Report on the

CANADIAN PETROLEUM AND NATURAL GAS SEMINAR AND MISSION CARACAS, MARACAIBO, PUERTO LA CRUZ VENEZUELA

February 16 - 24, 1981

Government of Canada
Gouvernement du Canada

Industry, Trade and Commerce
Industrie et Commerce

CANADIAN PETROLEUM AND NATURAL GAS SEMINAR AND MISSION

CARACAS, MARACAIBO, PUERTO LA CRUZ

VENEZUELA

FEBRUARY 16 - 24, 1981

CANADIAN PETROLEUM AND NATURAL GAS SEMINAR AND MISSION

VENEZUELA FEBRUARY 16th - 24th 1981

Table of Contents:

		Page
1.	Summary	1
2.	Purpose of Seminar and Mission	2
3.	Canadian Participants	3
4.	Venezuela Today	8
5.	Briefings	11
6.	Program - Commentary - Attendance - Impact Caracas Maracaibo Puerto la Cruz	12
7.	Debriefing	15
8.	Province of Ontario Mission views.	18
9.	Province of Alberta Mission views.	19
10.	Opportunities for Exports.	20
11.	Synopsis of Address by Dr. Aravelo Guzman Reyes	22
12.	Synopsis of Papers.	23
13.	Seminar Programs, List of Registrants	34

SECTION 1

SUMMARY

The seminar encompassed presentation of eleven technical papers in Caracas and ten each in Maracaibo and Puerto la Cruz. The accompanying trade missions, sponsored by the Governments of Alberta and Ontario availed themselves of the opportunities to acquaint the attending Venezuelan petroleum industry personnel with a representative cross-section of Canadian manufactured equipment. Approximately 195 persons attended the seminars at various times and comments were favourable. The technical papers covered a wide range of topics from Petroleum Geophysics to Production and Refining, all topics of current interest and importance to the industry. Both the seminar and mission were timely and well received by the Venezuelans attending. Most of the Canadian participants developed important contacts and expect to make early return visits to the country.

SECTION 2

PURPOSE OF SEMINAR AND MISSION

In the twelve months to December 1979, the last year for which statistics have been produced, Canada imported $1.5 billion of goods from Venezuela, of which crude oil accounted for $1.4 billion or 95%. On the other hand, Canadian exports to Venezuela totalled only $681 million, largely in motor vehicles sub-assemblies and parts. The imbalance is very striking. Canada is interested in improving its position while Venezuela is anxious to reduce its dependance on USA technology and goods, particularly within the petroleum sector. A Canadian presence would be most welcome because of our growing reputation as possessors of expertise in specific areas. The growing size and importance of Canada's national oil company is also viewed positively.

The thrust into Venezuela comes at an opportune time in the development of that nation's petroleum industry. Reserves of conventional crudes are declining and now represent less than half of total production. The industry will have to devote vast amounts of capital to the installation of secondary and tertiary recovery systems and to the exploitation of the very large and as yet untapped heavy crude deposits of the region north of the Orinoco River called Faja. Canadians have the expertise and the equipment to do the job, but a concerted effort is needed to penetrate this market. The seminar and mission was designed to promote an awareness of Canadian goods and technology while introducing Canadian businessmen to the Venezuelan market place.

SECTION 3

CANADIAN PARTICIPANTS

GOVERNMENT OF CANADA

Dr. James P. Hea
Director General
Petroleum Research Branch
Department of Energy, Mines and Resources
580 Booth Street
Ottawa, Ontario K1A 0E4
Tel: (613) 995-9351

Mr. R.K. McGregor, P. Eng. - Seminar Leader & Chairman
Energy and Environmental Equipment Division
Machinery Branch
Department of Industry, Trade and Commerce
235 Queen Street
Ottawa, Ontario K1A 0H5
Tel: (613) 992-0321

Mrs. Margaret E. Leigh - Seminar Coordinator
Western Hemisphere and Pacific Division
Trade Fairs and Missions Branch
Department of Industry, Trade and Commerce
235 Queen Street
Ottawa, Ontario K1A 0H5
Tel: (613) 995-8303

Mr. D. Courchene - Seminar and Mission Recorder
Regional Officer
Alberta and Northwest Territories Region
Department of Industry, Trade and Commerce
500 MacDonald Place
9939 Jasper Avenue
Edmonton, Alberta T5J 2W8
Tel: (403) 420-2944

SEMINAR MEMBERS

Company or Organization	Representative
Teknica Resource Development Ltd. Suite 600, 633, 6th Ave. S.W. Calgary, Alberta. T2P 2Y5 Tel: (403)269-4386 Telex: 03-826725	Roy O. Lindseth President
The Computer Modelling Group 3512, 33rd Street N.W. Calgary, Alberta. T2L 2A6 Tel: (403)282-9286 Telex: 03821545	Dr. Khalid Aziz, P.Eng. Manager
Alberta Research Council 11315 - 87th Avenue Edmonton, Alberta. T6G 2C2 ProjectTel: (403)467-8861 Telex: 037-2147	Dr. D.A. Redford Project Manager In-Situ Recovery
CE Lummus Canada 255 Consumers Road, Unit 2 Willowdale, Ontario. M2J 4H4 Tel: (416)493-4123 Telex: 06966712	Mr. R.B. Bower Manager International Bus. Dev.
CE Natco Limited 1100 A 58th Avenue S.E. Calgary, Alberta. T2H 2H3 Tel: (403)252-8841 Telex: 038-21548	Mr. Jack Williams President
HEP Pumping Units Division of Canadian Foremost Ltd. 2915 - 10 Avenue N.E. Calgary, Alberta. T2A 5L4 Tel: (403)248-6444 Telex: 038-22671	Mr. R.J. Scott Director of Marketing
Davie Shipbuilding Ltd. P.O. Box 130 Levis, Quebec. G6V 6N7 Tel: (418)837-5841 Telex: 051-2254	Mr. Ed White Vice-President Mr. René Hallé Assistant Manager Marketing

... 2

Lavalin Services Inc.
909 - 5th Avenue S.W.
Calgary, Alberta. T2P 0N8
Tel: (403)237-6500
Telex: 03-826650

Mr. R.A. Collie, P. Eng.
President

Energy Research Laboratory CANMET
Energy, Mines & Resources Canada
c/o 555 Booth Street
Ottawa, Ontario. K1A 0G1
Tel: (613)996-4570
Telex: 053-3586

Mr. Jean Denis
Manager
Synthetic Fuels
Research Laboratory

Petro Canada
P.O. Box 2844
Calgary, Alberta. T2P 3E3
Tel: (403)232-8000
Telex: 03-825753

Mr. George Lunin
Manager
Engineering Department

ALBERTA MISSION

COMPANY OR ORGANIZATION	REPRESENTATIVE
Ministry of Economic Development Government of Alberta 11th Floor, 10909 Jasper Avenue Edmonton, Alberta. T5J 3M8 Tel: (403)427-4809	Mr. Brian C. Westlund Trade Development
Propak Systems Ltd. 10 East Lake Boulevard Airdrie, Alberta. T0M 0B0 Tel: (403)948-2001	Mr. Donald W. Krusky Manager, Business Development
Global Trading Company (1979) Inc. 909 - 5th Avenue S.W. Calgary, Alberta. T2P 3G5 Tel: (403)237-6500	Gordon Brown Vice President
ATCO Drilling Ltd. 800 - 6th Avenue S.W. Calgary, Alberta. T2P 0T8 Tel: (403)263-1215	Mr. Rolf Siebert Management in Training Administrator
E.A. Kutryk Industries Ltd. 3131 - 57th Avenue S.E. Calgary, Alberta. T2C 0B2 Tel: (403)279-2511	Mr. Douglas J. Arkison Sales Manager
Sprung Instant Structures Ltd. 1001 - 10th Avenue S.W. Calgary, Alberta. T2R 0B7 Tel: (403)245-3371	Mr. Layman Ozolin Director of Marketing
Le Grand Industries Ltd. 616 - 58 Avenue S.E. Calgary, Alberta. T2H 0P8 Tel: (403)253-0117	Mr. Walt Labuhn Vice President & Gen. Mgr. Pump Division

ONTARIO MISSION

COMPANY OR ORGANIZATION	REPRESENTATIVE
Trade Development Branch Ministry of Industry & Tourism Government of Ontario Queen's Park Toronto, Ontario. M7A 2E1 Tel: (416)965-5701	Mr. Hans Martinsen International Marketing Consultant
Guelph Engineering Co. Ltd. 10 Kingsmill Avenue Guelph, Ontario. N1H 6J6 Tel: (519)824-2320	Mr. Roger McCormack Marketing Manager
Westinghouse Canada Ltd. Box 150 Hamilton, Ontario. L8N 3K2 Tel: (416)528-8811	Mr. Salvador Gomez Manager, South A.M. Turbines
3L Filters Ltd. Box 371 (G) Cambridge, Ontario. N1R 5V5 Tel: (416)621-9949	Mr. John Kadar President
Ebastec Lavalin Inc. 60 Bloor Street W. Toronto, Ontario. M4W 3E9 Tel: (416)964-4518	Mr. Roy Hughes Director, Business Development
J.H. Lock & Sons Ltd. 150 Perth Avenue Toronto, Ontario. M6P 3X4 Tel: (416)531-1186	Mr. James Holland General Sales Manager

SECTION 4

VENEZUELA TODAY

Venezuela is a federal republic with a bicameral legislature, under the constitution established in 1961 after the 1958 overthrow of then dictator Marcos Perez Jiménez. It enjoys essentially a two party system and each has alternated in power since 1963. The official population is estimated at 13.8 millions, unofficially the figure exceeds 17 millions due in large measure to an influx of "unregistered" immigrants from neighbouring countries. Approximately 20% of Venezuelans are foreign born.

The Venezuelan economy is heavily reliant on the petroleum industry. The Perez administration (1975-79) initiated ambitious social and infrastructure development programs with extensive public sector involvement that included nationalization of the Petroleum Industry. Although well conceived, the programs resulted in record imports which, despite inflated oil revenues, resulted in a 1976 trade deficit of $4.7 billion. The Herrera administration is turning more toward current expenditures in Agriculture, Housing, Education and Health. Development projects are being reassessed in light of Venezuela's current fiscal and monetary situation with the less critical ones being deferred or given very low priority. In consequence of fiscal measures undertaken, the balance of payments deficit was sharply reduced, reserves increased and the nation appears to have regained the confidence of the international financing community.

As may be expected, petroleum accounts for approximately 95% of Venezuelan exports; imports, which formerly consisted primarily of capital goods necessary for industrialization programs, now include a large part of Venezuela's food requirements as well as hard goods and transportation equipment. Canada accounts for approximately 12% of Venezuelan exports, but only about 6% of imports.

The dawn of the Venezuelan petroleum industry dates back to 1922 when the Shell discovery well, Barrosos #2 on the north-east shore of Lake Maracaibo, ran wild for ten days producing at the rate of 100,000 barrels per day. Other discoveries, including the fields under Lake Maracaibo followed in rather rapid succession, in 1928 the first important discoveries in Eastern Venezuela were announced, 1937-39 saw discoveries in Anzoategui (central) State and in 1945 the Barenas field south-east of Lake Maracaibo came into production. Total Venezuelan production increased from 323 million barrels per year in 1945 to 2.3 million barrels per day in 1979 and will be kept at this approximate level. However, production from the Lake Maracaibo fields, the principal source of conventional crudes, is declining. In order to maintain production at the desired levels, heavy crude reserves will have to be exploited, more extensively. Secondary and tertiary recovery of existing fields will have to be stepped up and the Faja (Orinoco belt) heavy oil deposits developed. Large investments in production facilities are

envisaged, particularly in the areas of steam generation. There will also be attendant investment in drilling, producing and transporting production from the new areas. In addition, the Venezuelan petroleum industry has started a program of off-shore exploration (with encouraging results on the north-east coast); exploratory work in the Gulf of Venezuela (which offers the best potential) is waiting settlement of the Venezuela/Colombia border dispute.

The Venezuela petroleum industry was totally nationalized in 1976 though strong ties remain with the former parents, including technical co-operation agreements. The sole owner of all petroleum concessions is the Petroleos Venezuela (PDVSa) which operates through four integrated companies, Lagoven (formerly Creole Petroleum, or Exxon), Maraven (Shell), Meneven (Gulf) and Corpoven. The latter is the successor to the former state company CVP which assimilated five of the remaining foreign companies which were operating in Venezuela, prior to nationalization. PDVSa also encompasses Pequiven (the petrochemical arm), Intevep (research) and recently formed Bariven as an umbrella purchasing agency; the latter maintains a purchasing office in Houston.

In addition to the need for developing known reserves of heavy crudes, PDVSa is cognizant of a need to find more medium and light crudes for internal consumption. This has occasioned reactivation of traditional areas that are thought to contain reserves in deep formations. Following on this activity, the industry has had to acquire new equipment and build up exploration staff. The combination of expanded programs in old areas and exploration of new ones has resulted in a marked increase in geophysical activity (16,000 kilometers of line in 1979 VS 5,500 in 1977) and drilling (136 wildcat wells in 1979, 45 in 1977). In 1981, 343 wildcats will be drilled, 212 in the Faja, 131 in the search for light oils.

In addition to petroleum, Venezuela contains sizeable reserves of natural gas which currently accounts for 20% of energy needs. Much of the natural gas is produced in association with oil and large quantities are used for gas reinjection (120 projects). Nonetheless, some gas is consumed for energy production. It is the governments' intention to encourage wider use of gas as a fuel and as a petrochemical feedstock. Exploration off the northeast coast has disclosed significant natural gas reserves which are being evaluated.

It will be seen from the foregoing that vast sums will be expended by the Venezuelan petroleum industry. Much of the "matériel" and a good bit of the technology will have to be imported simply because the industrial base cannot supply the country's needs and the (petroleum) industry is woefully thin on human resources. Additionally, some equipment cannot be produced economically for the domestic market because of the limited market size.

The Venezuelan power generating capacity is not growing as rapidly as demand and a shortfall of approximately 1000 Megawatts is anticipated, in large measure because the Guri project has fallen behind schedule. Nuclear power installations are only a very faint future possibility, but authorities are nevertheless thinking in terms of commissioning a socio-economic study related thereto. Of more immediate interest are the coal deposits of the northwest which could form the base for large thermal power generation.

Economically, the government held back expansion in 1979 and 1980 while trying to put its external and internal finances in order. The Venezuelan economy now appears ready to resume expansion - real growth of 4.5% is expected for 1981, 6.5% average for the period 1981 - 1985. Major spending projects include housing, food production and, of course, petroleum development. Inflation, which soared to 23.7% in 1980 should fall back to 14-17% in 1981 with the help of special measures to reduce prices. The government must do a careful balancing between the need to spur growth, and the attendant rise in imports which will impair recovery in the balance of payments. With the softening of world oil prices, the government cannot rely on appreciable increases in oil revenues to finance imports.

SECTION 5

BRIEFINGS

Briefing of Seminar Participants by R.K. McGregor

The seminar participants from Calgary, Edmonton, Toronto, Levi, Quebec and Ottawa assembled in New York, en route to Caracas, for a briefing by R. K. McGregor, Machinery Branch on matters pertaining specifically to the seminar.

Mr. McGregor outlined the background to the planning of the seminar, details of the history and organization of Petroleos de Venezuela (P de V). He also explained why the seminar was being presented at this time and that the selection of topics and individual seminar participants was in response to specific problem areas identified by P de V. He explained why the seminar was being conducted in Caracas, Maracaibo and Puerto la Cruz and described some of the Petroleum related activity carried on in the three major areas, Caracas, Maracaibo and the Faja region north of the Orinoco River. He also outlined some of the administrative arrangements concerned with the seminar.

Briefing by Embassy Personnel

The seminar and Mission members arrived in Caracas in various groups up to Feb. 14th. The entire group assembled at the residence of Lawrence D. Lederman, Commercial Counsellor, Canadian Embassy, Caracas, on February 25th.

Mr. Lederman presented a brief summary of Venezuela today, with particular emphasis on the Petroleum Industry. Mr. Wm. Jascke, Commercial Secretary carried on with a briefing on the Petroleum Industry, including some of the history of Petroleos de Venezuela and the operating companies, recent developments and general plans for development of the Faja (Orinoco heavy oil belt) whose reserves are variously estimated at between 70 and 1000 billion barrels. Embassy personnel stressed Venezuela's desire to substantially reduce reliance on American technology and equipment, the favourable light in which Canada is held (one of the first five desired trading partners, before the U.S.A.) and the consequent timeliness of the seminar/mission. The briefing concluded with a recapitulation of the seminar agenda, travel arrangements and tour plans.

SECTION 6

PROGRAM: COMMENTARY - ATTENDANCE - IMPACT

CARACAS - FEB. 16 - 18

Proceedings opened on February 16th with a welcome by L.D. Lederman, Commercial Counsellor followed by greetings from His Excellency Roger Rousseau, Canadian Ambassador to Venezuela. Mr. Rousseau spoke of Canada's desire to maintain its excellent relations with Venezuela, and to export some of its expertise to assist Venezuelan industry, with emphasis on the petroleum sector. The importance of Canada/Venezuela trade was also stressed. Dr. Aravelo Guzman Reyes, Director General, Secretorial de Hidro Carburos was introduced - a synopsis of his address is included as Section 11. R.K. McGregor, Seminar Chairman then outlined the purpose of the seminar, speakers and topics. The technical sessions followed. Because Dr. Roy Lindseth's luggage was misdirected at Los Angeles, the seminar agenda was re-arranged. (See Section 13). Some 24 industry representatives attended throughout the day, 37 on February 17th and 28 on the 18th. The subject matter of the papers appeared to be well received but generally elicited few questions. The evening featured a reception at the Ambassador's residence, attended by guests from the Venezuelan government, the petroleum industry and the business and financial community.

Luncheon on February 18 featured a short welcome by His Excellency Ambassador Rousseau and Antonio Casas Gonzales, Director, Petroleos de Venezuela , representing General Alfonso - Ravard, President of PDVSa. Guest Speaker was Dr. James P Hea, Director General of the Petroleum Research Branch of the Department of Energy Mines and Resources, Ottawa. Dr. Hea outlined Canada's National Energy Policy, a subject which, while of general interest to the Canadian companies represented, invoked little interest on the part of the Venezuelan audience.

A review of the registration list reveals that approximately sixty percent of the persons in attendance were from the Venezuelan oil companies (ie. PDVSa, Lagoven etc.), the balance from private industry, government or the financial community. Most of the petroleum industry representatives were engineers in various departments, ie, geological, exploration, drilling, etc.

Because of the enforced change in the seminar agenda, some registrants who were interested in specific papers found that they had either missed the speaker or had to return the following day. Dr. Khalid Aziz graciously consented to private sessions at the Lagoven and Intevep offices. Many questions that remained unasked during the seminar were answered during coffee breaks and lunches.

Maracaibo Feb. 19 - 20th

The sessions in Maracaibo were opened by L.D. Lederman followed by a film and a short special presentation by David Tutt, Chief Petroleum Engineer, Bank of Montreal, Calgary. Mr. Tutt addressed the subject of oil & gas reserves in Canada. The seminar sessions followed the prepared agenda.

Attendance was somewhat less than at Caracas (40 over the 2 day period) but, more field engineers were in attendance. As a result, the seminar material was thought to be of greater interest, despite the fact that the topics again elicited few questions. The Province of Alberta hosted a reception during the evening of February 19th.

On February 19th, Lagoven sponsored a tour of its facilities in and around Tamare and Lagunillas. The group travelled to the Lagoven camp where it was met by the tour guide. A short briefing by Lagoven personnel was followed by a bus tour of the maintenance and storage yards and the dockyard facilities on Lake Maracaibo, thence by a boat tour of the oilfield installations on the lake itself. The tour concluded with a boat ride back to Maracaibo.

On February 20th Maraven sponsored a tour of its Lake Maracaibo/Western region facilities. The group was transported to the offices and camp at Lagunillas for a briefing by Maraven engineers. The presentation related mainly to Maraven's present and projected steam injection projects - Maraven is operating a large pilot project covering 192 wells, and has 9 plants on the drawing boards. A tour of the M6 pilot project was the last stop before returning to Maracaibo. A boat tour of lake installations was also on the program. Both tours were beneficial in that they provided an opportunity to meet some operating personnel and obtain a first-hand view of a small part of field operations.

PUERTO LA CRUZ - FEBRUARY 22-24, 1981

The entire party arrived in Puerto la Cruz on February 21. On Sunday, February 22, about 25 Canadians participating in the seminar visited the San Tomé region some 185 km south of Puerto la Cruz as guests of Meneven. This is Meneven's largest and most complex district. It is located in the state of Anzoategui in the heart of Messa de Guanipa, just north of the Orinoco River basin. This district has the most extensive variety of petroleum installations which includes production stations, pipelines, oil storage facilities, water, gas and vapour injection plants and electrical generation facilities and also includes large integrated gas lines which constitute the biggest gas complex in the country. Two hundred and fifty-seven thousand barrels of petroleum are produced daily in this district, 57 percent of which are light crudes, 20 percent medium crudes, and 23 percent heavy and extra heavy crudes. San Tomé is the eastern headquarters of Meneven, and it includes the engineering and storage facilities for most of the equipment used in the gas and oil fields. Scattered throughout the countryside were many pump jacks, well head treatment facilities and gas re-injection plants. There is a vast network in this district of gas collection, transmission, and compression centres. There are 53 compressor stations with 212 units with a total power capability of 234,000 horsepower; 1,235 million cubic feet of gas per day is produced of which 487 million are used to satisfy 65 percent of the national demand for industrial and domestic use. The tour included stops at the Ovejas gas reinjection station and to two of the many oil well treatment/separation plants in the area. No accurate

information on the make up of the well production was available although some areas were characterized by high water, silt and entrained gas content. This region offers a good market for modern well-head treatment equipment, both for new installations as well as to upgrade many of those older, less efficient systems.

The seminar session started on Monday, February 23. The agenda remained virtually unchanged except, as previously arranged, did not include the paper by Davie Shipbuilding. Approximately twenty persons attended the sessions each day; there was very little turnover of personnel in attendance as most came from the fields, at some distance from Puerto la Cruz, and stayed for the two days. It appears that most were impressed by the quality of papers but again few questions came from the audience. Discussions with some of the registrants in Puerto la Cruz (as in Caracas and Maracaibo) leads one to believe that most of the seminar material was informative and timely. A few suggestions for improving attendance were received; namely, a) the seminar should be postered in working offices and field offices if at all possible and b) include information on the topics and name the speakers.

SECTION 7

Debriefing Feb. 23, 1981

An informal debriefing, at which virtually all seminar and mission members were present, was held on the evening of February 23rd. R.K. McGregor, Seminar Leader and Chairman, conveyed thanks to Embassy personnel for assistance provided, to the seminar team for the high quality presentations and excellent co-operation, and to the mission members. He then called on members for their views, which follow, more or less verbatim and anonymously.

"ITC has good people in Canada and abroad. Am disappointed that audiences were not larger; was seminar adequately publicized? What type and amount of publicity was used? What efforts were made to attract support of industry? The problem facing Canadian exporters seems to be one of convincing the Venezuelan petroleum industry that we can help and want to do so. We must seek feedback from Venezuelans in attendance. Some equipment problems lead to the question of whether it would be adviseable to be self sufficient in this regard. Agree with the concept of using seminars as a selling instrument, but should be on a continued and consistent basis, i.e. further seminars should be planned now for 1982 and 1983. Object to the distributing of the publication on Canada's National Energy Plan, as it is totally irrelevant to the Venezuelan petroleum industry and the objectives of the seminar".

"While the subjects treated in paper were of general interest, there is little likelihood of specific application, inasmuch as Venezuela has no plans for any large scale upgrading of heavy crudes. Agree that attendance could have been better, but was probably deceiving because of "shotgun" approach to recruitment. A follow-up with "rifle" approach recruitment through professional journals and/or in co-operation with PDVSa and/or Intevep could yield better results, rather than advertising in daily newspapers. Perhaps people contacted during organizational stage did not appreciate scope and range of seminar".

"Am in general agreement as to difficulties encountered, but how to improve return for time and money spent, i.e., how to improve low turnout, reach the right numbers of the right people? We should consider using professional societies to assist in organizing. A registration fee might be appropriate, or perhaps bringing the seminar to the field. Seminar did result in some good contacts but could have been much improved. Quality of papers high but not enough people there to benefit".

"Consideration should be given to holding future seminars at one location only. Moving from one centre to another could have detracted from effectiveness. Need rifle type of follow-up and exchange of contacts established. A meeting of the group should be held within two or three months. Would like to see separation of technical aspects from the marketing side".

"Suggest that success of future seminars could be ensured by "selling" through technical societies with the co-operation of Venezuelan petroleum industry personnel. Possibility of having Intevep co-sponsor should be investigated. Perhaps too many trade delegations are coming through, with consequent disruption, and Venezuelans are tiring."

"Consider that the seminar has established that Canada has the technology, and good contacts were made, but there is little possibility of meaningful sales in the short to medium term. Am convinced that response to the seminar could have been improved with the co-operation of the professional societies in Venezuela. Am convinced from observation and discussion that Venezuelan production will decline in the short term at least and from observations it appears many industry personnel are not fully aware that systems are inadequate. We must continue pressure to convince Venezuelan industry that we can assist."

"There is little benefit to Petro-Canada in the seminar/mission inasmuch as there are already semi-annual meetings between Petro-Canada and PDVSa/Intevep for technical exchanges."

"Am satisfied at interest shown by participants. Suggest that lack of questions could be traced to reticence in front of peers. Am of the opinion that Venezuelan industry is very thin in human resources and that when considered in this light, attendance was much better than the numbers suggest."

"What is the basis for gauging success? The technical papers did not take direct aim at Venezuelan problems in so many words. Feel there was a need to be more explicit, to be direct in fitting topics (and products) to Venezuelan market and needs. The seminar is useful for selling because it opens the way for sales personnel."

"There is a great need for technical exchanges involving visits to each country. While no sales will likely materialize in the course of a mission of this nature, the value is in the contacts established. For most suppliers, few sales will materialize in Caracas. Salesmen must be seen in the field, must become knowledgeable of working problems and conditions. It's unlikely that people who make the purchase decisions will attend seminars of this nature."

"I repeat conviction that we must have permanence in the country, i.e. local base of operations, no carpetbagging, if we are to be successful. Must also think in terms of what Venezuela needs to buy rather than what Canada wants to sell."

Post comments followed. L. Lederman noted comments of seminar and mission members. The idea of co-sponsorship had been proposed to Intevep which had

shown interest, but subsequently withdrew from the picture; Intevep did not want to seem to be endorsing Canadian products and services. Lederman emphasized the need for continuity of effort and permanent presence to gain the most benefit. He also suggested neither ITC nor individuals assume knowledge by the post of their circumstances and activities, inputs from Canada and Canadians are needed to be most effective in providing assistance.

The Post expressed the conviction that the visit was timely in context of Canada/Venezuela relationships. Venezuela wants to reduce dependance on U.S.A. and wants to look to Canada for help. Seminar was important, despite limited attendance, in delivering the message that we have the technology and the equipment, that we can help. We must plan a repeat performance in 1982.

SECTION 8

PROVINCE OF ONTARIO.

Mission leader Hans Martinson (Province of Ontario, Ministry of Industry & Tourism) expressed satisfaction at the reception accorded companies by the Venezuelan industry. No appointments had been scheduled by embassy staff but mission members were able to secure appointments on their own intitiative and by following-up on known contacts and previous associations. The consensus was that numerous good contacts had been established and general information on long range plans obtained. The mission had been otherwise very useful in gaining a partial insight into some of the problems facing would-be exporters to Venezuela. Martinson will be organizing a Provincial Mission for the fall of 1981 and will ensure that participating companies do adequate preparatory work in light of information gleaned during this mission.

Activities by Ontario companies consisted primarily of establishing new contacts and reaffirming old ones. There was a benefit derived in meeting field personnel, who in large measure are in a better position to judge the merits of products offered, to gain firsthand knowledge of operating conditions. However, most purchasing decisions particularly in big ticket items (steam generators, turbines etc.) are removed from the field. Therefore, there was some disappointment that there were not more high level officials in attendance. There was general agreement that, with few exceptions, business will not develop for up to two years and only then if the selling effort is sustained. Because purchasing officers are located in Houston (Bariven) and New York it is as important to become known there as in Venezuela.

Another view expressed related to the benefit in determining changing requirements. What is applicable and in demand today might not be required tomorrow. Frequent contact is necessary to stay attuned to the needs of the Industry.

... 2

SECTION 9

PROVINCE OF ALBERTA

The Alberta industry mission members as a group, were more heavily oriented toward the production end of the petroleum industry. Therefore, interest centered on current production methods and equipment and in seeking a niche for Canadian equipment and services in current and planned production activities. Brian Westlund (Province of Alberta, Department of Economic Development) was generally satisfied with the number and quality of contacts established. Of particular value was the opportunity to learn of some of the plans for expansion of secondary and tertiary recovery and development of the Faja. Inasmuch as Canada has developed a pool of expertise in heavy oil production (including up-grading) there are enormous opportunities on the horizon. One of the major problems facing any Canadian company is in overcoming an inbred dependence on US sources. This stems from their U.S. roots, and because of the existence of technology agreements which the nationalized companies signed with their former parents. The importance of these relationships will diminish as these agreements expire and the various divisions of PDVSa become aware of other sources of advanced technology. This means, however, that strong and continuing efforts will be required to overcome any advantage U.S. companies may have.

More specifically, there appears to be strong potential for engineering services in the design of recovery systems and field process units. Production of heavier sour crudes is increasing as the light sweet crude reserves decline. These crudes require more sophisticated production and handling methods (ie. steam drive, upgrading etc.) thereby creating a demand for services and goods. A market for gas sweetening technology and equipment is also developing as Venezuela move to exploit gas reserves and Propak Systems Ltd. has been invited to tender on a gas sweetening plant for Corpoven. As with the Ontario mission members, there was a consensus that successful marketing hinges on enlisting the support and acceptance of field personnel; strong recommendations from the field can influence the purchasing decision maker. However, major decisions are made at the head office or area office levels and well placed contacts there, are also a necessity.

The Venezuelan market appears to be more "open" than that in other South/Central American nations. Agency representation and/or a local office appear necessary, to establish some degree of permanency.

SECTION 10

Opportunities for Exports

The following is a recapitulation of views expressed by both the seminar and mission members as they relate to business opportunities in Venezuela:

Steam Flood/Steam Drive-

Venezuelan reserves are now approx. 55% heavy, 45% conventional crudes and the balance will increasingly tilt toward heavy crude. Production of heavy crudes will necessitate use of steam injection techniques. Maraven alone has nine steam plants in the planning stage for the Maracaibo fields comprising installation of up to 200 generators. Opportunities exist for engineering and project management capabilities, leading to supply of goods.

The Faja (the region north of the Orinoco River) consists entirely of heavy crudes, both conventional and unconventional. The development of the Faja, soon to be accelerated, presents an enormous market for technology and equipment for thermal flood and well head treatment.

Drilling and drilling equipment

The operating companies own approx 40% of their drill rig requirements and lease the balance. As development activity expands, medium and shallow depth rigs will increasingly come into demand. Some owned rigs are operated under labour contract arrangements. Both represent export potential. There could be opportunities for deep drilling services in the Zulio province fields west toward the Columbian border. Deep wells on Lake Maracaibo utilize jack-up rigs. This market is now dominated by several U.S.A. companies (as is the market for leased/contract land drilling) which apparently have a competitive edge. Opportunities will present themselves when Venezuelan efforts focus on Continental shelf exploration where some discoveries have already been made. It is believed that Canadian off shore rigs can compete effectively here. The most exciting potential appears to lie in the Gulf of Venezuela, but exploration of this area is on hold until the Venezuela/Columbia border question is settled.

Interest has been expressed in non-conventional (e.g. hydraulic) drill rigs that might offer cost advantages particularly for shallower drilling and are well suited for directional drilling.

Seismic and associated services

Petroleos de Venezuela operating divisions undertake a portion of their own seismic exploration work and operate a total of 12 crews. Additionally, a privately owned Venezuelan company is active. For the most part, however, the market is dominated by U.S.A. companies (Western, Teledyne, G.S.I.). Therefore, there appears to be potential for Canadian companies to participate. Unfortunately, Canadian operators, with few exceptions, do not have the resources to address the market. The best opportunities seem to be in the interpretative fields, ie. petroleum geophysics, reservoir simulation and the like. There are only some 200 - 300 qualified geologists and geophysicists in Venezuela, pointing to a need for services in these fields. Successful penetration would in large part hinge on establishing a "presence" (ie. an office), a move that would present difficult staffing

problems, in light of the already thin pool of trained experienced personnel.

Processing

Official thought is that a minimum of upgrading of heavy crudes will be done in Venezuela. Foreign refineries will be encouraged to modify their process streams to accommodate the heavier crudes that increasingly characterize Venezuelan production. Consequently, few opportunities exist in the short term. On the other hand, the operating companies are using some of their crude as a fuel for enhanced recovery programs. The minerals present in these fuels cause severe damage to the equipment. Therefore, as more enhanced recovery projects come on stream and more crude is utilized as a fuel source, the industry will have to weigh the economics of equipment maintenace cost versus upgrading. Further, as reserves of conventional crudes decline, Venezuelan refineries also, will have to convert to processing heavy crudes. If the objective is to maximize recovery of light ends and distillates, the Canadian developed CANMET process is attractive. No matter what the process selected, Canadian technology and engineering expertise with heavy oils should find a ready market.

Production equipment

There is no home grown pump jack manufacturing industry; imports are mainly from the USA (Lufkin, Oilwell) with some products from other South American countries. Demand, currently 1000/1200 units per year, will increase substantially with development of the Faja. Meneven alone predicts its requirements will be about 600 per year as the Faja is exploited. Predictably, the Venezuelan government will move to encourage local manufacture of conventional balance beam units. In the meantime, a strong market exists because of heavy demand in the USA that is stretching delivery dates. The Venezuelan industry is producing some spares. Contacts established during the seminar/mission expressed interest in testing non-conventional pumping units and exploratory talks are underway that could lead to definative proposals. Field treating units, ie, separators, gas sweetners, etc. and associated engineering services, are other areas that offer good export opportunities.

Project Management & Other

The Venezuelan petroleum industry expects to build a large number of steam injection plants (nine plants involving 200 steam generators planned by Maraven alone) to boost production of heavy oils and recovery from existing reservoirs. Each new project represents an opportunity for a project management contract. Corrosion problems will become more acute as the heavier sour crudes become increasingly predominant. Fortunately, Canada has a tremendous reservoir of knowledge in handling both sour gases and liquids. Production of heavy crudes fits neatly with Canadian experience and expertise - Canadian consultants in these fields should be able to market their services.

Pipelining technology could also be marketable as development pushes into the Orinoco region, and as the use of natural gas as an energy source and petrochemical feedstock is expanded.

SECTION 11

SYNOPSIS OF SPEECH

Dr. Arévalo Guzman Reyes
Director General
Secretorial de. Hidro Carburos
Address Opening Oil and Gas Seminar,
Caracas, February 16, 1981.

Dr. Guzman Reyes talked of existing energy and technical co-operation agreements in place between Venezuela and other nations and expressed his belief that Canadian experience and technology can assist the Venezuelan petroleum industry. "The climate for co-operation is favourable and direct bilateral contact would be beneficial" said Dr. Guzman Reyes, however, "Venezuela is looking for permanent, not temporary transfer". Canadian know-how fits Venezuelan requirements, but Venezuelan engineers must be trained so that "the technology remains here".

The Venezuelan petroleum industry is facing a period of development that will require the outlay of huge sums of money for developments in the Faja (Orinoco Belt) for production and upgrading of heavy oils. Additionally, Venezuela may consider investing in offshore refineries but, will basically attempt to encourage modification of offshore facilities to accept Venezuelan heavy oils.

The Venezuelan petroleum industry has a 5 year budget of 96 billion bolivares to develop the Faja comprising 2600 production wells and 3,000 workovers per year plus associated production facilities. Venezuela contains 6100 known reservoirs of which 200 are in secondary recovery and 500 more need to be.

Recovery is less than 30%. Accordingly, Venezuela is aiming to develop the human resources and to acquire the technical expertise to build a self supporting, self financing industry. This will include developing use of natural gas as a fuel. Venezuela produces approx. 2.2 million barrels of oil per day, continued Dr. Guzman Reyes, but produces associated gas only. There are potentially large reservoirs on the north-east coast and in Lake Maracaibo, the latter in association with condensates. It is important therefore, to develop use of this gas and of pentanes in the petrochemical industry. In conclusion, Dr. Guzman Reyes expressed the earnest wish to see development of permanent contacts with Canada, including joint ventures.

PROGRESS IN PETROLEUM GEOPHYSICS

BY

ROY O. LINDSETH

TEKNICA LTD.

600 633 6TH AVE. S.W.

CALGARY, ALBERTA

T2P 2Y5

Advances in seismic exploration data acquisition, digital processing, and new interpretive techniques are proving extremely effective for subsurface definition and the location of hydrocarbons.

Stratigraphic traps, development of heavy oil deposits, and the search for small accumulations of hydrocarbons, have all received new emphasis from greatly improved ability to map stratigraphy, facies changes, and depositional features. The greatest success has been in locating gas, since its reflection response in subsurface reservoir porosity is greater than oil.

New process technology derives synthetic subsurface sonic logs from surface measurements. The synthetic logs are similar to, and have most of the properties of, long spaced downhole sonic logs. The synthetics have been found to be particularly useful for delineation of the extent, thickness and porosity of petroleum reservoir rocks.

The use of geophysics in reservoir engineering and development drilling is another new and expanding field. In particular, the economics of new field development demonstrate substantial benefits from detailed reservoir mapping with the new techniques prior to establishing bottom hole drilling targets and locating offshore platforms.

Proper location of offshore drilling platforms can ensure reservoir coverage, and aid in optimizing development drilling patterns and the positioning of injection wells for secondary recovery programs to yield maximum recovery. Under favourable conditions, direct volumetric mapping of the reservoir can be accomplished.

ABSTRACT

Computer Design of Multiphase (Oil/Gas) and Single-Phase Pipe Facilities

K. Aziz and G.A. Gregory

Starting at the point where reservoir fluids enter the wellbore and ending with the point where these fluids or their derivatives are consumed, engineers must perform pressure drop and/or temperature profile calculations. Typical problems encountered by the petroleum engineer are:

(1) Calculations for the flow of oil, gas or their mixtures in vertical or deviated wells to predict either wellhead or bottomhole conditions.

(2) Calculations for the flow of oil, gas or their mixtures in field gathering systems to predict wellhead or plant delivery conditions.

(3) Design and analysis of single-phase oil, gas and dense-phase transmission lines.

(4) Compressor spacing.

(5) Inflow performance calculations.

(6) Generation and use of gradient curves.

Performing multiphase and many single-phase calculations by hand is:

(a) tedious and time consuming

(b) subject to errors due to the complex nature of the correlations and models

(c) subject to errors because of the need for assumptions to make the problem tractable

Such difficulties can be eliminated through the use of suitable computer programs which ideally should have:

(a) sound design procedures with carefully programmed iteration schemes

(b) well tested correlations and models

(c) easy access to fluid property data

(d) ease of use with simple and flexible data input

(e) options to handle various problems

(f) options to use the "best" method for each problem

Authors have developed a set of state-of-the-art programs that meet the above criteria. These programs have been used extensively over the past six years throughout the world.

This paper will describe the structure, feature and applications of INSPEC, PIPEFLO, WELLFLO and INPROP programs of Neotechnology Consultants Ltd.

ABSTRACT

New Developments in Reservoir Simulation

K. AZIZ

The Computer Modelling Group (CMG) was established in 1977 by the Governments of Alberta and Canada to do intensive research in the development of computer models for sophisticated enhanced oil recovery schemes. Since then 8 government agencies have become Members while 22 other organizations, including oil companies of various sizes, have become Associate Members.

CMG has already developed advanced technology for the simulation of in situ combustion, steam, gas injection (hydrocarbon and non-hydrocarbon), water flooding, and polymer injection processes. Work is now underway on chemical flood and fracture models. Along with the development of new models, considerable effort is directed towards the development of numerical techniques for solving large sets of linear and nonlinear equations that are typical of reservoir models.

This paper describes some of the recent developments of CMG and shows their impact on practical reservoir simulation problems. The technology developed by CMG is now being used extensively by the petroleum industry.

THE USE OF THE SOLVENTS AND GASES WITH STEAM IN THE RECOVERY OF BITUMEN FROM OIL SANDS

By

Dr. David Redford
Alberta Research Council

The use of several gases and solvents were examined as additives to the interwell verticle steam-stimulation process for the recovery of bitumen from oil sands. These additives gave unusually high recoveries and resulted in an examination of the mechanisms operating to achieve recovery. A number of recovery mechanisms were hypothesised and these are discussed in relationship to the experimental results obtained.

Experiments were conducted using a two-well, 45 cm diameter, three dimensional elemental physical simulator operating at conditions close to those anticipated in the field. Recovery curves and other pertinent results of the experiments are given together with correlation of results between experiments.

INTEGRATED HEAVY OIL PRODUCTION & UPGRADING

by

R. B. Bower

The Lummus Company Canada Limited

The world's oil sands and heavy oil generally are high in sulphur and metals and must be upgraded prior to marketing in quantity. It is further necessary to utilize newer production technologies, principally, the injection of large quantities of steam to obtain or enhance recovery. The integrated production and upgrading of these resources is a complex operation involving steam generation and injection, water treating, crude production and processing to provide a lighter low sulphur crude oil product. The presentation describes results from a comprehensive study performed by Lummus for an Orinoco, Venezuelan location to develop a detailed technical and economic understanding of an integrated facility for the production and upgrading of heavy oil and to determine the value of the upgraded product to a refinery market. The study utilized the Lummus refinery LP (Linear Program) model to simulate a production and upgrading complex and to establish a value for the upgraded product. To cover the range of technologies required input was made by a number of Combustion Engineering companies: CE Lummus (refining and upgrading), CE Crest (oilfield and drilling), CE Natco (oilfield steam generation and treating), and CE Power Systems (steam generation water treating and environmental control systems).

THE HEP PUMPING UNIT: PERFORMANCE CHARACTERISTICS, POTENTIAL APPLICATIONS AND FIELD TRIAL RESULTS

By

R. N. Laidlaw
P. J. Jespersen
HEP PUMPING UNITS

The HEP pumping unit which is the result of a four year development program by Canadian Foremost Ltd., constitutes an alternative to the familiar beam pumping unit as a means of transferring energy from the prime mover to the sucker rod string of a pumping well. This paper will address some basic concepts which are part of the HEP system design and will describe some of the resultant unit performance characteristics. The potential for enhancement of pumping well operations utilizing the high degree of control over rod string motion attainable with the HEP system, is discussed together with the results of a number of field trials in the Lloydminster area and some plans for further unit evaluation and development. A cost and capacity comparison with conventional beam pumping units is also included.

EQUIPMENT REQUIRED FOR THE OPERATION OF A STEAM INJECTION SYSTEM AND FOR THE PRODUCTION AND PROCESSING HEAVY OIL

By

Jack Williams
CE Natco Limited

The equipment required for the total project would include a discussion of all components of water treating equipment such as the filters, Ion exchanger units and degassers, the size and type steam generators and the processing of steam flood oil production equipment which would include the types and sizes of free water knockouts, exchangers, oil treaters and desalters. We will also discuss the quality of the produced water and the equipment required for hydrocarbon removal and water clean-up for steam recycle on disposal.

THE CANMET HYDROCRACKING PROCESS

By

George Lunin
Petro Canada

A new hydrocracking process is currently being commercialized by Petro Canada. This process has application in upgrading of heavy crudes and the residual fraction of conventional crudes.

The process (called CANMET) has the advantages of simplicity, high pitch conversion (above 525°C) and product yield and an abliity to handle a wide variety of feedstocks including Cold Lake, Lloydminster and Boscan.

The technical and economical viability have already been confirmed. The engineering and construction of the demonstration plant is currently planned.

This presentation will review the development of the process, its present status and the future program.

PETROLEUM PROCESSING RESEARCH AND DEVELOPMENT AT THE FEDERAL DEPARTMENT OF ENERGY, MINES AND RESOURCES

by

Jean Denis

ABSTRACT

In Canada, the federal department of Energy, Mines and Resources through its Canada Centre for Mineral and Energy Technology (CANMET) is actively supporting petroleum processing research and development in a blend of in-house and contract-out programs. This presentation outlines the research projects, describes the equipment and facilities and identifies the manpower and budgets which are available to support the research activities.

THE HANDLING OF SOUR GAS

BETWEEN WELL HEAD AND GAS PROCESSING PLANT

I.E. WELL HEAD FACILITIES AND GATHERING SYSTEM

By

R.A. Collie
Lavalin Services Inc.

Engineering for sour gas requires special designs and specifications which are not necessary for sweet gas. Strict adherance to specifications for sour gas material for all components of the well head facilities to prevent hydrogen embrittlement and sulphide stress cracking and corrosion is mandatory.

In the hydraulic design of the gathering system, a velocity has to be chosen which will result in mist flow conditions.

Rigid control of construction methods and monitoring of corrosion during operation are also part of a successful installation.

OFFSHORE DRILLING RIGS & PLATFORMS

By
E.D. White
Davie Shipbuilding Ltd.

This paper demonstrates that Canadian shipyards and the allied industries are capable of responding to the potential demand of the Canadian offshore in many different ways. It highlights some problem areas that must be faced in making such a response and develops two marketing strategies that are being employed. The Marathon LeTourneau jack-up drilling platform and its design development up to the present day are described in detail. It also looks at future jack-up and semi-submersible design development for the Canadian East Coast offshore fields.

SECTION 13

SEMINAR PROGRAM & LIST OF REGISTRANTS

CARACAS

Feb. 16, 1981.

0900	Opening remarks
1100	Dr. Khalid Aziz -Computer design of multi-phase (oil & gas) single phase pipeline
1400	Dr. Khalid Aziz -New Developments in Reservoir simulation
1500	Dr. David Redford -Use of Solvents and Gases with steam in the recovery of bitumen from oil sands
1615	Film presentation

Feb. 17, 1981

0900	R.B. Bower, B Sc., MBA -Integrated heavy oil production and upgrading
1045	Jack C. Williams B Sc., (ME) -Equipment required for operation of steam injection system for production and processing of heavy oil.
1400	Dr. Roy O. Lindseth -Progress in Petroleum geophysics
1515	R.A. Collie B Sc (ME) -Sour gas handling
1630	Ed White -Offshore drill rigs and platforms

Feb. 16, 1981

0900	George Lunin P. Eng. -The CANMET hydrocracking process
1030	Jean M. Denis B. Sc. -Petroleum process research & development at the Federal Department of Industry, Trade & Commerce.
1115	R.J. Scott B. Sc. -Performance characteristics, potential applications & field trails of hydraulic pump jacks.

SEMINAR REGISTRANTS

MINISTARIO DE ENERGIA Y MINAS
Caracas, Venezuela

Antonio Urdaneta

Hector Corrales

Ciro Ceballos

Ing. Luis Rivas Rodriguez
Jefe del Departamento de Evaluacion y Proyectos

José Soroima
Ing Petrolero
Jefatura de Fona de Morichal

José S. Rivera
San Tomé - Edo Anzoategui

Dr. Luis Garcia Vunez
Director General de la Oficina Sectorial
de Planificacion
Av. Las Artes
San Borja

Manuel Milan F.
Ingeniero
Centro Simon Bolivar
Piso 21 Ofic. 2111
Torre Norte
El. Silencio

Gladys Zavarce de Ramirez
Ingeniero

SEMINAR REGISTRANTS

PETROLEOS DE VENEZUELA (PDVSa)
Caracas, Venezuela

Rossano Fermo
Coordinacion Faja Petrolifera del Orinoco
Av. Libertador La Campina
Apdo 167

Armando Herrera
Ing.
Coordinacion Faja Petrolifera del Orinoco
Av. Libertador La Campina
Apdo. 169

Ing. Tiberio Faria
Gerente de Asuntos Internacionales
Av. Libertador La Campina
Apartado 169

Abdulio Monslave
Geofisico
Coordinacion de Exploracion
Av. Libertador - La Campina
Apartado 169

SEMINAR REGISTRANTS

INSTITUTO TECNOLOGICO
VENEZOLANO DEL PETROLEO (INTEVEP)
Caracas, Venezuela

Humberto Kum
Rafael Blance
Tarun Banerjes
José Guitien
Fernando Silva
Oscar Kizer

Pedro Vicente Silva M.
Jefe Seccion Ingenieria de Gas
Apartado 76343

Amilcar Gomez
Ingeniero Mecanico, Ph D
Ingenieria de Materiales

Jonas Marin Gil
Catalisis Aplicada

Sergio Rossi

Aldo Anselmi

Pedro Silva

SEMINAR REGISTRANTS

CORPOVEN S.A.
FILIAL DE PETROLEOS DE VENEZUELA
Caracas, Venezuela

Maria Elizabeth Lizardo de Carrillo
Ingeniero
Materiales y Relaciones Gubernamentales
Apartado 61373

Maria Cadiz
Ingeniero
Planificacion Corporativa

Waldimir Ziloff

Carlos Perez
Ing. de Petroleo
Detpo. de Desarrsllo
Anaco, Venezuela

Orlando Ruiz
Ecologo
Proteccion Ambiental
Apartado 61373

Nelson Orlando Ocanto
Ingeniero
Proteccion Ambiental
Apartado 61373

Pedro R. Franco
Supervisor de Procesos y Proyectos Especiales
Proteccion Ambiental
Apartado 61373

Patricia Sosa de Garcia
Natural Gas Engineer
Apartado 61373

CORPOVEN
Caracas, Venezuela

Jorge Garcia
Ing. Petroleo

Gustavo Posth
Supervisor de Operaciones
Exploracion - Oriente

J. Roberto Sanchez
Gerente de Operaciones
Division Oriental
Edificio Corpoven Norte
Apartado 10
Anaco - Venezuela

Julio C. Munoz
Ingeniero Petrolero

Heddy Vivas
Ingeniero Petrolero

SEMINAR REGISTRANTS

LAGOVEN, S.A.
FILIAL DE PETROLEOS DE VENEZUELA
Caracas, Venezuela

Carlos E. Sanchez
Departamento de Geologia

Rodulfo Prieto
Geofisico
Depto. de Produccion
Apartado 889

Luis E. Gallardo P.
Supv. Rehabilitacion de Pozos
Division de Oriente

Rubén Quinones
Operaciones de Produccion
Morichal - Edo. Monagas

José Emilio Rios
Ing. Mecdnico

James Herman McGee Calcano
Ing. de Proyectos
Sec. Ingenieria de Petroleo
Apartado 889

Alfanzo Regulo

Andres Pena
Depto. de Geologia

Antonello Lilliu
Depto. de Geologia

Armenio Azabache
Depto. de Geologia

Jose Luis Perdonio
Depto. de Geologia

José Pena
Ingeniero
DSMA (Desarrollo Sur Monagas y Anzoategui)

LAGOVEN CON'T
Caracas, Venezuela

Gustavo E. Garcia Brinez
Coordinacion y Suministro
Apartado 889

Carlos Machado
Ingeniero
Depto. Coordinacion y Suministro

Miguel Alevy
Depto. de Coordinacion y Suministro

Muricio Tedeschi
Ingeniero
Departamento de Planificacion

Raymond Mullen
Supervisor de Interpretaciones
y Estadisticas
Departamento de Produccion
Apartado 889

Ricardo Ortega

Pedro J. Bolivar B.
Ing.
Jefe de la Div. Tecnica de Produccion y
Fiscalizacion
Direccion de Hidrocarburos
Torre Norte, Piso 22
Of. 2228 - C.S.B.

Carlos Rivero

Jesus Pacheco
Ingeniero de Proyectos
Depto. de Produccion
Apartado 889

Leon Mandel
Ingeniero
Desarrsllo Sur Monagas y Anzoategui

LAGOVEN

Robert Wagner

Julio Felipa

Karmele Larrauri

John Middelveen

Eugenio Naumro G.

Cesar Camauto

Julius Trinkunas
Director
Apartado No. 889

Pedro Jam
Geologo
Depto. Geologia

Rolando Glaentzlin
Supervisor del Grupo de
Geologia de Explotacion
Departamento de Produccion

CARACAS

Edgardo Valero Z.
Ingeniero
Departamento de Produccion

José Benzo
Ingeniero
Departamento de Produccion

Eugenio Naumko
Ingeniero
Departamento de Produccion

SEMINAR REGISTRANTS

MARAVEN, S.A.
FILIAL DE PETROLEOS DE VENEZUELA
Caracas, Venezuela

Angel Marstt

Rita Delli Campagni

Oscar Eduardo Acuna C.
Exploracion y Produccion
Ingenieria de Yacimientos - Tierra
Ingeniero de Petroleo
Apartado 829

Jose R. Figuera C.
Geologo
Avenida La Estancia No.10
Ciudad Comercial Tamanaco
Apartado 829

Donald Goddard, Ph D
Geofisico de Costa Afuera
Depto. de Exploracion - Epex
Avda. La Estancia, Edif. Maraven
Ciudad Comercial Tamanaco, Chuao

MARAVEN, CON'T

ENGINEERS

Henry Pino - Ingeniero
Juan Slavione - Ingeniero
Claudio Martinez - Ingeniero
Jan M. Oosterbaan - Ingeniero
Rita Delli Campagni - Ingeniero
Oscar Eduardo Acuna - Ingeniero
Carlos Belfort - Ingeniero
Manuel Zegarra - Ingeniero

Carlos A. Perez
Ing. de Simulacion de Yacimientos
Crudos, Liv - Med
Exploracion y Produccion
Apartado 829

Aquiles J. Rattia
Ingeniero de Yacimientos

J. M. Noel
(EPGP/3)

Jose Diaz Munoz
Ingeniero de Yaciminetos

Numa Rojas
Ingenieria y Yacimientos

SEMINAR REGISTRANTS

MENEVEN, S.A.
FILIAL DE PETROLEOS DE VENEZUELA
Caracas, Venezuela

Freddy J. Becker
Supervisor de Informaciones Industriales
Departamento de Relaciones Publicas
Apartado 709

Victor Portillo
Ingeniero
Supervisor de Suministro
Apartado 709

Leonardo Moscoso
Geofisico
Apartado 709

Manuel Legarra
Apartado 709

Marcial Gonzalez H.

SEMINAR REGISTRANTS

OTHERS
Caracas, Venezuela

Subash P. Murray
Continental Brindaven S.R.L.
P.O. Box 3041

Petar Jacobi
Ingeniero
Klockner Venezolana CA
Delegado de Klockner & Co. Duisburg - Alemania
Av. Fco de Miranda
Campo Alegre - Chacaito
Edif. Roraima Piso 13 of 13-G

Ing. Lew. Dlujnewsky P.
Presidente
Industria Quimica Andina, S.A.
Calle San Antonio
Sabana Gde. - Ed. Farallon

Hector Ciavaldini
Presidente
Carbo - Cal
Av. Libertador
Edif. Torre Maracaibo A-11

Yves R. Conquy
Embajada de Francia
Calle La Guairita
Edif. Los Frailes Piso 6
Chuao

Frank Barnes
Coordinador de Asistencia Tecnica
Edif. Mene Grande Piso 9
Av. Francisco de Miranda

Gonzalo Bastidas Olvera
Jefe de la Division de Comercio Exterior
Juan Leon Mera y Orellana
Quito - Ecuador

Ing. Jose Gregorio Paez
Agent of National Tank
Caracas
(an ex professor seeks additional agency representations)

Douglas A. Alvarado
Fundacion Laboratori de
Servicios Tecnicos Petroleros

OTHERS CON'T
Caracas, Venezuela

Eliseo E. Brizuela
Gerente General
Techint
Sociedad de Proyectos, C.A.
Edifico Xerox - Piso 8

Ing. Jeffe Rodriguez Sierra
Ing. Mecanico
Techint

Ing. Julius S.T. Balan
Avda. Casansva
Ed. Tirreno 408-410

Manella Marguez

James J. Kelly
Representante Regional - Venezuela
The Royal Bank of Canada
Edificio Cavendes, Piso 7, Oficina 703
Avenida Francisco de Miranda
Los Palos Grandes
Apartado 70666

Julius S.T. Balan
Oficina Tecnica J. Balan S.R.L.
Av. Casanova - Edif. Tirreno 410

Jeffery Schneider
Banco Montreal
Representate Adjunto
Edif. Centro Altamira Piso 14
Avda. San Juan Bosco, Altamira

Eduardo J. Arze
Gerente Asistencia Tecnica
Gulf Oil Services Inc.
Apartado 649

Enrique Sotelo
Canadian Imperial Bank of Commerce

Manuel Mejia Calderon
Ministro Consejero Petrolero
Embajada del Ecuador En Venezuela
Codigo Postal 62124 Chacao

Waldemar Russel
JCI 3100

OTHERS CON'T
Caracas, Venezuela

Franeisco Sciarpa
Arquitecto CIV-CAV
Corporacion Venezolana de Guayana
Avda. La Estancia No. 10 - Ciudad Comercial
Tamanaco - Apdo 7,000

Ana Diaz
Venpres

William W. Carter
Gerente
Texaco Services (Venezuela) Inc.
Edificio Cavendas (OFC 405)
Apartado 267

Jose L. San Juan
Representative
The Bank of Nova Scotia
C.C.C. Tamanaco Ofc. 209
Apartado 2118, Caracas 101

Antonio J. Loro
Director para Venezuela
Apartado 66672 Anthes Equipment Limited

Teddy Schmidt
Ave. Circunraloiron del
Sol - Residencias Pedregal
Apto. 51 - 5° Piso
Urb. Santa Paula

MARACAIBO

February 19th, 1981

0900	Opening remarks
1030	Roy O Lindseth
1130	Dr. David Redford
1430	R.B. Bower
1515	Jack C. Williams
1615	R.J. Scott

February 20th, 1981

0900	Ed White
1015	R.A. Collie (paper presented by Gordon Brown)
1115	Jean M Denis
1400	George Lunin
1515	Dr. Khalid Aziz

SEMINAR REGISTRANTS

MINISTERIO DE ENERGIA Y MINAS
Maracaibo, Venezuela

Carmen G. Sanchez
Ingeniero Quimico
Calle 68 No. 9B-05
Tierra Negra

Ing. Norberto A. Gonzalez V.
Ingeniero
Jefe de Zona
Edificio Banco Industrial 5 to Piso

Gladys de Ramirez
Ingeniero

Anibal Leon
Ingeniero

Nelson E. Vermolen
Ingeniero Petrolero
Av. 5 de Julio, Esq. Avenida 9B
Edif. Banco Industrial 5° Piso

Ana Atencio de Vargas
Ingeniero Petrolero
Inspeccion Tecnica de Hidrocarburos
Lagunillas, Edo. Zulia

SEMINAR REGISTRANTS

CORPOVEN S.A.
FILIAL DE PETROLEOS DE VENEZUELA
Maracaibo, Venezuela

Edmundo E. Ramirez Lopez
Ingeniero
Supervisor de Ingenieria de Yacimientos
Departamento Operaciones
Campo la Mesa
Barinas, Venezuela

Jorge Garcia
Edo. Zulia

Mervin Portillo
Ingeniero Quimico
Gas Processing
Edo. Zulia

Nilson Cardozo
Ingeniero Quimico
Ingenieria de Procesos
Edo. Zulia

Lucilo Torris
Depto. de Desarrsllo
Edo. Zulia

José Rodriguez
Geofisico
Departamento Operaciones
Edo. Zulia

Salvador Arrieta
Edo. Zulia

Julio Patino
Edo. Aulia

Orlando Anez
Geofisico
Depto. Operaciones
P.O. Box 1203

Edgar Parra
Departamento Operaciones
Barinas

SEMINAR REGISTRANTS

LAGOVEN S.A.
FILIAL DE PETROLEOS DE VENEZUELA
Maracaibo, Venezuela

Rafael Padilla
Ingeniero
Departamento Ingenieria y Petroleo

Roberto Bjoraker
Depto. Geologia

Fernando Sotomayor
Ingenieria y Petroleo

Nestor L. Burgos
Ingeniero
Ingenieria de Petroleo
Lagoven Tia Juana - Edo. Zulia

N.L. Gonzalez
Ingeniero
Lagoven Tia Juana - Edo. Zulia

Luis Izarra
Ingeniero
Ingenieria de Petroleo
Lagoven Tia Juana - Edo Zulia

Francisco Cupello
Ingeniero
Ingenieria de Petroleo

SEMINAR REGISTRANTS

MARAVEN S.A.
FILIAL DE PETROLEOS DE VENEZUELA
Maracaibo, Venezuela

Raimando Urdaneta
Ingenieria de Desarrollo

Pedro Barrios
Ingeniero Mecanico
Depto. Ingenieria de Desarrollo
Division de Operaciones de Produccion
Apartado 173
Lagunillas - Edo. Zulia

Luis E. Araujo
Depto. Operaciones de Produccion

SEMINAR REGISTRANTS

MENEVEN S.A.
FILIAL DE PETROLEOS DE VENEZUELA
Maracaibo, Venezuela

Agustin Alfonzo Mayorca
Ingeniero
Supervisor Distrital de Operaciones
Departamento de Gas
Apartado 234

Nelson Borjas U.
Ingeniero
Supervisor Distrital de Mantenimiento
Departamento de Gas

Marcial Gonzalez
Superintendente del Depto. de Explotacion
Apartado 234

Lucas Guaregua
Ingeniero
Depto. de Produccion
Lagunillas - Edo. Zulia

Asdrubal Perozo
Ingeniero de Petroleo

Ivan Ordaz
Ingeniero

Manuel Marcano
Ingeniero
Control Presupuesto
Apartado 234

Geo. Jose I. Sambrano
Geologia
Supervisor de Geologia

Zoilo Hidalgo
Ingeniero
Superintendente de Produccion

Arnoldo Canizales
Ingeniero
Supervisor Distrital de Perforacion
Depto. de Produccion
Lagunillas Edo. Zulia

Orestes Perozo
Ingeniero
Ingeniero Distrital de Produccion
Depto. de Pro

SEMINAR REGISTRANTS

INSTITUTO DE INVESTIGACIONES PETROLEOS (INPELUZ)
Maracaibo, Venezuela

Leonel Pirela
Ingeniero - Profesor
Universidad Del Zulia
Facultad de Ingenieria

Rolando Lopez
Ingeniero
Profesor Escuela de Petroleo

Witold Kubacki
Ingeniero
Desarrollo
Facultad de Ingenieria

Clarence Gall B.
Av. 5 de julio
Edf. Los Chaguaramos
P.O. Box 98

Franco D'Orazio
Universidad del Zulia

SEMINAR REGISTRANTS

OTHERS
Maracaibo, Venezuela

Denis Keay, President
Basic Keay Incorporated
Management Controls
P.O. Box 896, Armdale, N.S.
Canada B3L 4K5

Offices in:
Calgary, Alberta &
Maracaibo, Venezuela

E.A. "Mac" McCoppin
Sales Manager for Latin America
Gray International
Apartado 1994

Ian M. Scoet
General Manager
Servicios Tecnicos Generales
P.O. Box 2680

Oscar de Diego
General Manager
Consorcio Raymond - Brown & Root
Edificio San Luis
Av. 5 de Julio y Av. 17

Pat Morton
Comunicaciones Industriales
Consulado de Austria

M.G. Edmonds
Vice Presidente
Griffin & Cia. S.A. Oil Field Supplies
P.O. Box 1206

Matilde Rincan
Panorama
Journalist

Bob Walton
General Manager
Teledyne Merla Gas Lift
Apartado No. 161
Ciudad Ojeda
Edo. Zulia

Ted Trumper
SAM
Ave. 3G #66 - 160

PUERTO LA CRUZ

February 23rd, 1981

0900	Opening remarks
0920	Roy O Lindseth
1030	Dr. Khalid Aziz
1130	Dr. David Redford
1400	R.B. Bower
1515	Jack C. Williams

February 24th, 1981

0900	R.J. Scott
1015	R.A. Collie (paper presented by Gordon Brown)
1115	Jean M. Denis
1400	George Lunin
1515	Dr. Kalid Aziz

MINISTERIO DE ENERGIA Y MINAS
PUERTO LA CRUZ, VENEZUELA

Juan José Baptista
Geologo
Anaco, Venezuela

José Rivera
Ingeniero
San Tomé, Venezuela

Oswaldo A. Sanchez Ruiz
Ingeniero de Petroleo
Inspector Técnico de Barcelona
Inspeccion Técnica de Hidrocarburos
Final Paseo Colon
Puerto La Cruz

SEMINAR REGISTRANTS

INSTITUTO TECNOLOGICO VENEZOLANO
DEL PETROLEO (INTEVEP)
Puerto La Cruz, Venezuela

Amilcar Gomez

SEMINAR REGISTRANTS

CORPOVEN S.A.
FILIAL DE PETROLEOS DE VENEZUELA
Puerto La Cruz, Venezuela

Carmen Apt
Ingeniero
Depto. Ingenieria General
Exploracion Oriente
Anaco, Venezuela

Luis Guerra Montilla
Ingeniero de Petroleo
Relaciones Técnicas

Luis Rivero Nunez
Supervisor de Yacimientos
Servicios Generales
Edificio Corpoven Sur
Apartado 10
Anaco, Venezuela

Nerio A. Rodriquez
Ingeniero
Superintendente de Mantenimiento
Operaciones
Division Valle de la Pascua

Romulo Benavides
Ingeniero
Gerencia Servicios Generales

Gustano Posth
Supervisor de Operaciones
Exploracion - Oriente
Campo Norte
Anaco, Venezuela

Jose Gamboa
Ingeniero
Exploracion Oriente
Campo Norte
Anaco, Venezuela

Carlos E. Perez
Ingeniero de Petroleo
Dept. de Desarrollo
Anaco, Venezuela

CORPOVEN CON'T

Edmundo Ramirez Lopez
Ingeniero
Supervisor de Ingenieria de Yacimientos
Campo la Mesa
Barinas, Venezuela

Julio Munoz
Ingeniero Petrolero

Frank Perez
Ingeniero Petrolero

Hugo Alberto Araujo Moreno
Superintendente de Ingenieria General
Servicios Generales
Edificio Corpoven Sur
Apartado 10
Anaco, Venezuela

Roberto Sanchez
Ingeniero
Gerente de Operaciones
Division Oriental
Edificio Corpoven Norte
Apartado 10
Anaco, Venezuela

SEMINAR REGISTRANTS

LAGOVEN S.A.
FILIAL DE PETROLEOS DE VENEZUELA
Puerto La Cruz, Venezuela

Luis Gallardo
Rehabilitacion de Pozos
Division de Oriente

Rubén Quinones
Operaciones de Produccion
Morichal - Edo Monagas

José Emilio Rios
Ingeniero Mecanico
Morichal - Edo. Monagas

Abraham Aguiar
Geologo, Lagoven
Maturin, Venezuela

SEMINAR REGISTRANTS

MENEVEN S.A.
FILIAL DE PETROLEOS DE VENEZUELA
Puerto La Cruz, Venezuela

Abad Loreto
Ingeniero San Tomé

Jorge Vierma
Ingeniero Quimico
San Tomé

Oscar Salazar
Ingeniero
Supervisor Departamento de Ingenieria de Procesos

Jose Loroima
Ing. Petroleo

Manuel Garcia C.
Ingeniero
Depto. Petroleos Pesados
San Tomé

José S. Rivera
Ingeniero
Jefatura de Zona
San Tomé

SEMINAR REGISTRANTS

UNIVERSIDAD DE ORIENTE
ESCUELA DE PETROLEO
Puerto La Cruz, Venezuela

Gonzalo Rojas
Ingeniero

Marcelo Laprea
Ingeniero

José Vicente Iguaran
Ingeniero

Julio Matheus
Ingeniero
Apartado 4511

Leonel V. Pirela C.

SEMINAR REGISTRANTS

OTHERS
Puerto La Cruz, Venezuela

Paul Turner - Director
Charles Rubio - Presidente
Carco (C.A. Rubio Company de Venezuela, S.A.)
Calle Guanipa - Edif. Guri
Zona Industrial UNARE II
Puerto Ordaz

Canada

(aussi édité en français)