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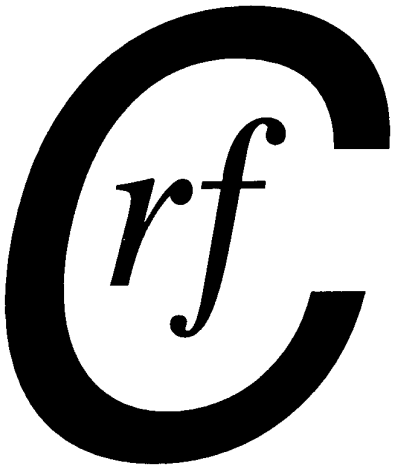
NEWSLETTER



of the

Coal Research Forum

Edited by: Dr Alan Thompson

EDITOR'S COMMENTS:

As our regular readers will have gathered by now, newsletter number 37 was the last that was edited by my colleague Dr Svenja Hanson. Having moved from Loughborough University to the University of Nottingham in 2000 she obviously found moving enjoyable and has now gone much further afield. Svenja is at present working at the Malaysia Campus of the University of Nottingham in Kuala Lumpur, helping Mike Cloke to set up the school of chemical engineering there.

All newly-arriving replacements, such as myself, like to pay tribute to the previous incumbent, and in some cases it is merely a obligatory ritual. However, in this case the tribute is thoroughly well-deserved since although Svenja edited only 7 newsletters, the quantity and quality of information that she managed to pack into them was quite amazing. Now that she no longer is the editor I feel safe to say it but you could almost afford to miss the meetings and still get all the information you needed from Svenjas highly detailed reports in this newsletter!

Whilst mulling over what I might put into this first editorial, I chanced to have a browse through the newsletter archive which was reverently handed to me by Svenja upon her departure. Incidentally, could this be the only existing archive containing all 37 previously issued newsletters? I wonder!

It is interesting that your truly is only the fifth newsletter editor in 14 years. This is in no small measure due to the marathon stint of Alan Walker from 1993 to 2001. With 25 issues under his belt he is followed by Svenja Hanson with 7, Nina Skorupska with 4 and David Clarke with two. How many for the present editor, who knows??!!

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Coal Conversion Division Meeting

Current Status of Coal Conversion Research and Tour of Monckton Coking Plant Thursday 12 June 2003.

I hoped I was properly prepared for what was going to be my maiden voyage as CRF Newsletter Editor. It was going to be a hard act to follow after the highly detailed reports of Svenja Hanson and prior to that Alan Walker. I had done my best, a new notebook, a sharp pencil, and just to refresh my sometimes unreliable memory, a digital camera. The camera was to secure some images of the visit to be sent to Svenja who is now working in the Malaysia Campus of the University of Nottingham in Kuala Lumpur. Sadly, after about 10 years working in coal carbonisation, Svenja had never visited a coke works. Now, just after she had left the UK, an opportunity presented itself- such is life!!

With the aid of a good map, some neat navigation by John Patrick, a following wind up the M1 and a sunny day, we arrived at the works of Monckton Chemical & Coke Co. Ltd., just outside the small town of Royston in Yorkshire at about 10.30am. In addition to the chimney stack providing a landmark to aim for, this plant could almost be found by following your nose!

The meeting had been arranged by John Patrick, Chairman of the Coal Conversion Division and in keeping with some of the previous events the numbers attending were modest. However, it seems that it is not the quantity that matters but the quality-at least that's what the attendees told me!

We were given a very warm welcome by Mr Adrian Beer the Coke Sales Manager at Monckton who began by providing us with coffee, biscuits and a fascinating history of the present site and how it became what it is today. It seems that coal was first won on this site in the 1800's when the land was owned by Lord Galway. In keeping with usual practises at the time the local clays were exploited for brickmaking and coke was also produced at the site. It is understood that the site continued along similar lines for very many years.

Records and reports from the early 1920's were made available to us and provided an absorbing insight into working practises, not just in the coke works but in the office, as the early reports were hand written in large, heavy ledgers in copper plate script.

For a period of 26 to 28 years Monckton was owned by ICI who used the coke it produced in their soda ash business in Cheshire. Although no longer owned by ICI, the coke is still supplied by Monckton and represents a major part of their core business.

The present owner of Monckton works is UK Coal plc. The company, which is the largest independent UK coal producer, is experiencing difficult trading conditions at present and is undergoing a restructuring. This is also the case at Monckton where measures have been taken to reduce costs. UK Coal has now been split into three groups, Mining Directorate, Property and Business Development. Monckton is part of the Business Development group together with Harworth Power and Lionhart Heating Services.

Harworth Power produces electricity from methane extracted from the mine workings of Harworth colliery. The electric power is produced using combined cycle from two 4MWe gas turbines, a waste heat boiler and a 10MWe condensing steam turbine.

Lionhart Heating Services was formerly Complete Heat when owned by British Coal. The company provides solid fuel heating, engineering and plumbing services. It is also involved in industrial heating activities and has diversified into oil and gas installation. Services for local authorities are also provided.

Monckton has a battery of 42 coke ovens, all of which were in operation at the time of the visit and was using Maltby coal supplied by UK Coal. Because of the nature of the coke making process, production cannot be increased above that which can be made with existing ovens, since new batteries are extremely expensive to purchase and install. This has resulted in the maximum coke production being around 210kt per year, or 24 t/h. In addition, Monckton also produces 1,000l/h of tar, 710l/h of ammonia and 210l/h of benzole. These products are sold on to other users without further processing. Water emanating from these processes is treated at the rate of 14,000l/h using a bio processing plant which improves the quality sufficiently for it to be returned to Yorkshire Water.

Sixty percent of the coke oven gas, (COG), which was previously also sold on to other users such as local glassworks, is now burned in a recently built Combined Heat & Power, (CHP), Plant rated at 11MWe. This plant represented a major investment of about £7M six to seven years ago. Originally intended to burn natural gas and COG the high price of the former means that only COG is now burned on the CHP which restricts its output to 7MWe. Attempts have been made on the site to exploit methane accumulations from old mine workings. Although methane has been found there are currently some problems in its extraction which is preventing its use in the CHP plant. The balance of COG (40%) is used in providing heat for the coking process. The present battery was refurbished in the late 1970's and the key to its continuing operation is regular and careful maintenance of the silica refractories and ancillaries.

The company has supplied products to the domestic markets for many years and about 10 years ago it sought to expand this sector of its business. To this end it brought out a new product to supplement its Sunbrite product known as Cosycoke. This new fuel is claimed to light more easily and to burn well and contains a quantity of petroleum coke. Despite this initiative, the inevitable fact is that the domestic market for coke is declining at a rate of between 10% and 25% per year.

Monckton coke has a top size of ~90mm and is comparatively soft which makes it unsuitable as foundry coke, thus limiting its markets. However, one of the initiatives being looked at is coke drying which would open up scope for new products including foundry coke. Other possible investment opportunities include re-installing the rail link which the company lost 12 –13 years ago. This would make the delivery of coke to large-scale users cheaper and easier.

After the talk the visitors were invited to don boiler suits, safety glasses, face masks and hard hats as a prelude to getting a first hand and close up view of coke making. The plant was very compact in that all of the activities could be viewed from close range without having to move very far. The coking time for each charge was 18.5hrs. The most spectacular event was the ejection of freshly-made coke into the bogie car, although the quenching of the coal with water sprays and the discharge of the coke was not far behind! The oven operators were certainly not envied in their tasks, despite their protective clothing, as they prepared the empty oven for recharging in very hot and dusty conditions.

A further quick tour of the site showed us the liquid by-product separation units, the boiler house and the well head for the proposed underground methane extraction system.

Exhausted by our stint of watching people working hard we were then invited to partake of a high quality buffet lunch which even our sharpened appetites failed to make much of an impression on.

The afternoon session of presentations was opened by Dr Peter Sage of AEA Future Energy Solutions who gave us his paper entitled "Coal Liquefaction Status Update". Peter began by explaining that his organisation had won the contract to provide a watching brief and manage the IPR on coal liquefaction for the DTI.

The early development history of coal liquefaction was summarised starting with the liquid by-products from coke making in the UK and Germany in the 1840's. This was followed by the indirect Fischer Tropsch process where a synthesis gas containing hydrogen and carbon monoxide was the main product. Further development of the direct liquefaction of coal in Europe resulted in the production of large quantities of gasoline, mainly in Germany, during World War II. Interest in coal liquefaction waned in many countries in the late 1940's early 1950's due to the cheap availability of crude oil. However, the political situation in South Africa in the 1950's and 60's created a need for an indigenous supply of liquid fuels and this resulted in the development of the SASOL process. The widely available and very cheap coal in South Africa helped the economics of the process and large indirect coal conversion plants were built there, the first in the 1950's and two larger ones in 1980 and 1982. By the mid 1980's it was claimed that 10 million tonnes/year or 60% of South Africa's transport fuel requirements were being met by these processes. The oil crisis of the early 1970's and an increasing awareness of environmental pollution reawakened the interest in coal liquefaction particularly in the USA, Japan and Europe. Solvent refined coal (SRC) was developed in the USA. Initially designed to produce a fuel with a lower ash and sulphur content suitable as a boiler fuel, later developments were capable of producing distillate fuels. Plant scale-up has resulted in the successful demonstration of a 6t/d SRC-1 Direct Liquefaction plant at Wilsonville, Alabama, USA.

In the UK laboratory scale research into supercritical gas extraction (SCGE) and liquid solvent extraction (LSE) began in the 1970's. A pilot scale development of the LSE process was subsequently constructed at the Point of Ayr facility. Its capacity was 2.5 tonnes/day and it operated for 4 years. However, it was decommissioned in 1995. A commercial appraisal of the LSE process was carried out in 1996 confirmed that the price of crude needed to be more than $30/barrel for it to be economically feasible. The plant was sold in 1996 to a company involved in waste oil solvent upgrading. This was carried out for 3 or 4 years but it is now believed that the present owners wish to dispose of the plant. In 2003 a further commercial appraisal showed the $30/barrel was still valid as a measure of its feasibility. This was done as interest from India and China for this technology was being shown. Outstanding process demonstration requirements include filtration and plant design and costing. In addition, it was established that steps towards commercialisation of the LSE process must include identification of target markets and competitor status and the finalisation of design options such as filtration or vacuum distillation. Product upgrading concepts, requirements for demonstration and economic estimates for design, cost and process feasibility would need consideration. Finally, potential partners would need to be identified.

The reawakening of interest in coal liquefaction stems from a number of concerns. A number of countries which supply crude oil are in politically unstable

regions such as the Middle East and parts of South America; many countries either have their own large coal reserves such as China or have access to supplies from stable regions such as Australia, South Africa or the U.S.A. and there is a need for security of supply as the energy needs of many countries expand.

China has taken a large step towards ensuring it is not dependent on oil imports by planning a large programme of coal-to-oil plants as they refer to coal liquefaction. In 2002 China's largest coal company Shenhua Group Corporation unveiled plans for the first commercially sized direct coal liquefaction to be built in Inner Mongolia. Hydrocarbon Technologies Inc. (HTI) have developed their DCL (Direct Coal Liquefaction) Process in which pulverised coal is dissolved in recycled, coal-derived, heavy process liquid at about 2500 psig and 425°C while hydrogen is added. Most of the coal structure is broken down in the first-stage reactor. Liquefaction is completed in the second-stage reactor, at a slightly higher temperature and lower pressure. The proprietary HTI GelCat Catalyst is dispersed in the slurry for both stages. A hydrotreater is incorporated in the process to concurrently remove sulphur and nitrogen and open up the aromatic structure to achieve higher cetane levels, making a fuel product compatible with conventional, downstream refining processes. The plant will have an ultimate capacity of 50,000 barrels per day of low-sulphur, diesel fuel and gasoline produced from indigenous coal. Under the agreement, HTI will provide the technology license, process design, and technical services. Construction started in 2003 and it is expected to be complete by the end of 2005. The process has apparently been scaled directly from pilot plant scale without demonstration at an intermediate scale.

Other competing technologies were briefly mentioned. These include the Koeleoel, NEDOL, HTI DCL and SASOL processes. Further details of some of these processes can be obtained from the DTI Technology Status Report 010 Coal Liquefaction.

Peter closed the presentation by stating that he felt that the U.K. government were unlikely to put huge amounts of money into coal liquefaction but that the DTI would welcome approaches from U.K. industrial companies who might be interested in taking the process forward.

The second presentation was by Professor Mark Thomas from the University of Newcastle entitled "Studies of adsorption of emissions of dioxins and furans". Mark suffered the presenters ultimate nightmare when his PowerPoint presentation could not be coaxed into life! To his great credit Mark provided the audience with an interesting and entertaining presentation entirely from memory, nice one Mark!! It seems that the highly toxic dioxins, furans and mercury species which are known to be produced during the combustion of refuse can be adsorbed onto activated carbons. However, the qualities needed by carbons for optimum adsorption are not well understood. In addition, the process occurs at elevated temperature (~200^{O}C), the toxic materials are in low concentration and other species may also compete for adsorption sites. The actual dioxins and furans found in flue gases are too toxic to be studied and model compounds are necessary to enable adsorption data to be collected. Compounds used include chlorobenzene; 1,3-dichlorobenzene, 2-chlorotoluene and 2-chloroanisole. These were suitable compounds as they were much less toxic and also had low volatilities. A number of active carbons and lignite cokes were used in the study. They were known to possess micro, meso and macropores as well as hydrophilic functional groups and hydrophobic graphene layers. The work was divided into four phases with the first involving carbon dioxide adsorption up to 300^{O}C with verification of the quality of the measurements. It was found that a new computer algorithm had to be written to control the temperature with a furnace.

In addition, since the critical temperature of carbon dioxide is ~303K it was not possible to make comparisons using values for the saturated vapour pressures at different temperatures. A virial equation approach was used to determine the isosteric heat at zero surface coverage. This should be constant over a wide temperature range and was found to be so. Phase 2 involved the characterisation of a suite of active carbons with a wide range of porous structures. The four carbons were; a wood-derived active carbon with a wide size distribution; a microporous coconut shell carbon; a Longannet coal active carbon and a Rheinbraun lignite coke. Adsorption isotherms were obtained for each. It was found that at very high pressures the commercial active carbons were 4 times better than the low cost materials. However, at the short residence times in flue gas, equilibrium conditions are never reached. Stage 3 involved the adsorption of model compounds onto the active carbons. Measurements at very low pressures were attempted in order to simulate the conditions in flue gas. The final stage was to study the adsorption dynamics. The conclusions to the work were that PCDDs (polychorinated dibenzodioxines) and PCDFs (polychlorinated dibenzofurans) could be studied at up to 200^{O}C and that as the temperature increased, the level of adsorption decreased. This phenomenon is consistent with physisorption. At high relative pressure, the uptake of wood-based carbon is much greater than the other carbons at low temperature, but at low pressure, the coconut shell carbon has a higher adsorption capacity. This indicated that total pore volume is not a good guide to adsorption characteristics at low concentrations and relative pressure. The LDF (linear driving force) model was used to calculate adsorption rate constants for adsorption of chlorinated aromatic compounds on activated carbons and cokes. The results of kinetics studies show that lignite cokes have faster adsorption kinetics than the other activated carbons at very low relative pressure. The adsorption of dioxins and furans on active carbons in flue gas treatment systems is under conditions which are not close to equilibrium and kinetics are the dominant influence.

The next paper, entitled "The assessment of fissures in metallurgical coke" by Ashiedu Oyemogum and John Patrick of the Nottingham Fuel & Energy Centre, SChEME, University of Nottingham, was presented by Professor Patrick. The overall aim of this work is to improve existing methods for the characterisation of structural parameters in metallurgical coke with the specific objective of characterising the fissures and ascertaining their significance as regards coke quality. The methodology of the analytical procedure is based on computerised image analysis of cut and polished surfaces of coke lumps in the size ranges 40 to 60mm, 60 to 80mm and >80mm, the fissures being highlighted with white plaster. Measurements are made of the area and perimeter of the coke lumps, and the area, breadth, length, number and circularity of the fissures. Aspect ratios and shape factors are also calculated from this data. Fissure shape can vary from a thin straight line to distorted lines and branched lines and these can be identified by the image analysis data. Data were presented for two batches of coke to show the degree of variability in the measurement and some general conclusions were presented. Average fissure length increased progressively with increase in coke lump size and fissure density was found for these cokes to be greatest in the smaller size fractions. The two cokes could be differentiated on the basis of the incidence of fissures and fissure density. The work is continuing with the analysis of further batches of coke now that the characterisation method has been demonstrated to be capable of producing reliable representative data. Finally, the financial support of the ECSC for this project was acknowledged.

The final paper of the day, entitled "A review of current ECSC R&D projects on coal carbonisation", was also given by Professor Patrick. In this review Professor Patrick surveyed the current status of European Union funding for carbonisation R & D by considering projects awarded under the auspices of the ECSC in 2000-

2002 and hence generally still operational, the usual contract duration being 3 years. Under the heading of "Coke production and properties" some 13 projects were awarded the majority of which were directed towards coke oven operations with the aims of improving energy efficiency, emissions control and preservation of the integrity of the coke oven structure. Some of these were also linked to coke quality since operational factors clearly can influence the quality of the coke produced. With the increased use of coal injection at the tuyeres of the blast furnace, maintaining a high level of coke quality has become paramount once more. Coking pressure, its measurement at the bench scale and the prediction of dangerous coals, still occupies many research minds seeking an unequivocal explanation of the mechanisms involved in the phenomena. Other topics funded included some with environmental issues such as improved manufacture of coke for non-ferrous applications, high value coal tar products, coke for environmental purposes and recycling of carbonaceous wastes in the coking oven. Analysis of the partners taking part in these projects shows the main beneficiaries to be Deutsche Montan Technologie (DMT), Centre de Pyrolyse de Marienau (CPM) and Instituto Nacional del Carbon (INCAR), who between them co-ordinated 10 of the 13 projects and SChEME at the University of Nottingham who were partners in 6 of the projects. Under the banner of "Coal preparation", nine projects could be considered to have an impact on the coking industry. Advanced demineralisation processes, in one form or another, in-situ or on-line measurements and modelling of coal storage, handling and preparation formed the basis of these projects with DMT and SChEME being the principle co-ordinators. A third category for ECSC funding was entitled "Environmental issues" and four projects were funded under this heading in the period under review. The subjects were emissions in coke making, development of active carbon supported catalysts for low temperature NOx reduction, treatment of coke oven-derived PAHs and waste water. Of these projects it is noteworthy that 3 out of the 4 were co-ordinated by universities in the UK and Spain. The brief analysis served to demonstrate that the ECSC, as a source of funding for coal carbonisation R & D, has been very important to those research centres involved in coke-related studies. If Europe is to remain at the forefront of coal carbonisation R & D, then it would appear to be essential that the EU through the Research Fund for Coal and Steel (RFCS) continues to support projects relevant to the coking industry (and hence to the iron-making and steel industries). The signs at present are not too encouraging on the basis of the 2003 RFCS-funded projects. The message for the future seems to be that the coal carbonisation R & D community will have to be more vigorous and innovative to obtain RFCS funding without which European coal carbonisation R & D is unlikely to survive to any significant threat.

After that rather downbeat message from the usually optimistic Professor Patrick it was time to leave Monckton. We bade our hosts farewell and thanked them warmly for filling us all with a vast amount of knowledge, not to say food as well!!

The World Coal Institute:

An article from Ms Christine Copley, Senior Manager, World Coal Institute.

The World Coal Institute – aims and objectives

The World Coal Institute is a non-profit membership association for the coal industry (both producers and consumers) and is the only international body representing the industry world-wide.

The Institute was formed in 1985, is based in Putney, London, and currently has a membership of 16 companies. These include the large transnational corporations, such as Rio Tinto, Anglo Coal, BHP Billiton to the smaller

independents such as PT Adaro (Indonesia). WCI represents interests from around the globe, with membership spanning Europe, the Former Soviet Union, N. America, S. America, Africa, Asia and Australasia.

The Objectives of the World Coal Institute are to:

- Provide a voice for coal in international policy debates on energy and the environment;

- Improve public awareness of the merits and importance of coal as the single largest source of fuel for the generation of electricity;

- Ensure that decision makers - and public opinion generally - are fully informed on the advances in modern Cleaner Coal Technologies; advances that are steadily improving the efficient use of coal and greatly reducing the impact of coal on the environment;

- Widen understanding of the vital role that metallurgical coal fulfils in the worldwide production of the steel on which all industry depends;

- Support other sectors of the worldwide coal industry in emphasising the importance of coal and its qualities as a plentiful, clean, safe and economical energy resource;

- Promote the merits of coal and upgrade the image of coal as a clean, efficient fuel, essential to both the generation of the world's electricity and the manufacture of the world's steel.

The Institute focuses on a small number of topical concerns at any one time – the role of coal in sustainable development was a key focus in the lead-up to the World Summit on Sustainable Development in South Africa last year. The advent of the Carbon Sequestration Leadership Forum recently held in Washington DC is focusing WCI activities in furthering coal's progress along the technology pathway.

In addition to specific topic-related activities, the WCI produces general information, targeted at different audiences from policy-makers to students. A new briefing document "The Role of Coal as an Energy Source" has just been published, providing policymakers and those in the energy industry worldwide, with a succint argument for retaining coal in the energy mix.

A comprehensive website (http://www.wci-coal.com) provides a wealth of information regarding the institute and its actitivities, as well as all publications and links to other relevant sites.

The Institute is also working closely with other coal associations and organisations to develop an international coal network, to facilitate the dissemination of key messages, encourage cooperation on areas of mutual concern and broaden the pool of resources available.

The Role of Coal as an Energy Source

Coal is critical in a balanced energy mix, fuelling economic and social development in both the industrialised and developing world. However, the coal industry recognises that it must more fully promote sustainable development in

its widest sense, by improving the environmental performance of coal, if this important contribution is to endure in to the long-term future.

Sustainable development requires secure and reliable access to affordable energy. For the two billion people who lack it, access to modern energy and in particular to electricity, is essential for generating local industry and employment, alleviating poverty and improving public health, and accessing modern information and education services.

Coal is the main fuel for electricity generation in many of the world's biggest economies – the US, Germany, China and India among them – and is the most abundant and widely available fuel. Coal is readily available, transportable, storable and reliable – the only fuel which has this combination of advantages.

Energy is a fundamental driver of economic development and contributor to people's quality of life. It sustains the living standards of developed countries to a high level of comfort and convenience and in the developing world it leads people out of poverty. Access to electricity increases life expectancy, reduces infant mortality, facilitates education and improves productivity. It provides a window to the wider world.

However, the energy sector faces major challenges in the 21st century.

It will have to continue to supply secure and affordable energy in the face of growing demand. Even with energy conservation measures in developed countries, global energy consumption will continue to increase, driven by economic growth and the needs of developing countries. Overall demand is projected to increase by almost 70% over the next 30 years, with most of that growth coming from developing countries [IEA 2002a]. Even then 1.4 billion people in developing countries will still not have access to electricity in 2030 [IEA 2002a].

At the same time, society is demanding cleaner energy and less pollution. The desire for lower emissions has led to widespread questioning of the role of fossil fuels in general and of coal in particular.

The industry has accepted and is responding to the call for improved environmental performance from the use of coal.

The report explains how coal will continue to make a major contribution to global energy supply in the 21st century. Not only will the huge reserve base of coal be needed, but technological advancement can ensure coal is part of a cleaner energy future.

Key Messages

- Energy demand has grown strongly and will continue to increase, particularly in developing countries where energy is needed for economic growth and poverty alleviation.

- All energy sources will be needed to satisfy that demand by providing a diverse and balanced supply mix.

- Coal is vital for global energy security. It is abundantly available, affordable, reliable and easy and safe to transport.

- In an energy hungry world the challenge for coal, as for other fossil fuels, is to further substantially reduce its greenhouse gas and other emissions while continuing to make a major contribution to economic and social development and energy security.

- Coal is part way down a technology pathway that has already delivered major environmental improvements. Further technical solutions include improved combustion efficiency and reduced emissions, coal gasification, new approaches to carbon capture and storage, and the production of hydrogen from coal, which will play a part in the transition to a hydrogen-based energy future. The ultimate goal is near complete elimination of emissions.

- The member companies of the World Coal Institute are committed to improving coal's sustainability by:
  - Supporting major research efforts to make cleaner technologies affordable and thereby accelerate their uptake;
  - Raising awareness within the industry;
  - Providing credible input to policy making; and
  - Demonstrating leadership in implementing the Guiding Principles for the Coal Industry, set out at the back of this document.

The world needs coal.
Advanced coal technologies will meet the challenges of the 21st century.

U.S. Plans To Study Natural Causes Of Global Warming

Conservationists bash study - They say White House examination of global warming is off base

By John Heilprin / *Associated Press* Friday, July 25, 2003

WASHINGTON -- The chief goal in a White House plan to study global warming is learning more about natural causes of climate change, drawing criticism from environmentalists who say reducing industrial carbon emissions is the real problem. The new 10-year, $103 million plan to speed up research in some high-priority areas was released Thursday by Commerce Secretary Don Evans and Energy Secretary Spencer Abraham, who pointed to $4.5 billion in government spending on climate change-related programs. "We're going to lead on this issue," Evans said. The first of the 364-page plan's five goals is to study the "natural variability" in climate change. The second is to find better ways of measuring climate effects from burning fossil fuels, industrial production of warming gases and changes in land use. Other goals are to reduce uncertainty in climate forecasting; to better understand how changes in climate affect human, wildlife and plant communities; and to find more exact ways of calculating the risks of global warming, according to plan summaries. But environmentalists said the administration was focusing too much on natural causes and reopening scientific issues already well studied. Philip Clapp, president of National Environmental Trust, predicted that "most climate scientists around the world will see this as fiddling while Rome burns. ... This would have been a great research program if it had been announced by the first President Bush 10 years ago." "We

can't move the science faster than it goes," said Assistant Commerce Secretary James Mahoney, who oversees U.S. research on climate change. "At any point in time, there can be debates about the policy, but our job is to structure our information to be the most helpful." The administration also will ask Congress to approve a new $103 million, two-year initiative to speed up research on carbon pollution, aerosols and oceans, and determine the best ways to compile and disseminate information about them.

That effort will be included in President Bush's budget proposals for 2005-06, Mahoney said, and would draw some of its from the $1.75 billion Climate Change Science Program. Congress in 1990 required that the nation create a 10-year climate change research plan, but no administration has complied until now. Such a plan also is supposed to be updated every three years. The Bush administration released its first draft of a plan late last year, focusing on making better economic projections of possible climate policy changes and tighter co-ordination of more than a dozen federal agencies' efforts. That draft was harshly criticised by a panel of top climate experts at the National Academy of Sciences, who said it didn't set hard priorities or provide a clear vision and specific timetable for meeting goals. "We've tried to take all of the academy's recommendations into account," Mahoney said. "The greatest focus is on what we can deliver in the shortest period." The plan calls for 21 reports over the next four years on a wide range of climate change aspects. Many scientists blame carbon dioxide from burning oil and coal for contributing to a "greenhouse," or warming, effect on global climates. Bush and his advisers have adopted the stance that reducing emissions through costly near-term measures is unjustified.

International Power offer to buy stake in Drax

LONDON, July 24 (Reuters) - UK utility International Power on Thursday offered to buy a stake in AES Drax, Britain's biggest power station, and to take on a chunk of the troubled plant's debts. In an offer to Drax creditors that IP said was an improvement on a deal offered by U.S.-owned AES earlier this month, IP said it would pay up to 80 million pounds ($128.9 million) for a 36 percent stake and 15 percent of the plant's 1.3 billion pound debt. The offer would stand for 30 days. "Although International Power's offer is at a discount to the face value of the debt, it is at a meaningful premium to the AES offer," said IP in a statement. IP also offered to manage the plant for free. The move came just days before the expiry of a one-month extension to a standstill agreement with Drax lenders. Drax, a huge coal-fired plant in Yorkshire, northern England, has been attempting to restructure its finances since it fell into a cash crisis last year when it lost its main sales contract, held with bust utility TXU Europe. The loss of the contract left Drax exposed to much lower prices in the spot power market. Spot electricity power prices have fallen more than 40 percent since the late 1990s on increased competition, although they staged a brief recovery this month as maintenance shutdowns at power stations triggered a supply squeeze on the grid. Lower prices have forced several power stations into the hands of banks which financed them in the 1990s on the back of much higher prices. "Prospective involvement with Drax, as creditor, part-owner and manager is of great interest to us as it would represent a good opportunity for us to enhance our existing position in the UK market," said David Crane, IP's chief executive officer, in the statement.

Coalpower to produce CO_2 _

- **First phase of £650m power station approved**

by David Gow, Wednesday August 6, 2003, The Guardian

Richard Budge, the former owner of most of Britain's coal industry, yesterday won government approval for the first phase of a £650m plan to build a gasified coal-fuelled power plant at his Hatfield colliery, near Doncaster. Mr Budge, chairman and managing director of Coalpower, said he also aims to capture carbon dioxide in commercial volumes and sell by-products in the form of aggregates - or even hydrogen - for a fleet of buses. "I have always wanted to keep coal in the energy portfolio," he said, claiming that the new 430MW plant would help reduce Britain's dependency on imported gas and meet Kyoto targets for reducing greenhouse gas emissions. Hatfield, taken over by Coalpower in October 2001 after being saved from closure with the aid of more than £7m government money, will supply 1.25m tonnes a year to the new £350m power station. In the next phase of his plans Mr Budge aims to build a second unit, costing £300m, with the same capacity and taking the same amount of coal - most of it linked to seams at the Selby complex being closed by UK Coal. Coalpower, which says it has access to 100m tonnes of reserves, has applied for government aid to develop access to the rich Barnsley Main seams. The new plant would be one of the first to be built in Britain since the 40% drop in wholesale electricity prices over the past five years forced producers to close or mothball plants, allow others to be taken over by creditor banks and postpone plans to build new gas-fired stations. Mr Budge claimed that the Hatfield stations would produce much cheaper power. "Gasification is the cheapest way to achieve the Kyoto protocol," he said. "This station will produce power costing less than any offshore wind farm." He added that the plant would produce enough hydrogen to fuel a fleet of 2,000 buses and enough CO_2 in commercial volumes to keep oil fields going. "The only thing the plant does not do is nuclear power." Drax, the UK's biggest coal-fired station in north Yorkshire, with 3,900MW of capacity, is to continue operating despite knife-edge talks between its owner, AES, and its creditor banks over refinancing debts of £1.3bn. The banks were given until midnight last night to agree to AES terms - paying 47p in the pound - but creditors have said two experienced directors will run the plant on their behalf.

Broad energy coalition presents marketplace-based plan (report from Chemical & Engineering News June 2003)

A business, labour, and environmental coalition last week presented its views on what should be a national (USA ed.) energy plan that uses the marketplace to speed adoption of technologies to cut carbon emissions and oil consumption as well as broaden world-wide access to electricity. The group spent 18 months developing a report that drew upon more than 100 contributors, the coalition members said. It issued recommendations in six areas: improvement of the electricity grid, conversion of biomass to fuels, development of advanced vehicles, dissemination of clean energy technologies to the developing world, coal R & D, and energy efficiency. The reports emphasis was on what the group viewed as “politically achievable public policy solutions”. Hence, missing was any endorsement of vehicle fuel-efficiency standards or requirements for reduced emissions from coal-fired power plants, for instance. Instead, for coal and vehicles, the nations largest users and generators of energy and pollution, the report endorsed sequestration of carbon emitted by power plants and tax incentives to encourage automakers to manufacture fuel-efficient vehicles and consumers to buy them.

UK power cuts 'in 20 years' (report from BBC)

The Institution of Civil Engineers (ICE) says 80% of the gas needed to fuel power stations will come from what it calls "politically unstable" countries thousands of miles away. The report says that if the supply was interrupted the lights would start to go out within hours. The institution said emission constraints mean that the UK's coal-powered generating plants will close shortly after 2016 and only one nuclear power station will remain operational beyond 2020. At present, renewable energy sources such as solar, wind and wave can only provide a fraction of the total requirement. Therefore Britain will be forced to import fuel by 2020, initially from Norway, but as demand across Europe exhausts supplies, Britain will be forced to source gas supplies from West Africa, the Middle East and the former Soviet Republics, it said.

Tom Foulkes, ICE director general, said: "Britain is a long way from the major new gas fields being developed in central Asia and Africa." Can the security of the UK's gas supply be guaranteed, given that it will have to travel thousands of miles in a series of pipelines that are vulnerable to mechanical failure, sabotage and terrorist attack? What would happen then? "Under current plans, with no gas, this country would have no electricity."

Grinding to a halt? (report from the BBC)

The ICE is urging the government to "develop a sustainable solution that incorporates a mix of all types of generation, including renewable sources like wind and wave power, nuclear and cleaner coal and gas-fired power stations".

David Anderson, chair of ICE's energy board, warned that the alternative was a "return to the blackouts that marked the 'Winter of Discontent' and brought the country grinding to a halt". The Energy Minister, Stephen Timms, told the BBC he did not accept the bleak picture painted by the report - he had a different view of how the countries supplying our gas would develop. "I think we've taken good account in the White Paper of the changing energy requirements and the patterns of supply over the next 20 years," he said. "There are some major issues for us to address but I think we're on track for doing so."

Tailings

- The re-launch, yet again, of the Coal Preparation Division is set to take place within the next two months. Following Chandu Shah's short stewardship of the division it is now in the hands of Andrew Bailey of UK Coal plc. Andrew is planning a meeting at UK Coal's headquarters. It will probably include a morning and afternoon session, with at least two speakers, one highlighting where UK Coal / the Coal Industry is at the moment with regard to the utilisation of coal preparation technology, and another highlighting where research is going. Hopefully this will stimulate an enthusiastic discussion. UK Coal's presentation would possibly focus on technologies utilised, and how changes to the economic / environmental environments are influencing these technologies and how they are used / monitored, their products and their future needs.

- Alkane Energy, the producer of coal mine methane, is halving its UK work force due to low energy prices, with its development team, engineers and support staff being cut from 24 to 12.

- Alkane has reached agreement with A-TEC and Pro2 of Germany to develop methane generation facilities at abandoned coal mines in Gelsenkirchen, which will involve a £1.3m investment over ten years. 12-Mar-03

- PowerGen is to invest £120m in renewable energy projects in 2003, including a 40MW wood-burning power station in Lockerbie, wind farms and two hydroelectric plants. 11-Mar-03

- UK Coal is said to be planning to shed up to 100 jobs, as part of a restructuring that will create new divisions for mining, property management and household fuels. 06-Mar-03

Student Bursaries for the 2003 ICCS

Up to 6 travel bursaries for up to £300 are on offer to bona-fide full-time students wishing to attend the ICCS 2003. To apply, please send the abstract submitted to the conference with a brief supporting letter from your supervisor to:

Prof. J.W. Patrick
SChEME
The University of Nottingham
Nottingham
NG7 2RD

The bursaries come with no obligations to the recipient other than to supply a short essay about his or her impressions of the conference to the Newsletter for inclusion in the January 2004 edition.

CALENDAR OF COAL RESEARCH MEETINGS AND EVENTS

Date	Title	Location	Contact
Monday 13th October 2003	52nd BCURA Robens Coal Science Lecture	The Royal Institution, Albermarle Street, London	Mr J D Gardner, BCURA Company Secretary, Gardner Brown Ltd., Calderwood House, 7 Montpellier Parade, Cheltenham, GLOS, GL50 1UA Tel : 01242-224886 Fax : 01242-577116 E-mail : john@gardnerbrown.co.uk
2-6 Nov 2003	12th International Conference on Coal Science	Cairns Convention Centre, Qld., Australia	12th ICCS, PO Box 268, Toukley, NSW 2263, Australia Tel: +61 2 4393 1114 Fax: +61 2 4393 1114 Email: iccs@aie.org.au Internet: www.aie.org.au/iccs
6-8 Sep 2004	5th European Conference on Coal Research & Its Applications	University of Edinburgh	5th European Conference on Coal Research & Its Applications, organised by the Coal Research Forum Contact Dr A.W.Thompson Tel: +44 115 951 4198 Fax: +44 115 951 4115 Email: alan.thompson@nottingham.ac.uk