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CITY GAS DISTRIBUTION
An Indian Perspective

Authors:
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An Indian Perspective

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Prof (Dr.) Anirbid Sircar
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HYDRO-FRACTURING OF HTHP OIL & GAS WELL

HYDRO-FRACTURING OF HT/HP OIL AND GAS WELL

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A Journey

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A Critical Analysis of its Feasibility

Author: Dr. Ashutosh Karnatak

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Handbook of Hydrocarbons
Exploration and Production

(A set of THREE volumes)

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Volume - 1
S. L. Sah

Volume - 2

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GEOGRAPHY AND PROSPECTS OF THE POLAR REGION

SPECIAL FOCUS
Hydrocarbon Prospects in Polar Regions

S. L SAH
With onshore oil and natural gas reservoirs of the world depleting, deep and ultra deep water areas and polar regions offer massive oil and natural gas reservoirs. The Antarctic is a continent surrounded by ocean while the Arctic is an ocean basin almost completely surrounded by continents. The Arctic Ocean is a Mediterranean in the continental hemisphere of the world while the Antarctic is a remote outpost in the ocean hemisphere of the world. The maritime coastal area of the Arctic and Antarctic experience warmer winters and cooler summers while the extreme continental climates of northeast Siberia experience cooler winter and longer, warmer summers. Antarctic temperature are low all the year round. On the continental the mean annual temperature vary from −60°C on the ice sheet summit to −10°C around much of the coast. In the Arctic the pattern varies with the seasons. In winter there are two land areas and an intervening zone in the Arctic ocean where mean temperature are below −30°C. The lowest temperatures are at the edge of the Arctic. In the summer the pattern changes to one where air temperatures over the Arctic Ocean approximate to 0°C even at the pole, while the surrounding land areas are warmer, exceeding 16°C in north-east Siberia. One characteristic of polar climates is the presence of temperature inversion above snow or ice surface which results from strong radiation cooling. The inversion may be only 10 to 100m thick and yet represent a temperature difference of 30°C. In the Antarctic the inversion is wide-spread. Life 100m above the ice would be over 10°C warmer and much less windy.

The polar region has long been viewed as a huge resource for oil and gas but harsh conditions and tricky economics have made it unappealing. Attention is now turning to the polar regions, which circumscribes the large surface of the earth. It is one of the last regions of any significant size to be explored for oil and gas. Polar regions include: (i) Alaska, (ii) Antarctica, (iii) Arctic Canada, (iv) Greenland, (v) Svalbard, and (vi) The Soviet Arctic. Alaska’s 1.52 million km² comprises one-fifth of the total area of the United States. Estimates of the recoverable reserves from the North Slope oil province range from 7 to 20 billion tonnes of oil as well as 8.5 trillion m³ of natural gas. In the Cook Inlet oil province reserves are estimated to 200 million tonnes of oil and 5 trillion m³ of natural gas. The main resource of Antarctic is a land mass 1.5 times as large as USA, while the main constraint is that over 98 percent of the continent is buried beneath ice. The sedimentary basins underlying the Ross, Weddell and Bellingshausen areas are thick and exploratory drilling has already found natural gas traces in all these areas. Large reserves of oil and gas exist and official reports mention figures for recoverable oil of tens of billions of barrels. Other oil company sources give figures of 50 billion barrels or more for the Ross and Weddell sea basins alone. Arctic Canada comprises a continental landmass and an archipelago. Oil and gas prospects are in the Mackenzie Delta/Beaufort Sea basin (probability of reserves of 580 million tonnes of oil and 1.1 million m³ of gas) and in the Sverdrup basin estimated reserves to be 220 million tonnes of oil and 680 billion m³ of gas. A third promising zone for oil and gas in the continental shelf off Baffin Island and Labrador. Greenland is twice the size of Alaska. The Palaeozoic sediments of North and East Greenland and offshore in western and eastern Greenland hold potential for oil, gas and coal. Svalbard islands are at the north-western edge of the Berents sea. In the north and west are metamorphic rocks associated with the Caledonian orogeny, while to the east and south are flat bedded sedimentary rocks of a wide variety of ages. The great hope for the future is oil and gas, particularly under the continental shelf surrounding the islands. The Soviet Arctic is huge and extends in an east-west direction for 7000 km. The oil, gas and coal are found in flat-lying sediments of the plain of western Siberia and the basins and coastal plain of north-east Siberia. Arctic gas discoveries account for 80 percent of the Russia’s proven total reserves. Vast additional resources are thought to lie beneath the off-shore continental shelf.

The focus now is upon offshore resources in the Arctic Circle, in continental shelves under less than 500m of water. Onshore areas in the region have already been explored, with some 40 billion barrels of oil (BBO), 1136 trillion cubic feet of natural gas, and 8 billion barrels of natural gas liquids having been developed, primarily in the Western Siberian Basin of Russia and on the North Slope of Alaska. Deepwater basins in the Arctic Circle are considered weak prospects as they lack the appropriate source rock structures. The area north of the Arctic Circle has an estimated 90 billion barrels of recoverable oil, 1670 trillion cubic feet of recoverable natural gas, and 44 billion barrels of recoverable natural gas liquids in 25 geologically-defined areas thought to have potential for petroleum. Sakhalin is a large, inhospitable elongated island, sitting just of the eastern coast of Russia in the north Pacific. Sakhalin-I has started producing in 1999. The oil and gas are stored at the drilling platform and are collected by tankers. Sakhalin-II operates amid some of the world’s harshest conditions in Russia’s far east, an area prone to earthquakes. The project on Sakhalin Island exports LNG and oil the fast-growing energy markets in the Asia-Pacific region and the west coast of North America. It will meet nearly 8 percent of Japan’s gas needs and 5 percent of South Korea’s.

The polar regions are an important area of geographical study for many regions. They are: (i) the Arctic and Antarctic contain about one-fifth of the world’s land and about 15 percent of total surface area, (ii) study of the polar regions contributes to the understanding of natural and human systems operating on a global scale, (iii) the polar regions possess certain attributes which contribute a unique set of broader geographical principles, (iv) the polar regions are a zone marginally to the distribution of many species, including man, and (v) the Arctic and Antarctic are widely separated at opposite poles, and yet are similar, offers many advantages. The fundamental natural systems considered here are those associated with land, atmosphere and ocean, while the main human systems discussed are those of the original indigenous peoples and the intrusive system of commercial and industrial society.

At the end of this book five appendixes have been included for the benefit of readers and users. These appendixes will give valuable information to readers and users besides subject matter mentioned in this book.

This book is suitable for geophysicists, geologists, scientists, universities, organizations, teachers, students and other working in different disciplines of petroleum industry.
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About the book

Oil and Gas Well Drilling Technology is getting new dimension day-by-day. New technologies and products are being introduced in the fields for speedy and cost-effective drilling of a well.

The drilling personnel working in the fields and offices and the new entrants into drilling operators and those associated directly or indirectly in drilling operations are encountering problems in understanding the proper meaning of the terms and phrases used at the time of carrying out of drilling operations.

Compiled from authentic sources after conducting exhaustive research, “The Handbook of Drilling Technology Terms and Phrases” covers the detailed description (along with visuals, wherever possible) of terms and phrases used during drilling an oil and gas well – from well spudding to well completion.

Being published for the first time in the history of Oil and Gas Well Drilling, the Handbook aims to fulfill the long-standing desire of the global oil and gas well drilling community. The main objective of the Handbook is to make drilling engineers and those associated with drilling activities directly or indirectly more informed, resulting in reduction in expenditures and enhanced productivity in their area of operations.
# Holistic Energy Development and ONGC

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DICTIONARY on
Energy, Environment, Safety and Health

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SATISH KUMAR MATHUR

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on
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Energy, Environment, Safety and Health

TERMS COVERED
Wind/Hydro, Nuclear/Power and Coal, Oil & Gas Drilling/E&P, Refining, Petro-chemicals, Solar Renewables, Health Safety Environment

About the book
With the growth of the energy sector, a large number of new terms and words have emerged and therefore a book in the shape of a dictionary has been brought out to meet the inevitable need for an up-to-date, authoritative concise compilation of salient terms associated with the broad areas of energy and environment. In this work, an attempt has been made to cull out key words from the vast literature on various aspects of energy and environment and expound them in a simple and understandable language so that without additional labour for reference to more journals, documents and books, those may become vividly clear to even a layman. The book also contains chapters on units mostly used in energy business as well as popular acronyms. This second edition of the dictionary is now comprehensive with the addition of many terms related to Energy, Environment, Health, Safety, Exploration, Drilling, Production, Refining & Processing, Petro-chemicals, Petroleum Marketing & Transportation, Coal, Power, and Renewable Energy.

The dictionary may be of immense interest and use to everyone associated with energy industry, environment, supporting activities, academic institutions and will be a valuable reference document for every library in companies, Government offices, institutes, Universities etc. Particularly, the students pursuing studies for post-graduate diploma or MBA in environment, health and safety may derive more benefit from this dictionary.
Contemporary Issues in Energy Sector

CONTEMPORARY ISSUES IN ENERGY SECTOR

Dr. Neeraj Anand, Editor

Editor:
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14th-15th March, 2002

Editor
Narendra K. Verma

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Geology for Everybody
(Indian Stance)

GEOL OGY
FOR EVERYBODY
INDIAN STANCE

P.L. Zutshi

Author:
P.L. Zutshi
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