Appendix - I

A. Krishna-Godavari

Offshore basinal area :	24,000 km^2
Offshore Mining Lease:	333 km^2 (Ravva Field)
Prognosticated Resources:	960 million tonnes (MMT) of oil and oil equivalent of gas (o.e.g) of which about 500 MMT offshore
Geological Reserves:	150 MMT of oil and o.e.g. of which about 90 MMT offshore
General:	Onland, gas and subordinate gas accumulations in sandstone, limestones and fractured volcanics of Cretaceous and Paleogene age Offshore, accumulation in Miocene and Pliocene sandstone, generally in growth fault oriented roll-over features. Ravva field is the most important, producing from mid-Miocene Sandstone.

B. Cauvery Basin

Offshore basinal area :	30,000 km^2
Offshore Mining Lease:	75 km^2
Prognosticated Resources:	700 million tonnes (MMT) of oil and oil equivalent of gas (o.e.g) of which about 250 MMT offshore
Geological Reserves:	100 MMT of oil and o.e.g. of which about 35 MMT offshore
General:	Onland, the exposed Phanerozoic sequence consists of continental Late Jurassic to Early Cretaceous sediments overlain by a marine sequence of Cretaceous and Paleocene sediments. Offshore, the sedimentary sequence is more continuous. The Cretaceous contains mature source rocks in most of the sub-basins. Commercial oil and gas accumulations have been established in Oligocene, Eocene, Paleocene and Cretaceous age as also in weathered basement.

C. Andaman Islands

Offshore basinal area:	41,000 km^2 No specific PELS or MLS, only speculative seismic surveys and exploratory drilling.
General:	Of the 14 exploratory wells drilled so far, only one on the east coast produced 192,000 cubic metres of gas per day from a mid-Miocene Limestone reservoir.

Note: Basin areas indicated above are upto 200 metres isobath.

GAS HYDRATE - A MAJOR ENERGY SOURCE FOR THE FUTURE

Gas hydrate is a unique chemical compound containing a vast amount of methane which could possibly be a future source of energy. Great deal of interest is being evinced in recent years to locate significant concentrations of this compound in deeper sections of ocean floor sediments specially along continental margins. Extremely high pressures and cold temperatures are stated to create conditions favourable for accumulation of such hydrates. Hydrate cemented sediments are believed to act as gas traps, indicating a reservoir of gas below.

Most gas in hydrate is considered to be biogenic methane, getting concentrated at places where there is rapid accumulation of detritus leading to quick burial protecting it from oxidation. The hydrates are known to bind immense amounts of methane in ocean sediments. The location of gas hydrates is stated to be dependent on temperature and pressure changes since the last ice age.

Interest in gas hydrate began in 1970 when it was identified in bore holes intersecting oceanic sediments along continental margins and at polar continental settings and its characteristic responses to seismic reflection profiles and oil-well electric logs. Several regions of gas hydrate concentration have been identified in the offshore region between New Jersey and Georgia and Alaska in USA and in Siberia and Norway. Deep hydrocarbon exploration has been initiated by several countries and drilling to confirm the existence of large quantities of gas seriously attempted. Information gathered is exchanged between oil companies and academic institutions. We are not sure whether any gas hydrate has been identified by ONGC. Since hydrates are stated to have a strong effect on acoustic reflections, seismic reflection profiles should be able to locate concentrations of hydrate over large areas. It is stated that gas hydrates are indicated by an anomalous seismic reflector known as the Bottom Simulating Reflector or the BSR which may occur as sub-parallel to the sea floor.

Since gas hydrates could be the most abundant carbon fuel resource, the study is deserving of serious attention. Ocean research technology has enabled scientists to get a closer look at these unique chemical compounds which look like chunks of ice but burn like candles. It is stated that world-wide gas trapped in hydrates is estimated at 20,000 trillion cubic metres (personal communication, Dr. S.N. Visvanath).

We invite a more comprehensive note on this remarkable carbon fuel resource with immense potential and the possibilities of identifying and developing this resource in the submarine deltaic regions of our country - *Ed.*

GROUP DISCUSSION ON 'DRAINAGE EVOLUTION OF NORTHWESTERN INDIA WITH SPECIAL REFERENCE TO THE LOST SARASVATI'

'Ambitame Naditame, Devitame Sarasvati.' Rgveda (2.41.16)

A group discussion on the drainage evolution of northwestern India, emphasising on the ancient River Sarasvati organised by the Geological Society of India, was conducted at the Department of Geology, M.S.University of Baroda from 26th - 28th, December 1997. 30 papers were presented. The discussion commenced with the Keynote address by B.P.Radhakrishna which brought to the fore the essence of Rgvedic information on the mighty Sarasvati. Theme introductions were given by S.S.Merh (Vadodara), K.S. Valdiya (Bangalore) and A.Kapadia (Vadodara).

Primarily the Group Discussion revolved around three approaches taken. The first involved the characterisation of the ancient Sarasvati from ancient literature and archaeological studies. The Rgveda was used as a credible source of factual information by D.S.Chauhan (Jodhpur), S.Kalyanaraman (Chennai), S.G.Kantawala (Vadodara), R.N.Mehta (late) communicated by D.M.Shringarpure (Vadodara), K.N.Prasad (Chennai), S.V.Srikantia (Bangalore), R.N.Athavale (Hyderabad) and R.S.Bisht (New Delhi). This approach helped to arrive at following conclusions:

(i) The river Sarasvati was an independent river that originated in the Himalaya (ii) it had six major tributaries; (iii) It's discharge was perennial and was frequently affected by floods (iv) It had high stream power that was sufficient to erode and entrain bedrock efficiently (v) The area drained by the rivers was periodically affected by intensive earthquakes (vi) It sustained a great Vedic civilization along its banks.

A rather complex and somewhat controversial picture emerged from the results of palaeochannel mapping using various types of remotely sensed data, geomorphology of the river basins and topographical sheets. This methodology was adopted by a large number of workers including S.M.Ramasamy (Tiruchirapalli), A.S.Rajawat and co-authors (Ahmedabad), B.Sahai (Ahmedabad), D.P.Rao (Hyderabad), J.N.Malik & co-authors (Vadodara), A.Kar (Jodhpur), V.Sridhar and