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## Appendix A

### Decrees and Federal Decree-Laws

#### 1864

Decree No. 3.352-A, from November 30, 1864

Grants Thomaz Denuy Sargent a faculty for a period of 90 years, either by himself or through a company, to extract peat, oil, and other mines in the Comarcas do Camamu and Ilheos, of the province of Bahia.

#### 1872

Decree No. 5.014, from July 17, 1872

Grants Luiz Matheus Maylaski permission for 2 years to explore stone coal and petroleum in the regions of Sorocaba, Itapetininga, and Itu, in the province of S. Paulo.

Decree No. 5.050, from August 14, 1872

Grants Dr. Cyrino Antonio de Lemos and Dr. João Baptista da Silva Gomes Barata, permission of 2 years to mine stone coal and oil in the region of the capital of the province of S. Paulo.

#### 1874

Decree No. 5.732, from August 27, 1874

Prolongs for 1 year the period set for the Graduated Cirino Antonio de Lemos and José Baptista da Silva Gomes Barata, in the Decree No. 5.050 from August 14, 1872, for the exploration of coal and oil mines in the Comarca of the capital of province of S. Paulo.

#### 1882

Decree No. 8.416, from February 11, 1882

Grants Antonio Lopes Cardozo a privilege for the process of his invention designed to make oil unexplained, disinfected, and colored.

Decree No. 8.703, from October 7, 1882

Grants permission to Gustavo Emilio Olander to explore oil fields in the regions of Campo Largo and Lapa, in the province of Parana.

#### 1883

Decree No. 8.840, from January 5, 1883

Grants permission to Dr. Gustavo Luiz Guilherme Dodt and Graduated Tiberio César de Lemos to explore minerals [including oil] in the Maranhao Province.

Decree No. 8.983, from August 4, 1883

Extends the deadline granted to Antonio Lopes Cardoso for the process of his invention, designed to render kerosene or oil inexplusive.

#### 1885

Decree No. 9.444, from July 20, 1885

Grants permission to Manoel Vidal Barbosa Lage to explore stone coal and oil in the province of Minas Gerais.

Decree No. 9.493, from September 5, 1885

Renews the concession referred to in decree No. 5744<sup>1</sup> from September 16, 1874 for exploration of stone coal and oil in the province of S. Paulo.

#### 1887

Decree No. 9.724, from February 19, 1887

Grants Henri Raffard permission to transfer to Major Francisco de Assis Paula the concession referred in Decree no. 9493 from September 5, 1885.

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<sup>1</sup>The Decree n° 5744, from 16 September 1874 mentions only the mining of stone coal from Água Branca. When the concession was renewed by the decree No. 9493, from 5 September 1885, oil exploration is added.

**1888**

Decree No. 10.037, from September 15, 1888

Grants permission to Ignacio de Souza Lages to explore stone coal, oil, and other minerals in the city of Cameta, Para Province.

Decree No. 10.073, from November 8, 1888

Grants permission to Tito Livio Martins to explore oil and other minerals in the city of Tatuhy, province of S. Paulo.

Decree No. 10.105, from December 1, 1888

Extends for 1 year the period specified in the decree No. 9.724 from February 19, 1887, for the conclusion of the exploration work of oil and stone coal in the city of Tatuhy, province of S. Paulo.

**1889**

Decree No. 10.239, from May 2, 1889

Grants permission to João Maria do Valle, Engineer Abdon Felinto Milanez and Emilio de Menezes to explore coal stone, oil, and other minerals in the valleys of the *ribeirões* of Canavieiras and Cubatao, in the municipality of Guaratuba, Parana Province.

Decree No. 10.347, from September 6, 1889

Grants permission to João Moreira da Silva to explore stone coal and other minerals, oil, and other bituminous substances in the province of Santa Catharina.

Decree No. 10.361, from September 14, 1889

Grants permission to Raulino Julio Adolpho Horn to explore oil and other mineral oils in the province of Santa Catharina.

Decree No. 10.431, from November 9, 1889

Grants permission to Adam Benaion to explore oil, stone coal, and other minerals in the province of Para.

Decree No. 10.445, from November 9, 1889

Grants to Tito Livio Martins an extension of the term established in Decree No. 10,073 from November 8, 1888.

**1890**

Decree No. 393, from May 12, 1890

Grants permission to Dr. Almir Parga Nina to explore, by himself or through a company,

mineral oils (including petroleum) in the State of Maranhao.

Decree No. 670, from August 18, 1890

Grants permission to Tito Livio Martins to explore oil and other minerals in the city of Tatuhy, province of S. Paulo.

Decree No. 1.114, from November 29, 1890

Extends the deadline to Raulino Julio Adolfo Horn to explore oil and other mining oils in the State of Santa Catarina.

**1897**

Decree No. 2.471, from March 8, 1897

Approves, with amendment, the articles of the Petroleum Industrial Company and authorizes it to operate.

**1912**

Decree No. 9.335, from January 17, 1912

Grants the Standard Oil Company of Brazil, current denomination of the Petroleum Industrial Company, authorization to continue to operate in the republic.

**1913**

Decree No. 10.168, from April 9, 1913

Grants authorization to The Anglo Mexican Petroleum Products Company, Limited, to operate in the republic.

**1917**

Decree No. 12.438, from April 11, 1917

Grants authorization to "The Anglo Mexican Petroleum Products Company, Limited", to replace this denomination by "Anglo Mexican Petroleum Company, Limited".

**1932**

Decree No. 21.414, from May 17, 1932

Authorizes Brasileira de Petróleo Company to continue with the assignment and lease agreements for sub-of territorial properties in the municipality of Pirajú in the State of São Paulo.

Decree No. 21.415, from May 17, 1932

Authorizes the incorporation by Mr. J. B. Monteiro Lobato, M. L. de Oliveira Filho e L. A. Pereira de Queiroz of a joint-stock company

with headquarters in São Paulo and capital of 3.000:060\$0 (three thousand “contos de réis”), exclusively national, with the objective of researching oil formations and exploring the respective deposits.

Decree No. 22.210, from December 13, 1932

Authorizes Th. Marinho de Andrade, Augusto Leal de Barros, and Constantino Badesco Dutza to organize a company for the exploration of oil, with the denomination of National Company for Exploration of Oil.

### 1933

Decree No. 22.932, from July 12, 1933

Authorizes Avelino Barreto to hire, without privilege, research, and exploration of petroleum and asphaltitis in the city of Botucatu, State of Sao Paulo, and to organize a company for the exploitation of the contract.

Decree No. 23.225, from October 17, 1933

Authorizes, without privilege, Companhia Brasileira de Petróleo Cruzeiro do Sul, to hire with Rita Spinola Dias, owner of Fazenda Bofete, in the municipality of Porangaba, and with Adelaide Barnsley Guedes, or its successors, owner of Fazenda Pederneiras, in the municipality of Tatui, both municipalities of the State of Sao Paulo, to the research and exploration of petroleum that exists in those farms.

Decree No. 23.572, from December 12, 1933

Authorizes Th. Marinho de Andrade, Augusto Leal de Barros, and Constantino Badesco Dutza to include the contracts they made with Rodolfo Jacob and Elói José Nuncio, in the areas dealt with in art. 1 of decree n. 22.210, from December 13, 1932, for the research and exploration of petroleum by admitting the company “Companhia Nacional para Exploração de Petróleo”, in organization, and makes other provisions.

Decree No. 23.575 of December 12, 1933

Authorizes, without privilege, Companhia Brasileira de Petróleo, an anonymous society, with headquarters in the Federal Capital, to contract the acquisition or lease of territorial properties in the municipality of Ribeirao Claro,

in the State of Parana, for the research and exploration of oil.

### 1934

Decree No. 23.752, from January 16, 1934

Authorizes its privilege, the Pan-Brazilian Petroleum General Company, with headquarters in the Federal Capital, to contract the acquisition or lease of territorial properties in the municipality of Ribeirao Claro, State of Parana, for the research and exploration of oil.

Decree No. 24.377, from June 12, 1934

Authorizes, without privilege, Companhia Brasileira de Petróleo, an anonymous society, headquartered in the Federal Capital, to:

- (1) To contract the lease of lands belonging to private individuals, located in the municipality of reserve, in the State of Parana, in order to search for oil;
- (2) Enter into the purchase option contracts for the aforementioned land; and
- (3) Acquire the oil deposits that may exist in the subsoil.

### 1936

Decree No. 1.041, from August 20, 1936

Approves the relation of the personnel contracted for geological studies and petroleum researches in the Territory of Acre and State of Amazon.

### 1937

Decree No. 1.849, from August 3, 1937

Authorizes the Brazilian citizen Silvio Fróis Abreu to research natural gas and oil in an area of 175,84 hectares on the Ilha Itaparica, in the municipality of Itaparica, State of Bahia.

Decree No. 1.850, from August 3, 1937

Authorizes Brazilian citizen Edgard Frias to search for oil and natural gas in private lands located in the district of Mapele, municipality of Matoim, State of Bahia.

Decree No. 1.870, from August 10, 1937

Authorizes the Brazilian citizen Silvio Fróis Abreu to research natural gas and oil in an area

of 224,16 hectares on the Ilha Itaparica, in the municipality of Itaparica, State of Bahia.

Decree No. 2.119, from November 9, 1937

Authorizes the Brazilian citizens Olímpio José Brochado, Firmino de Santana, and Quineto Gusmão Rocha to search for oil on marine lands located in the place called “Porto de Sauípe”, municipality of Entre Rios, State of Bahia.

Decree No. 2.189 of December 21, 1937

Authorizes, on a provisional basis, the Brazilian citizen Carlos Dias de Avila Pires, to search for oil and natural gas in the municipality of Monte Negro, State of Bahia.

Decree No. 2.190 of December 21, 1937

Authorizes, on a provisional basis, the Brazilian Society of Mineralogical Research Limited, to search for oil and natural gas, on the coast of the State of Bahia.

Decree No. 2.191 of December 21, 1937

Authorizes, on a provisional basis, the Brazilian Society of Mineralogical Research Limited, society organized in Brazil, to research oil and natural gas, on the coast of the State of Bahia.

Decree No. 2.192, from December 21, 1937

Authorizes, on a provisional basis, the Empresa Nacional de Investigação Geológicas Limitada, organized in Brazil, to research petroleum and natural gases on the coast of the State of Bahia.

Decree No. 2.193, from December 21, 1937

Authorizes, on a provisional basis, the Empresa Nacional de Investigações Geológicas Limitada, a company organized in Brazil, to research natural gas and oil in the Ilha Itaparica, municipality of Itaparica, State of Bahia.

Decree No. 89, from 21st December 1937

Approves the Special Protocol on Railway Connections and Use of Bolivian Petroleum signed in La Paz on November 25, 1937.

Decree No. 2.217, from December 28, 1937

Authorizes, on a provisional basis, the Brazilian citizen Salvador Prioli Junior by himself or a company to organize, to research oil and natural gas, in the State of Sergipe.

## 1938

Decree No. 366, from April 11, 1938

Incorporates to the Code of Mines, decree No. 24.642, of July 10, 1934, new title, which establishes the legal regime of deposits of oil and natural gases, including rare gases.

Decree No. 380, from April 18, 1938

Approves the Treaty on the Exit and Use of Bolivian Petroleum, between Brazil and Bolivia, signed in Rio de Janeiro, on February 25, 1938.

Decree No. 395, from April 29, 1938

Declares as public utility and regulates the importation, exportation, transportation, distribution, and trade of crude oil and its derivatives in the national territory, as well as the refinery industry of imported oil produced in the country, and other measures.

Decree No. 2.616, from May 4, 1937

Authorizes, on a provisional basis, the Brazilian citizen Alberto Hofmann, by himself or a company to organize, to search for oil in Serra da Taquara Verde region, in Rio Caçador municipality, in the state of Santa Catarina.

Decree No. 2.800, from June 29, 1938

Authorizes, the provisional title, the Brazilian citizen Francisco de Sá Lessa for himself or society to organize, to search for oil and natural gas in the municipality of Alagoas, State of Alagoas.

Decree No. 2.801, from June 29, 1938

Authorizes the Brazilian citizen Tadeu de Araújo Medeiros for himself or society to organize research of oil and natural gas in the municipality of Alagoas, State of Alagoas.

Decree No. 2.802, from June 29, 1938

Authorizes, on a provisional basis, the Brazilian citizen Eudoro Lemos de Oliveira, by himself or a company to organize, to search for oil and natural gas in the municipality of Coruripe, State of Alagoas.

Decree No. 2.803, from June 29, 1938

Authorizes, on a provisional basis, the Brazilian citizen of Barbosa de Couto e Silva, by himself or a company to organize, to search for

oil and natural gas in the municipalities of Socorro and Laranjeiras, State of Sergipe.

Decree No. 2.804, from June 29, 1938

Authorizes, on a provisional basis, the Brazilian citizen Eurico de Rocha Portela, by himself or a company to organize, to search for oil and natural gas in the municipality of Maceio, State of Alagoas.

Decree No. 2.805, from June 29, 1938

Authorizes, on a provisional basis, the Brazilian citizen Cristiano Heyn Hamann, for himself or a society to organize, to search for oil and natural gas in the municipality of Piassubussu, in the state of Alagoas.

Decree No. 2.806, from June 29, 1938

Authorizes, on a provisional basis, the Brazilian citizen Oscar Edvaldo Portocarreiro, by himself or a company to organize, to research oil and natural gas in the municipality of Santo Amaro, State of Sergipe.

Decree No. 538, from July 2, 1938<sup>2</sup>

Organizes the National Oil Council, defines its assignments and other measures.

Decree No. 533, from July 5, 1938

Extends the term referred to in § 1 of art. 4th of decree-law No. 395, of April 29, 1938.

Decree No. 538, from July 7, 1938

Organizes the National Oil Council, and defines its assignments and other measures.

Decree No. 2.999, from August 17, 1938

Authorizes the Brazilian citizen, Elpidio Domingues Lins, to search for oil and natural gas in the municipality of Recife, capital of the state of Pernambuco.

<sup>2</sup>There is a record in the database of the Federal Senate website that the same decree-law no. 538 (which creates the National Oil Council) had two editions, one of 2nd July 1938, published in the Collection of the Brazil on 31st December 1938 and the other, dated 7th July 1938, published in the Federal Official Gazette on 8th July, 1938. Since the access to the contents of the first document is not available, it is not possible to know if it is identical to the one edited later (accessed). It was decided to keep records of the existence of the two documents in order to demonstrate the power of the State when the National Oil Council was created.

Decree No. 3.004, from August 19, 1938

Declares without effect the decree No. 2,616, from May 4, 1938, provisionally authorizing the Brazilian citizen Alberto Hofmann, by himself or a company to organize, to search for petroleum in the region of “Serra da Taquara Verde”, in the municipality of Rio Caçador, in the state of Santa Catarina.

Decree No. 3.008, from August 19, 1938

Authorizes, on a provisional basis, the Brazilian citizen Alberto Hofmann, by himself or a company to organize, to search for oil in Serra da Taquara Verde region, in Rio Caçador municipality, in the state of Santa Catarina.

Decree No. 3.097, from September 22, 1938

Authorizes, on a provisional basis, the Brazilian citizen Vitor Amaral Freire, by himself or by the “Companhia Matogrossense de Petróleo”, in organization, to search for oil and natural gas in borderlands located in the municipality of Corumba, in the State of Mato Grosso.

Decree No. 3.098, from September 22, 1938

Authorizes, on a provisional basis, the Brazilian citizen Vitor Amaral Freire, by himself or by the “Companhia Matogrossense de Petróleo”, in organization, to search for oil and natural gas in borderlands located in the municipality of Corumba, in the State of Mato Grosso.

Decree No. 3.099, from September 22, 1938

Authorizes, on a provisional basis, the Brazilian citizen Vitor Amaral Freire, by himself or by the “Companhia Matogrossense de Petróleo”, in organization, to search for oil and natural gas in borderlands located in Porto Esperança in the municipality of Corumba, in the State of Mato Grosso.

Decree No. 747, from September 29, 1938

Opens, by the Ministry of Finance, the special credit of 750:000\$000 for the National Petroleum Council.

Decree No. 3.131, from October 05, 1938

Promulgates the Treaty on the Exit and Use of Bolivian Petroleum, between Brazil and Bolivia, signed in Rio de Janeiro, on February 25, 1938.

Decree-law No. 804, from October 24, 1938

Extends the term referred to in the sole paragraph of art. 3 of decree-law n. 395, from April 29, 1938.

Decree-law No. 842, from November 9, 1938

It fixes the salaries of the members of the Executive Committee of the National Petroleum Council and takes other measures.

Decree No. 3.344, from November 30, 1938

Declares as expired the authorization granted to Avelino Barreto, by decree no. 22,932, dated July 12, 1933, to contract, with no privileges, the exploration and exploitation of oil and asphaltitis

in lands located in the city of Botucatu, State of Sao Paulo, as well as to organize a society for the exploration of the contracts to be carried out.

Decree No. 3.452, from December 14, 1938

Declares as expired the authorization granted to Olimpio José Brochado, Firmino de Sant'anna and Quineto Gusmão Rocha, by decree number 2, 119, from November 9, 1937, to search for oil on land located in the place called Porto de Sauípe, in the Municipality of Entre Rios, Bahia State.

Decree-law No. 961, from December 17, 1938

Rewrites No. I of art. 3 of decree-law n. 395, from April 29, 1938.

## Appendix B

### Table B.1

**Table B.1** Oil drillings made by the Federal government all over national territory from 1919 to 1928

SONDAGENS PARA PETROLEO EFETUADAS PELO GOVÉRNO FEDERAL EM TODO O TERRITORIO NACIONAL, de 1919 a 1928					
Estados	Localidades	Encarregados	Início	Fim	Prof. metros
(1) Paraná	Marechal Mallet	R. Lima Coelho	18-8-19	7-7-20	84, 77
(2) Alagoas	Garça Torta	A. Bulhões Pedreira	14-4-20	9-7-20	130, 26
(3) Paraná	Marechal Mallet	Alpheu Diniz Gonsalves	21-9-20	23-3-22	509, 97
(4) Alagoas	Garça Torta	A. Bulhões Pedreira	26-11-20	24-3-21	130, 26
(5) Bahia	Ilhéus, Cururipe	Gerson Alvim	24-2-21	8-4-21	100, 51
(6) Bahia	Ilhéus, Cururipe	Júlio Pôrto	1-6-21	14-11-21	197, 05
(7) São Paulo	Graminha, São Pedro	Gerson Alvim	12-2-21	21-7-22	329, 43
(8) São Paulo	Querozene, São Pedro	Bourdout Dutra	5-8-21	19-10-22	498, 70
(9) Alagoas	Garça Torta	Andrade Júnior	15-9-22	7-7-22	152, 52
(10) São Paulo	Santa Maria	Júlio Pôrto	15-4-22	12-8-22	211, 55
(11) Bahia	Maraú	Paulino Carvalho	26-6-22	19-11-23	387, 30
(12) São Paulo	Itirapina, Rio Clarc	Gerson Alvim	17-7-22	31-10-23	324, 54
(13) São Paulo	Santa Maria, São Pedro	Júlio Pôrto	4-10-22	24-9-23	251, 24
(14) Alagoas	Riacho Doce	J. F. Andrade	13-12-22	12-2-23	41, 95
(15) São Paulo	São Pedro	Bourdout Dutra	29-2-23	26-10-24	477, 53
(16) Paraná	Marechal Mallet	Paulino Carvalho	28-7-23	5-4-24	283, 72
(17) Alagoas	Riacho Doce	Eufrásio Borges	15-6-23	3-6-24	220, 50
(18) São Paulo	Tucum, São Pedro	Júlio Pôrto	28-11-23	30-4-24	147, 11
(19) São Paulo	Itirapina, Rio Claro	Gerson Alvim	18-1-24	30-5-25	100, 05
(20) Bahia	Maraú	Afonso Galeão	25-9-24	23-7-25	240, 14
(21) Alagoas	Riacho Doce	Eufrásio Borges	11-11-24	25-10-27	45-35
(22) Paraná	Marechal Mallet	Paulino Carvalho	6-12-24	7-3-27	518, 00
(23) São Paulo	Araquá, São Pedro	Bulhões Pedreira	22-1-25	6-8-28	380, 67
(24) Pará	Itaiúba	Pedro Moura	20-7-25	23-9-26	445, 10
(25) São Paulo	Graminha, São Pedro	Olinto Pereira	31-7-25	19-11-27	469, 01

(continued)

**Table B.1** (continued)

## SONDAGENS PARA PETROLEO EFETUADAS PELO GOVÉRNO FEDERAL EM TODO O TERRITORIO NACIONAL, de 1919 a 1928

Estados	Localidades	Encarregados	Início	Fim	Prof. metros
(26) São Paulo	Alambari, Botucatu	Couto Fernandes	1-12-25	1-12-27	446, 02
(27) Bahia	Santo Amara	E. Scorza	15-1-26	20-10-26	91, 60
(28) Rio Grande do Sul	Bela Vista, São Gabriel	Axel Löfgren	8-2-26	25-4-26	240, 14
(29) Pará	Bom Jardim, Itaituba	Pedro Moura	16-11-26	24-4-26	201, 58

De modo geral, o tipo de sondas empregado foi o de “Ingersol Hand, Rotativa”, funcionando com aço granuloso. O alcanoe máximo, verificado, destes tipos de sonda, não passava de 600 a 800 metros de profundidad

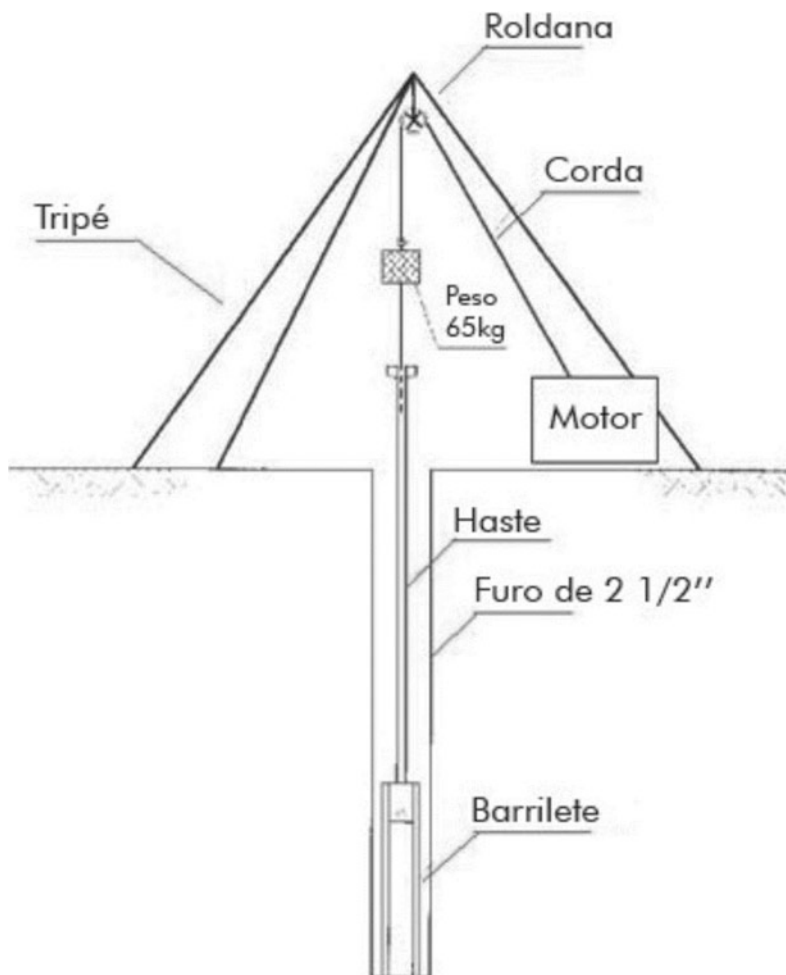
Com esse modelo de sonda foi atingida, por mim, em Marechal Mallet, no Paraná. (3.\* na relação supra) a profundidade máxima de 510 metros, a maior até então alcançada, quando se deu o desprendimento de gás combustível conforme anotamos anteriormente, tendo conseguido atra-vessar uina espêssa camada de diabásio, rocha excessivamente dura e diaclasa

Source Gonsalves (1963): 143

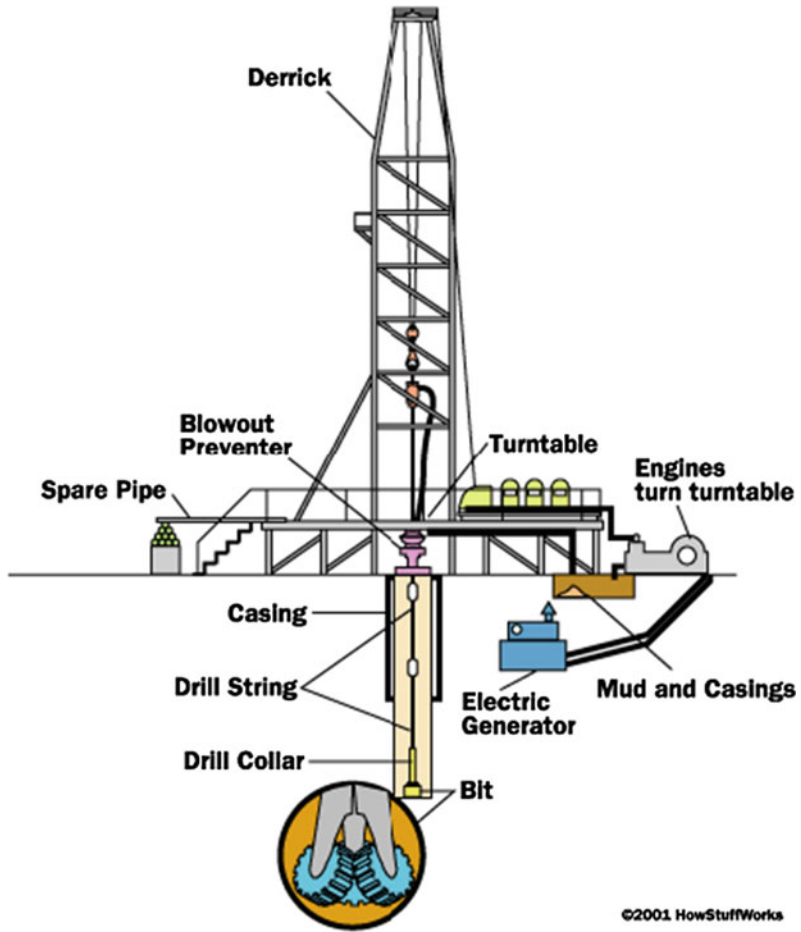


## Appendix C Drills

See Figs. C.1 and C.2.



**Fig. C.1** Percussion drilling. *Source* SONDAGEM A ... s.d



**Fig. C.2** Rotary drilling. *Source* Craig Freudenrich, Ph.D. & Jonathan Strickland “How Oil Drilling Works” 12 April 2001. HowStuffWorks.com, <https://science.howstuffworks.com/environmental/energy/oil-drilling.htm>. 26 March 2019

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## Fourth Cover

The oil industry was born very late in Brazil—even when compared to other Latin American countries. The emergence of this productive activity occurred as a consequence of the persistence of public and private national actors who bet on the potential of the geological country. In this singular trajectory, it is also evidenced that the institutionalization of the geosciences occurred in the wake of the productive activity. It was when the Brazilian state committed itself to developing the country's oil activity, through the creation of the National Petroleum Council in 1938 and then of Petrobras in 1953, which revealed a lack of qualified human resources in the field of geosciences. This last aspect is particularly impressive in a territory of continental dimension and of so much mineral wealth. This unique experience is described in a captivating and masterful way by Drielli Peyerl. It takes up this history from the dawn of the oil industry in 1864, when the first decree was issued

authorizing the mining of this mineral in the country until the end of the 1960s, when Petrobras made its first advances in offshore production. The Brazilian case clearly illustrates the thesis that progresses in the formation of human resources and, later, in research, only occurred as a result of an explicit development project. In fact, it was from the imperative of industrialization and the consequent expansion of the domestic demand for petroleum derivatives that the need arose to produce it on national soil. However, it was only with the expansion of its industry in the country that the need to train qualified human resources was consolidated, contributing to the sedimentation of geological science in Brazil. In this sense, Petrobras played a decisive role in the creation of the first geology courses in our context, and it is incumbent on it to act as a development agency in the institutionalization of this discipline in the country.

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