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Summary Proceedings

U.S. Department of Energy
Office of Fossil Energy

July 1989

Public Meetings for Views and Comments on the Conduct of the 1989 Clean Coal Technology Solicitation

Denver, Colorado, January 18, 1989
Irving, Texas, February 2, 1989
Atlanta, Georgia, February 16, 1989

Public Meetings for Views and Comments on the Conduct of the 1989 Clean Coal Technology Solicitation

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CHAPTER 1

INTRODUCTION AND OVERVIEW

1.1 INTRODUCTION:

Three public meetings were convened by the Department of Energy (DOE) in January and February 1989 in order to obtain views, comments, and recommendations with regard to the forthcoming Clean Coal Technology III solicitation. In the sections that follow, brief descriptions are provided of the background to the CCT solicitation and the public meetings, and how the meetings were conducted. Subsequent chapters of this report present the discussions that ensued at each of the meetings, and the views, recommendations, and concerns that were expressed by attendees. Finally, an appendix contains a list of the organizations that were represented at the public meetings.

The meetings took place as follows:

1. Denver, Colorado	Radisson Hotel Wednesday, January 18, 1989
2. Irving, Texas	Harvey Hotel Thursday, February 2,1989
3. Atlanta, Georgia	Radisson Hotel Thursday, February 16, 1989

1.2 SUMMARY OF THE CLEAN COAL TECHNOLOGY PROGRAM:

Round #1

On December 19, 1985, Congress enacted Public Law 99-190. Among other things, it provided nearly $400 million "... for the purpose of conducting cost-shared Clean Coal Technology projects for the construction and operation of facilities to demonstrate the feasibility for future commercial applications of such technology ..." and authorized DOE to conduct the first solicitation for cost-shared clean coal technology projects.

The first Clean Coal Technology Program Opportunity Notice (PON) was issued on February 17, 1986. Consistent with Congressional direction, it contained guidelines stating that the competition must (1) be open to all market applications of clean coal technology that apply to any segment of the U.S. coal resource base, including utilities, industry (including steel and iron ore processing), commercial and residential markets, and transportation; (2) be open to both new and retrofit applications whether intended to displace oil and natural gas or to use coal more cleanly, efficiently, or economically than presently available technology; and (3) consist of industry projects, with financial assistance available from the Government at levels up to 50 percent of project cost.

On July 25, 1986, DOE named nine projects as its initial choices from 51 candidate projects submitted by private sponsors and state agencies.

Negotiating cooperative agreements for Clean Coal Technology projects, in actual practice, is made up of two steps.

First, an initial fact-finding effort is undertaken by the Department.In this step, the selected proposer develops and delivers to the government significantly more detailed information about the project than was required for the proposal. Information supplied as part of fact finding includes a proposed recoupment plan, updated information on the technical, environmental and financing aspects of the project, a preliminary project management plan, a detailed cost estimate, information regarding intellectual property, more detailed site information and audit data. Often, fact finding is the more complex and time-consuming stage of the negotiation process.

Once the necessary detailed information is in hand, the Department and the proposer enter into negotiations, the second step of the process. During negotiations, proposal language and project information are translated into definitive contract language (it should be noted that the actual document negotiated is a "cooperative agreement, "which is somewhat different from a "contract" in terms of Government procurement definitions).

In Round #1 of the Clean Coal Program (as well as in Round #2), fact finding and negotiation activity with each industrial participant began immediately after selection. On March 20, 1987, cooperative agreements were signed for the first two Clean Coal Technology projects—the Tidd Pressurized Fluidized Bed Combustion Demonstration Project, sponsored by the Ohio Power Company (a subsidiary of the American Electric Power Company), and the Advanced Cyclone Combustor Project, sponsored by the Coal Tech Corporation.

Subsequently, the negotiation process and required Congressional review were completed for five additional Round #1 projects sponsored by: The Babcock & Wilcox Co. (June 25, 1987), Ohio-Ontario Clean Fuels (December 15, 1987), Energy International (December 23, 1987), and M.W. Kellogg (January 22, 1988).

In September 1987, two of the original nine sponsors withdrew their proposals from consideration. Funds made available were used to select four additional projects from the list of alternate proposals identified at the time of the initial Round #1 selection, bringing the total number of projects to 11.

Of these projects two resulted in cooperative agreements (Colorado-Ute Electric Association on October 3, 1988, and TRW, Inc., on November 4, 1988). One project is still in fact finding, and negotiations with the fourth project sponsor (Minnesota Department of Natural Resources) were terminated on December 9, 1988, when the private sponsor could not obtain sufficient industrial participation and financial support. Elimination of the fourth replacement project permitted the Department to select three more proposals from its alternate projects list.

In summary, 13 Round #1 projects are currently active. Nine cooperative agreements have been signed committing $271 million of Federal funds and $589.5 million of non-Federal funds for a cost-share ratio of 68.5% non-Federal to 31.5% Federal.

Four additional Round #1 projects are currently in fact-finding. If successfully negotiated, an additional $116.2 million of Federal and $244 million of private funds will be committed to the program. In the event negotiations can't be successfully concluded, one project remains on the alternate list for consideration.

Round #2

Congress, in Public Law 100-202, provided $575 million to demonstrate clean coal technologies capable of reducing sulfur dioxide and/or nitrogen oxide emissions from existing facilities. (The FY 1989 appropriation and act modified the funding timetable to provide $50 million in FY1988, $190 million for FY 1989, and advance appropriations of $135 million in FY 1990 and $200 million in FY 1991.)

Based upon Congressional guidance, lessons learned in Round #1, comments received from four public meetings, and recommendations from the Innovative Control Technology Advisory Panel (an advisory group to the Secretary of Energy). DOE issued the Round #2 solicitation on February 22,1988. By the May 23, 1988, closing date 55 proposals were received. In September 1988, 16 projects were selected for negotiations. All of these projects are in fact finding and negotiations.

Round #3

In DOE's Fiscal Year 1989 appropriations law (Public Law 100-446) an additional $575 million was advance appropriated for Fiscal Year 1990 for the third Clean Coal Technology solicitation. Congress specified that the third round was for the demonstration of technologies which could be used to retrofit or repower existing facilities. The solicitation was to follow the same cost-sharing provisions as in the first two rounds. Four public meetings again were held to obtain suggestions on how DOE could improve the Round #3 solicitation. The Innovative Control Technology Advisory Panel again provided suggestions on factors that should be considered in the solicitation.

With consideration given to all of these recommendations, DOE issued a draft of the third round solicitation on March 15, 1989, and asked for public comment.

Round #3 officially began on May 1 with the formal issuance of the final PON. Offerors have 120 days to submit proposals. The DOE has 120 days to evaluate the proposals and make selections.

Future Rounds

In his February 9, 1989, budget message, President Bush reinstated the original 5-year schedule to carry out the Clean Coal Technology competitive process. In addition to requesting that the FY 1990 funding level remain intact, the President reaffirmed the importance of advanced appropriations for the remaining $1.2 billion ($600 million in FY1991 and $600 million in FY 1992) to complete the five-round program.

The President's decision to adhere to the previous Clean Coal schedule, which had been agreed to with Canada, sends two strong signals:

First, that the Administration wants the Clean Coal Program to proceed at a pace that will make it an integral part of a comprehensive solution to acid rain concerns.

Second, that private companies should be confident that they can apply their own resources, both in the R&D and demonstration stage, with assurance that federal Clean Coal funding will be competitively available to complete an emerging technology's transition into the marketplace.

This latter point is particularly important. Advance appropriations will inject a greater measure of certainty into the program. Knowing these funds will be available will give industry the confidence to devote a greater amount of their own resources to concepts now in the R&D process.

1.3 ICTAP AND THE SEB:

On March 18, 1987, President Reagan directed the Secretary of Energy to establish an advisory panel, known as the Innovative Control Technology Panel (ICTAP), to:

> *... advise the Secretary of Energy on funding and selection of innovative control technologies projects. Projects will be selected, as fully as practicable, using the criteria recommended by the [Special Envoys on Acid Rain, Drew Lewis of the United States,and William Davis of Canada].*

The inaugural meeting of ICTAP was held on September 30, 1987.

The ICTAP is a primary recipient of the results of the meetings, and is an important audience for the present report.

In order to serve as a ready reference, the Lewis/Davis criteria for CCT projects, referred to above, are reproduced in full below as they appeared in the original Joint Report of the Special Envoys on Acid Rain:

> *Because this technology demonstration program is meant to be part of a long-term response to the transboundary acid rain problem, prospective projects should be evaluated according to several specific criteria. The federal government should co-fund projects that have the potential for the largest emission reductions, measured as a percentage of SO2 or NOx removed. Among projects with similar potential, government funding should go to those that reduce emissions at the cheapest cost per ton. More consideration should be given to projects that demonstrate retrofit technologies applicable to the largest number of existing sources, especially existing sources that,because of their size and location, contribute to transboundary air pollution. In short, although the primary purpose of this research program is to demonstrate the kinds of technologies that would be needed for future acid rain control program, it should also result in some near-term reductions in U.S. air emissions that affect Canadian ecosystems.*
>
> *Furthermore, special consideration should be given to technologies that can be applied to facilities currently dependent on the use of high-sulfur coal. ... The commercial demonstration of innovative technologies that clean high-sulfur coal will*

help to reduce the economic consequences of any future acid rain control program [by substituting for coal-switching].

The other primary recipient of the views, comments, and recommendations that ensued from the public meetings will be the Source Evaluation Board (SEB). The SEB, which has been formally appointed for the CCT III solicitation, constitutes a select group of government professionals whose role it is to solicit and evaluate the proposals, and to report their findings to a Source Selection Official.

1.4 MEETING PLANNING AND FORMAT:

The public meetings were formally announced in the *Federal Register* of December 14, 1988, (FR DOC 88-28773) under the heading, "Invitation for Public Views and Comments on the Conduct of the 1989 Clean Coal Technology Solicitation; Meetings." The notice reviewed the purpose of the meetings, provided a proposed outline of the anticipated solicitation, and identified "a number of specific issues and concerns that DOE is particularly interested in receiving public comments on":

1. Improved evaluation criteria.

2. Increased number of Western project proposals.

3. Reduced cost of proposal preparation.

4. Reduced time required for the negotiation of cooperative agreements.

Additional publicity was obtained by the issuance of a DOE News Release on December 27, 1988, and by a mass mailing of the notice to over 2,000 addresses of individuals who had previously responded to DOE solicitations or notices, or who had expressed an interest in being kept informed of CCT activities.

Pertinent information of possible use or interest to meeting attendees was compiled into a *Background Information* document (DOE/FE-0112), which was distributed at each of the three public meetings or provided upon request by mail or telephone. This report included the *Federal Register* notice of December 14, 1988, DOE's FY 89 appropriations request for the CCT effort, and two statements by J. Allen Wampler, Assistant Secretary for Fossil Energy, in testimony before congressional committees.

As was described in the *Federal Register* notice, each meeting commenced with a brief plenary session, which included introductory remarks and program overviews by DOE officials. The audience then briefly recessed and reconvened into working sessions, which ran concurrently in order to facilitate animated discussion in small groups and to make efficient use of the time available. All of the working sessions discussed all of the same issues; the number of sessions varied from city to city in response to the attendance. In Denver and

Atlanta, there were four working sessions each, while in Irving, Texas, three working sessions were adequate. Finally, attendees met in a closing plenary session in each city. The highlights and recommendations of each of the working sessions were reviewed and summarized, and the meetings were concluded. The opening and closing plenary sessions were transcribed. However, there was no transcription of the working sessions; each session cochairman was responsible for preparing notes of the salient aspects of the proceedings. These working session summaries are provided in Chapter 4 of this report.

CHAPTER 2

SUMMARY ISSUES AND SUGGESTIONS

2.1 INTRODUCTION:

As was noted in Section 1.4, the meetings notice published in the *Federal Register* listed four issues and concerns of particular interest to DOE. Additional subjects were identified as noteworthy for discussion by the public at the meetings. This chapter provides capsule statements of the issues that were raised and summaries of the public's suggestions regarding these issues.

It is important to note, however, that this report reflects the views, opinions, and comments expressed by the public, and that inclusion here does not in any way reflect DOE's agreement with these statements. However, DOE fully considered and assessed the merits of all feedback, oral and written, received from the public prior to issuance of the recent CCT III Solicitation.

2.2 GLOBAL WARMING

Comments and Suggestions

The greenhouse effect does not warrant major emphasis, however some consideration is worthwhile.

The government would best serve its cause by remaining totally silent on the issue in the CCT III solicitation.

Work the CO2 problem through Fossil Energy's R&D Programs.

Global Warming should be addressed indirectly through "efficiency" considerations.

2.3 SOLICITATION APPROACH

Comments and Suggestions

Focus on the reduction of SOx and NOx emissions from existing facilities.

Allow opportunities for dialogue between the Offeror and DOE prior to final selection; others found this idea objectionable due to the potential for unfair advantage.

Establish a two-step approach where proposers qualify first and then submit a full-blown proposal.

The "one-step" proposal approach is more cost-effective and preferable than a "two-step" approach.

Financial consideration should be given a high priority since projects with sound financing would have a better chance of success and subsequent commercialization.

The program should be broadened to include technologies that (1) produce export fuels and technologies; (2) displace oil and gas from existing facilities and (3) promote new markets for coal.

DOE should provide clear guidance on what technologies have the best opportunity to be funded.

The CCT program should limit its support to demonstration projects....the program should not be "diluted" by using funds to support smaller scale research projects.

DOE should not expand the scope of the CCT III solicitation only to attract projects that use new fuel forms (NFF). However, DOE should clearly define what constitutes a NFF, repowering, and retrofitting.

2.4 REPAYMENT

Comments & Suggestions

Flexibility should be retained to adjust the plan during negotiations....permit each project to be treated in an individual manner.

Repayment is not in the best interest of either the government or the participant....is contrary to the government concept of sharing in risk reduction on projects too large to be safely undertaken by the private sector.

The repayment plan should be clearly stated in the solicitation.

The requirement for repayment adds a certain legitimacy to proposals.

A "grace period" should be included before repayment begins to encourage initial penetration of the market.

The repayment concept presents a special difficulty for regulated utilities....a special focus for utility problems is required.

2.5 PROPOSAL PREPARATION AND COSTS REDUCTION

Comments and Suggestions

The purpose of the solicitation and the criteria should be made very clear and specific so the proposers can then "self-select" .... considerable cost and effort will be saved if the proposer recognized from the start that he has little chance to be selected and decides to not submit a proposal.

The number of proposal volumes should be reduced.

DOE should be specific on what information is required in areas such as socioeconomic impacts.

Shorten proposal preparation time from 120 to 90 days....extra days allotted just increases costs.

Participants noted that uncertainty about the form of Acid Rain Legislation could influence their participation in the program. DOE should provide a unilateral right to withdraw from a CCT project if the legislation makes the project impossible or impractical.

2.6 PROJECT EVALUATION AND SELECTION

Comments and Suggestions

Quantify the Program Policy Factors so that Offerors can better direct their proposal to be responsive to these needs.

Provide guidelines on the size of demonstration desired.

Improve the technology readiness criteria.

DOE should provide a baseline market forecast that all offerors would use in preparing their commercialization plans.

A criterion for project selection should be the ability and commitment of the proposer to commercialize the proposed technology.

DOE should request only that information necessary for selection followed by a subsequent request for the additional information needed for award and project definition.

DOE should be as explicit as possible in stating the evaluation criteria and to publish the precise weights to be applied to each criterion.

DOE should make clear in the PON how the state of development of a proposed technology will affect evaluation.

2.7 INCREASING WESTERN PARTICIPATION

Comments and Suggestions

Emphasize selection criterion factors such as: NOx reduction, fuel switching to lower sulfur content of coal, and credits for an improved fuel form.

The CCT III PON should stress coal utilization, not just clean air.

A "broadening" of the solicitation purpose to extend beyond "Lewis-Davis" type benefits since western coals could be used to produce new fuel forms.

Expand the PON scope to include coal export and oil backout.

Western coals would be penalized if global warming criteria are used since they produce more CO2 per Btu.

CHAPTER 3

WELCOMING REMARKS

3.1 EXPLANATORY NOTE:

At the initial public meeting in Denver, attendees were welcomed by Mr. J. Allen Wampler, Assistant Secretary for Fossil Energy. The prepared text of his presentation is provided in Section 3.2. In Irving and Atlanta, the public was addressed by Mr. Jack S. Siegel, Deputy Assistant Secretary for Coal Technology. The messages conveyed by Mr. Siegel, although not contained in this report, were essentially similar to those presented by Mr. Wampler in Denver.

3.2 REMARKS BY J. ALLEN WAMPLER OF JANUARY 18, 1989

OPENING PLENARY SESSION
DENVER, COLORADO

Clean Coal Technology

Clean Coal: Round #3

Remarks by
J. Allen Wampler
Assistant Secretary
for Fossil Energy
U.S. Department of
Energy
to the Clean Coal
Technology
Program Public
Meeting
in Denver, Colorado
January 18, 1989

In about 15 weeks we will issue our third call for proposals in nation's Clean Coal Technology Program. Round number three, which as you are aware is scheduled to begin on May 1, represents the mid-point in the Clean Coal Program. As we described in our budget submission to Congress last week, we envision five rounds of competition by the time the program concludes in the 1990s.

Five rounds – totaling $2.5 billion in government funding – and if our experience in cost-sharing in the first two rounds is any gauge, that $2.5 billion will leverage more than six and a quarter billion dollars worth of projects.

That is a major, national commitment. It is far in excess of what any other nation is doing – specifically in terms of government and industry working together to position coal technology for expanded use in the 1990s and the 21st Century. It is the single largest energy initiative – in terms of total dollar value and in terms of the sheer number of projects – that is currently underway in this country.

Again, if Rounds #2 and #3 are any gauge, by the time the program is over, this country could be financing something like 75 to 100 demonstration projects, each showcasing a new and better concept for using domestic coal cleanly and efficiently. These are projects that not only can help us achieve our environment goals, but they can be the basis for expanded

economic growth and, perhaps, in the restoration of a more favorable balance of trade overseas.

That's the effort we are asking you to help us fashion. Round #3 may be the middle round of the five round program we envision, but in many ways it could be the most important.

We believe the Clean Coal Program can be a substantial contributor to many of the answers this nation will be looking for in 1989 and in the 1990s.

It can help us solve, once and for all, the problem of acid rain. It can move us beyond the limitations of today's conventional control technologies—permitting deep, sustained cuts in acid rain-causing pollutants. And it can do it without the enormous financial burdens associated with the acid rain legislation—*all* of the acid rain legislation—that we've seen discussed in Congress.

We simply aren't building the kind of power generation capacity this country will need to sustain even moderate economic growth into the foreseeable future. Growing demand and a shorter timeframe to meet that demand will ultimately force us to smaller, modular, power options...

It can help us address the global climate problem—if there is a problem at all—by developing a cadre of new, high efficiency power concepts that extract proportionally greater energy from a given amount of coal.

It can help us address the approaching problem of reliable electric power in this country—and here, I think the problem is very real and certainly more immediate. In 1988, many utilities walked closer to the edge—in terms of reserve margins—than they ever expected they would and certainly closer than they wanted to.

We simply aren't building the kind of power generation capacity this country will need to sustain even moderate economic growth into the foreseeable future. Growing demand and a shorter timeframe to meet that demand will ultimately force us to smaller, modular, power options that can be built quickly and installed incrementally—and if coal wants to play in this changing utility game, it will need technologies like those being supported in the Clean Coal Program.

And finally, the Clean Coal Program may be the most important advantage this nation has in convincing overseas markets to buy more U.S. coal. Yes, there are things the industry can do to increase its competitive advantage—and we're seeing signs that those efforts are underway. But ultimately,

world customers will be facing the same kind of environmental pressures, the same kind of economic pressures, the same kind of electric power demand pressures that we're confronting here at home. And if we can offer them technology that addresses those needs – technology that has been demonstrated on American coals – we will have a formidable marketing package unlike any other in the world.

So the message I'm sending to you today is that the Clean Coal Program, in our mind, is much more than a program driven by a singular focus on resolving just acid rain-related problems. That is clearly an important component – perhaps the primary motivation behind the program. But the collateral benefits of what we are attempting to do will extend much beyond simply resolving that one problem. The program has clear implications for national security, energy security and economic strength.

This program won't work if it appeals only to one sector of the coal industry. There is no East and West in this program – no high versus low sulfur coal. The program is too important for that.

So we are asking you today to help us fashion a program that can meet those objectives – and do it efficiently and effectively.

This program won't work if it appeals only to one sector of the coal industry. There is no East and West in this program – no high versus low sulfur coal. The program is too important for that.

This program won't work if it appeals only to the largest and richest of companies. If it costs too much to prepare a proposal and that, in turn, discourages smaller companies with limited resources, then we are eliminating a major source of good ideas and potentially valuable projects. The program is too important to this nation's future to let that to happen.

If the amount of information we ask for in a proposal is unrealistic or too excessive to be a factor in our evaluation process – and the shear paperwork drives away potential participants – then we've got to remedy that problem. If we don't permit the flexibility to negotiate sound financial deals in an expedient timeframe, then we are defeating our purpose.

That's what we want you to tell us today. We want to hear problems, and we want to hear suggestions for remedying those problems. Where can we improve the program? How can those improvements be made? The public meetings we had in advance of Round numbers one and two did result in changes in

our solicitation. They had an impact on the way we structured the competition. These public meetings will have an impact, too, I can assure you.

In our FY 1990 budget, submitted to Congress last week, we stretched out the final two rounds of the Clean Coal program – Rounds #4 and #5. There is no effect on Round #3, it will proceed as planned, with the full amount of federal funding as planned. The reason for the stretch-out of the latter competitions – and you'll see the details here in a minute – was strictly for budgetary reasons – as a way of reducing the program's composite impact on the federal deficit.

We can tell decisionmakers in Congress that we have a better way to address environmental problems without sacrificing economic growth. We can tell the environmental community that new laws and tighter standards aren't the only options this nation has to continue and accelerate its record of environmental progress.

But coupled with that stretch out was the President's request for full funding for the remainder of the program – funding that would be appropriated in advance to put a lock on it for future years. We believe that action is important so that potential project sponsors who have new concepts currently in the development phase remain confident that the federal commitment will remain intact as those concepts mature.

But my point is this – the Clean Coal program, as a large national expenditure – is being watched closely. And how it is treated by the 101st Congress and others will depend largely on how valuable they believe it is in meeting the national needs I described.

The year 1989 could be pivotal for the program. If Round number three can be carried out efficiently, effectively and in way that attracts a wide range of innovative concepts backed by sound corporate commitments, then we can send a strong message.

We can tell decisionmakers in Congress that we have a better way to address environmental problems without sacrificing economic growth. We can tell the environmental community that new laws and tighter standards aren't the only options this nation has to continue and accelerate its record of environmental progress. We can tell the nation's power industy that coal can continue to be the fuel of choice for the current – and the next – generation of electric power capacity. We can tell the nation's industrial manufacturers that technologies are emerging to return coal to the industrial and commercial sectors. And we can tell overseas customers that we have a package of new

technology and a reliable feedstock that no other nation can begin to match.

That's the importance of this program – and of this meeting. The program will work only if you in this audience are involved in it from Day One. And in many ways, these public meetings constitute Day One.

So let me again express my appreciation for your attendence and your interest. We have 15 weeks to go and we have our work cut out for us.

CHAPTER 4

SUMMARY PROCEEDINGS OF THE WORKING SESSIONS

4.1 THE FIRST PUBLIC MEETING

FOUR WORKING SESSIONS
DENVER, COLORADO
JANUARY 18, 1989

4.1.1 Working Session Number 1

Public Meeting of January 18, 1989
Denver, Colorado

J. Strakey, Chairman
H. Watkins, Co-Chairman

The participants presented the suggestions and views of a broad cross-section of interests including utilities, coal-mining and minerals companies, engineering and construction companies, technology developers, oil and energy companies, and research and support companies. The discussion focused on the following areas:

- The Purpose of the Solicitation
- The Evaluation Approach
- Repayment
- Reducing Proposal Preparation Costs

Purpose of the Solicitation

- A strong consensus emerged that, including reduction of CO2 or other greenhouse gas emissions as part of the purpose of the Clean Coal III solicitation, was premature considering the uncertainty in the scientific data about global warming and its causes. Moreover, valid approaches for the disposal of any CO2 that would be recovered from energy processes were not available at this time.
- It was agreed that giving credit for reduced CO2 emissions would be appropriate as part of a criterion where credit is given for higher efficiency technologies. This approach would also appropriately recognize the reduction in SO2 and NOx emissions per unit of useful energy produced and would encourage conservation of our energy resources.
- Many felt that the solicitation purpose should be broadened to recognize the benefits of clean coal technologies that extend beyond the "Lewis-Davis" type benefits of reducing emissions of SO2 and NOx, particularly those emissions that contribute to transboundary pollution. The program should include technologies that:
  - — Produce export fuels and technologies;
  - — Displace oil and gas from existing facilities;

— Promote new markets for coal (e.g., co-firing with municipal refuse, methanol production).

- This "broadening" would substantially encourage western participation since western coals could be used to produce new fuel forms that could be exported to the Pacific Rim and might also find application in the oil/gas replacement markets.
- Western participation would mainly be encouraged if western coals are credited for the reduction in emissions that would accrue if existing facilities are converted to these new fuel forms. These fuels should be allowed to compete in both the eastern and western markets. Some of the group noted that the true costs for this approach would include the social costs of displaced miners and jobs in the east and that was what the Lewis-Davis report sought to avoid.
- A general consensus emerged that the next solicitation should include two objectives as the purpose of the solicitation. Namely,
  - — Reduction in transboundary and interstate pollution through reduction in emissions of SO2 and NOx from existing facilities;
  - — Ensuring the continued and increased use of the U.S. coal resource base.

  Both should be done in an efficient and environmentally acceptable manner.

Evaluation Approach

- Expanding the purpose of the solicitation might make comparison of diverse technologies difficult. One approach that was discussed would divide proposals into three categories:
  - — Retrofits
  - — Repowerings
  - — Refuelings

  The retrofits and repowerings would be similar to the technologies in CCT-II. The refueling category would include coal preparation and new fuel forms (including those that originate from western coals). These new or beneficiated fuels would then find application in retrofits or repowerings at existing facilities or in new markets for coal.

- To decide the balance between retrofits, repowerings, and refuelings, the selection official would apply the program policy factors. Thus, the need for consistency in the evaluation process would only be significant within one category.
- This approach has advantages since:
  - — The information DOE requests from proposers could be tailored to the appropriate category.
  - — Comparisons would only be made between similar technologies. DOE would then be comparing apples to apples, oranges to oranges, etc.
  - — It could add value to debriefings since the losers would understand more clearly what they were being compared to.
- Another approach that was suggested would divide the proposals into pre-combustion, combustion and post-combustion technologies.
- Any division has the drawback that some technologies could fit into more than one category or fall between the cracks. The retrofit, repowering, refueling categories minimize this problem. Various alternatives for assigning projects to categories were discussed.
- Some participants felt that size limits, both minimum and maximum, would be appropriate for the demonstration. Most felt that no predetermination of a minimum or maximum size could be made for widely differing technologies. DOE could avoid problems in this area by being very clear about the purpose of the program.
- The need for performing combustion testing of fuel products from a demonstration project was discussed. It was generally felt that such testing should be included as part of the proposal if there were technical uncertainties or risks in this area. If combustion of these or similar fuels has already successfully been demonstrated in the target boilers, then that experience could be described in the proposal in lieu of testing.

Repayment

- Many felt that the repayment requirement was not consistent with the nature of the program and should be dropped. It was

recognized that dropping of the repayment requirement was an unlikely outcome of the meeting so discussion focused on the best approaches to repayment.

- It was clearly noted that the CCT-II approach requiring repayment based on 2% of gross equipment sales and 3% of licensing fees was out of balance. Since a typical license fee would be 4% or 5% of equipment sales, the repayment in this case would only amount to 0.15% of equipment sales.
- There is no simple predetermined set of percentages that is equitable. It depends on many factors, such as prior investment in the technology. Flexibility to negotiate an equitable plan is needed.
- Repayment in the first few years after the demonstration is a strong disincentive to commercialization. Often, the first few units are bid at a loss to penetrate the market. A grace period of a few years, or for the first units sold, is essential.
- Monitoring of profits from the sale of the technology is difficult. Several attendees expressed concern about DOE's auditing of their business and financial records.
- It was strongly felt that DOE needed more flexibility for development of the repayment plan during negotiations.

It should be possible to make a projection of total equipment sales and licensing fees for the recoupment period. This projection would then serve as the basis for calculating payments. These payments could be related to an easily measurable index such as number of units sold, kilowatts of capacity installed, dollar value of units sold, etc. A grace period could be included in the calculation.

Reducing Proposal Costs

Various two-stage or two-step approaches were discussed .

- An approach similar to that used by the Ohio Coal Development Office featuring a short initial proposal followed by a longer full proposal (for those not eliminated) was generally not favored. This approach only saves costs for the few that get eliminated after the initial proposal. The attendees felt that DOE could only eliminate a small percentage of proposals based on a short proposal, so little would be saved. Everyone, of course, expected that their proposal would pass the first test. They therefore saw little benefit in this approach.
- The pros and cons of making a cut near the end of the evaluation process were discussed. This would basically consist of a competitive range determination.Those in the competitive range could then supply additional information to address questions from DOE and perhaps supply additional detail in the cost area at this point. It was recognized that this approach does not work when there are program policy factors and different technical categories, since the competitive range determination could eliminate entire categories. (This, in fact, is why competitive range determinations are not included in the federal assistance regulations.)
- A "Project Definition" phase was considered. This phase would begin with award and continue through preliminary design. At the end of this phase, there would be a go/no-go decision by DOE. The primary advantage would be to shift some of the information requirements from the proposal into this period. Several participants felt that this approach offered even less than the one used in CCT-II where DOE has the ability to cut off a project at the end of a budget period if the participant does not meet the milestones and goals defined in the evaluation plan. The attendees seemed to favor the CCT-II approach since DOE clearly states what they were looking for through the evaluation plan and thus avoids the potentially arbitrary nature of the go/no-go concept.

The cleanest approach to reducing proposal preparation cost was stated by one of the attendees. He suggested that DOE should make the purpose of the solicitation and the criteria

very clear and specific so the proposers can then "self-select." Considerable cost and effort will be saved if the proposer recognizes from the start that he has little chance to be selected and decides to not submit a proposal.

- Cost Proposal: The idea of submitting a very abbreviated cost proposal (i.e., budget-level proposal) was discussed. It was offered that the proposer has to do the full-blown cost analysis anyway in order to develop the numbers for the budget-level proposal. Therefore, only the relatively small printing costs are saved with a budget-level cost proposal.
- If the proposed budget-level amount serves as basis for award with no subsequent ability to add dollars after more detailed costs are developed, the proposers will "pad" their cost estimate to include a contingency. This would reduce the amount of proposals that would be selected -- an approach not generally favored by the group. A minority view was presented to go with a budget level cost estimate with flexibility for subsequent upward or downward adjustment of a limited amount or percentage.
- B-List: The CCT-I "B-List" concept was discussed. The B-List was an alternate selection list from which additional selections could be made if negotiations could not be successfully completed with one or more of the "A-List" projects. Several attendees felt that this concept had merit, especially if the funding profile for CCT-IV and CCT-V is stretched out.
- EHSS Information: Several felt that the extent of EHSS-related information requested by DOE in CCT-II was excessive in view of the weights assigned to it in the criteria. Moreover, it was very hard to understand exactly what we wanted in this regard.
- Commercialization Factors: The information requirements for the "Cost and Environmental Performance Methodology" were discussed. This represented a request for a "structured response" versus the more common request for a general discussion on each criteria. One proposer felt the model used did not adequately credit the contribution that fuels based on western coals could make to reducing emissions. It was noted that this is not a defect in the model -- it follows from the intended purpose of the CCT-II solicitation. The session attendees generally preferred the "structured response"

approach, and felt that it would result in a more objective evaluation. They also indicated that DOE should be clear about the model that will be used and how it will be applied.

In summary, the general tone of this session was that DOE should strive to be more clear about the purpose of the solicitation, the information required from the proposer, and how the proposals will be evaluated.

4.1.2 Working Session Number 2

Public Meeting of January 18, 1989
Denver, Colorado

G. Weth, Chairman
K. Hancock, Co-Chairman

Approximately 30 people attended the Workshop Session #2 meetings in Denver. Western states were well represented. Also, the group contained a good cross section of private and public sector representation; i.e., mining interests, coal processing interests, A&E firms, utilities, manufacturers, research institutes, a university professor, and state and Federal organizations. Only a small fraction of this group had actual experience in submitting proposals and/or participating in some manner in the first two CCT Solicitations. These experienced individuals were the most active in our discussions and contributed much interest. Those whose background with the CCT Program was more limited came to learn, and often wished to question the session Chair and Cochair about our procedures. Also, information exchange among the participants often was aimed more to inform others than to delve deeply into the topics to be discussed. Nevertheless, many areas of general concern were addressed as highlighted below:

Repayment

Utilities are a special group that lack a straightforward mechanism to effect repayment. This discourages their participation.

Repayment should tax each prime and major subcontractor in a manner that reflects their level of participation in the project and their potential for gain.

A preferential pay back to creditors should be given (up to a certain threshold). DOE pay back could occur after a specified ROI has been achieved.

Selection Approaches

The participants strongly endorsed a two-step selection process as a means to provide better feedback to the proposers, to allow more projects to be submitted, and to allow proposal preparation costs to be utilized more efficiently. The group found the time limitations provided by Congress to be counterproductive to this goal. Ideally, the approaches used by Ohio and Illinois have much to offer. Initially, a small proposal is submitted to the Review Board. This group provides feedback to those proposers where the most interest resides. This screened group then submits a larger proposal in line with the feedback provided. To deal with the timing issue, the following suggestions were provided:

- View the 120/120 submit/review cycle as 240 days which could be split, for example, 30/30 and 90/90 and still achieve the overall Congressional schedule. The first submittal could be a 15-page concept paper to which DOE would respond. DOE would either make definite cuts, or advise the proposers of weaknesses to allow them the option of proceeding or withdrawing.
- Host informal discussions prior to the May 1, 1989, PON release date allowing participants the opportunity to size up what project would be best to propose.
- Allow one-on-one discussions with proposers during the review process to place less emphasis on how skilled, or flush with money, a group is in playing the proposal game.
- Make PON amendments ASAP and as few as possible. Releasing Amendments late in the proposal writing cycle introduced confusion and loss of time to the prospective offerors.

Proposal Information

From the submitters' perspective, the following actions on DOE's part would be most useful:

- Provide clear guidance on what technologies have the best opportunity to be funded. DOE could identify technology gaps up front so that bidders would know where the priorities are. Participants expressed much concern over such questions as -- Will our technology be considered? and How

does it fit in to DOE's overall game plan? Are pilot scale projects acceptable?

- Help keep proposal costs down by asking for only that information that measurably assists the selection process.
- Appendix 1 was not appreciated. Most thought one case could satisfy DOE's needs. Also, because of the Reference Plant size, some groups viewed this as a bias towards large projects and declined to submit a proposal for their small project.
- Define Repayment clearly enough so that the proposers can accurately calculate their ROI. A solid financial plan needs to be presented internally to get management approval to submit a project in response to the PON. Because of this internal need, most participants favored a strong Business and Management proposal section. Good financing is a legitimate criterion for project selection.
- From the perspective of the proposers of large projects, limiting the amount of cost and engineering details would not necessarily save time, as this information must be prepared anyway in order to win Company approval for the Offeror's cost share.

Global Warming

The participants were divided on a good strategy to address the CO2 problem given the role coal plays in generating CO2. Generally, people recognized that the issue could not be ducked, but questioned whether the PON is the best place for a direct assault of this topic. The problem could be treated separately, for example, at the R&D level. Placing an efficiency requirement in the PON as part of the selection criteria would indirectly treat this issue.

Broadening the PON Objectives

Participants encouraged a broad versus narrow interpretation of applicability for CCT-III proposal submissions; i.e., all coals, markets, and technologies. The narrow view point, that of acid rain abatement/transboundary air pollution, was seen as not in the best interest of U.S. Policy. Energy security interests and balance of trade receipts, for example, are best supported by a broad definition. Conversion of coal to transportation fuels was suggested as an acceptable PON III technology.

Also not unexpected, given the location of the Public Meeting, Western participation was widely encouraged. This could be accomplished by giving emphasis in the selection criteria to factors such as: NOx reduction, fuel switching to lower sulfur + content of coal, and credits for an improved fuel form.

4.1.3 Working Session Number 3

Public Meeting of January 18, 1989
Denver, Colorado

Oldoerp, Chairman
G. Friggens, Co-Chairman

The participants in Workshop Session #3 represented a broad, yet evenly divided, range of interests which included utilities, architect engineers, technology vendors, coal companies, consultants, government, and non-profit organizations. This diversity revealed itself in the number and variety of comments and viewpoints expressed during the workshop. Yet, perhaps somewhat surprisingly, the group reached unanimous or close-to-unanimous conclusions related to a number of the issues discussed. The following summary attempts to explain the questions brought before the group and to highlight the responses offered. The discussions were focused around five topic areas: global warming, repayment, proposal selection approaches, evaluation criteria emphases, and the question of a broadened scope for the PON.

Global Warming

The group was asked whether or not the PON should provide for global warming considerations (CO_2 emission aspects) and, if so, in what manner. Opinions were rather evenly divided between two schools of thought. Nine participants felt that the PON should not consider global warming in any way, while 12 others recommended that the PON should consider global warming, but only in an indirect way as extra credit in a broader emissions criterion or through credit given for process efficiency. Arguments offered for excluding global warming from the PON were (1) there is no Congressional mandate to include it; (2) it would tend to dilute the perceived true goals of the PON; (3) the CO_2 issue is a new and not well-defined one which would more fittingly be addressed in a research and development program, not in demonstration-scale projects; and (4) while the overall contribution of clean coal technologies to global warming is very small, unwarranted negative publicity could result from an undue or overstated emphasis in the PON. The major argument for including global warming in the PON was that, while its importance is still not well-defined, clean coal technologies might derive future benefit from an early focus addressing the CO_2 problem.

Repayment

The participants were asked whether, assuming repayment of the Government's cost-share would be required by the PON, an approach to repayment similar to that in the first solicitation would be preferred to the more structured formula of the second solicitation. The group was also asked to recommend better alternatives. The participants elected to ignore the assumption they were asked to make and unanimously recommended that the repayment provision be eliminated from the PON in any form. They pointed out that repayment tends to be counter to DOE's goal since it penalizes the commercializer. They also observed that it tends to discourage or penalize only the good projects; the bad ones won't be required to pay. Further, it was recommended that even were it too late to eliminate repayment from the third PON, efforts should begin now to eliminate it from future solicitations. A concensus view held that DOE's repayment requirements are not sufficient to make it likely that DOE will obtain repayment anyway, so why waste the time and money necessary to deal with what has come to be such an onerous concept.

Assuming that the requirement of repayment would likely be a reality in the third PON, the group urged that at least the inflation kicker be removed. Adjusting the repayment amount for inflation appears rather to be like rubbing salt in the wound.

There was strong agreement that no single repayment structure or formula could be derived which would be preferable or appropriate for all projects, since each project has its own unique repayment constraints. Consequently, it was recommended that a flexible approach be taken which would permit each project to be treated in an individual manner. One such approach received the support of some 70 to 80 percent of the participants and can be outlined as follows: (1) the PON would require repayment, but without specifying either a target or formula; (2) the PON would specify minimum acceptance characteristics of a proposed repayment plan and would require that the proposer's approach to repayment be described in its proposal; (3) DOE would evaluate the described approach for minimum acceptability, but would not evaluate its "relative goodness;" and (4) the actual plan would be negotiated on a case-by-case basis and incorporated into the Cooperative Agreement.

Other suggestions included (1) tying repayment to the profitability of commercialization, since commercialization is the major goal of

DOE; (2) calculating payments on the basis of net pre-tax profits or by charging a percentage of any profits earned in excess of some minimum rate of return; and (3) taxing license fees or charging flat fees to the commercializer. However, it was recognized that these approaches would still tend to penalize the commercializer of the technology and that most would still have problems associated with the auditing of profits.

The concept of establishing some sort of "grace" mechanism to postpone repayment for a given period of time or until a given number of units were sold was mentioned but met with only a lukewarm response.

The repayment concept presented a special difficulty for regulated utilities. For example, consider an electric utility which is the prime proposer on a team that includes a technology vendor/licensor. Under DOE's repayment policy, the utility is responsible for repayment. Having limited options for a source of repayment dollars, the utility must therefore collect a fee from the licensor based on the licensor's revenues. This situation burdens the utility considerably and makes it liable for repayment from activities not directly under its control.

Recommendations which focused specifically on utility problems included (1) not requiring repayment from a utility which is demonstrating some type of SOx or NOx reduction technology if no substantial profit is being made by the utility; and (2) developing language which would allow potential financial assistance from future acid rain legislation to be applied, even on a retroactive basis, to a clean coal project if that project were meeting the acid rain requirements legislated.

Another alternative favored by about 20 percent of the participants (generally representing smaller firms) was one of a zero-coupon bond to be purchased either at award or at the starting point of commercialization. It was noted that this approach would ensure repayment to the Government but, if required, would likely discourage some potential proposers. It was also observed that, in a way, the approach could be regarded as non-repayment since in most cases the proposer would simply inflate the estimated project cost to obtain sufficient Government sharing to cover the cost of the bond.

Proposal Selection Approaches

The group was asked whether the single-step selection process used in the previous solicitation was acceptable, or if another approach (a two-step process, for instance) would be preferred. A conceptual two-step approach which the group developed was comprised of a brief (approximately 20-page) technical abstract followed by a more complete proposal in the second round. Under this scenario, the first step would represent approximately 10 percent of the total proposal cost. There seemed to be no strong position expressed one way or the other, but an informal poll of the participants indicated a general dislike of the two-step concept with three voting in favor, ten against, and an additional ten abstaining.

Observations were that (1) preliminary screening might be good, but there are problems as to what criteria would be used to screen out projects early on; (2) a two-step approach might increase the number of proposals received, but in general wouldn't cut proposal costs; and (3) most successful projects have a team which could afford significant proposal costs and would rather risk preparing a full proposal than being screened out on the basis of a preliminary abstract.

While the discussions regarding selection approach were by no means conclusive, one bit of fallout was extremely interesting. The participants unanimously agreed that a mechanism should exist to permit written or verbal contact to occur at DOE's request, after proposal submission, for clarification purposes. The participants were in full support of this concept, even after it was pointed out that such contacts would probably entail additional costs to them. They also agreed that it would be acceptable for DOE to have contact with some proposers, but not others, provided the others received some sort of notification that their proposal was sufficiently understood so that further clarification was not required.

Evaluation Criteria Emphases

The participants were asked for their views concerning the relative emphasis which should be placed upon commercialization factors as opposed to demonstration factors, and upon technical factors as opposed to business factors. While no definitive conclusions were reached, the participants issued a unanimous call for DOE to be as explicit as possible in stating the evaluation criteria and to publish the precise weights to be applied to each criterion.

The group observed that the relative emphasis to be placed upon demonstration versus commercialization factors really depends upon whether DOE's goal is to support innovative technologies or deployment ready technologies. A high emphasis on commercialization factors was seen to penalize innovative technologies and the smaller, entrepreneur-type proposers. DOE's need for all of the commercialization data it requested in the second solicitation was questioned. One participant noted that in the previous PON his organization's commercialization proposal costs were at least as high as its demonstration proposal costs.

The group reached no conclusions concerning the relative emphasis which should be placed upon business criteria as opposed to technical criteria. There seemed to be some sentiment in favor of a pass/fail type of approach for the business criteria. All agreed that a strong business and management emphasis was important. The participants also expressed recognition of the critical importance of the technical readiness criterion. Positive support was expressed for some type of "fatal flaw" mechanism to eliminate proposals which do not clearly demonstrate the technical readiness of the technology proposed.

Broadened PON Scope

The participants were asked for suggestions concerning the scope of the third solicitation, in light of the differing approaches evidenced by the first two PON's, with specific emphasis upon the encouragement of Western participation. The group was unanimously in favor of broadening the scope of the third solicitation to include technologies which do not necessarily directly address the Lewis-Davis recommendations, a constraint which was imposed by the second PON.

One participant noted that the area of greatest opportunity for Western coals is pretreatment and displacement of Eastern coals, but that this was politically untenable. Another participant suggested that DOE should a priori identify a minimum number of proposals in each of a number of technology categories which it would target for selection (provided the proposals were acceptable).

As one might expect, very vocal and nearly unanimous (one dissenting vote) support for an expansion of the PON scope to include coal export and oil backout was expressed by the participants.

4.1.4 Working Session Number 4

Public Meeting of January 18, 1989
Denver, Colorado

L. Salvador, Chairman
J. Ruether, Co-Chairman

Approximately 25 participants, representing a wide variety of coal related business and Government interests, attended the Workshop. Coal mining, coal processing, rail transportation, engineering and construction, utilities, a Western states government board, and research institutes were represented. Many participants did not have experience with previous Clean Coal Technology solicitations. Discussion in the Workshop centered on the following topics:

- Repayment
- Increasing Western participation
- Alternative selection approaches to that used in CCT-2
- Global warming
- Evaluation criteria

The following records opinions or recommendations expressed by one or more participants. Where an opinion or recommendation is substantially a consensus of the Workshop, this is indicated.

Repayment

- Government financing at greater than 50% of total project cost or cost per phase should be available in the early phases of the project.
- Repayment schedules should be flexible, negotiated project by project, rather than specified by detailed rules. The demonstration project should not be included in the repayment plan, since this would be a financial burden at a time when the project is probably financially the weakest. Repayment should only occur after successful commercialization of the technology. These thoughts represent a consensus.
- Repayment from equipment manufacturers should only be required from the major technology supplier, the top tier in

the project organization. A "bookkeeping nightmare" would result if assessments were made on equipment supplied by lower tier vendors.

- No repayment should be required at all. For participants that are utilities, any repayment is ultimately paid for by the ratepayers for developing a technology that is potentially useful throughout the country.
- Any repayment that is received should be plowed back into the DOE coal R&D program.
- Concept of recoupment from a company's net profits rather than gross sales would be more realistic.

Increasing Western Participation

- In evaluating proposals, credit should be given for sulfur reductions achieved by fuel switching to Western coals that had been processed into "new fuel forms."Such processing was defined as treatment, beyond drying, which results in chemical or compositional change in the coal. The processing could be aimed at sulfur reduction or changing other properties of the coal, e.g., its transportability or combustion characteristics.
- Expanding use of coal should be a goal of the third CCT solicitation, having equal weight with the Lewis-Davis acid rain mitigation criteria. The value of increasing national security by displacing imported oil for fuel and/or chemicals and expanding coal, domestic and export markets should be acknowledged and credited in the evaluation process. These suggestions were a consensus.
- An alternative way to increase Western participation is to earmark a fraction of available funds for Western projects.
- The CCT-III PON should stress coal utilization, not just clean air.

Alternative Selection Approaches

- A group consensus was the desirability of having DOE give early indication to a proposer whose technology was not competitive or was unqualified for receiving an award, to avoid the high cost of preparing a full proposal. This was particularly important to small businesses. To this end, the Workshop explored several multi-step proposal approaches with written or verbal feedback by DOE between stages.

Advantages and disadvantages were noted of having a page limit for the initial proposal, sometimes called a preproposal. No consensus was reached on this point. The difficulty and disadvantage of excluding a proposer based on an abbreviated proposal was noted.

- It was generally agreed that DOE should strive to describe the technical criteria by which proposals would be rated in a more "user friendly" manner, i.e., one that was more readable and understandable to proposers inexperienced in dealing with the government procurement system.
- A consensus was reached that the following two-step approach to proposal submission has merit for achieving the desired early feedback from DOE. A preproposal, or qualifying proposal, would be submitted initially in response to the PON. This proposal might be limited to about 50 pages. DOE would review the proposal, then fill out and return to the proposer a check list. Items on the check list would be answered by Yes/No or very short responses with respect to strengths and weaknesses. Example items might be: Does the proposal satisfy requirements for a demonstration site? -- for project financing? -- for technology? -- for project team definition? Concerning technical evaluation criteria, does the proposal qualify for review to receive credit for particular criteria, such as reduction of SO2 or NOx emissions, or expanding coal markets? No selection or cut of proposers would be made on the basis of the first proposal. The proposer would use the completed check list to decide whether to submit a second, detailed proposal that would be used by DOE to select awardees.

If enough time is not available in the schedule for the third CCT solicitation to conduct a multi-step proposal approach, the Congress should allow additional time in subsequent CCT solicitation schedules to permit it.

Global Warming

- It is premature to include global warming among criteria used in selection. The effect of carbon dioxide on global warming is not well enough known to warrant it. It would be appropriate for DOE to include consideration of global

warming in formulating its R&D programs. These ideas represent group consensus.

- Greenhouse is a political effect pushed by special interests. The nuclear industry is the only certain beneficiary.
- Western coals would be penalized if global warming criteria are used since they produce more CO2 per Btu.

Evaluation Criteria

- DOE should make clear in the PON how the state of development of a proposed technology, e.g., the largest scale on which it has been demonstrated, will affect evaluation. Consensus view.
- Proposed technologies should not be penalized in evaluation for being in a relatively early stage of development. The ability of a proposer to secure at least 50% private financing should satisfy DOE's concern about technical risk.
- Net present value of a proposed technology should be one measure used in the technical evaluation. Other less easily quantifiable measures should also be used, such as the effect of the technology on national security, not pay out based on pollutant reductions, cost of power, oil import reductions.
- DOE has left a gap in supporting the development of new coal processing technologies between small scale research and the CCT demonstration program. The missing portion of the development cycle is pilot scale demonstrations. The CCT program could be redefined to fill the gap. Should not require a demonstration at the ultimate commercial scale.

The extended design example in Appendix I of the CCT-2 PON required too much work by proposers and was too costly to justify whatever value it served in evaluation of the proposals. The example coal, an Eastern bituminous, was not representative of Western coals. Even with a redefinition of the design problem to make it more relevant to Western coals, the amount of work required for this type of input in the proposal should be reduced.

4.2 THE SECOND PUBLIC MEETING

THREE WORKING SESSIONS
IRVING, TEXAS
FEBRUARY 2, 1989

4.2.1 Working Session Number 1

Public Meeting of February 2, 1989
Irving, Texas

L. Salvador, Chairman
J. Ruether, Co-Chairman

Approximately 15 participants representing a variety of coal-related businesses and Government interests attended the Working Session. Electric utility, petroleum and petrochemical, engineering/construction, coal mining, and coal transportation interests were represented. Several attendees had participated in previous Clean Coal solicitations, and others had experience with the Federal procurement system. Discussion in the Working Session addressed the following topics:

- Purpose of the solicitation
- Solicitation approach
- Proposed evaluation and project selection
- Repayment

The following records opinions or recommendations expressed by one or more participants.

Purpose of the Solicitation

- The main purpose of the program should continue to be acid rain reduction. However, other purposes could also be included: increasing coal use in the western United States and increasing U.S. coal exports were mentioned.
- DOE should describe the goals or purpose of the third CCT solicitation and the criteria used to evaluate proposals very clearly. The weighing of each criterion should be specified. This would allow potential proposers to "self select," i.e., determine for themselves whether their project was of sufficient interest to DOE to merit preparation of a proposal. The most important contribution DOE can make to reducing proposal cost is to include sufficient information in the PON about goals and selection criteria that potential proposers may "self select" in a highly informed manner.
- The ability of proposers to "self select" would be enhanced if the purpose of a CCT solicitation was restricted. However,

this would exclude potential proposers of technology in the areas passed over, with no guarantees that these areas would be included in later CCT solicitations. Thus, it was recommended that all goals of the CCT program should be included in each CCT solicitation.

- DOE should specify the importance of achieving short term and longer term SO2/NOx reductions. The former is achieved by retrofitting and repowering existing facilities, while the latter addresses new coal-burning facilities. The technologies used to achieve both ends are not identical.
- For a CCT solicitation having multiple goals, it was recommended not to allocate a particular fraction of available funds to a particular goal. Distribution of funds among multiple goals should be described by DOE clearly stating the weights of the evaluation criteria used to make selection.
- The contribution of CO2 to global warming is not well enough established to warrant including the reduction of CO2 emissions as a goal of the third CCT solicitation. However, the most significant way in which coal technology could reduce CO2 emissions is through increased thermal efficiency, and this is an important goal in its own right. Although at present the cost of coal is not high enough to make improved efficiency an important economic consideration, in the long term the situation will change. An important long term goal of the CCT program should be the conservation of our coal resources.
- The question was considered whether pilot scale projects should be considered for funding as well as demonstration projects. A consensus view was that the CCT program should limit its support to demonstration projects. Public utilities will only adopt a new technology if it has been demonstrated at a nearly commercial scale, and funding for this type of demonstration is very difficult to secure other than from the CCT program. The CCT program should not be "diluted" by using funds to support smaller scale research projects.

Solicitation Approach

- The "one-step" proposal approach used in CCT-1 and CCT-2 is more cost-effective and preferable than a "two-step" approach. All the calculations and other work needed to conceptualize a project would have to be done before a proposal -- regardless of size -- could be prepared. Requiring two proposals would string out the process and increase the cost of proposing.
- A DOE participant asked for consideration of delaying the requirements for submission of financial information in the proposal by, say, 90 days after other material was submitted. DOE would make no selection during the interim; it would merely delay evaluation of the financial section of the proposals. It was a consensus that this was unattractive to proposers. Because the proposer's position with DOE would not change during this interim, neither would the proposer's ability to secure financing from third parties. All information required in the proposal should be submitted at once.
- An idea was tabled by a DOE participant for allowing meeting of selective proposers with DOE following submission of proposals for the purpose of clarifying, but not modifying, the proposal. Would other proposers object if DOE had such meetings with some but not all proposers? The consensus was yes, this would be objectionable. In practice, any meeting with DOE gives the proposer an opportunity to modify a proposal without changing cost, which would represent an unfair advantage.
- An outline of the proposal volumes should be included in the PON as part of the instructions for preparing proposals.

The distinction between requirements for inclusion in the proposals and background information that is contained in the PON should be made clearly. In past CCT solicitations, it has been difficult to find specific instructions for proposal preparation among a mass of verbiage.

Proposal Evaluation and Project Selection

- How "program policy factors" are used to select awardees should be clarified and described in the PON. Studying the solicitation goals and selection criteria is not sufficient to enable a potential proposer to decide whether to or how to propose if program policy factors act as a "wild card." For example, a proposer might site his project in a particular location even though there were technical reasons not to do so, if there were a program policy factor providing for projects with geographic diversity.
- DOE should seek the help of the electric utility industry in establishing the evaluation criteria for CCT proposals. This might be done by an advisory panel to the Source Evaluation Board.
- A criterion for project selection should be the ability and commitment of the proposer to commercialize his proposed technology. CCT support should not be given to isolated projects with poor prospects for subsequent commercialization.

Repayment

- DOE should clarify the nature of its financial contribution to an awardee for income tax purposes. Because of the uncertain requirements for repayment, the proper manner for the Industrial Partner to treat DOE's contribution is in doubt. Consideration should be given to try to secure favorable tax status for the Government's contribution.
- No repayment should be required.

DOE should be more explicit about its expectations for repayment. Wording in the CCT-2 PON was ambiguous: the Government expects to receive repayment "up to" its total contribution. Uncertainty in the repayment obligation that a project team is assuming in a Cooperative Agreement can cause difficulty in assembling the team. Also, a public utility needs to know its financial obligations in dealing with regulatory bodies.

4.2.2 Working Session Number 2

Public Meeting of February 2, 1989
Irving, Texas

S. Oldoerp, Chairman
G. Friggens, Co-Chairman

Most of the participants in Working Session #2 represented either technology developers and vendors or electric utilities. Many of them were familiar with the Clean Coal Technology Program, having submitted proposals in one of the two previous solicitations. Despite this commonalty, there was a significant diversity of comments and viewpoints expressed during the workshop. Four basic topic areas were covered: global warming, scope of the PON, repayment, and the proposal selection process. The discussions related to these topic areas are summarized below.

Global Warming

The group was asked if the PON should address the issue of global warming (through consideration of CO2 emissions) and, if so, in what manner. Participants arrived at a general consensus that the PON should consider the issue, but not through any criterion specifically addressing CO2 emissions. Rather, it was reasoned that global warming would be implicitly considered through credit given for process efficiency both directly and indirectly (through technology economics, for instance). It was suggested that DOE should take credit for this consideration by explicitly mentioning CO2 emissions in a PON discussion of process efficiency. Global warming was seen to be an important and potentially adverse issue for coal technologies which, because of political attention, ought not be ignored. Addressing the issue now, it was felt, could head off pressures for fuel switching or some other anti-coal alternative at a later date.

A few participants suggested that global warming should not be considered at all. They argued that, in the absence of legislation, there is absolutely no economic incentive for reducing CO2 emissions. Furthermore, they noted, there is no clear evidence that global warming is a problem. Even if it were, they suggested, reduction of CO2 emissions from clean coal technologies would have a negligible impact on a global basis.

Broadened PON Scope

The participants were asked if the scope of the technologies to be considered by the PON should be broadened from the rather strictly defined SO2 and NOx reduction approach taken in the second solicitation. While there was some disagreement among the group, the majority felt that the PON scope should be broadened.

The consensus viewpoint suggested that the PON should allow for three major technology categories:

- those applicable to retrofit or repower applications as in the second solicitation,
- those applicable to expansion of existing coal markets, but not in retrofit or repower applications, and
- those representing new utilization of coal or coal-based fuels, including new fuel forms.

It was observed that retrofitting inherently penalizes process efficiency. Furthermore, both retrofitting and repowering tend to be short term approaches to clean coal technology development because at some point all potential plants will be retrofitted or repowered. On the other hand, the demonstration of technologies for grassroots applications or for new utilization of coal represents a more forward-looking approach.

Utility participants underscored the importance of addressing increased power requirements. They felt that credit should be given for technologies capable of providing additional capacity, whether or not they are applicable to retrofitting or repowering. They also pointed out that it may be desirable to build; a new grassroots plant to replace or reduce operation of existing heavy-polluting plants. Such a scenario would still address the SO2 and NOx reduction concerns of the Lewis-Davis approach, they claimed, even though the technology might not be applicable to retrofitting or repowering existing plants.

With regard to the evaluation methodology for EHSS effects, a few of the participants expressed general satisfaction with the approach taken by DOE in the second PON. It was suggested that the reference plant approach could also be used in the third solicitation. However, to provide for consideration of new capacity addition, it was suggested that two reference plants be used: (1) the one used in the second PON, and (2) a 1989-vintage pulverized coal plant with wet limestone scrubber.

Other participants warned against focusing primarily upon power generation technologies and emphasized the desire of opening new markets for western coals. They felt that the second solicitation was biased toward combustion and post-combustion technologies to the detriment of the West. They pointed out that SO2 and NOx reduction criteria are not appropriate for brand new markets since there is no baseline from which to start. They felt that evaluation criteria important to western technologies would include process efficiency and extent of coal utilization.

One participant suggested that DOE should a priori specify that it intends to select a given number of projects in the three major categories listed above. However, others objected to that approach, contending that some technologies crosscut those categories.

Despite the general consensus, at least two participants objected to broadening the PON scope at all. They felt that expanding the scope would conflict with Congressional intent unless all technologies were measured against Lewis-Davis criteria. One participant argued that the biggest roadblock to increased use of U.S. coals is environmental acceptability and that it is, therefore, important to continue to rely upon a strong SO2 and NOx reduction approach to the PON.

Repayment

The group was asked for comments on the Government's intent to seek repayment of its cost-share for each project. Unexpectedly, several participants spoke in favor of repayment and, although it was in no way unanimous, a majority of the group agreed. One participant observed that repayment is a good alternative to Government ownership of the technology. Another felt that the requirement for repayment adds a certain legitimacy to proposals. The idea of Government contribution being a forgivable loan, however, was recognized as an important concept because it does not further penalize failed projects.

The group was also asked about the preferred structure of repayment plans. Generally, there was no objection to the approach taken in the second solicitation although, given the choice, nearly half of the participants would opt for what they considered the more flexible approach taken in CCT-1. However, the participants agreed that the concept of repayment from commercializing the technology is a good one. One participant suggested that repayment should be based upon profits, not upon gross equipment sales. However, it was pointed out that profits would then need to be audited by the Government and that this might not be an acceptable approach. While the group did not agree upon a specific formula, it was suggested that 3 percent of licensing fees is a very small amount and that the percentage should be increased.

Utility representatives stated that they didn't have a problem with the repayment structure of the second solicitation and were not concerned about having to pass on the burden to their technology suppliers. It was pointed out that the approach in the last solicitation improved the situation for utilities by relieving the requirement for repayment out of operating revenues from the demonstration plant.

Selection Process

The participants were asked if a two-step approach to the evaluation and selection of proposals would be preferable to the one-step approach taken by DOE in the previous solicitations. The two-step concept would entail some sort of abbreviated proposal (on the order of 20 pages long) which, if it passed an initial screening by DOE, would be followed by a detailed proposal. With only one dissenting vote, the group agreed that a one-step approach would be preferred. It was stated that DOE would have a difficult time screening out very many proposals on the basis of a 20-page summary. Those proposers that were cut might feel short-changed because of not having had the opportunity to provide DOE with a full and detailed proposal. Several participants felt that the two-stage approach would actually lengthen the proposal process and would ultimately be more costly to proposers who were not screened out.

The major problem noted with the one-step approach is that DOE asks for too much information and also reserves the right to accept the proposal as presented. According to at least one participant, one of the biggest burdens to the proposer is working up project financing within the time constraints of the proposal. Early in the proposal

stage, it was noted, project details are not sufficient to propose financing to potential financiers. It was suggested that DOE delay its requirement for a financing plan until, for instance, midway through the proposal evaluation process to allow proposers more time for this aspect of the project.

The participants agreed that, regardless of the selection approach taken, communications between DOE and proposers need to be allowed during the evaluation process. Whether those communications are written or verbal is not critical; some form of contact would be better than none at all. One participant suggested that a one-hour presentation to DOE should be required as part of each proposal, but this was dismissed by another participant as not being practical, given the number of proposals likely to be submitted. The group did agree that DOE should be able to ask proposers for clarification of their proposals.A general consensus was that this would be acceptable even if DOE did not ask for clarification from all proposers.

4.2.3 Working Session Number 3

Public Meeting of February 2, 1989
Irving, Texas

J. Strakey, Chairman
H. Watkins, Co-Chairman
G. Weth, Co-Chairman

The participants in this session represented a range of interests and presented the views of technology developers, equipment vendors, architect-engineers, utilities and universities. Several of the participants had little experience with the provisions of prior Clean Coal Technology solicitations. The following summary attempts to explain the issues and discussions of the group. The discussions focused on the objective of the solicitation, global warming, the repayment provisions and proposal selection approaches.

Objective

The participants encouraged the broadening of the scope of the Clean Coal III solicitation. The consensus of the group was that the program should allow for industrial and new fuel form projects but the program focus should remain on the "Lewis-Davis" type criteria which was considered as an essential element of the program.

Some members of the group recommended that developmental-type projects with higher technical risks and higher potential payoffs should be given additional consideration. It was suggested that these projects could be included in the program through application of the program policy factors rather than through adjustment of any process cost or payoff related evaluation criteria.

Expanded markets for coal and new fuel forms were considered as likely areas to be included in the PON. This would help promote the use of western coals and encourage western participation in the program. The group was in agreement that the Clean Coal program should encourage the increased use of coal in an environmentally sound manner rather than limit the program to only emission reductions.

During this discussion it was recommended that: 1) Financial considerations should be given a high priority since projects with sound financing would have a better chance of success and subsequent commercialization. 2) Projects whose sole purpose is deployment, rather than demonstration, should not be permitted. However, if a project based on commercial technology was proposed with a unique or new feature, it should be allowed to compete.

Global Warming

The consensus of the group was to acknowledge that lower CO2 emissions is a benefit and should be given some consideration in the PON. This credit should be given indirectly for reduced emissions per unit of successful energy produced, or better yet, through a credit given for improvement in process efficiency.

The group favored reduced emphasis on greenhouse gases (CO2) since: (1) it would tend to dilute the true purpose of the PON; (2) The effect of CO2 on global warming is still being studied and its causes have yet to be verified; (3) Over emphasis of CO2 emission reduction would only aid the nuclear industry (4) Western coals would be heavily penalized since they produce more CO2 per kilowatt of power produced.

It was noted that some credit for CO2 reduction would encourage higher efficiency projects and the use of methanol.

Repayment

There was a lively discussion on the issue for repayment. The response of the group was different than past public meetings in that repayment was considered to be a reasonable Government requirement. It was acknowledged that this could limit utility participation since they have difficulty in motivating the technology owners and manufacturers to participate in repayment plans.

All were in agreement that the monitoring the repayment plan for 20 years based on 2 percent of sales and 3 percent of license fees could be an administrative nightmare. The different accounting systems, especially for projects with foreign participation, may not satisfy Government auditors. Repayment should be based on the 2 percent of sales and 3 percent of license fees but finally calculated and monitored on an installed capacity basis, i.e., $/kW or $/lb of steam.

Another general consensus was the inequity in the ratio of 2 percent of sales and 3 percent of license fees. The former generally represents a much larger financial burden than the latter. It was agreed that the 2 percent of sales should be lowered and the 3 percent of licensing could be raised. There was no strong suggestions or rationale for more equitable percentages.

There was some discussion on an approach to allow the participant to recover its investment prior to initiation of repayment. Most felt that the approach used in Clean Coal II, requiring repayment on a percentage of commercial sales of the demonstration technology, was a better approach. A "grace period" could also be included before repayment began to encourage initial penetratio of the market.

Proposal Selection Approaches

There was an active discussion on the relative meritis of a two-step selection process.

The first concept requires submission of a 15-20 page technical volume for evaluation as the first step. After much discussion the group came to the conclusion that DOE would have limited information upon which to make the initial proposal selection. In all likelihood this would eliminate only a small portion of proposals and increase the time required to reach final selection. It may even increase overall proposal preparation costs.

The second two-step approach would have the proposers to submit a "full blown" technical proposal for evaluation at the first step. Proposers selected at this point would be required to submit the Business & Management and Cost volumes. While most of the group liked this approach they quickly realized that it would add six to eight months to the selection process and be more costly and, therefore, counterproductive.

Some members felt that DOE should make a provision for prospective proposers to submit a project summary, which might cost $5-10K, for DOE's review and comment. The results of this review would be used by the submitters to decide whether or not they wished to submit the full proposal, which might entail costs in the $100's K range.

Other suggestions to limit the burden and cost of proposal preparation were: 1) Limit the information requirements in the proposal to only that which is essential for selection. 2) The information in Appendix I was complicated and time consuming --DOE should try to reduce these requirements. 3) Most of the requested EHSS information are Federal, State and Local requirements for the project and should be requested prior to award -- not prior to selection. 4) DOE should provide for discussions with the proposers for clarification of the proposal, if necessary. 5) Set aside a pool of 25 percent for cost overruns which would relieve the burden for detailed cost estimating.

The final consensus of the group was that DOE should request only that information necessary for selection followed by a subsequent request for the additional information needed for award and project definition.

4.3 SUMMARY PROCEEDINGS

THE THIRD PUBLIC MEETING
FOUR WORKING SESSIONS
ATLANTA, GEORGIA
FEBRUARY 16, 1989

4.3.1 Working Session Number 1

Public Meeting of February 16, 1989
Atlanta, Georgia

J. Strakey, Chairman
H. Watkins, Co-Chairman
J. Lerch, Co-Chairman

The participants in this session represented utilities, technology developers, industrial manufacturers, research and development organizations, engineering and construction companies, academia, Congressional committee staff, federal, state and municipal government, energy media, railroad associations, and a Canadian research organization.

The session discussions focused on global warming, the purpose of the solicitation, acid rain legislation, repayment, reducing proposal costs, the selection process, and discussions with offerors.

Global Warming

Global warming was discussed from the perspective of consideration as part of the evaluation criteria for the Clean Coal III program. The group generally agreed that the validity of the scientific database to support taking steps to reduce CO2 emissions was questionable at this time. It was pointed out that the "greenhouse effect" is a global-scale problem and CO2 emissions associated with U.S. utilities are only about 8 percent of the global total.

Even though the greenhouse effect does not warrant major emphasis in this solicitation, some consideration is worthwhile. It would provide public relations value as well as give credit to more efficient technologies, thus promoting conservation of our valuable energy resources.

The group suggested that potential for CO2 reduction (for higher efficiency) could be used as a tie-breaker or as part of a criteria receiving a relatively low weight.

Purpose of the Solicitation

After a lengthy discussion on the benefits of Clean Coal Technologies, a number of suggestions surfaced for consideration to broaden the solicitation. The market for coal could be expanded through the ability of some clean coal technologies to produce export fuels, thus positively affecting our balance of payment. In addition, several clean coal technologies have the ability to result in oil and gas backout, hence a reduction of oil imports and conservation of premium fuels. It was suggested that credit might be given for a technology which could produce export fuel or provide a substitute for oil.

The subject of western coal was discussed from two perspectives. One was to make better use of our western coal resource base through exports to the Pacific Rim. The second was to process the western coals to a new fuel form which could be transported to the East for use in coal-fired boilers.

The use of coal wastes that are currently presenting an environmental problem was also considered. It was suggested that coal wastes could be cleaned and used as a fuel in the U.S. and abroad.

At the conclusion of this topic discussion, the group agreed that the principal purpose of the solicitation should focus on the reduction of SOx and NOx emissions from existing facilities.

Acid Rain Legislation

Next, the group addressed the relationship of potential Acid Rain Legislation to the Clean Coal Technology (CCT) program.

Participants noted that uncertainty about the form of the legislation could influence their participation in the program. Specifically, the legislation could force utilities to install technology available today (e.g., limestone scrubbers) and render the demonstration technology to be of no value to the utility. The group felt that DOE should, at a minimum, provide a unilateral right to withdraw from a CCT project if the legislation makes the project impossible or impractical, thus, allowing them then to "cut their losses." In addition, DOE should explore other regulatory options to permit the participants to continue with the project during the demonstration period, or beyond, if such legislation is passed. In other words, provide a grandfathering option.

Repayment

When the topic of repayment was introduced, the group unanimously favored eliminating the requirement. Recognizing the impracticality of that, the group proceeded to focus on alternatives to structure an equitable repayment plan that would not serve as a disincentive to commercialization.

Three concepts were introduced. The first was similar to the repayment plan in Clean Coal II, with some refinements and improvements to simplify the administrative requirements. In addition, a grace period of up to five years would be included, where no repayment would be required. This would encourage commercialization and early penetration in the market.

The second concept was a plan that could be characterized as negotiable. After selection, a repayment dollar value target would be established by looking at the potential for commercialization for the technology. This target level would not necessarily be equal to, and would never be greater than, the government's investment.

The third concept was a repayment plan that would be submitted along with the proposal and it would be included in the evaluation process. Then, if the project is selected, the plan outlined in the proposal will be the basis for the repayment plan.

There was no strong consensus on the first two concepts, although there was agreement that the grace period was a definite plus. It was agreed that flexibility should be retained to adjust the plan during negotiations and the playing field should be level for all players. Some participants endorsed a plan that would be based on profits.

The third concept was not favored because of the high cost associated with putting the plan together and establishing the agreements between the parties prior to selection.

Reducing Proposal Preparation Costs

The group discussed cost and performance methodology used to evaluate the commercialization factors in Clean Coal II. This part of the proposal (Appendix I) could be characterized as a "structured response" as opposed to the "unstructured response," relatively speaking, that was used in Clean Coal I.

The group generally favored the structured response approach but felt the information required should be significantly reduced, and an explanation be provided as to its use in the evaluation process. Some participants also felt the number of proposal volumes should be reduced.

The information requested by the PON relative to EHSS impacts was considered too broad. A suggestion was made that DOE be more specific on what information is required in areas such as socioeconomic impacts. It was felt that the cost involved in preparation of this section outweighs its value.

Selection Process

Some participants favored a two-step process, especially if only a budget level cost proposal would be required in Step 1. However, it was recognized that the time required to reach a final selection could be significantly increased; up to six months. Some participants noted the strength of the CCT Program, as it is today, is the relatively short period of time between issuing the PON and making final selections.

Discussion with Offerors

The last topic covered was discussions with offerors. Most of the participants felt it was worthwhile to have discussions after the qualification and preliminary review step to answer any questions that might arise relative to the information provided in the proposal. This would minimize the chance of having misunderstandings that might result in disqualification.

4.3.2 Working Session Number 2

Public Meeting of February 16, 1989
Atlanta, Georgia

G. Weth, Chairman
K. Hancock, Co-Chairman

Approximately 30 individuals attended the working session. Several attendees had participated in previous Clean Coal solicitations, and consequently, were very active in the ensuing discussions. Participant concerns centered around the following topical areas:

- Global Warming
- Repayment
- Solicitation Approach
- Proposal Costs
- Selection Criteria

In general, participants engaged in lively discussions and expressed decisive points of view according to their perspective as technology vendors, utility owners, or owners of coal reserves, etc. Only in some instances, as noted, could the group reach a unanimous position.

Global Warming

Participants noted that global warming is an important international problem that extends far beyond the role of U.S. industry burning fossil fuels and producing CO2 as a consequence. In fact, they stated that emissions from U.S. utilities were only a small portion of this large and complex problem. Until more clarity can be brought to this issue, any CO2 reduction action which would impact utilities that burn coal seems misdirected. The group was unanimous that any heavy emphasis in the upcoming PON should be avoided. At this point, two schools of thought emerged. The first point of view was that any tie in to the PON would be more damaging than beneficial. The government would best serve its cause by remaining totally silent on the issue. Alternate courses of parallel action would be to work the CO2 problem through Fossil Energy's R&D programs or by convening a study group to assess the merits of including global warming as a part of PON's IV and V. Also, to include "efficiency"

criterion in the PON could unfairly emphasize advanced technologies like IGCC and PFBC.

A second school of thought believed that the politics of global warming prohibited just ignoring the issue. It had to be included in the PON, but indirectly, through "efficiency" considerations. There should be no evaluation criterion, per se. It was noted that high efficiency power generation is an important national goal in its own right. Also, certain clean coal technologies produce excess CO2 because of the use of limestone, and additionally produce huge amounts of wastes. One group member questioned, should not these latter technologies be penalized?

Repayment

This group was particularly ardent in its belief that repayment was not in the best interest of either the government or the participant. Repayment was stated to be contrary to the government concept of sharing in risk reduction on projects too large to be safely undertaken by the private sector. Utility managers were particularly vocal on this point, as payback would come from the rate payer. In other words, the Nation benefits from the utility demonstration at the expense of the rate payers serviced by the participating utility. Alternately, technology vendors did not want to bear the brunt of repayment and pointed out that the second vendor into the market would have an advantage as he does not have to make recoupment payments.

When challenged to accept repayment as a reality, and to state preferences, a majority preferred the Round 1 approach over Round 2. Technology vendors understandably believed the two percent of gross sales versus three percent of licensing fees to be out of balance. "This is an elephants-to-peanuts comparison." They recommend that a formula involving sales should be based on a percentage of net profits, not on the gross sales figure itself.

Concerning the actual approach to payback, utilities did not like the flow down provisions of Round 2, which would force them to act as a blank in verifying and being accountable for the repayment actions of vendors and technology licensors. Technology vendors were concerned with developing an approach which would allow them a reasonable return of their investment prior to payout of significant dollars to the government. They favored the Round 1 approach, as they perceived it afforded greater flexibility to negotiate a payback

based upon net profits. This group accepted that a price they would pay for this approach is increased government scrutiny of their books. Their comment to this was "We do this all the time already!" The following additional ideas were suggested:

- Allow a several year grace period after Phase III ends to allow some return on investment.
- Give recoupment credits on use of facilities that are already fully depreciated.
- Give credit to a utility that continues to use a demonstrated technology, or expands its use within its own systems, even though existing regulations do not specifically require compliance to the achieved pollutant reductions.
- Award credit to demonstrations that have significant national impact and provide tangible benefits to groups beyond the project team members and technology owners.

Solicitation Approach

The working group was unaninous that DOE should allow some opportunity for dialogue between the Offeror and DOE prior to final selection. It was pointed out that private industry does this all the time. Some believed this process would also help keep costs down, as the Offeror would not have to throw everything into the original proposal, just to cover all conceivable questions the reviewers might have. Typical comments offered by the participants are listed below:

- Establish a two-step approach where proposers qualify first and then submit a full blown proposal.
- Alter the 120/120 day submit/review sequence to 90/150 days. Use the extra DOE review time to add interactions with the Offeror. These interactions could take the form of (1) One-shot oral evaluations, (2) written questions for points of clarification only, and (3) DOE feedback on the proposal which allows a "best and final" offer to be made, etc.
- During proposal preparation, set aside an independent, knowledgeable group which has no role in PON III. This group would provide advice to proposers as they prepare their proposal for submission. Offerors would take such advice at their own risk.
- DOE should look into the VEPCO process. They have a proposal review process which permits dialogues.

- Hold more pre-award bidders' meetings. (Others noted that this would unnecessarily increase proposal costs.)

Proposal Costs

All working group members were unanimous that DOE should seek avenues to keep proposal costs down. A technology vendor noted that DOE's approach does not allow a small business to successfully compete. Small businesses stated that their difficulty to respond would not cost so much as it is the excessive amount of effort required to satisfy all of DOE's informational requirements in a proposal. Other comments pertaining to proposal costs are noted below:

- A company's actual proposal cost extends from the time of preparing for the proposal submission to the actual award date, an 18-month to two-year cycle. This total time must be speeded up, not just the time spent in selecting awards.
- Shorten proposal preparation time from 120 to 90 days. The extra 30 days allocated to PON III just increases costs for the Offerors, and probably does not affect the selection outcome. (Opinion of the larger vendor organizations.)
- Clean up and simplify Appendix 1.
- Allow Phase I design work to be performed in the pre-award period and reimbursed upon signing of an agreement. Otherwise project managers, and other members can be lost to the project.

Selection Criteria

The participants requested that DOE be as explicit as possible in explaining how the Offerors will be evaluated. Comments are noted below:

- Provide as much clear guidance as possible as to which technologies and demonstrations are favored so that Offerors can decide up front whether they even wish to participate. (Offerors of precombustion technologies were particularly concerned about this point.)
- Quantify the Program Policy Factors so that Offerors can understand them better and better direct their proposal to be responsive to these needs. (For example, will duplicative projects between PON's I, II, and III be allowed?)

- Provide guidelines on the size of demonstration desired.
- Improve the technology readiness criteria. Some Offerors did not know what was expected. One useful measure would be for DOE to state what availability the reviewers expected the demonstrations to achieve during Phase III operations. For example, a demonstration that achieves 70 percent availability is decidedly different in its technical readiness from one that can only achieve 30 percent.

Because commercialization is basically driven by external factors, i.e., acid rain legislation, great uncertainty exists when offerors attempt to extrapolate into this market environment. To avoid an apples and oranges comparison, DOE should provide a baseline market forecast that all offerors would use in preparing their commercialization plans.

4.3.3 Working Session Number 3

Public Meeting of February 16, 1989
Atlanta, Georgia

S. Oldoerp, Chairman
M. Ghate, Co-Chairman

Approximately 20 participants representing a variety of synthetic fuels interests attended the session. The participants included members of utilities, vendors, congressional and government agencies. Some of the participants had attended at least one or two meetings and have participated in the earlier Clean Coal Technology (CCT) solicitations. A few of the participants also had an experience in the actual negotiations of the CCT, and as such were familiar with the Federal Procurement System.

At this working session the following four (4) topics were discussed:

- Global Warming
- New Fuel Forms
- Proposal Preparation
- Repayment

The following is a record of opinions or recommendations by one or more participants.

Global Warming

The subject of global warming was introduced to the group by posing an issue of carbon dioxide (CO2) mitigation in the CCT-III solicitation.

- It was pointed out that about seven percent of the CO2 emissions are due to the use of coal by utilities. A major contribution to the atmos- pheric CO2 is a result of burning fossil fuels in the transportation sector.
- The global warming, due to increased concentration of CO2 does not have any scientific agreement. It was also opined that even if the CO2 mitigation is achieved to the extent of one hundred percent, it will not help the issue of global warming. The Group felt that CO2 is less harmful than any other atmospheric pollutants.

- If CO2 mitigation/reduction criterion is included in the CCT-III solicitation, weighting factors should be a primary criterion as it was for SOx and NOx in ICCT-II solicitation. However, if a given technology could reduce or mitigate the CO2 emissions by increased efficiency, a credit should be given during evaluation.
- Time should be given to sort out CO2 related technical issues and perhaps should be brought in focus during the CCT-IV and V solicitations. DOE should not consider CO2 mitigation/reduction as an issue in the CCT-III solicitation.

New Fuels Forms

The subject of new fuels forms (NFF) was introduced to the group by asking whether to restructure the objectives or criterion to attract projects that feature NFFs. Most of the discussions were focused on understanding a clear definition of the NFF.

- The discussion on the inclusion of NFF category led to the issue of expanding the scope to encourage western states participation in its program. In ICCT-II the emphasis on SOx and NOx reduction criteria did not bring in certain technologies that are very specific to the low sulfur western coals. Broadening the scope of the solicitation would provide an opportunity to bring in a wide suite of technologies.
- The discussion then led to the thrust of the CCT Program. It was then sorted out that the thrust of the program is "technology development" and not a "technology deployment."
- Issue of clear definition of what constitutes NFFs led to technical discussions on mild gasification, i.e., IGCC and coal beneficiation technologies. It was defined that micronized coal would constitute a NFF if it contributes the reduction of SOx and NOx. The gasification based combined cycle technology would not be considered as a NFF based technology. However, gasification is used to power the gas turbine and also to produce a product like methanol as a peaking fuel then it could be considered as a NFF based technology. In this category, mild gasification coupled with gasification could also be considered as a NFF.

- Fuel switching to achieve SOx, and NOx reduction should not be considered as NFFs.
- A more general definition of NFF was provided that if the coal is chemically or physically altered so that the use of that altered coal results in lower SOx and NOx reduction.
- DOE should not expand the scope of the CCT-III solicitation only to attract projects that use NFFs. However, DOE should clearly define what constitutes a NFF, repowering, and retrofitting.

Proposal Preparation

The subject of proposal preparation was introduced so as to get a feedback on the proposed 120 days proposal preparation period for CCT-III solicitations; and ways to reduce the cost of the proposal preparation.

- There was only one opinion -- the longer the proposal preparation period, the higher the costs will be.
- Listing of environmental permits and cost estimates were identified as items that translate into costs. However, some participants pointed out that these requirements do lend themselves to the maturity of the project.
- It was also suggested that the "post-selection" process should include preparation of a "better" cost estimate. Such an approach would provide a means to share the cost with DOE, thus will reduce the overall proposal preparation cost.
- The longer the time allowed to receive responses to the solicitation, the higher the costs will be.

Repayment

The repayment feature of the solicitation was introduced to the group by asking for a response about its merits to the CCT-III solicitation.

- Six (6) of the participants believed that the repayment feature of the solicitation should be retained, while four (4) believed that it should be dropped, and the rest did not express any opinion.
- Those in favor of keeping the repayment feature in, felt that such a feature helps to quell the public perception that the CCT program is a "giveaway" program. Also these

participants believed that such a feature will bring in quality proposals that will ultimately result in viable projects.

- Those who were opposed to the repayment feature, think that the repayment feature might inhibit the incentives to participate in the CCT program.
- A formula for repayment was discussed but was thought it would treat some participants unfairly.
- Generally, repayment terms were well understood by the participants. However, many expressed concerns about handling the repayment methods. An approach to tie the repayment plan with gross sales and royalties was proposed. Such an approach would keep the government out of monitoring profits of the Industrial Partner.
- The inflation kicker issue was also discussed.A direct "one shot" repayment approach was proposed. Discussions on the repayment plans of CCT-I and ICCT-II resulted in an opinion that the CCT-I plan was better as it was much easier to deal with. The ICCT-II plan/approach did not go well with the participants as it created difficult situations to handle insurance premiums, international sales, improvement to the facility and/or equipment.
- Some of the participants proposed a "grace period" for repayment. Primarily this idea stems from the fact that a project may not make any money in the early period of operation. In the same spirit, it was proposed that a certain number of units may be exempted from the repayment plan.
- Monitor the sale of plants and use Return on Investment (ROI) approach to establish repayment plan.
- To most of the participants it is a very serious issue, but will not inhibit them to participate in the CCT-III program. However, the majority felt that DOE should clearly state the repayment plan in its solicitation.

4.3.4 Working Session Number 4

Public Meeting of February 16, 1989
Atlanta, Georgia

G. Friggens, Chairman
J. Ruether, Co-Chairman

Approximately 20 participants representing a variety of coal-related businesses and governmental interests attended the working session. Electric utility and independent power producers, engineering/constructors, technology vendors, academics, and R&D departments of manufacturing companies were among those represented. Many attendees had participated in previous Clean Coal Technology (CCT) solicitations. Discussions in the working session addressed the following topics:

- Scope of the Solicitation
- Repayment
- Treatment of New Fuel Forms Derived from Coal
- Solicitation Approach

The following records opinions or recommendations expressed by one or more participants.

Scope of the Solicitation

- At present, sufficient scientific understanding of the possible role of greenhouse gases, including carbon dioxide (CO2) is not available to warrant including in the solicitation a criterion of selection for limiting of CO2 emissions.
- If any mention of greenhouse gases is made in the PON, it should address improved thermal efficiency as the means for limiting CO2 emissions. Note should also be taken that improving thermal efficiency reduces emission of sulfur and nitrogen oxides per unit of useful work similar to reducing emissions of CO2.
- A minority opinion was that global warming by greenhouse gases is already scientifically established. Limitation of greenhouse gas emissions should begin at once.

- Retrofit technologies would compete poorly if CO2 emissions were an important selection criterion, since these technologies adversely affect thermal efficiency.
- Other environmental improvements associated with coal use besides acid gas emission control should be included in the CCT Program, such as particulates control.

Repayment

- No repayment should be required.
- DOE should not give a formula with specific percentages for cost recovery in the PON. Each project should be free to develop its own funding sources and schedules.
- Differing Opinion: DOE should include specific percentages in a repayment formula. This gives the Industrial Partner some idea of what DOE's expectations for repayment are. DOE could give several sets of figures, each representing an approach acceptable to DOE for repayment.
- The idea was suggested to have proposers describe a repayment plan in their proposals and to have this serve as part of the basis of selection. Consensus view to reject this data.
- DOE should adopt a sliding scale of repayment expected, depending on the percentage of total project cost the private partner provided. The larger fraction of project cost provided by the private partner, the smaller part of the government loan would have to be repaid.
- The difficulty of a utility to commit itself to a repayment schedule tied to sales by an equipment manufacturer was noted. The utility stands to make no profit if commercialization of the technology results, yet they have the responsibility for securing repayment for DOE if they are the Industrial Participant.

Treatment of New Fuel Forms

Any proposed CCT project with potential to displace residual oil should be evaluated with credit given for any SO2 emissions reductions that would result.

- No strict definition is possible for what constitutes a new fuel form. Rather, any technology proposed should be evaluated operationally: Is it new and innovative?Does it provide for use of a coal-derived fuel in an environmentally responsible manner? The PON should instruct proposers to include this type of information.

Solicitation Approach

- There is more to lose than to gain if DOE changes to a two-step solicitation approach. Additional costs would be incurred in preparing the full proposal for those proposers continuing to the second stage. It would be difficult and perhaps unfair to make a significant cut in the first round based on a page-limited proposal.
- DOE should find some way to communicate with proposers after submission of proposals to clarify. However, selective discussions between DOE and certain but not all proposers would be unfair to those left out.
- If DOE does not expect to hold discussions with proposers before selection, they should not mislead proposers with language in the PON that suggests they will. Some proposers expected to have such meetings during the ICCT solicitation process.

APPENDIX

ORGANIZATIONS REPRESENTED AT THE PUBLIC MEETINGS

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ADA Technologies, Inc.
Air Products and Chemicals, Inc.
AMAX Research and Development Center
Ansaldo North America
Argonne National Laboratory
Arizona Electric Power Cooperative, Inc.
Associated Governments of Northwest Colorado
Association of American Railroads
Atlanta University Center
Avco Research Laboratory TEXTRON

Babcock & Wilcox
Bechtel National, Inc.
Bethlehem Steel Corporation
Black & Veatch
BNRR
Brock, Easley, Inc.
Brown & Root U.S.A., Inc.
Burns & McDonnell

Carbon Fuels Corporation
Carbon Resources, Inc.
Central and South West Services, Inc.
Char-Fuels of Wyoming, Inc.
City of Tallahassee Electric Department
Clean Coal Technology Coalition
Clean Coal/Synfuels Letter, McGraw-Hill
CLI Corp.
Coal Quality Development Center
Coastal Power Production Company
Cockerill Mechanical Industries
Colorado Department of Natural Resources
Colorado School of Mines
Colorado-Ute Electric Association, Inc.
Combustion Engineering, Inc.
Consolidation Coal Company
Cool Water Gasification Program
Corning Glass Works
CRS Sirrine, Inc.
Cyprus Coal Company

APPENDIX

DEMSRI/Atlanta University Center
Department of Utilities
Dow Chemical U.S.A.
Dow Corning Corporation

East Kentucky Power Cooperative, Inc.
Ebara Environmental Corporation
Ebasco Services Incorporation
Economic Development and Stabilization Board - State of Wyoming
Electric Power Research Institute
EnCoal
Energy International, Inc.
Energy Research Corporation
Energy Systems Associates
Energy and Environmental Research Corporation
Engineered Systems International
Environmental Power Corporation
EPDC

Florida Coal Gasification, Inc.
Florida Institute of Phosphate Research
Florida Power & Light Company
Florida Public Service Commission
Fluor Daniel
Foster Wheeler Development Corporation
Fuel Tech, Inc.

General Atomics
General Motors Corporation -- Allison Gas Turbine Division
Gilbert/Commonwealth, Inc.
Gulf Power Company

High Technology Associates
HRI, Inc.
Hydrocarbon Research, Inc.

Independence Power and Light
Indiana Department of Commerce
Indianapolis Power and Light Company
Inside Energy, McGraw-Hill Institute of Gas Technology

International Fuel Cells Corporation
International Paper

J.E. Sinor Consultants, Inc.
John T. Boyd Company

Kansas Department of Commerce
Kentucky Energy Cabinet
K-Fuel Partnership
King Publishing Group
Knife River Coal Mining Company
K.R. Komarek Research, Inc.

Livingstone College
Louisiana Gasification Technology, Inc.
Lurgi Corporation

Methacoal Corporation
Microfuel Corporation
Mid-Continent Resources, Inc.
MK-Ferguson Co.
Mobil Coal Producing, Inc.
Montana Energy R&D Institute, Inc.
Morgantown Energy Technology Center
MSE, Inc.
M.W. Kellogg Company

NaTec, Ltd.
National Coal Association
National Research Council of Canada
National Rural Electric Cooperative Assn.
Navajo Nation
North American Coal Corporation
NOXSO Corporation

Office of Management and Budget
Office of U.S. Senator William L. Armstrong
Office of U.S. Senator Wyche Fowler
Oglethorpe Power Corporation
Ohio Edison
Ohio Ontario Clean Fuels, Inc.

APPENDIX

Pacific Power
Peabody Holding Company, Inc.
Perkins Power, Inc.
PIC Technologies, Inc.
Pittsburgh Energy Technology Center
Provident Investments Corporation
Public Service Company of Colorado
Puerto Rico Electric Power Authority
Pure Air Pyropower Corporation

Radian Corporation
Robert A. Westman & Associates
Ryan Fincor, Inc.

Sandia National Laboratories
Science Technology & Energy, ADECA
Shell Mining Company
Shell Oil Company
Snamprogetti
Southern Coke & Coal Corporation
Southern Company Services, Inc.
Southern Illinois University
Standard Oil AFT
Stone & Webster Engineering Corporation
Synfuels Engineering & Development, Inc.
Synfuels Technology

Tennessee Valley Authority
Tribal Assets Management
TRW Energy Development Group
TU Electric

Ultrasystems Power and Environmental Systems, Inc
United Engineers & Constructors, Inc. -- Stearns-Roger Division
United States Bureau of Mines
United States Department of Energy -- Denver Support Office
United States Department of Energy -- Oak Ridge Operations Office
United States General Accounting Office
United States Gypsum Company

United Transportation Union
University of Kentucky -- Center for Applied Energy Research
University of Missouri -- Columbia
University of North Dakota Energy & Mineral Research Center
University of North Dakota Operations
University of North Texas
University of Washington
University of Wyoming
Usibelli Coal Mine, Inc.
Utility Fuels, Inc.

Washington Irrigation & Development Company
Western Energy Company
Western Interstate Energy Board
Western Research Institute
Westinghouse Electric Corporation
Wolverine Power Supply