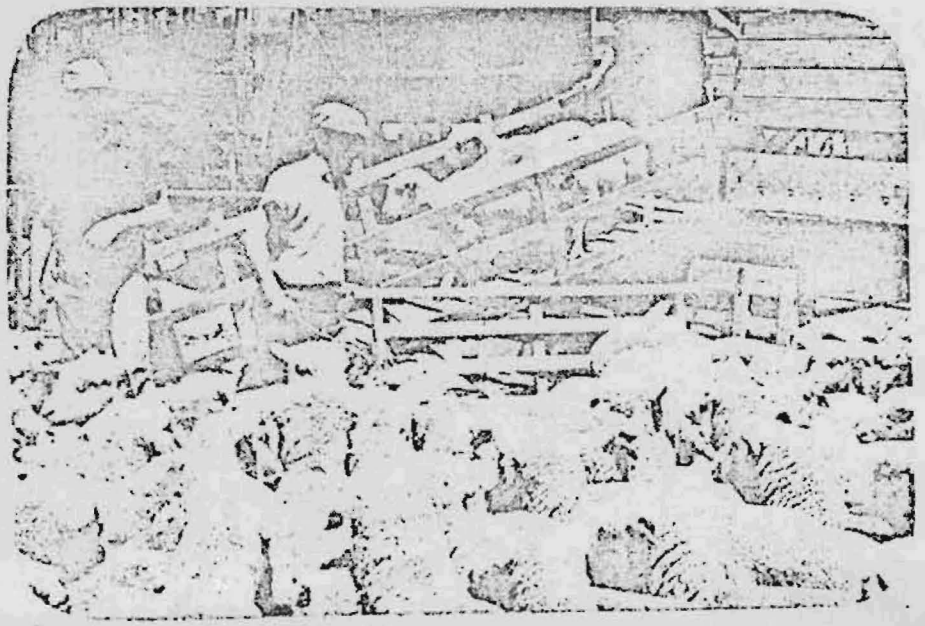
In previous issues we have written about many instances of dock improvements at both the physical and human levels. The Chairman of the National Port Management, Colonel Roberto Ramirez, has worked hard to promote the coming into being of the present efficient port. The value of the progress gained through the hard nosed effort of all those working at the docks is amply demonstrated by the steady rise of port activity while the world is suffering the effects of a deep recession of the major markets.

As mentioned previously, the Montevideo Port is the ideal connecting point between the world and 140 million South American inhabitants (from Uruguay, the Argentinian interior, Bolivia, Paraguay and Southern Brasil. The modern idea of "continental areas" has placed Montevideo's beautiful and functional bay into a top priority zone for the Southern Cone.

The succesive reorganization measures have banished the "Dirty Port" label which had been deeply rooted in the high costs caused by the slow and innefficient dock services. The vast rebuilding process has centered on such vital points as; dock infrastructure; personnel plannification; repairing dredges, cranes, shipyards, machines, deposits and floating dikes. The opening of dirty free storage deposits and freezing chambers for cargo in transit has become a favourite dock service for todays modern on the go freight ships. The establishment of wide range social benefits for the dock workers has not only raised their morale but also their overall output to new highs. With the dredges doing their share the depth of the bay has been maintained to the desired level and reaches more than ten meters in many parts.

The port has thus progressed from a highly deteriorated state to an exporter of port services.

The ships of the world now look towards a Montevideo stop with renewed confidence of a good stay. The regional integration covenants have helped to make this natural bay and excellent port the true solution to the Southern Cone's import-export needs.



TRATADO DEL RIO DE LA PLATA

APERTURA DE INMENSAS PERPECTIVAS

El Dr. Julio César Lupinacci, Asesor Letrado del Ministerio de Relaciones Exteriores y uno de los negociadores uruguayos del Tratado del Río de la Plata y su Frente Marítimo, analiza a través del trabajo cuya publicación iniciamos en el presente número, algunos de los grandes beneficios que se derivan de dicho instrumento para Uruguay y Argentina.

EL TRATADO del Río de la Plata y su Frente Marítimo, al dar definitiva y justa solución a seculares problemas jurisdiccionales pendientes entre Uruguay y Argentina y establecer un verdadero Estatuto regulador del ejercicio de los iguales derechos de los dos ribereños en esas áreas fluviales y marítimas, crea las condiciones adecuadas para una explotación racional e integral de los ingentes recursos de la zona por parte de cada Estado y abre inmensas perspectivas de cooperación entre ambos en los planos económico, científico, técnico y jurídico.

A) El primer beneficio mutuo que deriva de tan trascendental instrumento, es el marco de seguridad jurídica que brinda a las partes para el pleno desarrollo de sus posibilidades de aprovechamiento de todos los recursos vivos y no vivos de las áreas bajo sus respectivas jurisdicciones, ahora totalmente definidas.

En efecto, ninguna empresa nacional o extranjera, privada o estatal, podría encarar la explotación de recursos —sea un yacimiento mineral o un depósito de hidrocarburos o la pesca, por poner ejemplos —en una zona litigiosa, es decir una zona disputada entre dos Estados, ya que cada uno de ellos reivindicaría para sí el derecho a realizar o autorizar la explotación con exclusión del otro.

Al definirse las jurisdicciones, ese problema desaparece en virtud de que las áreas de explotación quedan perfectamente delimitadas, tal como lo establece el Tratado, y cada Parte puede, entonces, explotar íntegralmente, sin riesgos, las riquezas que tenga en su respectivo territorio marítimo y fluvial.

B) Otro aspecto importante es el relativo a la conservación y protección de los recursos.

El Tratado contiene una serie de normas relativas a la preservación de los recursos vivos tanto en el Río de la Plata como en su Frente Marítimo.

Respecto del primero, las Partes acordarán las normas reguladoras de las actividades de pesca en relación con la conservación y preservación de esos recursos, lo que se realizará a través de la Comisión Administradora.

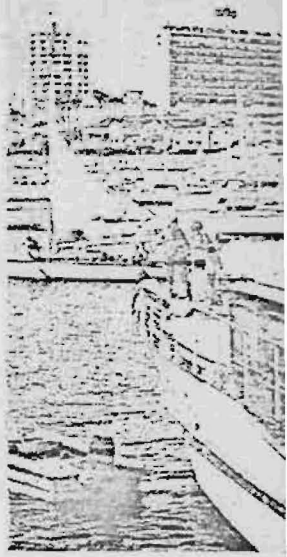
Con referencia al Frente Marítimo, se crea la Comisión Técnica Mixta, uno de cuyos cometidos principales es el de adoptar y coordinar "planes y medidas relativos a la conservación, preservación y racional explotación de los recursos vivos".

Para evitar la depredación de las especies se prevé, asimismo, la fijación de volúmenes máximos de captura y su ajuste periódico, todo lo cual se hará sobre la base de estudios e investigaciones de carácter científico y se establecen, por otra parte, los controles adecuados en base al ejercicio de funciones de vigilancia y el intercambio regular de información, entre los dos países, sobre esfuerzo de pesca y captura por especie y sobre la nómina de los buques de las respectivas banderas que operen en las aguas de uso común en el Río y en la Zona común de pesca en el mar.

También se acuerdan severas normas relativas a la protección del medio acuático y, específicamente, para prevenir, combatir y eliminar la contaminación, que en los últimos años se ha constituido en un peligro creciente para la conservación y supervivencia de las especies marinas y fluviales, en particular, por el vertimiento de hidrocarburos provenientes del lavado de tanques, achique de sentinas y de lastre de los barcos, así como del vertimiento de otras materias nocivas sea desde buques o, particularmente en los ríos, desde la costa, en especial, desechos industriales.

(Continuará)

ENJOYING A URUGUAYAN SUMMER



URUGUAY'S golden shoreline is already shinning under the summer sun. The first wave of tourists, mainly from the Southern Cone neighbors, are enjoying the summer beach resorts and the traditional good hospitality and respect that the Uruguayans dispense in great measure to their yearly guests.

The Government has taken the necessary steps to assure the tourist of a rapid inmigration control and a carefree movement within the Republic.

A few days past, the Executive decreed the following:

Article 1. — The duties, migratory and security control of passangers and tourists who enter the country between the 1st. of December of 1974 and the 31st. of March of 1975 will be effectuated at the normal points of entrance and departure.

Article 2. — Once the inmigration control process has ben completed, the tourist will only be subject to controls due to reasons of national security and to be performed by the competent authorities within the national territory.

Article 3. — It will be the obligation of the duties officer to issue to the tourist at the point of entrance a pamphlet indicating the current customs regulations.

Article 4. — In the same way it will be obligatory with respect to the tourists vehicles, to locate in a visible place a stamp that certifies the inspection, the category of tourist, the registration, the date of entrance and the duration of the temporary admission.

During that period of temporary admission (6 months), the tourist will be able to enter and leave the national territory, until the original permit expires, always that the original documentation is kept and that the pertinent customs controls are effectuated.

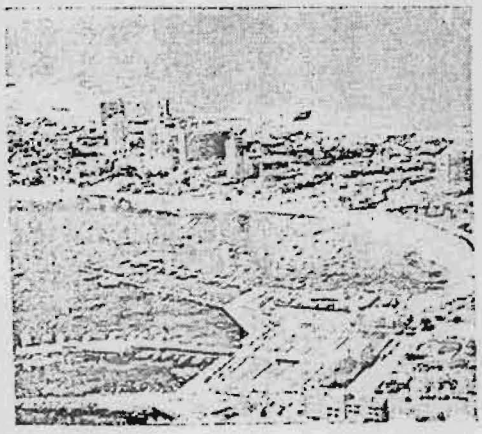
Article 5. — The National Customs Office will determine the norms that the tourists must observe with respect to the introduction of foods and beverages during the period indicated in Article 1. All other controls to be effectuated by the intervening authorities on vehicles, persons and other goods will conform to the existing regulations.

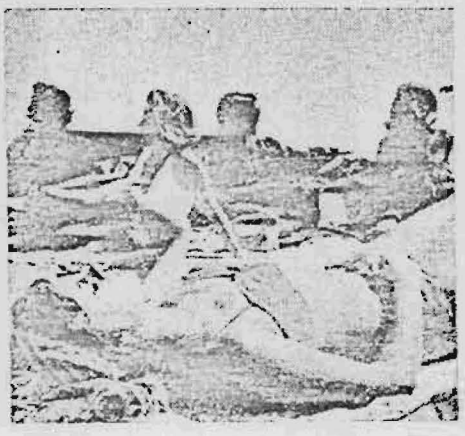
Article 6. — The tourists that enter during the period indicated in Article 1, may conduct their vehicle within the national territory with the driver's license issued by their country of origin or the international driver's license that may be possessed.

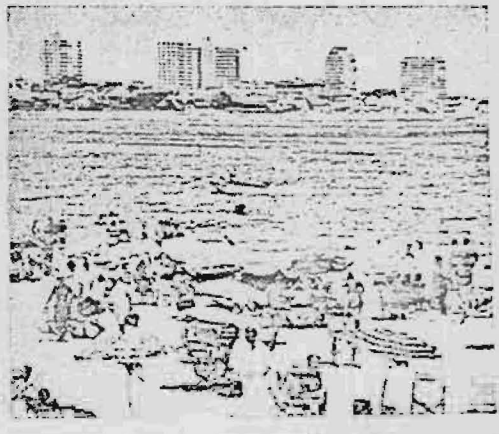
Article 7. — Once the inspection referred to in Article 1 has been carried out, no customs accusation with respect to the vehicle and other goods of the tourists will be applicable without the previous assentment of the highest ranking official of the Departamental Service, National or Municipal authority to which the accusing officer belongs. The preventive apprehension or appropriation may only proceed with the order of the competent superior authority.

Article 8. — The Customs, Military, and Departamental and Municipal Police authorities will enforce the preceeding articles in a coordinated manner so as to insure a proper application of said regulations.

Article 9. — The preceeding regulations will be applied until the 31st. of March of 1975.







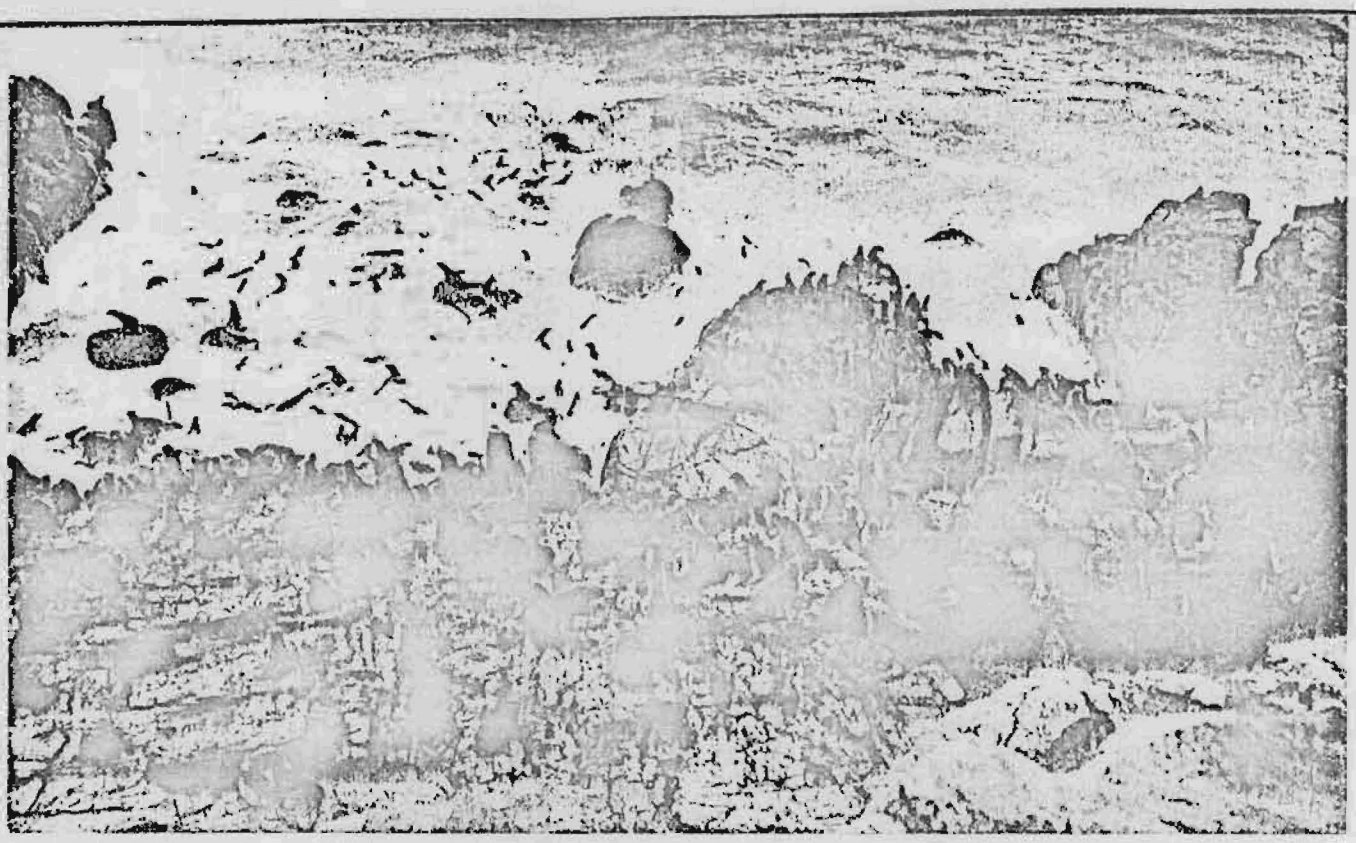
URUGUAY al mundo

EXHIBIT H

81

N° 1 MONTEVIDEO, ENERO DE 1978

VERANO URUGUAYO Vista panorámica de una playa urbana de Montevideo. Las arenas, recostadas a la gran ciudad, ya dan colorido solaz a millares de turistas que año a año buscan la plenitud de la costa uruguaya.



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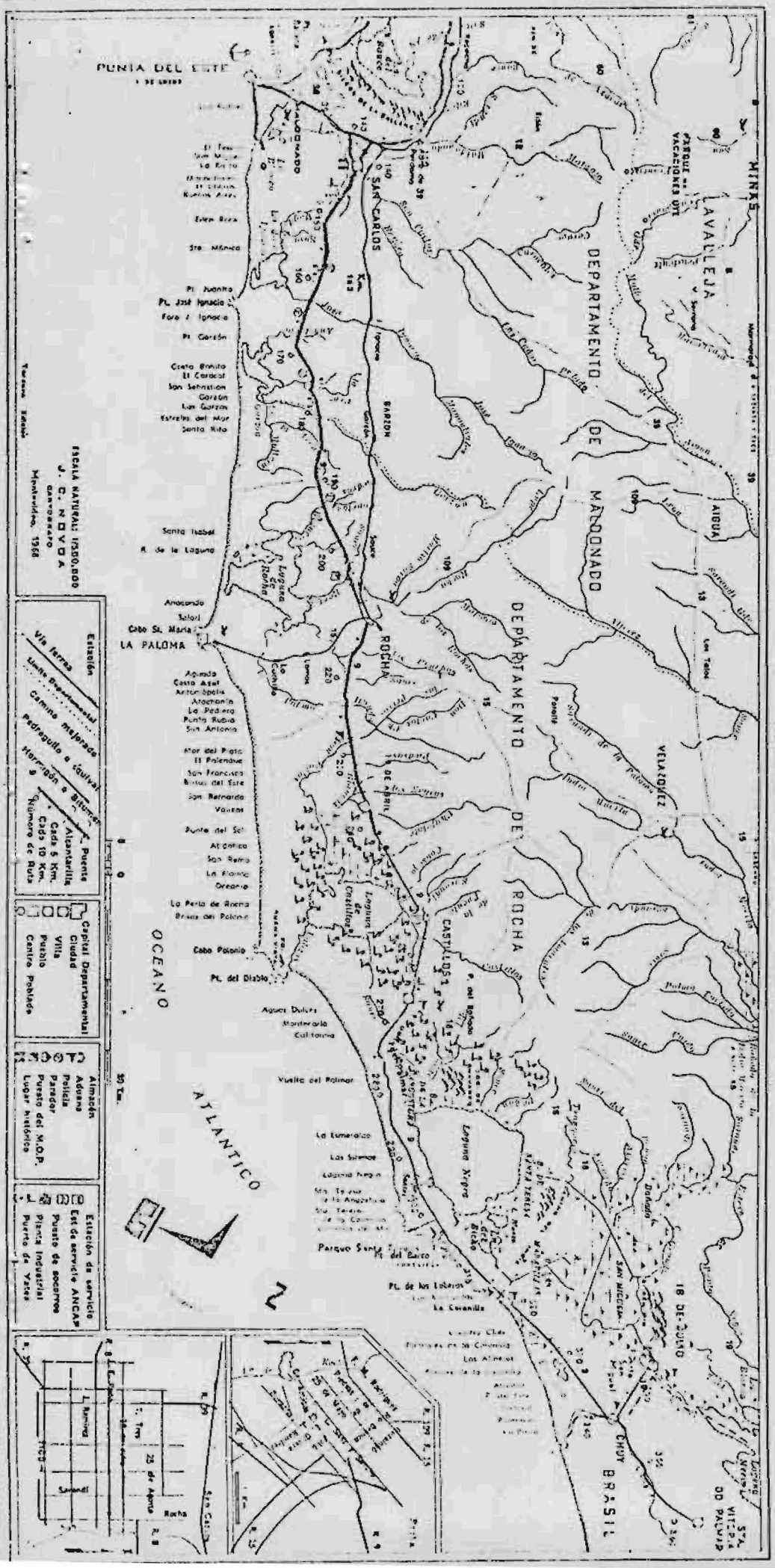
Sea lions are the chief attraction on Lobos Island

Punta del Este

One of the famous ocean resorts in the Western Hemisphere, Punta del Este is crowded with visitors from Argentina, Brazil, Uruguay, and elsewhere during the season. Located on a peninsula jutting far out into the Atlantic, this is the first in the chain of Uruguay's coast resorts facing the open sea. The peninsula is built up with summer homes, from palatial mansions to quaint chalets. Of the excellent beaches on either side of the peninsula, Playa Mansa (Mild Beach) on the Río de la Plata side is an excellent beach for children and non-swimmers; while Playa Brava (Rough Beach), facing the Atlantic Ocean, appeals to those who prefer the surf. Informality is the keynote of life at Punta del Este, even at the best hotels and clubs. In addition to surf bathing and swimming, there is sailing, fishing, hiking, cycling, horseback riding, golf, and tennis. Here were held two meetings of historic significance to the Inter-American System: the Special Meeting of the Inter-American Economic and Social Council of the OAS in August 1961, which established the Alliance for Progress; and the Meeting of American Chiefs of State in April 1967.

An interesting trip may be made by launch to Lobos Island from Punta del Este or Maldonado. The main attraction on this barren, rocky island is its large colony of sea lions; here also is the most powerful lighthouse on the Uruguayan coast. Punta del Este is about 100 miles from Montevideo and may be reached by highway, railway, or airplane. Cantegril, a suburb of Punta del Este, is well known as the scene of international film festivals, where movie stars from all over the world assemble. International championship golf and tennis matches are often played at the country club.


PUNTA DEL ESTE
SAN CARLOS
MINAS
LAVALLEJA
DEPARTAMENTO DE MALDONADO
DEPARTAMENTO DE ROCHA
ROCHA
LA PALOMA
Cabo St. María
Cabo Polonio
Pt. del Diablo
OCEANO ATLANTICO
Parque Santa Teresa
Pt. del Barco
Pt. de los Loberos
La Coronilla
CHUY
BRASIL
18 DE JULIO
VELAZQUEZ
ESCALA NATURAL: ISIDORO J. C. NOVOA
Montevideo, 1968
Estación
Vía férrea
Límite Departamental
Camino mejorado
Pedregullo o equival.
Terraplenado o Bituminoso
Alcantarilla
Puentes
Cada 5 Km.
Cada 10 Km.
Número de Ruta
Capital Departamental
Ciudad
Villa
Pueblo
Centro Poblado
Almacén
Aduana
Policía
Parador
Puesto del M.O.P.
Lugar histórico
Puesto de socorros
Pizzas industrial
Puerto de Yates
Estación de servicio ANCAP
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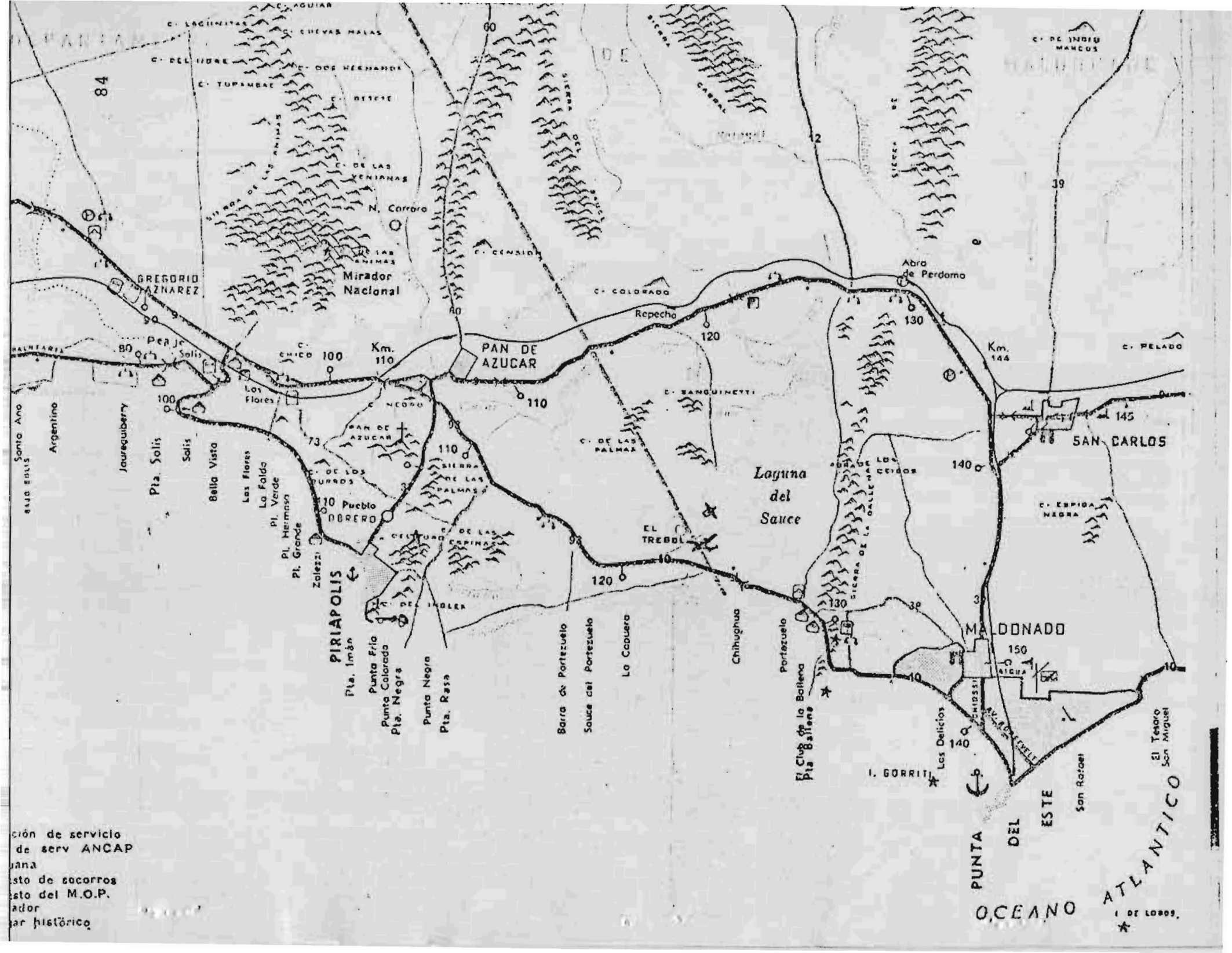

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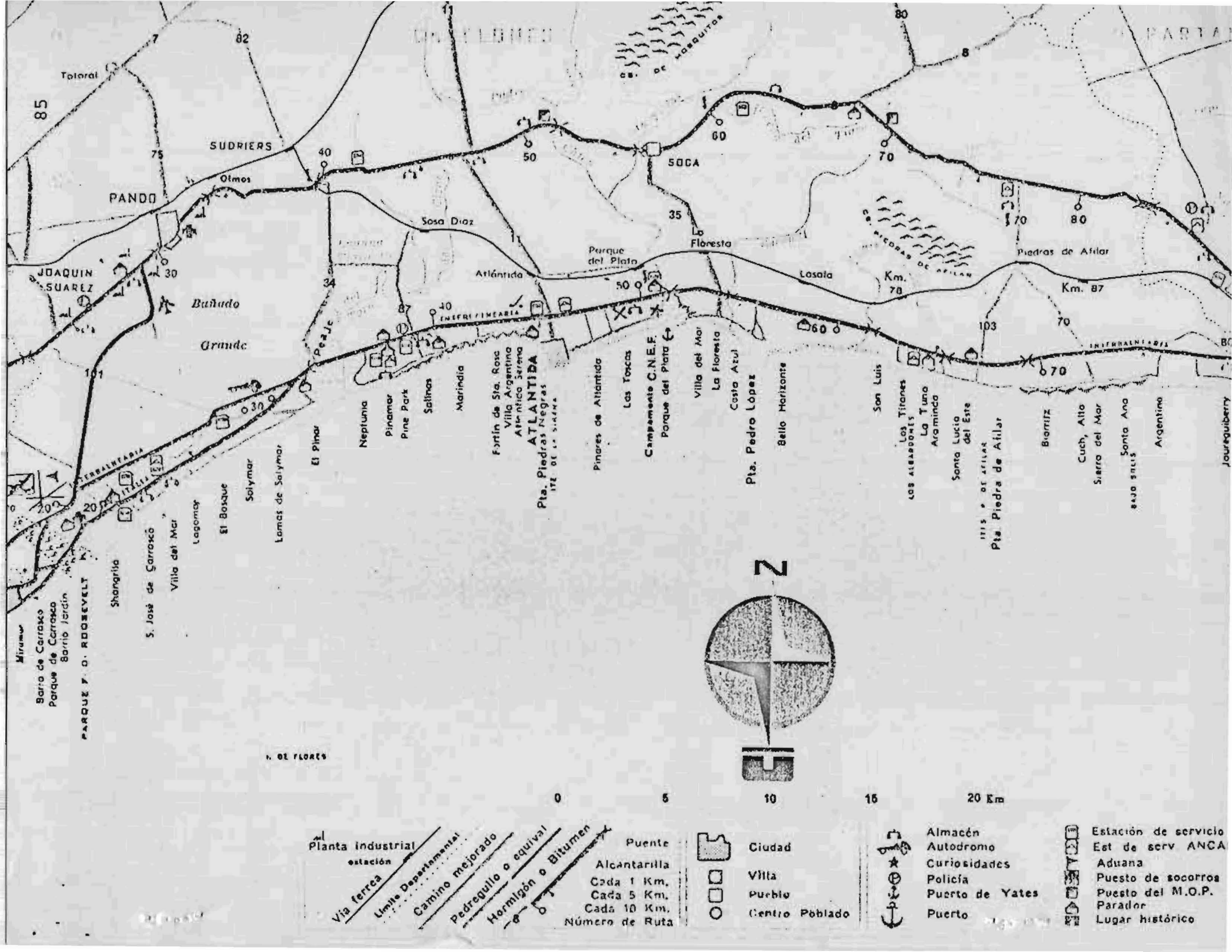
Totoral
SUDRIERS
Olmos
PANDO
JOAQUIN SUAREZ
Bañado Grande
Sosa Diaz
SOCA
Floresta
Parque del Plata
Atlántida
Peaje
Neptunia
Pinamar
Pine Park
Salinas
Marindia
Fortín de Sta. Rosa
Villa Argentina
Atlántico Serena
ATLANTIDA
Pta. Piedras Negras
Pinares de Atlantida
Las Toscas
Campamento C.N.E.F.
Parque del Plata
Villa del Mar
La Floresta
Costa Azul
Pta. Pedro López
Bello Horizonte
San Luis
Los Titanes
Los Alisadores
La Tuna
Aramindo
Santa Lucía del Este
Pta Piedra de Afilar
Piedras de Afilar
Km. 78
Km. 87
Losada
Biarritz
Cuch, Alto
Sierra del Mar
Santa Ana
Argentino
Joureguiberry
INTERBALNEARIA
El Pinar
El Bosque
Solymar
Lomas de Solymar
Villa del Mar
Lagomar
Shangrila
S. José de Carrasco
Barrio de Carrasco
Parque de Carrasco
Barrio Jardín
PARQUE F. D. ROOSEVELT
Miramar
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Planta industrial
estación
Vía férrea
Límite Departamental
Camino mejorado
Pedregullo o equival
Hormigón o Bitumen
Puente
Alcantarilla
Cada 1 Km.
Cada 5 Km.
Cada 10 Km.
Número de Ruta
Ciudad
Villa
Pueblo
Centro Poblado
Almacén
Autodromo
Curiosidades
Policía
Puerto de Yates
Puerto
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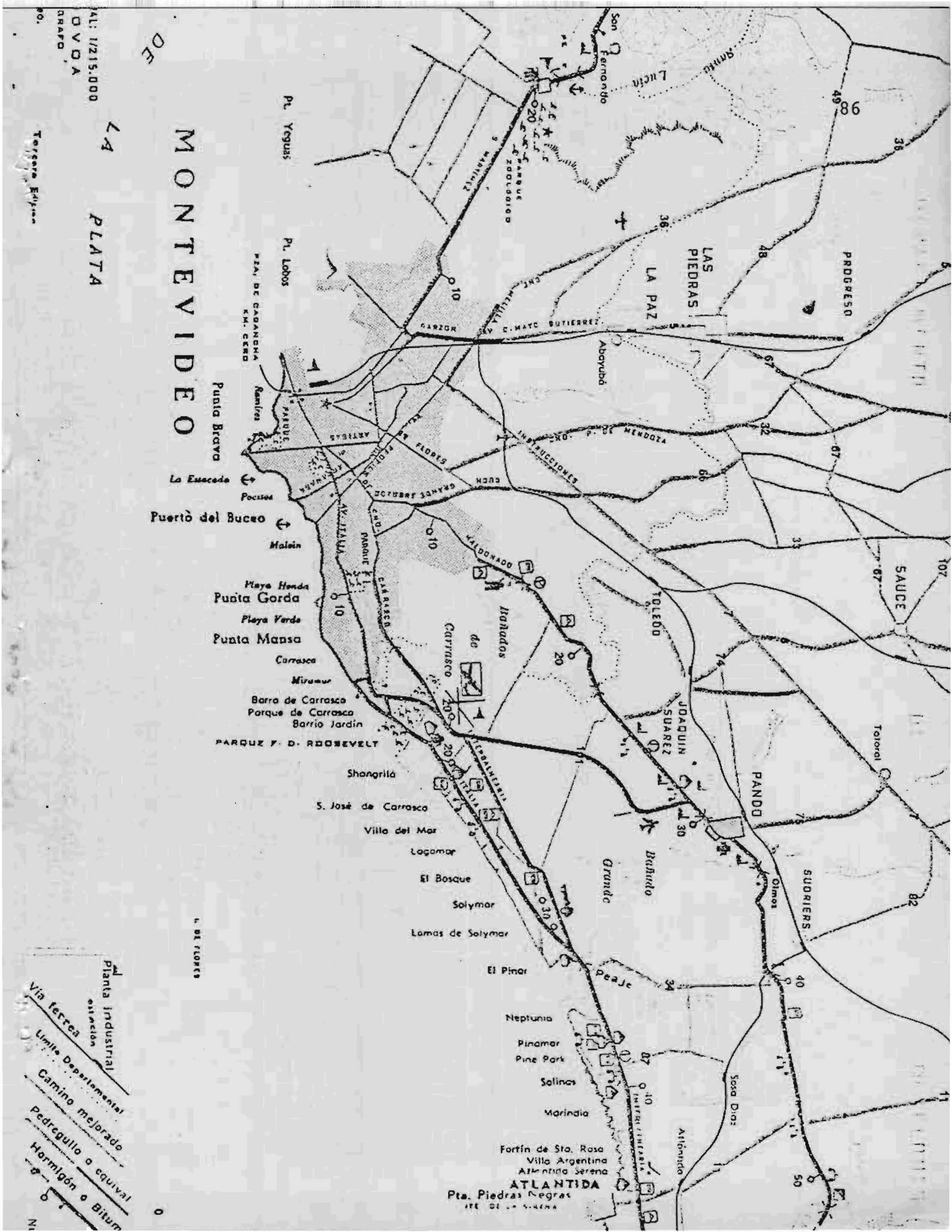
Aduana
Puesto de socorros
Puesto del M.O.P.
Parador
Lugar histórico



MONTEVIDEO
PLATA
Pt. Yeguas
Pt. Lobos
Punta Brava
La Ensenada
Pocitos
Puertò del Buceo
Malvín
Playa Honda
Punta Gorda
Playa Verde
Punta Mansa
Carrasco
Miramar
Barra de Carrasco
Parque de Carrasco
Barrio Jardín
PARQUE F. D. ROOSEVELT
Shangrilá
S. José de Carrasco
Villa del Mar
Lagomar
El Bosque
Solymar
Lomas de Solymar
El Pinar
Neptunia
Pinamar
Pine Park
Salinas
Marindia
Fortín de Sta. Rosa
Villa Argentina
ATLANTIDA
Pta. Piedras Negras
Bañados de Carrasco
Bañado Grande
Peaje
LAS PIEDRAS
LA PAZ
PROGRESO
SAUCE
TOLEDO
JOAQUIN SUAREZ
PANDO
SUDRIERS
Olmos
Totoral
Sosa Díaz
Abayubá
Planta industrial
Vía ferrea
Límite Departamental
Camino mejorado
Pedregullo o equival
Hormigón o Bitum