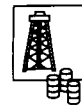


# OIL & GAS TECHNOLOGY



THERMIE PROGRAMME: promotion of energy technology in Europe

## Transfer of European technology to help stop the decline of CIS oil production

THE EUROPEAN COMMUNITY considers that oil and natural gas production from Russia and the other republics of the Commonwealth of Independent States (CIS) is of prime importance for the balance and security of energy supply within Western Europe.

The Soviet Union was once the world's largest oil and gas producer, and thus its continuous decline in oil production, as well as the uncertain status of its energy sector in general, is of concern not only to the successors to the former Soviet Union but also to the European Community.

This has motivated the process which led to the creation of the European



EDITORIAL

Energy Charter and to the implementation of the Technical Assistance Programme to the CIS (TACIS).

The European oil industry has much to offer its counterparts in the former Soviet Union and can assist the Russian oil sector in transferring innovative and efficient technologies.

One of the main objectives of the EC THERMIE Programme is to support Community enterprises in this effort.

The participation of the EC in the April 1993 Moscow NEFTE-GAS trade show, at which both THERMIE promotional activities and appropriate near-market technologies will be exhibited, is an important part of this strategy of technical assistance and technology transfer.

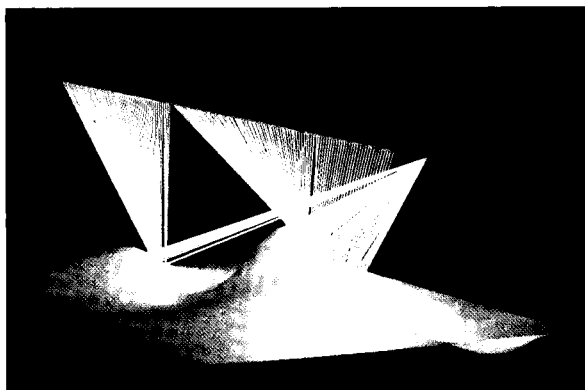
## Measuring HP dew and bubble points

A NEW mercury-free high pressure apparatus which is compact, fast, accurate and reliable using microwave resonance is being developed to measure high pressure dew and bubble points of hydrocarbon mixtures and reservoir fluids, this data being of great importance when evaluating the potential of a new discovery, and forming the basis for production strategy.

The apparatus was designed at the Technical University of Denmark, and is being developed in collaboration with BP Research, UK, and French company ROP.

The existing prototype will be improved in several ways to make the operation of the equipment more convenient; present the results in a more user-friendly way; and also to select the most suitable components for manufacture of the apparatus, which will be commercially available from the latter part of 1994.

The project has a total budget of close to 800,000 ECU, and has received 40% support from the EC THERMIE Programme.



A SOFTWARE PACKAGE is being developed as a tool for tackling the issues of velocity estimation and time-to-depth conversion in a general three-dimensional sense, and is designed to fulfil two specific needs of the exploration industry: the determination of an appropriate 3D interval velocity model which will then serve as input to 3D migration schemes, and the determination of an accurate depth-oriented 3D macromodel from interpreted seismic data sets relevant for the selection of site locations for drilling.

Currently being developed by TOTAL, CGG, TNO and ELF Aquitaine Production, the SISTRE software functionality will include the building, manipulation and display of complex 3D macromodels.

## SISTRE: a new tool for geophysical 3D modelling

*Simulation of seismic experiments by ray tracing, resulting in inverted 3D seismic data.*

It uses the latest ray tracing and inversion techniques and will adjust the 3D macromodel by comparing the interval velocities and structure of the horizon interfaces with the interpreted seismic data. Such seismic data may be multi 2D seismic surveys, land and marine 3D surveys.

The database is designed to contain data from SISTRE as well as from other (existing) relevant programs, and will also be used for communication with programs outside the SISTRE project. Information on travel time, velocities and location of traces will be digitized with programs from modern workstation environments.

The project value is over 4 million ECU, of which the Commission of the European Communities is funding 35%.

## Natural gas into Greece

THE NATIONAL GAS COMPANY of Greece, DEPA, is developing an infrastructure for the introduction of natural gas. It will be supplied from two sources: from Russia by pipeline, and from Algeria as liquefied natural gas (LNG) by ship.

Sojuzgazexport of Russia will supply gas over a 25 year period, from 1.0 billion m<sup>3</sup> annually in 1992-95 rising to a plateau of 2.4 billion m<sup>3</sup> in 2001 and thereafter.

This gas will be delivered at the Bulgarian border, for distribution through a national

network via Thessaloniki, Larissa and Volos to Athens. The 511 km high-pressure transmission system and 460 km spur lines will cost approximately 442 million ECU.

Machinoimport of Russia will construct the main pipeline, with large diameter steel pipes from Italian company ILVA and the French/German consortium Europipe.

French company SOFREGAZ designed the low-pressure distribution system for Athens, Thessaloniki, Larissa, and Volos.

The network to supply local consumers will consist of 7,000 km of polyethylene

pipes in major cities and industrial areas. Its cost is estimated at 625 million ECU.

LNG will be supplied by Sonatrach from Algeria for 21 years, from 1992-95, with 500 to 670 million m<sup>3</sup> gas equivalent annually.

A 184 million ECU LNG terminal on the island of Revithoussa, in Saronicos Bay, will have cryogenic installations for pumping, vaporising and related processing of the gas.

German company DYWIDAG will construct the LNG storage tanks by end 1993.

Harbour facilities civil works have been awarded to a Greek construction company.

## CONFERENCE, EXHIBITION and WORKSHOP DIARY

### Moscow International Oil & Gas Business '93 Conference (21-22 April 1993), and Exhibition (NEFTE-GAS '93) (20-23 April 1993) Moscow Russia

THIS CONFERENCE will address the key issues and business opportunities arising from change, reform and progress in the oil and gas industry in Russia and the newly-independent Republics.

Mr Patrick Lambert of the EC's Directorate-General for Energy will give a keynote speech on Policy and Reform, and

his colleague Mr Perry Argyris will give a presentation on Oil & Gas Business Development.

Further, the EC will have a stand at the associated NEFTE-GAS exhibition, with THERMIE information and representatives present to explain new European hydrocarbons technologies.

### OTC : Offshore Technology Conference Houston USA 3-6 May 1993

THE EUROPEAN COMMISSION will be taking an active part in this year's OTC, organising a large exhibition stand to promote the THERMIE Programme and specific near-market technologies developed within the Community, and a workshop on subsea technologies, which will be held on 30 April, immediately before the main conference and exhibition.

### The OPET Network: Organisations for the Promotion of Energy Technology

The EC's THERMIE Programme was launched in 1990 to encourage greater use of European energy technologies. The OPET Network was created as the prime means of promoting near-market innovative technologies, through a range of activities including market studies, workshops,

conferences, trade exhibitions and publications.

THERMIE's increasing role in Eastern Europe and the former Soviet Union has been acknowledged by the establishment of EC Energy Centres in the national and regional capitals, and by a widening of the Hydrocarbons

OPET Network.

OPETs and Energy Centres are there to help and advise. For further information on the THERMIE Programme, contact an OPET or Energy Centre listed below, or contact PSTI for details of an OPET nearer to you.

### Hydrocarbon

#### sector OPETs

EAB: Berlin, GERMANY.

ENERGIUM 2000: Wavre, BELGIUM.

EUROPLAN: Valbonne, FRANCE.

EVE: Bilbao, SPAIN.

FAST: Milano, ITALY.

GEP-ASTEO: Rueil-Malmaison, FRANCE.

ICEU: Leipzig, GERMANY.

NOVEM: Sittard, The NETHERLANDS.

MWMT: Potsdam, GERMANY.

PSTI: Aberdeen, UNITED KINGDOM.

EC Energy Centre Bratislava  
VUPEX/OO  
Energiesparverband  
Bajkalska 27  
CS-82752 Bratislava  
SLOVAKIA  
Tel & Fax: +42 7 225 893

EC Energy Centre Budapest  
Mr Ian Brown  
Könyves Kálmán Körút 76  
1087 Budapest VIII  
HUNGARY  
Tel: +36 1 269 9067  
Fax: +36 1 269 9065

EC Energy Centre Kiev  
The Institute of Energy Saving  
Problems/MARCH  
The Ukrainian Academy of  
Sciences  
Pokrovska Street 11  
254070 Kiev  
UKRAINE  
Tel & Fax: +7 044 417 0737  
Telex: 131392 MODEL SU

EC Energy Centre Minsk  
Belvic/BCEOM  
PO Box 154  
220002 Minsk  
BYELORUSSIA  
Tel & Fax: +7 0172 204 114  
Telex: 252 101 Neman SU

EC Energy Centre Moscow  
ENIN/INNOTEC  
Room 210  
Leninsky Prospekt 19  
117927 Moscow  
RUSSIA  
Tel & Fax: +7 095 952 5527  
Telex: 411700 for Box No.  
013010 ENCONS

EC Energy Centre Prague  
Vupek/ICEU Leipzig  
Stetkova 18  
Prumstav Building  
140 00 Praha 4  
CZECH REPUBLIC  
Tel & Fax: +42 2 430 948

EC Energy Centre Riga  
EC Energy  
Centre/COWIconsult  
1 Ganibu Dambis 12  
4th Floor  
226810 Riga  
LATVIA  
Tel: +371 2 32 88 56  
Fax: +45 30 24 99 03

EC Energy Centre  
St Petersburg  
DNTP/FAST  
58 Nevsky Prospekt  
191011 St Petersburg  
RUSSIA  
Tel: +7 812 210 4932  
Fax: +7 812 314 4038  
Cellnet Tel: +7 812 906 0225

EC Energy Centre Sofia  
EC Energy Centre/EXERGIA  
51 James Boucher Boulevard  
1407 Sofia  
BULGARIA  
Tel & Fax: +359 2 681 461

EC Energy Centre Tallinn  
EC Energy  
Centre/COWIconsult  
B428 Ministry of Buildings  
11 Harju Street  
EE0001 Tallinn  
ESTONIA  
Tel: +372 2 69 12 18  
Fax: +372 5 24 78 57

EC Energy Centre Vilnius  
Lithuanian State Power  
System/COWIconsult  
14 Zveju Street  
PO Box 2515  
2051 Vilnius  
LITHUANIA  
Tel: +370 2 75 07 74  
Fax: +370 2 29 02 24

EC Energy Centre Warsaw  
EC Energy Centre/IABPO -  
Friedemann und Johnson  
Jasna 22  
PL-(0)-950 Warszawa  
POLAND  
Tel: +48 22 268 391 or 268 888  
Fax: +48 22 260 585

### EC Energy Centres: contact details

This Newsletter is produced by the Petroleum Science and Technology Institute for the Commission of European Communities.

For further information please contact:

Michael Pelling, Editor, PSTI, Offshore Technology Park, Exploration Drive, Aberdeen AB23 8GX, UK.  
Tel: +44 224 706 600 Fax: +44 224 706 601

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