

INFRASTRUCTURE REPORT

INFRASTRUCTURE PROJECTS DIVISION

DECEMBER 1999

No. 41

RECENT CHANGES IN THE BRAZILIAN OIL INDUSTRY

Only four years after the deregulation of Brazil's oil monopoly¹, the sector is today at an advanced stage of transformation that will lead in the short term to a competitive market. Advances in the new regulatory structure, the holding of the first round of tenders for exploration and production of a series of blocks, the announcement of a second round of tenders, the gradual liberalization of prices², the scope for importing oil and oil byproducts, and Petrobrás's new investment strategy, are all clear examples of these changes.

On the issue of regulation, the transition to a competitive market within a strategic industry such as the oil industry requires the creation of specific legislation that is not restrictive, but that regulates all the activities within the industry. In this way, the government has been creating a legal framework that attempts to accommodate the interests of the various agents that are often conflicting. Unlike the previous environment, in which the government monopoly was exercised by a state company, the new regulatory system aims to eliminate barriers to the entry of new agents to the sector on a progressive basis. These include product subsidies, price setting, lack of free access to pipelines, etc.

Important changes during 1999 were: the new rules governing various activities along the production chain for oil and natural gas, as defined by the Brazilian Petroleum Agency (ANP). As may be seen from the following table, with the exception of exploration and production (E&P) of oil and natural gas and the distribution of natural gas, which are subject to a tender system, other activities merely require authorization from the ANP that is obtained through simplified procedures.

Activity	Oil	Natural Gas	LPG, Gasoline, Naphtha, Kerosene, Diesel Oil, Gas Oil, Fuel Oils
Exploration	Concession	Concession	-
Production	Concession	Concession	Authorization
Transport	Authorization	Authorization	Authorization
Refining	Authorization	Authorization	-
Import	Authorization	Authorization	Authorization
Export	Authorization	Authorization	Authorization
Distribution	-	Concession by Individual States	Authorization

Another important advance in regulation was the establishment of Model Accounts (ANP Ruling No. 11 of January 13, 1999) for oil and natural gas exploration and production concessionaires that the ANP will be able to use as an instrument for monitoring spending on plans and programs for exploration, development and production, as approved in concession contracts that arise from tenders for E&P blocks.

Also during the first half of 1999, the ANP held the first round of tenders³ in Rio de Janeiro on July 15-16, 1999. This consisted of an auction of 27 blocks for exploration and production of oil and natural gas, of which 24 were located offshore. Of the total of the blocks tendered, 12 offshore blocks were sold. Total proceeds from the auctions of subscription bonds amounted to R\$ 321,655,955.00. Of this total, the ANP received R\$ 41 million and the Federal Treasury the remainder. The result of the first tender (see insert) produced eleven new players in the upstream segment: the Italian group, Agip, YPF of Argentina, the US groups, Texaco, Esso, Amerada Hess, Kerr McGee and Unocal, the Anglo-Dutch group Shell, and the British groups, BP and British Borneo.

The ANP is currently preparing the second round of tenders, expected to take place in the second quarter of 2000, and has already announced a number of simplifications, most notably for the smaller concession

areas. 23 blocs should be offered in this round of tenders (see insert), of which 13 offshore and 10 onshore blocs. Of the 13 offshore blocs, 6 are located in shallow waters: 3 in the Campos basin, 1 in the Santos basin (where a huge oilfield was recently discovered), 1 in the Camamu-Almada basin and one in the Pará-Maranhão basin. The 7 remaining blocks are located in deep waters, with 4 in the Santos basin, 1 in the Campos basin and 2 in the Sergipe-Alagoas basin.

PETROBRÁS

In October 1999, after having adapted to the liberalized environment within the sector, Petrobrás announced its strategic program for the next few years, in which it presented its aim of transforming itself into an integrated energy company with an international presence. The company intends to double its oil production by 2005, and increase its crude oil refining by 50%. In order to achieve these targets, it will invest US\$ 32.9 billion over the next 5 years, of which US\$ 28.3 billion within Brazil, and US\$ 4.6 billion (14%) outside it. According to Petrobrás, 70% of its funds will be obtained internally or through conventional financing, with the remaining 30% through project finance.

Petrobrás: Signed Partnerships

Position - December 1999

Bloc	Basin	Stakes (%)	Investment (US\$ million)	Date of Signing
<i>Exploration Areas</i>				
BES-3	Espirito Santo	Petrobrás (35,0%), YPF (30,966%)*, Santa Fé (19,084%), Norbay (9,75%), Petroserv (3,25%), Sotep (1,95%)	20.0	10/20/98
BCAM-2	Camamu (BA)	Petrobrás (40%), Coastal (40%)*, Unocal (10%), Ipiranga (10%)	10.4	10/24/98
BTUC-1	Tucano (SE)	Petrobrás (35%), Perez Companc (65%)*	12.4	11/07/98
BPOT-2	Potiguar	Petrobrás (40%), Santa Fé (38,56%)*, YPF (19,64%), Sotep (1,8%)	10.6	12/19/98
BS-2	Santos	Petrobrás (40%), Amerada Hess (32%)*, British Borneo (20%), Odebrecht (8%)	41.0	02/06/99
BC-8	Campos	Petrobrás (40%), Amerada Hess (32%)*, British Borneo (20%), Odebrecht (8%)	31.0	02/06/99
BSEAL-3	Sergipe	Petrobrás (30%), Sipetrol (40%)*, Tecpetrol (30%)	24.0	03/10/99
BSEAL-4	Sergipe	Petrobrás (70%), Pennzenergy (30%)*	20.0	03/10/99
BPOT-3	Potiguar	Petrobrás (30%), Sipetrol (30%), Tecpetrol (40%)*	6.5	03/10/99
BP-1	Pelotas	Petrobrás (50.0%), Exxon (50.0%)*	25.0	07/02/99
BFZ-1	Foz do Amazonas	Petrobrás (40.0%), Exxon (60.0%)*	31.0	07/02/99
BC-4	Campos	Petrobrás (42.5%), Texaco (42.5%)*, Nisscho Iwai/Inpex (12.75%), Odebrecht (2.25%)	42.5	07/08/99
BS-1	Santos	Petrobrás (40.0%), Kerr McGee (40.0%)*, Esso (20.0%)	50.0	07/13/99
BC-10	Campos	Petrobrás (35.0%), Shell (35.0%)*, Esso (15.0%), Mobil (15.0%)	140.0	07/20/99
BES-2	Espirito Santo	Petrobrás (35.0%), Mobil (35.5%)*, Unocal (30.0%)	55.0	07/20/99
BC-2	Campos	Petrobrás (35.0%), Elf (35.0%)*, Enterprise (15.0%), Shell (15.0%)	108.0	07/28/99
BC-9	Campos	Petrobrás (35.0%), Unocal (35.0%)*, YPF (10.0%), Japex/Marubeni (20.0%)	40.0	07/30/99
BFZ-2	Foz do Amazonas	Petrobrás (30.0%), BP (35.0%)*, Esso (20.0%), Elf (15.0%)	50.0	12/06/99
BS-4	Santos	Petrobrás (40.0%), Shell (40.0%)*, Texaco (20.0%)	50.0	12/16/99
<i>Production Development Areas</i>				
BAS-97	Camamu (BA)	Petrobrás (40%), Coastal (40%)*, Unocal (10%), Ipiranga (10%)	87.0	10/24/98
Frade	Campos	Petrobrás (42.5%), Texaco (42.5%)*, Nisscho Iwai (12.75%), Odebrecht (2.25%)	1,542.5	07/08/99
<i>Production Areas</i>				
SES-107D	Sergipe	Petrobrás (25%), Union Pacific Resources (67.5%)*, TDC Engineering (7.5%)	70.8	12/15/98
Caraúna	Potiguar	Petrobrás (20%), Santa Fé (51.41%)*, YPF (26.19%), Sotep (2.4%)	230.0	12/19/98
TOTAL	-	-	2,697.7	-

* Operating company

NATURAL GAS

In July 1999, with the start of commercial operation of the first stage of the Bolivia-Brazil pipeline, Brazil began to import natural gas. Since then, São Paulo has been receiving an average of 2.2 million m³ per day. The completion of the second section during 2000 should make it possible to transport Bolivian gas to every state in the South of Brazil.

In addition, starting next year, Argentina will supply gas to the thermal plants of Cuiabá (480 MW - Enron), and Uruguaiana (600 MW - AES). A 626-km branch line is under construction that will bring gas to Cuiabá from the Bolivia-Brazil pipeline starting from the Bolivian city of Rio Grande. In order to supply the Uruguaiana thermal electric plant, a consortium, Transportadora de Gas del Mercosur (TGM), consisting of

Techint, TransCanada Pipelines, the Argentine group CGC, the US group CMS Energy, and Petronas of Malaysia, began building a 437-km pipeline in August of this year, between the Argentine city of Paraná (in the province of Entre Ríos) and Uruguaiana.

With the aim of linking to the Bolivia-Brazil pipeline in the city of Porto Alegre, and thus closing a ring of pipelines between Argentina, Bolivia and Brazil, Transportadora Sulbrasileira de Gás (TSB)⁴ began building a gas pipeline in October 1999 that will link Uruguaiana to the Metropolitan region of Porto Alegre (615 km and 24"), with transport capacity of 15 million m³ per day. Of this total, 2.8 million m³ represent the supply to the Uruguaiana thermal plant. The gas pipeline is expected to be completed by the end of 2001.

With the consolidation within Brazil of a network of gas pipelines involving various agents, regulation of free access has become essential to the rationalization of investments and the operation of this system. In this way, the ANP published Ruling No. 169 on November 26, 1998, which deals with the subject. In addition, on October 21, 1999, Petrobrás, still the main domestic natural gas transport company, published the first offer of capacity for its pipelines, in accordance with the terms of Article 4 of the same Ruling⁵.

PRICES

The transition from a system of managed prices for domestically produced oil byproducts and natural gas to a system of free prices is, on account of its complexity, perhaps the most difficult challenge. This complexity is illustrated by some of the concepts adopted before the Petroleum Law, when prices of oil byproducts were tightly controlled by the government.

Until this point, the structure of prices was regulated by Law 4,452/64 and Decree-Law 61/66, and aimed: (i) to cover the costs of production/distribution/commercialization and remunerate all economic agents in the production chain (refiners, distributors and resale agents); (ii) to guarantee uniform prices throughout the country; (iii) to generate tax revenues.

The concept underlying this price structure was based on the calculation by refiners of the average cost of processing a barrel of oil⁶, taking into consideration its costs, expenses and return on capital. This unit revenue, termed the Average Realization Value (VMR), was intended to guarantee the profitability of refineries. On the basis of the VMR, the government determined for each kind of byproduct, the realization price (VR) for sales by refineries to distributors, observing the guidelines of social and economic policy, such as cross-subsidies. In order to arrive at the sale price to the final consumer for each byproduct, the Single Tax on Lubricants, Liquid and Gaseous Fuels (abolished in the 1988 constitution) was added to the realization price, as were the costs of distribution and resale⁷ and other costs⁸ defined in specific laws.

This policy for setting prices was adversely affected, particularly during the 1980s, by successive stabilization plans that caused the effective VMR received by refineries to diverge from the real VMR⁹. This shortfall was provisioned in a specific account (The Oil, Byproducts and Alcohol Account¹⁰) managed by the now extinct National Department of Fuels (DNC). This imbalance persisted until the approval of the Petroleum Law, which ordered the National Treasury Secretariat to draw up a list of all outstanding debts and credits between the federal government and Petrobrás, covering the various reciprocal liability and subsidy accounts, including those relating to the Oil, Byproducts and Alcohol Account. This resulted in a net outstanding balance on September 30, 1999 of some R\$ 2 billion owed by the National Treasury to Petrobrás. The Law also established that this balance should be settled in full by August 2000, since from then on, the prices of all byproducts would be freely determined.

During the transition to a competitive regime, policies for increases and revisions of prices for basic oil byproducts and natural gas will remain the joint responsibility of the Finance Ministry and the Ministry of Mining and Energy. The process of changing pricing policies began on July 27, 1998, when the Federal Government¹¹ approved the liberalization of the price of crude oil of domestic origin, and defined a new system for determining realization prices for refineries. At this point, for each byproduct, a so-called Specific Price Component (PPE) was defined, with the aim of ensuring the gradual extinction of the Oil Account. The PPE consists of the difference between the Invoiced Price (PFAT)¹² and the Realization Price (PR), that is:

$$PFAT_n = PR_n + PPE_n, \text{ where } n = \text{month } n$$

A negative PPE implies that the invoiced price for the byproduct is below its realization price, i.e. that product is being subsidized. In the opposite case, the PPE works as a "tax" on sales. Considering all

byproducts together, if the sum of positive PPEs is greater than the sum of negative PPEs, then the balance of the Oil Account diminishes. In simplified terms:

$$SCP_n = SCP_{n-1} - \sum_i PPE_n^i - O_n$$

where:

SCP_n – balance of the Oil Account at the end of month n ;

SCP_{n-1} – balance of the Oil Account at the end of month $n-1$;

PPE_n^i – PPE of product i in month n ;

O_n – other charges¹³ in month n .

The following table presents the current situation for the prices of oil byproducts, with particular emphasis on the stages in the production chain that are still administered by the government.

Current State of Regulation of Oil Byproduct Prices

Position - December 1999

Byproduct	Price charged by Refineries to Distributors (1)	Price charged by Distributors to Retailers	Price charged by Retailers to Consumers
Diesel Fuel	Fixed	Free	Fixed
Gasoline/Alcohol	Fixed	Free	Free
LPG	Fixed	Fixed (2)	Fixed (2)
Fuel Oil (OCA1, OCA2, OCB1, OCB2)	Fixed	Free	Free
Fuel Oil (other)	Fixed	Free	Free
Aviation Kerosene	Fixed	Free	Free
Naphtha (3)	Fixed	-	-

(1) Maximum invoiced price for producing refineries (2) Prices to retailers and final consumers are free in the South and Southeast of Brazil (3) Byproduct sold directly to industrial consumers

With regard to natural gas, it should be remembered that since it competes with fuel oil, the pricing policy adopted since the start of its commercialization within Brazil has always linked its price to that of oil. In this way, the Inter-ministerial Ruling MF/MME No. 155 of June 23, 1999 reset the ratio of the maximum sale price of domestic natural gas for heating uses to pipeline-based gas distribution concessionaires to the maximum invoicing price charged by refineries for OCA1-type fuel oil at 86.22%¹⁴. For natural gas imported from Bolivia, this ratio is 97.72%.

In May 1999, a new pricing policy for fuel oil was introduced, with a direct impact on the setting of the price for domestically produced natural gas. These new rules for prices establish a monthly adjustment on the basis of the average change in fuel oil prices in the international market, as well as in the US Dollar.

During May-October 1999, presuming that the ratio of oil and gas prices is respected, reductions in gas prices would compromise its competitiveness. In this way, the impact of this policy on the price of natural gas would oblige the federal government to make adjustments in the form of discounts and price freezes for predefined periods, with the aim of guaranteeing a balanced transition to a system of free prices.

Following the last revision of natural gas prices in October 1999, these have been frozen, and it is expected that at the start of 2000, a new defining policy will be announced that will remain in force until prices are completely deregulated, a development that is expected to take place during the second half of 2000.

Also with regard to natural gas, it is important to mention the differentiation of prices by the Ministry of Mining and Energy for thermal plants that begin operating before 2003 that will hold for supply contracts agreed with distributors for periods of more than 20 years.

Team

Edna Maria B. Gama Coutinho – **Manager** (GESET 1/AI)
Antonio Claret Silva Gomes – **Engineer**
Eliada A.S. Teixeira Faria – **Economist**
Heloisa Helena de Oliveira Fernandes – **Accountant**

¹ In November 1995, Constitutional Amendment No. 9 relaxed the oil monopoly. Law No. 9,478, known as the Petroleum Law, published on August 6, 1997, implemented this Amendment.

² Article 69 of the Petroleum Law establishes that prices of basic oil byproducts and natural gas will be deregulated.

³ **The procedures to be adopted in this round of tenders were the object of ANP Ruling No. 9, of January 12, 1999.**

⁴ The TSB consortium consists of the following companies: Ipiranga, Gaspetro, Techint, Tecgás, CGC, Nova Gás, YPF do Brasil and Total.

⁵ Of the four Petrobrás systems: (i) Espírito Santo; (ii) Rio Grande do Norte, Paraíba and Pernambuco; (iii) Sergipe and Bahia, and (iv) Rio de Janeiro, Minas Gerais and São Paulo, only Espírito Santo has available capacity to offer free access to third parties.

⁶ This is equivalent to the cost of production of an "average theoretical byproduct" from a barrel of crude oil.

⁷ **Costs of distribution and resale include general expenses, return on capital, and transport of the product by internal routes.**

⁸ These costs include coastal freight and funding installments for various government energy programs.

⁹ The "real VMR" is the value resulting from the appropriation of production costs, expenses and remuneration of capital, as established in the legislation. "VMR received" is the effective value authorized by the government.

¹⁰ The Oil, Alcohol and Byproducts Account is an accounting register of Revenues and Expenses (alcohol subsidies, freight) included in the price structure of byproducts.

¹¹ Inter-ministerial Rulings MF/MME Nos. 3, 4 and 5 of July 27, 1998.

¹² Excluding PIS/PASEP and COFINS.

¹³ Compensation to third parties, Petrobrás and interest payments on loans.

¹⁴ For natural gas used as a fuel for automobiles, the maximum price of natural gas to distributors may not exceed 91.16% of the price of fuel oil OCA1. For petrochemical uses, this percentage falls to 65.53%.

ANP – FIRST TENDER – JUNE 1999 OIL EXPLORATION AND PRODUCTION BLOCKS RESULTS

Basin/Block	Winner	Commitment to local supplier (%)		Value (R\$)	Premium (%)
		Exploration	Development		
Campos / BMC - 3	Petrobrás (40.0%)*. Agip Oil do Brasil S.A. (40.0%) and YPF S.A. (20.0%)	25	20	6,121,123	2,348
Campos / BMC - 5	Texaco Brasil S.A. (100.0%)*	50	35	6,056,966	2,323
Campos / BMC - 6	Petrobrás (100.0%)*	50	60	5,032,437	2,860
Santos / BMS - 4	Agip Oil do Brasil S.A. (100.0%)*	25	20	134,162,101	53,565
Santos / BMS - 3	Amerada Hess Limitada (45.0%)*. Kerr McGee do Brasil Ltda (30.0%) and Petrobrás (25.0%)	5	20	18,165,365	7,166
Santos / BMS - 2	Texaco Brasil S.A. (100.0%)*	50	35	28,263,463	11,205
Potiguar / BMPOT - 2	Uncontested	-	-	-	-
Espírito Santo / BMES -1	Esso Brasileira de Petróleo Ltda (100.0%)*	5	15	19,226,900	7,591
Camamu Almada / BMCAL -2	Uncontested	-	-	-	-
Camamu Almada / BMCAL -1	Petrobrás (50.0%)* and YPF S.A. (50.0%)	5	20	824,327	230
Paraná / BTPR -1	Uncontested	-	-	-	-
Paraná / BTPR -3	Uncontested	-	-	-	-
Campos / BMC - 4	Agip Oil do Brasil S.A. (55.0%)* and YPF S.A. (45.0%)	10	20	51,000,128	20,300
Paraná / BTPR -2	Uncontested	-	-	-	-
Potiguar / BMPOT - 1	Agip Oil do Brasil S.A. (100.0%)*	10	20	8,000,601	3,100
Santos / BMS - 5	Uncontested	-	-	-	-
Espírito Santo / BMES -2	Unocal Latin American Ventures Ltd (40.5%)*. Texaco Brasil S.A. (32.0%) and YPF S.A. (27.5%)	50	35	31,742,736	12,597
Camamu Almada / BMCAL -3	Uncontested	-	-	-	-
Foz do Amazonas / BMFZA - 1	BP Exploration Operating Company (30.0%)*. Esso Brasileira de Petróleo Ltda. (25.0%). Petrobrás (20.0%). Shell Brasil S.A. (12.5%) and British Borneo Oil & Gas plc (12.5%)	20	20	13,060,490	5,124
Santos / BMS - 6	Uncontested	-	-	-	-
Campos / BMC - 2	Uncontested	-	-	-	-
Cumuruxatiba / BMCUM - 1	Uncontested	-	-	-	-
Santos / BMS - 1	Uncontested	-	-	-	-
Espírito Santo / BMES -3	Uncontested	-	-	-	-
Campos / BMC - 1	Uncontested	-	-	-	-
Espírito Santo / BMES -4	Uncontested	-	-	-	-
Cumuruxatiba / BMCUM - 2	Uncontested	-	-	-	-

Source: ANP

* operator

ANP –SECOND TENDER – 2ND QUARTER 2000 OIL EXPLORATION AND PRODUCTION BLOCKS

1. Amazonas - Block BTAM-1		2. Campos - Block BMC-7	
Flat area (km ²)	10,011.7	Flat area (km ²)	1,958.6
Adjusted area (km ²)	9,994.0	Adjusted area (km ²)	1,918.6
Perimeter (km)	499	Perimeter (km)	202.60
3. Campos - Block BMC-8		4. Campos - Block BMC-9	
Flat area (km ²)	1,598.9	Flat area (km ²)	1,193.6
Adjusted area (km ²)	1,565.2	Adjusted area (km ²)	1,166.5
Perimeter (km)	203.626	Perimeter (km)	175.5
5. Campos - Block BMC-10		6. Camamu-Almada - Block BMCAL-4	
Flat area (km ²)	2,430.4	Flat area (km ²)	869.3
Adjusted area (km ²)	2,364.7	Adjusted area (km ²)	841.4
Perimeter (km)	197.359	Perimeter (km)	134.4
7. Paraná - Block BTPR-4		8. Pará-Maranhão - Block BMPAMA-1	
Flat area (km ²)	5,703.0	Flat area (km ²)	3,642.7
Adjusted area (km ²)	5,701.0	Adjusted area (km ²)	3,590.1
Perimeter (km)	395.5	Perimeter (km)	274.831
9. Potiguar - Block BTPOT-3		10. Potiguar - Block BTPOT-4	
Flat area (km ²)	174.8	Flat area (km ²)	490.6
Adjusted area (km ²)	167.3	Adjusted area (km ²)	470.9
Perimeter (km)	112.0	Perimeter (km)	143.1
11. Recôncavo - Block BTREC-1		12. Recôncavo - Block BTREC-2	
Flat area (km ²)	287.4	Flat area (km ²)	191.2
Adjusted area (km ²)	276.9	Adjusted area (km ²)	184.5
Perimeter (km)	98.8	Perimeter (km)	65.4
13. Recôncavo - Block BTREC-3		14. Sergipe-Alagoas - Block BTSEAL-1	
Flat area (km ²)	179.8	Flat area (km ²)	1,314.9
Adjusted area (km ²)	173.6	Adjusted area (km ²)	1,260.6
Perimeter (km)	101.1	Perimeter (km)	315.71
15. Sergipe-Alagoas - Block BTSEAL-2		16. Sergipe-Alagoas - Block BTSEAL-3	
Flat area (km ²)	1,090,677	Flat area (km ²)	1,004,945
Adjusted area (km ²)	1,040,484	Adjusted area (km ²)	957,391
Perimeter (km)	257.066	Perimeter (km)	231.042
17. Sergipe-Alagoas - Block BMSEAL-4		18. Sergipe-Alagoas - Block BMSEAL-5	
Flat area (km ²)	2,367.018	Flat area (km ²)	1,125.276
Adjusted area (km ²)	2,265.376	Adjusted area (km ²)	1,072.485
Perimeter (km)	224.817	Perimeter (km)	192.524
19. Santos - Block BMS-7		20. Santos - Block BMS-8	
Flat area (km ²)	6,642.2	Flat area (km ²)	4,923.4
Adjusted area (km ²)	6,591.5	Adjusted area (km ²)	4,864.4
Perimeter (km)	327.1	Perimeter (km)	281.4
21. Santos - Block BMS-9		22. Santos - Block BMS-10	
Flat area (km ²)	3,815.7	Flat area (km ²)	3,833.0
Adjusted area (km ²)	3,763.5	Adjusted area (km ²)	3,780.1
Perimeter (km)	247.1	Perimeter (km)	247.7
23. Santos - Block BMS-11			
Flat area (km ²)		5,311.5	
Adjusted area (km ²)		5,229.6	
Perimeter (km)		294.6	

Source: ANP.