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MARCH 1991

Dept. of External Affairs
Min. des Affaires Étrangères

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MARCH 1991

History and Background Information

Until 1979 Bolivia was a net exporter of crude oil. After a quarter of a century, Bolivia is now scarcely producing enough INDEX its own consumption.

Proven oil reserves at the end of 1989 totalled 180 million barrels.

Crude oil and condensates are produced at a rate of 45,000 barrels per day, down from a peak of 45,000 bpd in 1975.

Most of the country's reserves are situated in the departments of Tarija and Santa Cruz. In the south, the natural gas field, Camiri, was discovered. The established fields are: Rio Grande, Montegordo, La Peña, Caranda, Colpa, Camiri, Palmar, Caigua, C. Naranjillo, Vuelta Grande, Tiza, El Porvenir, Madre de Dios, Cascabel, Humberto Suarez, Yapacani, Sirari, Vibora, Taiguati, Chorrillos and Los Suris.

Bolivia's installed refining capacity is 55,000 barrels/day, without any cracking capacity. The refineries are: Valle Hermoso-Cochabamba (37,000 Bls/d); Palmasola-Santa Cruz (3,000 Bls/d). All liquids produced (crude oil plus condensates) are fed to the refineries for internal consumption, leaving no excess for exports.

Due to this production, at the present consumption rate, is barely enough for 12 years. It is now governmental policy to increase oil reserves, to avoid the risk of being dependent on foreign sources.

In addition, the refineries, as possible, their refinery-derived liquids by L.P.G. (Liquid Petroleum Gas).

- **INFORMATION RELATIVE TO Y.P.F.B.**

The Natural Gas Market

Aside from the near-critical situation regarding liquid hydrocarbons, Bolivia is rich in natural gas, with probable reserves of 3 trillion cubic feet and production of 511.5 million cubic feet per day (MMCFD). The consumption of natural gas is only 30 MMCFD, there is an excess of 481.5 MMCFD plus.

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History and Background Information

Until 1979 Bolivia was a net exporter of crude oil. After a quarter of a century, Bolivia is now scarcely producing enough to meet its own consumption.

Proven oil reserves at the end of 1989 totalled 180 million barrels.

Crude oil and condensate production is running at some 25,000 barrels per day, down from a peak of 45,000 bpd in 1975.

Most of the country's reserves are situated in the departments of Tarija and Santa Cruz, in the southeast, where Bolivia's first oilfield, Camiri, was discovered. The established fields are: Rio Grande, Monteagudo, La Peña, Caranda, Colpa, Camiri, Palmar, Caigua, Cambetti, Tatarenda, Espino, Rio Seco, Naranjillo, Vuelta Grande, Tita, El Porvenir, Madre de Dios, Cascabel, Humberto Suarez, Yapacaní, Sirari, Víbora, Taiguati, Chorritos, Escondido and Los Suris.

Bolivia's installed refining capacity is currently 55,000 barrels/day, without any cracking capacity. The refineries are: Valle Hermoso-Cochabamba (37,000 Bls/d), Palmasola-Santa Cruz (15,000 Bls/d) and Sucre (3,000 Bls/d). All liquids produced (crude oil plus condensates) are fed to the refineries for internal consumption, leaving no excess for exports.

Due to this production of liquid hydrocarbons that, at the present consumption rate, is barely enough for 12 years, it is now governmental policy to increase oil reserves, to avoid the risk of being forced to import in the near future.

In addition, they are substituting, as much as possible, their refinery-derived liquids by L.P.G. (Liquid Petroleum Gas).

The Natural Gas Market

Aside from the near-critical situation regarding liquid hydrocarbons, Bolivia is rich in natural gas, with probable reserves of 5 trillion cubic feet and production of 511.5 million cubic feet per day (MMCFD). Since the domestic consumption of natural gas is only 30 MMCFD, there is an important exportable surplus.

Yacimientos Petrolíferos Fiscales Bolivianos (YPFB) -the state petroleum corporation- has a contract with Argentina to supply natural gas. The original contract was to expire in 1992 but was extended in late 1989 to run until year 2002.

While Argentina has considerable reserves, insufficient investment in production facilities means Argentina will, no doubt, need Bolivian gas for a long time.

A 526 Km., 24-inch pipeline from the Santa Cruz fields carries 215 MMCFD to Argentina via Yacuiba.

A contract signed in 1989 with Brazil for supply of electricity will represent an additional market for natural gas. More details in the project are provided later on this same report.

Y.P.F.B.

Yacimientos Petrolíferos Fiscales Bolivianos (YPFB), the state-owned oil company is by far the largest operator in Bolivia. This company was founded in 1936 and in 1989 accounted for 85% of the country's production of natural gas.

Additional information on this main potential customer for Canadian companies is provided in the pages attached.

Foreign Operators

Presently, there are two American contractors working in Bolivia: Occidental Boliviana and Tesoro Petroleum. They produce approximately 15% of the country's liquid hydrocarbons (all condensate) and more than 30% of the natural gas.

Occidental Boliviana Inc.

This company operates presently only at "El Porvenir" gas field, after having returned their "Tita" field to YPFB due to reduced production. Their present production is 110 MMFCD of natural gas and 5,100 Bls/day of light condensate. They sell 50 MMFCD and inject the balance of their production. Their plans for the near future are:

- 1) To drill a deep "wild cat" (4600 M) at "El Porvenir" by the second half of 1990 with an initial investment of US\$ 4,000,000 and a total overall cost of US\$ 15,000,000.

- 2) To develop the "Madre de Dios" area, north-west of Bolivia. Seismic interpretation is being completed, and they will soon start drilling 3 "wild cats". Total cost of this project is estimated at US\$ 240,000,000 with an initial disbursement of US\$ 9,000,000 to be completed in 1990, at a cost of US\$ 350,000/Km.
- 3) Oxy's third project, whose timing has not yet being defined, is the drilling of a "wild cat" at "Chorritos" field, south of Santa Cruz, and 500 Km. north of "El Porvenir" field.

Tesoro Petroleum Company

This company has concessions on blocks "Tarija" and "La Vertiente".

On the first block, the "Los Suris" field has not being developed yet, and is kept for future reserves.

On the "La Vertiente", Tesoro has one field not developed yet: "Escondido", and two producing fields: "La Vertiente" and "Taiguati". Total production in those two fields is 46 MMCFD of natural gas and 1,528 Bls/d of light condensate. Tesoro's whole production of gas is given to YPFB for exports.

Contracts for exploration have been signed recently by Maxus Petroleum Co., Sol Petrol (associated with Sceptre Resources Inc. from Calgary) Plus Petrol and Perez Compac, all from Argentina.

Regulatory Framework

In the past, the government's relationship with foreign oil companies has depended to a great extent on the political complexion of the government in office. Before 1973, the government of Bolivia offered concession agreements to foreign petroleum companies. Since then, the hydrocarbons law introduced by then President Hugo Banzer (1973-78), has encouraged foreign companies to explore on a production-sharing basis which exempted companies from any taxes, but specified that 50%-60% of any crude found was the property of YPFB and that the remaining share of oil production was to be sold to the state company at previously agreed prices.

Hydrocarbons Law

After considerable debate in Congress, a new Hydrocarbons Law Nr. 1194 (Ley de Hidrocarburos) was proclaimed on November 1, 1990 and is now in full effect. Its main provisions are:

- Oil and gas fields belong to the Bolivian State. No concession or agreement can grant or concede the ownership of the oil and gas fields.
- Yacimientos Petrolíferos Fiscales Bolivianos (YPFB) has the responsibility for exploration within all the Bolivian territory and for the exploitation of hydrocarbons. These two activities may be carried out by YPFB alone or associated in Operations Contracts with third parties or in Joint Ventures.
- The phases of Refining, Industrialization, Transportation and domestic Marketing may be carried out by YPFB and/or by private companies.
- The marketing abroad of liquid hydrocarbons is reserved for YPFB.
- The marketing abroad of natural gas will be made by YPFB alone or in association with Contractors of Operations or with Joint Ventures partners.
- Every juridical person signing a Contract of Operation or Joint Venture Agreement will be obliged to constitute a legal address in Bolivia and to nominate a legal representative. They are also to renounce any diplomatic claim. As well, they should submit and adopt all the necessary measures to avoid pollution of the natural environment and alteration of the ecological balance within the areas of the Contract.
- All companies signing contracts according to the present law will enjoy the guarantee of the Bolivian State to the free disposition of the currency resulting from their exports and the free convertibility of their income from sales to YPFB.

The Embassy in Lima has a complete copy of the Law and can provide copy to interested parties.

As part of a trio of measures to liberalize the economy and to promote investment both domestic and foreign, a new Investment Law "Ley de Inversiones" Nr. 1182 was proclaimed on September 17, 1990" (the third measure is a revised Mining Code which is still being considered by Congress). Its main provisions are:

- Foreign investors are recognized to have the same rights, obligations and guarantees as local investors.
- Private investment does not require either previous authorization or additional registry.

- The right of property is guaranteed, without any limitation for local and foreign investors alike.
- A regime of free currency exchange is guaranteed, without limitations for the inflow and outflow of capital, and remittance abroad of profits, interest and royalties.
- The freedom to import and export goods and services, excepting those deemed to affect public health and/or the state's security is guaranteed.
- Joint ventures among local and/or foreign companies are specifically recognized.
- Free currency convertibility is guaranteed.
- Freedom of production and marketing of goods and services as well as the free determination of prices, except those goods and services prohibited by law, is guaranteed.
- Investors may freely contract investment insurance inside the country or abroad. Foreign investment guarantees will be backed by bilateral or multilateral instruments that Bolivia has agreed or may agree with other nations or international organizations.
- The law provides for the creation of tax-free zones.
- The law supersedes any features that may be more restrictive in the Acuerdo de Cartagena.

Santa Cruz-Puerto Suarez Gas Pipeline Project

Bolivia and Brazil reached an agreement in 1989 for Bolivia to sell electrical energy to Brazil from a power plant to be built at the border town of Puerto Suarez. The contract requires Bolivia to have 450 MW available by December 1992. In the first year of operation, Bolivia must supply 1800 GWH (Gigawatt-hours) rising to 3000 GWH by the fourth year.

The production of the electrical energy to be supplied requires the provision of 150 MMCFD of natural gas. For that purpose, gasfields near Santa Cruz are to be developed and a pipeline 557 Km. long and 20" O.D, is to be built in Puerto Suarez. Nova Corporation of Alberta conducted the preliminary market study and pre-project report. Snam Progetti did the feasibility study and preliminary design in May 1989. The pipeline will require 2 metering stations, mainline valves, plus telemetering/telecommunications system.

Investments in the gas plant, pipeline and power station are estimated at US\$ 700 million. The pipeline was estimated to cost US\$ 250 million in 1989, and the power plant US\$ 200 million. For its part, Brazil must invest US\$ 100-120 million in power lines. Notional sources of funds are Bolivia/YPFB own resources \$100 million, World Bank \$150 million; Inter-American Development Bank (IDB) \$250 million; Japan Overseas Economic Cooperation Fund \$200 million in untied funds. In addition Japanese EXIMBANK is said to be willing to lend up to \$100 million to support Japanese exports. With the exception of Japanese OECFD funds, credits would be on commercial terms. Loan proposals are still being defined, including some mechanism to ensure timely payments to Bolivia for electricity exports.

Technical and economic factors argue for additional gas use, particularly the construction of an urea fertilizer plant, circa 1994, and a polyethylene plant, whose locations will depend on future markets. It is proposed that these two projects be privately owned and financed, with the possibility of some investment by International Finance Corporation (IFC). A Brazilian/Bolivian group is said to be developing a proposal in this sense.

International Public Tenders were launched late 1990 for the different components of both the Power Plant and the Gas Pipeline but everything has been frozen for the time being due to Japan's EXIMBANK decision to delay their participation while solutions to aspects of Third World debt problems related to Trinidad Terms are being worked out.

Other Projects

YPFB has a program of drilling 29 wells to be completed by April 1992, to explore for the first time stratigraphic traps on the north east of Santa Cruz supported by IADB funding, while Occidental Petroleum plans to drill 5 wells in the next 2 years.

YPFB require various technical services also being financed by IADB and World Bank, including the following:

- Seismic data and stratigraphic interpretation.
- Well simulation for primary recovery.
- Software for optimization of production, especially gas.
- Gas well completion technology.
- Technical assistance re "heavy" oils (API 30), its transport and optimization of recovery; and viscosity breaking.
- Sand and water control and treatment.
- Bottom hole pressure gauges for gas wells and interpretation.

Marketing Information

The main suppliers of equipment for the oil industry in Bolivia are:

1. The United States, with a share of approximately 55% of the market, mainly drilling rigs, mud pumps, drilling tools, gas compressors, electrical gear, controls, high-tech products and services, including equipment and technology for exploration.
2. Brazil, Mexico and Argentina, with a combined share of approximately 30% of the market for supplies of gas and oil pipeline, tubing, christmas trees, drilling rigs, and drilling tools. Some of the suppliers in this group are subsidiaries of American companies, meaning that the USA have in fact a market share larger than the 55% pointed-out before.
3. The remaining 15% is provided by European, Japanese and a few other international suppliers. In this group is Canada with a very small share, constituted mainly by technical studies and services for the exploration field.

Since Canadian products have, in general, the same standards of quality than USA made products, our potential for attaining a higher share of this market is very good, although the price and higher cost of freight might pose some difficulties in the case of equipment. A very promising sector though is that of consulting services and high-tech products.

Marketing Strategy

To participate in public tenders in Bolivia it is a legal requirement for any foreign company to have a local agent or representative.

Since personal contacts play a very important role when trying to do business in Bolivia, we strongly recommend to engage the services of a reputed and well connected agent as the best possible way to start selling to YPFB.

The embassy in Lima can provide suggestions in that regard.

PURCHASING PROCEDURES FOR PUBLIC ENTITIES IN BOLIVIA

Policy regarding imports

Since there is no local manufacturing or even assembly of equipment for the oil industry, there is an open market for all kinds of imports, with a common customs tariff of 15% ad-valorem on CIF prices.

Canadian Participation

PCIAC signed in 1989 a \$3.5 million technical cooperation agreement with YPF, that was extended in February 1991 for two more years (1993) and \$6.0 million. The cooperation is in the areas of exploration, drilling and production.

In November 1989 and February 1990, more than 10 Canadian companies from Alberta visited Bolivia on missions organized by the Department of Economic Development and Trade of the province.

In October 1990, two Canadian companies presented papers at the Seventh Latin American Drilling Congress (COLAPER) in Santa Cruz.

A senior representative of YPF attended the National Petroleum show in Calgary/June 1990.

All these activities have created a favourable climate for the Canadian industry that should pay good results in the near future.

- a) Publication of the Call for Tender in all major newspapers in Bolivia. In the case of large international tenders the publication is made also in major newspapers in New York and Washington. (Direct invitations are sent to some foreign Embassies in some cases).
- b) Reception and evaluation of proposals.
- c) Final report to the end user with the agency's recommendations. (Normally the end user follows that recommendation).

To prequalify for certain tenders, a public invitation is made previously, following steps a and b. The interested companies send only their background information (credentials) and are not required to have a local counterpart or agent at that stage. Those companies that are prequalified are then invited to submit their proposals for the final tender.

In order to submit their tender, it is a legal requirement that the company have either a local office or a local agent, otherwise their bid cannot be accepted.

PURCHASING PROCEDURES FOR PUBLIC ENTITIES IN BOLIVIA

Under Bolivian legislation, all acquisitions exceeding the sum of B/. 100,000 (about US\$ 34,000) by state-owned companies and government bodies must be made through one of the three independent procurement agencies officially appointed by the Bolivian government for that specific purpose. The agencies are:

1. **U.N.D.P./O.S.P.(Office of Services For Projects-United Nations Development Program)**

Av. Arce # 2579 - Bloque C

2o. Mezanine

La Paz, Bolivia

Phone: (591-2) 362174, Fax: (591-2) 357447

2. **CROWN AGENTS**

Av. 6 de agosto # 2508, Esq. Pedro Salazar

Casilla # 11393

La Paz, Bolivia

Phone: (591-2) 373425, Fax: (591-2) 372765

3. **C3D (CAISSE DES DEPOTS DEVELOPPEMENT)**

Calle Pinilla # 262

La Paz, Bolivia

Phone: (591-2) 379452, Fax: (591-2) 391614

Once a specific agency is appointed by the Bolivian state organization to purchase on their behalf, the agency carries out all the procedures of a public tender, including:

- a) Publication of the Call for Tender in all major newspapers in Bolivia. In the case of large international tenders the publication is made also in major newspapers in New York and Washington. (Direct invitations are sent to some foreign Embassies in some cases).
- b) Reception and evaluation of proposals.
- c) Final report to the end user with the agency's recommendations. (Normally the end user follows that recommendation).

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In order to submit their tender, it is a legal requirement that the company have either a local office or a local agent, otherwise their bid cannot be accepted.

USEFUL ADDRESSES**Yacimientos Petrolíferos Fiscales Bolivianos (YPFB)**

Head Office: (Administration)	Edificio YPFB Calle Bueno 185 La Paz	Phone: (591-2) 356541 Fax: (591-2) 365300
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Santa Cruz Office (Exploration and Exploitation Depts.)	Santa Cruz Km.2 Carretera a Cochabamba	Phone: (591-3) 347336 Fax: (591-3) 337147
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Cochabamba Office (Industrial Production Department)	Av. Salamanca #0722 Cochabamba	Phone: (591-4) 248701 Fax: (591-4) 248289
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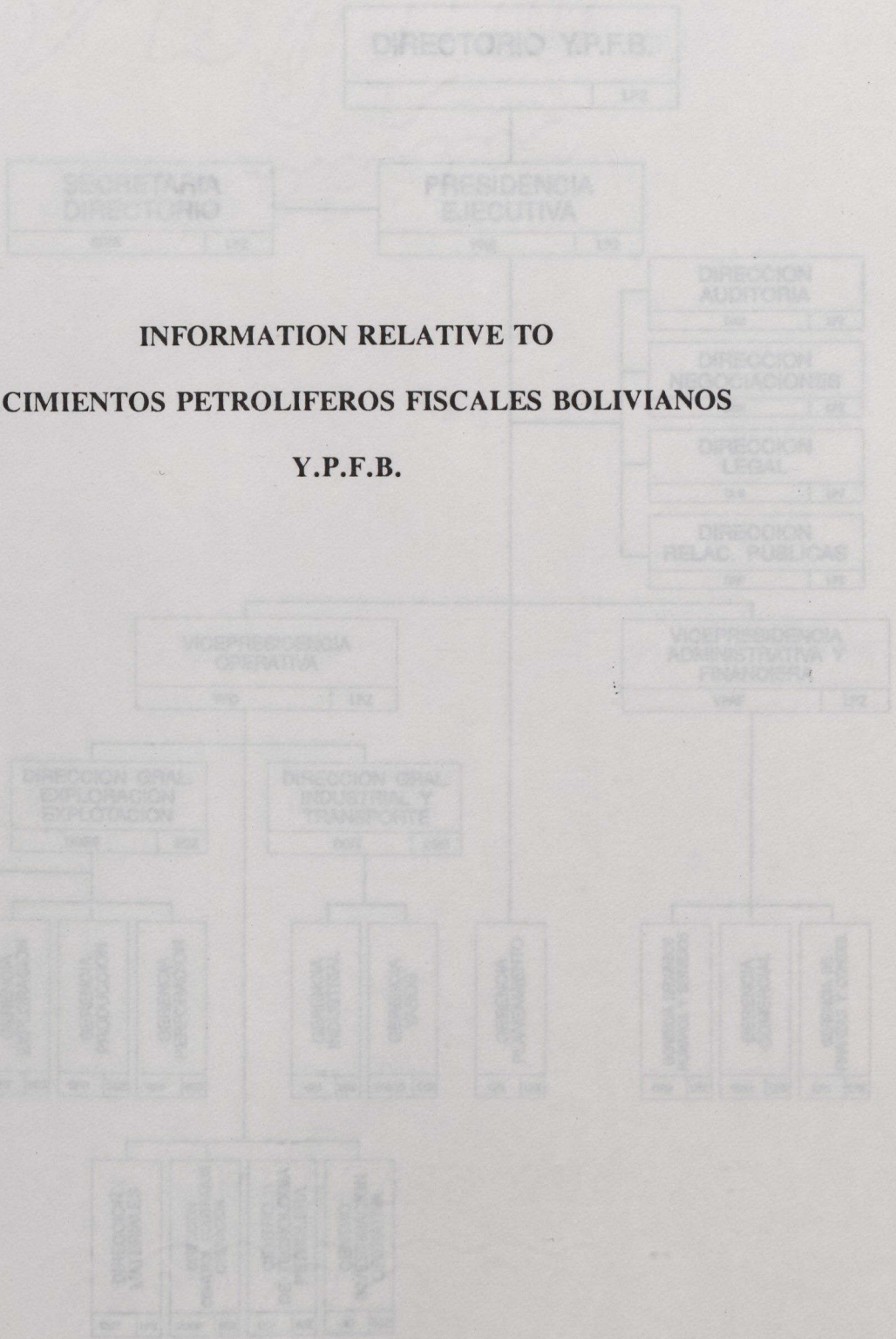
Canadian Honorary Consulate in Bolivia

20 de Octubre #2475 Plaza Avaroa - Sopocachi La Paz	Phone: (591-2) 375224 Fax: (591-2) 329435
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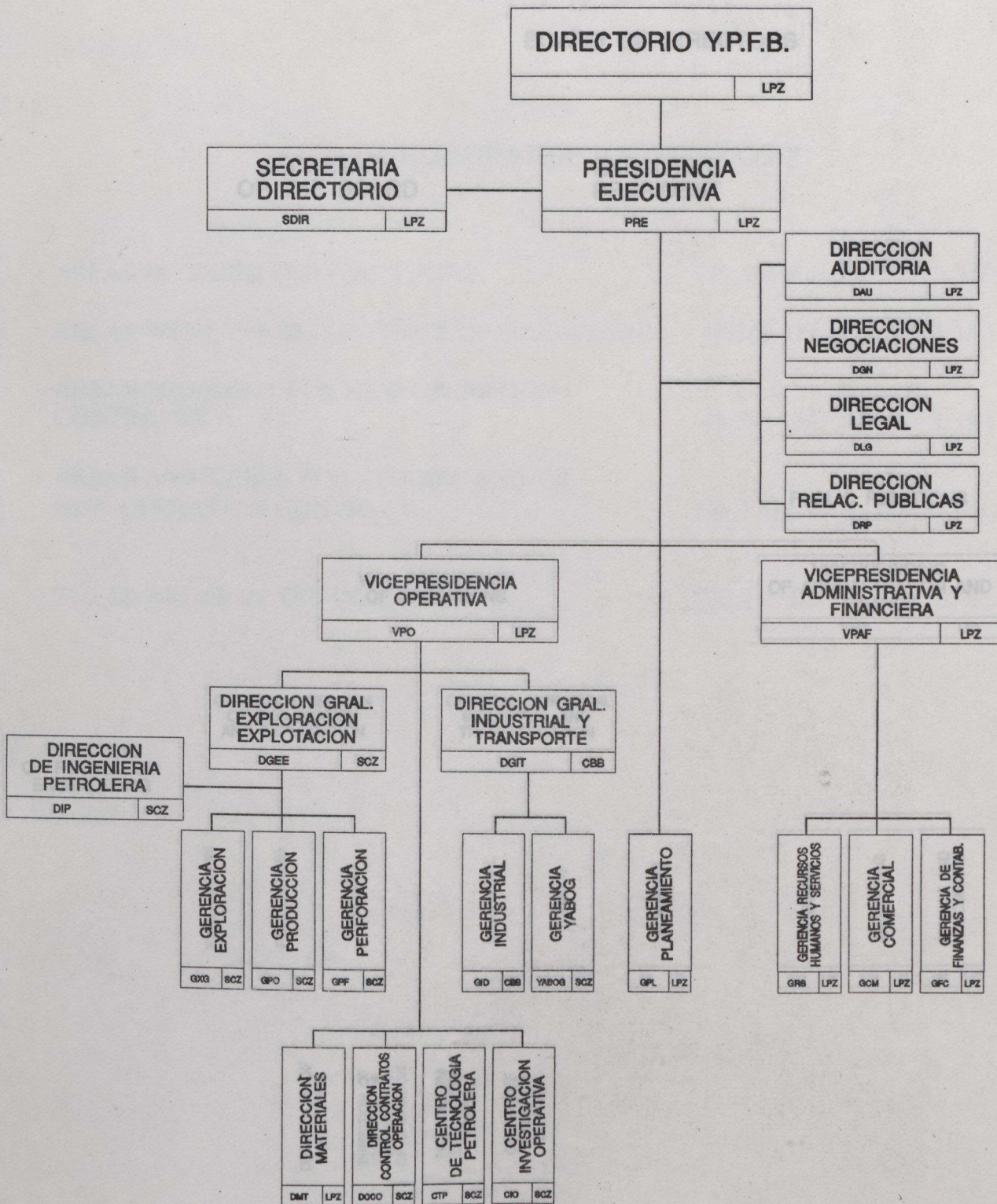
Commercial Counsellor: Wayne McKenzie
Commercial Officer: Oscar Vásquez

ORGANIGRAMA DE YPFB

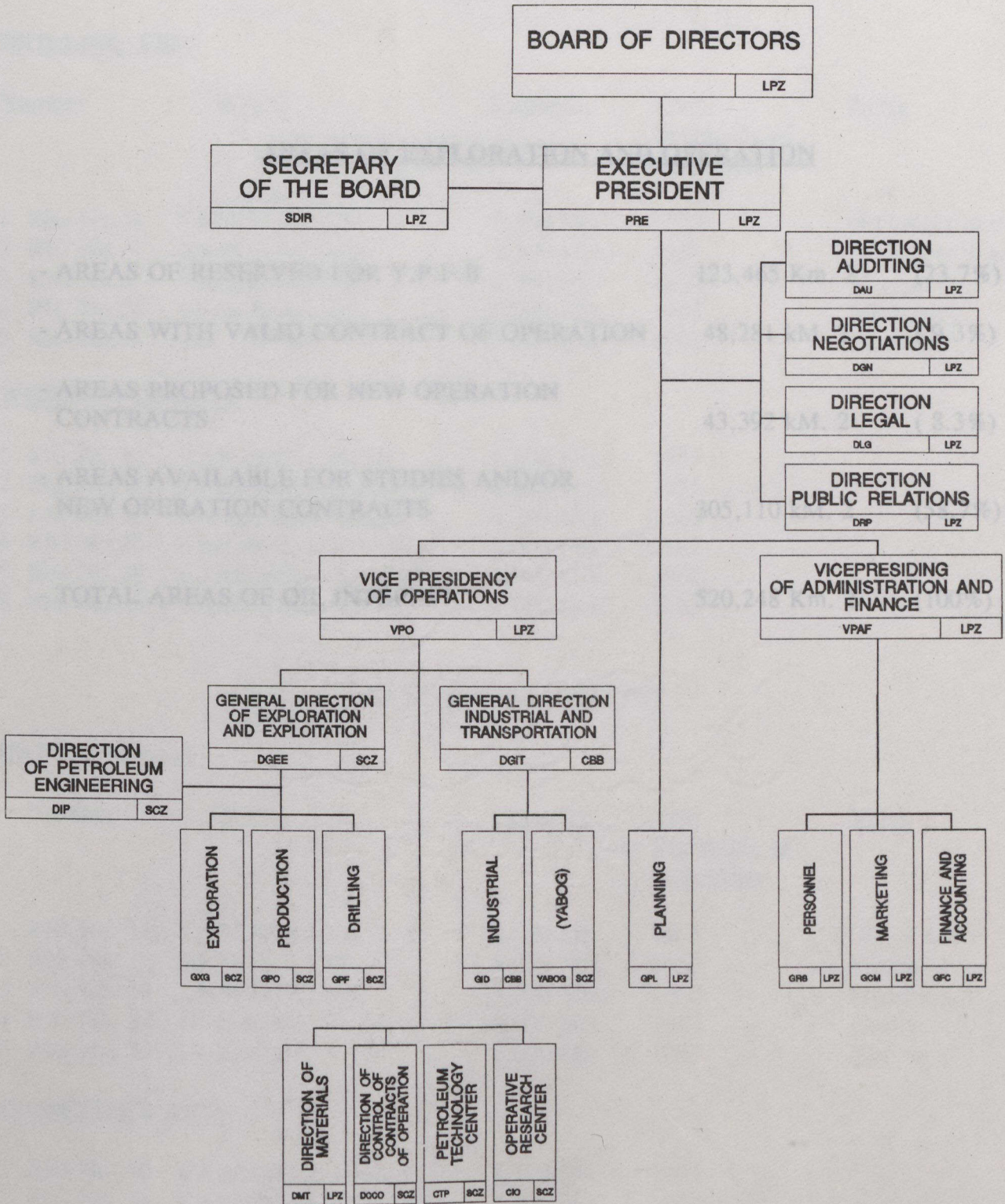
INFORMATION RELATIVE TO YACIMIENTOS PETROLIFEROS FISCALES BOLIVIANOS Y.P.F.B.



ORGANIGRAMA DE YPFB



ORGANIZATION CHART YPFB



Y.P.F.B.
MANAGEMENT OF DRILLINGS DETAIL OF WORKING DRILLING RIGS
CAMIRI DISTRICT

DRILLING RIGS

Number	Brand	Capacity	Year Beginning of Operation	Notes	
<u>AREAS OF EXPLORATION AND OPERATION</u>					
1	RIG No. 8	EMSCO GC-500	2,500 Mts.	1955	No longer in use
2	RIG No. 9	EMSCO GC-500	2,500 Mts.	1955	No longer in use
3	- AREAS OF RESERVED FOR Y.P.F.B.		3,000 Mts.	1960	123,465 Km. 2 (23.7%)
4	RIG No. 24	EMSCO A-1100	5,000 Mts.	1963	Mechanic
5	- AREAS WITH VALID CONTRACT OF OPERATION		1,000 Mts.	1983	48,281 km. 2 (9.3%)
6	- AREAS PROPOSED FOR NEW OPERATION CONTRACTS				43,392 km. 2 (8.3%)
1	RIG No. 13	CARDWELL K-201	1,800 Mts.	1955	
2	RIG No. 14	CARDWELL KB-200A	3,000 Mts.	1955	
3	- AREAS AVAILABLE FOR STUDIES AND/OR NEW OPERATION CONTRACTS		1,200 Mts.	1960	305,110 km. 2 (58.7%)
4	RIG No. 25	CARDWELL KB-200A	3,000 Mts.	1962	
5	RIG No. 28	CARDWELL HS-1007	1,000 Mts.	1962	
6	- TOTAL AREAS OF OIL INTEREST		1,000 Mts.	1965	520,248 Km. 2 (100%)

SANTA CRUZ DISTRICT

DRILLING RIGS

Number	Brand	Capacity	Year Beginning of Operation	Notes	
1	RIG No. 11	CARDWELL OA-116	2,000 Mts.	1955	Out of order
2	RIG No. 12	EMSCO A-1100	5,000 Mts.	1959	Mechanic
3	RIG No. 19	EMSCO GC-500	3,000 Mts.	1960	Mechanic
4	RIG No. 32	IH-E-6000	6,000 Mts.	1983	Electric
5	RIG No. 33	IH-E-6000	6,000 Mts.	1983	Electric

WORKOVER RIGS

1	RIG No. 10	CARDWELL I-450	2,500 Mts.	1955
2	RIG No. 31	CARDWELL LTO-750	2,500 Mts.	1982

Y.P.F.B.
MANAGEMENT OF DRILLINGS DETAIL OF WORKING DRILLING RIGS
CAMIRI DISTRICT

DRILLING RIGS

<u>Number</u>	<u>Brand</u>	<u>Capacity</u>	<u>Year</u> <u>Beginning of</u> <u>Operation</u>	<u>Notes</u>
1 RIG No. 8	EMSCO GC-500	2,500 Mts.	1955	No longer in use
2 RIG No. 9	EMSCO GC-500	2,500 Mts.	1955	No longer in use
3 RIG No.17	EMSCO-GC500	3,000 Mts.	1960	Mechanic
4 RIG No.24	EMSCO A-1100	5,000 Mts.	1963	Mechanic
5 RIG No.34	GD-1100 M	5,000 Mts.	1983	Mechanic

WORK-OVER RIGS

1 RIG No.13	CARDWELL K-201	1,800 Mts.	1955	
2 RIG No.14	CARDWELL K-201	1,800 Mts.	1955	
3 RIG No.21	CARDWELL K-200	1,200 Mts.	1960	
4 RIG No.25	CARDWELL KB-200A	2,000 Mts.	1962	
5 RIG No.28	CARDWELL HS-1007	1,000 Mts.	1962	
6 RIG No.35	CARDWELL KS-63	1,000 Mts.	1963	

SANTA CRUZ DISTRICT

DRILLING RIGS

<u>Number</u>	<u>Brand</u>	<u>Capacity</u>	<u>Year</u> <u>Beginning of</u> <u>Operation</u>	<u>Notes</u>
1 RIG No. 11	CARDWELL OA-116	2,000 Mts.	1955	Out of order
2 RIG No. 12	EMSCO A-1100	5,000 Mts.	1959	Mechanic
3 RIG No. 19	EMSCO GC-500	3,000 Mts.	1960	Mechanic
4 RIG No. 32	IH-E-6000	6,000 Mts.	1983	Electric
5 RIG No. 33	IH-E-6000	6,000 Mts.	1983	Electric

WORKOVER RIGS

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2 RIG No. 31	CARDWELL LTO-750	2,500 Mts.	1982	

Y.P.F.B.

PIPELINES-REFINERIES AND GAS PLANTS

PROJECT	PROGRAMMED ACTIVITY	POSSIBLE RESERVES TO DISCOVER	NETAL INVESTMENT AND FINANCING	EXISTING STATUS	CLAREN. : CONCLUSION : AVERAGE OF PROJECT
Exploration of Stratigraphic traps	1st Phase -Seismic registry 4,500 No.	98.9 Mm BPD TALE 80% YPER 20%	98.9 Mm BPD TALE 80% YPER 20%	9 oil pipelines 4 to 12" (Capacity 5,000 to 30,000 BPD)	June 1992
Location of Santa Cruz	-Geochemistry 1,500 No. (3,500) samples	*****	*****	4 multiproduct pipelines (Capacity 1,500 to 12,000 BPD)	
Central Plains Plateau area	Exploratory Drilling 22 wells (65,700 m)	*****	*****	9 gas pipelines (Capacity 4 to 250 MMPCD)	
Exploration of The Plateau (PBM)	1st Phase -Geology 2,000 No.	*****	*****	Refineries 3,000 to 37,000 BPD (Installed Capacity 55,000 BPD)	April 1993
Location of La Paz, Ocuca and Potost	-Geochemical Study 1,400 No. (2,500 samples) -Acromegastrometry 30,000 No. -Seismic registry 1,500 No.	*****	*****	Gas plants 6 to 160 MMPCD (Installed capacity: 640 MMPCD)	
Exploration of 100,000 No. 2	Exploratory drilling 2 wells (8,500 m)	*****	*****	3 complexes 11 plants	
		*****	*****	11 plants	

MANAGEMENT OF EXPLORATIONMANAGEMENT OF PROJECTS OF EXPLORATION

PROJECT	PROGRAMMED ACTIVITY	POSSIBLE RESERVES TO DISCOVER	TOTAL INVESTMENT AND FINANCING	PRESENT STATUS	GLOBAL ADVANCE	CONCLUSION OF PROJECT
<p>Exploration of Stratigraphic Traps</p> <p><u>Location</u> -Department of Santa Cruz -Central Plains Plateau area Brazilian shield</p> <p><u>Extension</u> 25,000 Km.2</p>	<p><u>1st Phase</u> -Seismic registry 4,660 Km.</p> <p>-Geochemistry 1,500 Km. (3,800) samples -Exploratory drilling 22 wells (65.700 m)</p>	<p>-Liquid hydrocarbons 36 MM Bol -Gaseous hydrocarbons 1.009.4 MMCF</p>	<p>98.9 MM \$US IADB 80% YPFB 20%</p>	In Execution	61%	Late 1992
<p>Exploration of The Plateau (PEAL)</p> <p><u>Location</u> -Departments of La Paz, Oruro and Potosi</p> <p><u>Extension</u> 100,000 Km. 2</p>	<p><u>1st Phase</u> -Geology 2,000 Km.</p> <p>-Geochemical Study 1,400 Km. (2,500 samples) -Aeromagnetometry 30,000 Km. -Seismic registry 1,800 Km.</p> <p>-Exploratory drilling 2 wells (8,500 m)</p>	<p>-Liquid hydrocarbons 12.5 MM BBL -Gaseous hydrocarbons 25.0 MMCF</p>	<p>29.6 MM \$US</p>	In Execution	27%	April 1993

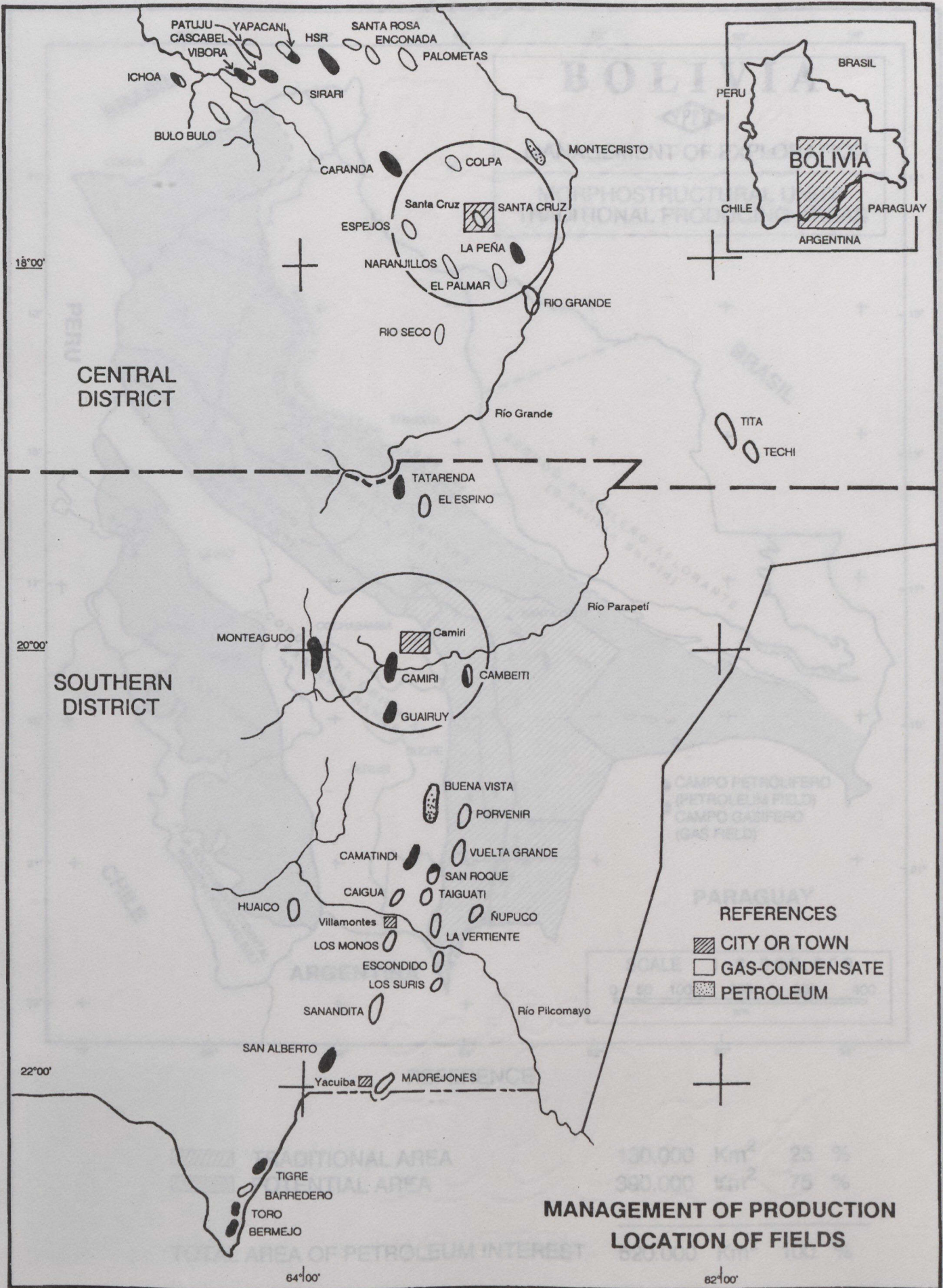
MANAGEMENT OF EXPLORATION
BRIEFING OF PROJECTS OF EXPLORATION

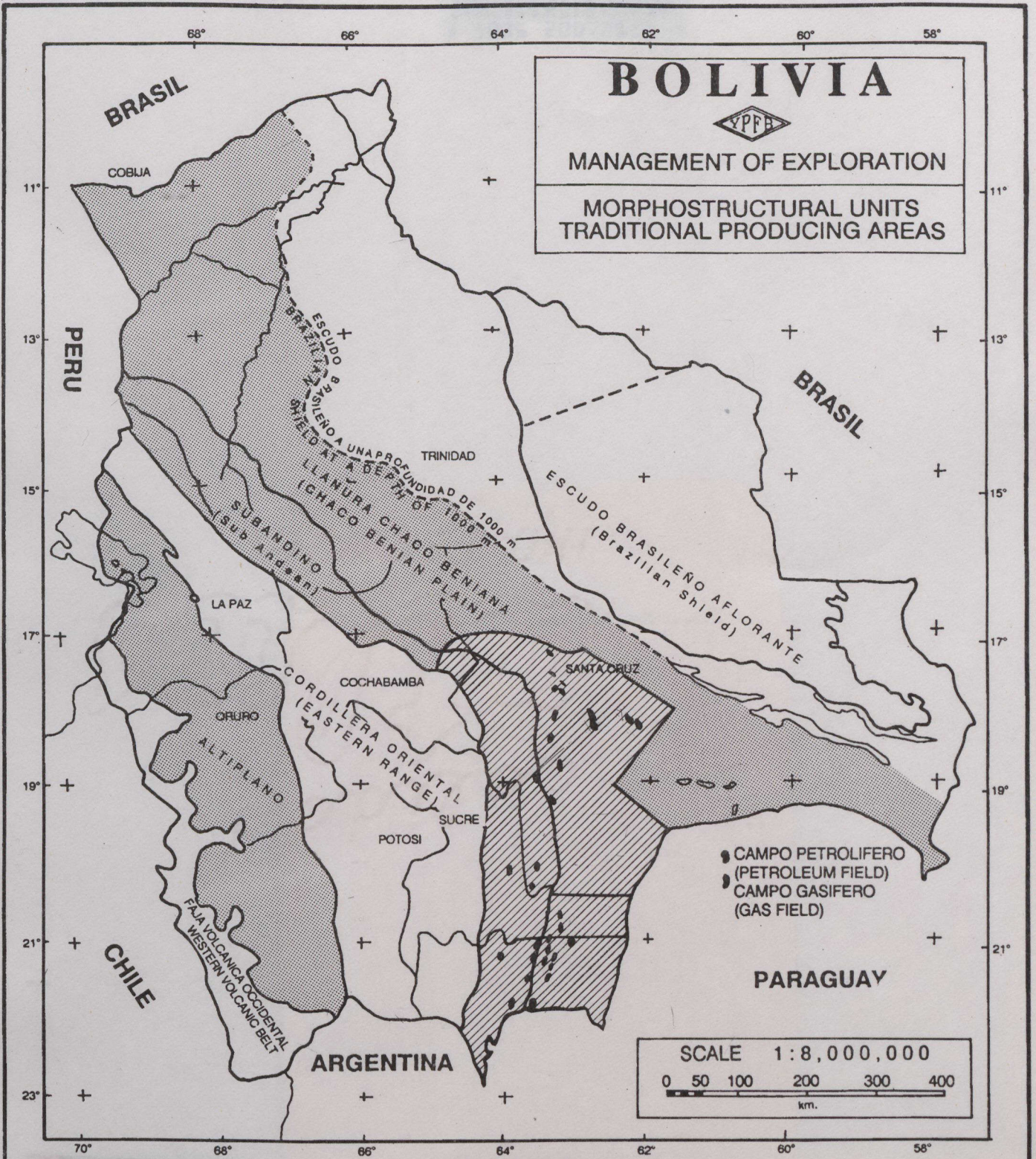
PROJECT	ACTIVITY PROGRAMMED	POSSIBLE RESERVES TO BE DISCUSSED	TOTAL INVESTMENT AND FINANCING	PRESENT STATUS	GLOBAL ADVANCE	CONCLUSION OF PROJECT
Exploration Southern Area (PEXS) Location -Departments: Tarija, Chuquisaca, and Santa Cruz	-Geology 3,500 Km. -Seismic registry 910 Km. -Geochemistry 760 Km.(1840 samples) -Exploratory drilling 27 wells (83.350 m)	-Liquid Hydrocarbons 19.4 MMBEL -Gaseous Hydrocarbons 806.7 MMPC	132.66 MM \$US YFFB 100%	Just beginning	-	Late 1996
Exploration Central Area (PEXC) Location -Department of Santa Cruz Central and Eastern plain	-Geology 1,100 Km. -Seismic registry 4,700 Km. -Geochemistry 5,100 Km. (12,300 samples) -Exploratory drilling 41 wells (134,490 m)	-Liquid hydrocarbons 42.0 MMBEL -Gaseous hydrocarbons 1432.0 MMPC	157.43 MM \$US YFFB 100%	Just beginning	-	Late 1996
Exploration Northern area (PEXN) Location -Departments of La Paz, Cochabamba, Beni and Pardo -Plain and Northern Subandean	-Geology 1,920 Km. -Geochemistry 1,510 Km. (130 samples) -Seismic Aeromagnetometry 45,250 Km. -Exploratory drilling 11 wells (39,000 m)	-Liquid hydrocarbons 64.28 MMBEL -Gaseous hydrocarbons 456. MM PC	71.44 MM \$US YFFB 55% Financing being processed	In execution	33%	Late 1994

**MANAGEMENT OF PRODUCTION
BRIEFING OF PROJECTS OF EXPLOITATION**

CENTRAL DISTRICT

PROJECT	OBJECTIVES	ANTICIPATED PRODUCTION	TOTAL INVESTMENT	FINANCING	PRESENT STATUS	ADVANCE (%)	CONCLUSION OF PROJECT
Exploitation of "Vibora Field" Location: Province of Ichilo, Department of Santa Cruz	-Drill 8 wells (6 production and 2 injection)	2,100 BPD Pet/Cond. 45 MMCFD (gas)	41.5 YPFB 23.9 IADB 17.6	BID-YPFB (PEP-III)	Being executed	57	Fourth Quarter 1991
Exploitation of "Sirari Field" Location: Province of Ichilo, Department of Santa Cruz	-Drill 9 wells (7 production and recycle gas produced)	1500 BPD (Cond) 40 MMCFD (gas)	34.7 YPFB 19.3 IADB 15.4	BID-YPFB (PEP-III)	Being Executed	60	Second Quarter 1992
Integral Exploitation of "H.Suarez-Yapacani gas fields" Location: Province of Ichilo, Department of Santa Cruz	Drill wells -Modernization Battery HSR -Install gas plant at Yapacani	2400 BPD (Pet) 400 BPD (Cond) 20 MMCFD	57.7 YPFB 12.1 IADB 45.6	BID-YPFB (PER-I)	Being Executed	49	Third Quarter 1992
Exploitation of "Cascabel field" Location: Province of Ichilo, Department of Santa Cruz	-Complete develop of Cascabel field with drilling of 4 producing wells	1250 BPD (Pet) 12 MMCFD	20.6	YPFB	Just beginning	-	Fourth Quarter





REFERENCE

- TRADITIONAL AREA
- POTENTIAL AREA

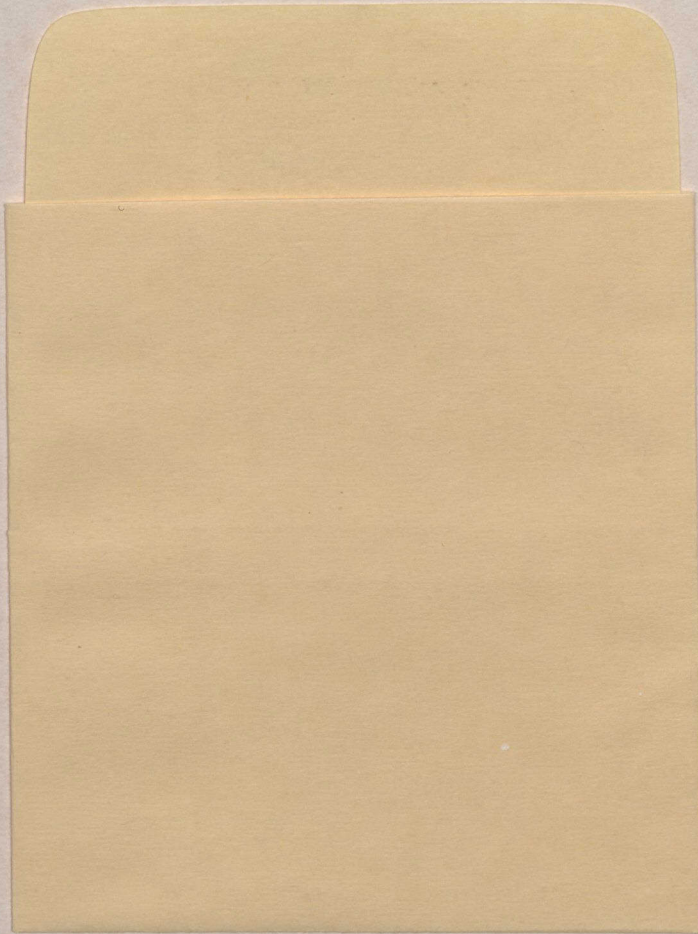
130.000	Km ²	25 %
390.000	Km ²	75 %

TOTAL AREA OF PETROLEUM INTEREST 520.000 Km² 100 %

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