

Originally Processed With FOIA(s):
2005-0336-F

FOIA Number:
2005-0336-F

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Record Group/Collection: George H.W. Bush Presidential Records
Collection/Office of Origin: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: General Science Files

OA/ID Number: 62043
Folder ID Number: 62043-008

Folder Title:
Energy [2 of 2] [1992]

Stack:

Row:

Section:

Shelf:

Position:

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"Document Control"

DOCUMENT NUMBER: 9201429

DIRECTORATE STATUS

TYPE: ACTION
ORIGINATOR: 02

STATUS I

FROM: HASSAM, Jim

APR 22 1992

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 04/07/92

SUBJECT: HE IS FORWARDING A PROPOSAL REGARDING ENERGY
CONSERVATION AS IT RELATES TO THE FUEL CONSUMPTION
OF PETROL ENGINES.

DIRECTORATE
ASSIGNED:

PHYSICAL SCIENCES

STAFF

ASSIGNED:

ACTION

REQUIRED: AS/IF NECESSARY

STAFF

ACTION:

OSTP DUE DATE:
DATE COMPLETED:

SENDER'S DUE DATE:
05/04/92

STAFF DUE DATE
DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #:

CONTACT PERSON:
PHONE:

EXT:

REMARKS:

OSTP RECEIVED: 04/22/92 DEPT RECEIVED:
FILE: P-PHYSICAL SCIENCES-ENERGY

CENTRAL FILES:

Ref: Aspin valves
for i.c. engines

29 Cunningham St
Capalaba 4157

Q.L.D.

7/4/92
Australia

To

Assistant to the President
for Science and Technology

Sir A. Bromley

Dear Sir / Madam

I am submitting to this ^{Office} ~~institute~~ an article arguing in favour of re-assessing the prospects of developing rotary conical valves for internal combustion engines. Recent developments in anti-friction additives which cause P.T.F.E to become bonded onto moving parts have, in my opinion, re-opened the long-defunct case for the use of rotary valves in internal combustion engines. The most promising and interesting of which was undoubtedly the Aspin valve.

The Aspin rotary conical valve is more than just another rotary valve. The conical rotor also contains the eccentrically disposed combustion chamber whose rotation around the valves axis produces turbulence and centrifugally induced charge stratification. These elements contribute to the creation

of a combustion system like no other in terms of its ability to burn lean mixtures quickly and cleanly while employing extremely high compression ratios with low grade broad cut fuel of low octane rating. This is a fact which could have very positive implications for the costs of refining motor fuels if aspirin valved engines were to become widely used. A further advantage in employing the aspirin system is that it would leave the engine little changed below the cylinder head joint with the exception of high compression pistons of shallow conical shape (and perhaps a more robust bottom end).

The very low levels of CO, HC and NO_x resulting from the quick, clean combustion of lean turbulent stratified mixtures would assist in the ability to conform to increasingly rigid emissions requirements also. I believe that a mechanically reliable aspirin valve with low oil consumption is now within the grasp of automotive engineers.

I feel this issue should be investigated in the national interest* since the potential

* Both Australian and US and UK national interests

reduction in energy consumption both in the engines themselves and in the refining process could ultimately have an impact on the national fuel bill.

Note that I have also included a tentative design for higher pressure applications such as Diesel engines and heavily turbocharged aircraft engines.

This employs an extra bearing and a system of digital clearance control.

This article may be worth including in any publications your organization maintains. Also if you are interested in pursuing the subject further you might be interested in the address of the originators of the valve which appeared just before the war (ie, the firm itself Aspin Engineering Ltd.)

Unit 5

Egremont Close

Max Lane Trading Estate

Whitefield

Manchester U.K.

M 25 6FH

Telephone 061 766 9622

Fax 061 766 1423

Telex 667822

I have no idea if they have any current interest in Aspin valves or whether they have given them up in despair at the disinterest evinced. I wrote to them to explain my clearance control proposal but received no reply so they may have given rotary valves up, because no one is interested. It's difficult to say when there is no reply.

Hoping this proposal is of some interest to your members
I remain, in anticipation
yours sincerely
Jim Hassab
CAPALABA.

P.S. Frank Aspin passed away some years ago, the company is now managed by his son
Mr Anton F. Aspin.

Note: If this proposal is not relevant to your office's activities I wonder if you might be so kind^{as} to forward it to Caltech

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20506

April 28, 1992

Dear Mr. Hassam:

Thank you for your letter and its attached materials concerning the Aspin valve and engine. We appreciate your providing this information to us.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Karl Erb', with a stylized, cursive script.

Karl A. Erb
Associate Director--Designate
for Physical Sciences and Engineering

Mr. James Hassam
29 Cunningham Street
Capalala 4157
Q.L.D.
Australia

"Document Control"

TYPE: PRESIDENTIAL PRIORITY DOCUMENT NUMBER: 9201335
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS

FROM: BURTON, Allen J.: DURBS ASSOCIATES INC.

TO: PRESIDENT BUSH

APR 15 1992

DATE OF
CORRESPONDENCE: 04/03/92

SUBJECT: HE IS WRITING REGARDING A NEW FUEL SOURCE.

DIRECTORATE STAFF
ASSIGNED: PHYSICAL SCIENCES ASSIGNED:

ACTION
REQUIRED: FOR DAB'S SIGNATURE STAFF
ACTION:

SENDER'S DUE DATE:
OSTP DUE DATE: 04/21/92 STAFF DUE DATE
DATE COMPLETED: DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #: CONTACT PERSON:
PHONE: EXT:

REMARKS: NOTE: THIS CAME IN AS BATCH MAIL FROM PRESIDENTIAL
CORRESPONDENCE.

OSTP RECEIVED: 04/14/92 DEPT RECEIVED:
FILE: P-EOP-PRESIDENTIAL PRIORITY

CENTRAL FILES: ENERGY

1335

check

RECEIVED

16
DS TP

DURBS ASSOCIATES INC

2133 Indian Springs Ln.
Newport Beach, CA 92660
MAIL Tel: (714) 646-2268 Fax (714) 646-2918

APRIL 3rd, 1992

PRESIDENT GEORGE BUSH
THE WHITE HOUSE
FAX: (202) 456-2461

Dear Mr Bush,

I have just finished reading an article in today's Los Angeles Times (section A25) concerning the June summit on the environment, to be held in Rio de Janeiro.

The article seems to suggest your reluctance to attend, the last sentence however was what caught my attention, " If he (BUSH) goes, and he is likely to go, we need something in hand that will represent a respectable contribution."

Well I think I may have just what you need, "HYDROFUEL" is a synthetic chemical compound fuel additive which, when blended and briefly agitated together with fuel oil (75%) and WATER (25%), instantly results in a homogeneous fuel mixture.

I realize that this claim is revolutionary and immediate comment from the scientific community will be, impossible, oil and water don't mix, snake oil etc, both the inventors and myself (their agent) have experienced this kind of response on a regular basis, until recently, when tests carried out in Florida proved our claim, a brief rundown on the tests are as follows:

	<u>Internal Combustion</u>	<u>Open Flame Burners</u>
OXYGEN	INCREASED	INCREASED (APPROX + 25%)
CARBON DIOXIDE	REDUCED APPROX 33%	15% REDUCTION
CARBON MONOXIDE		5% to 10% REDUCTION
COMBUSTIBLE GASES	GREATLY REDUCED	REDUCED OVER 40%
SULPHUR DIOXIDE		REDUCED BY 20%
NITROUS OXIDE (NOX)		REDUCED BY 20%

I was present at these tests and can supply you with a full report including tests run at CITY UNIVERSITY in London England, December 1990, if you would like a copy of this report and or send a representative to see tests for themselves please have someone contact me to make the arrangements with the inventors.

(2)

This product opens up a pandora's box of possibilities, 25% reduction in the imports of oil, the creation of 1000's of jobs to manufacture and distribute the product, a cleaner environment, it can also be used on oil spills and to reclaim contaminated oil, etc.

I enclose some of the test results for your inspection, and again offer to send the full report should you so desire.

I thank you in anticipation of an early response and look forward to talking to someone from your office soon.

Yours sincerely,

A handwritten signature in dark ink, appearing to read 'Allen J. Burton', with a horizontal line drawn underneath it.

ALLEN J BURTON.

COMBUSTION TEST**HYDROFUEL****Reading = 3 Smoke**

SERIAL # 11002357
 ENERAC MODEL 2000
 COMBUSTION TEST RECORD

FOR: J.E.SIPPEL INC.

TIME: 18:48:51
 DATE: 03/18/92

FUEL #4 OIL: 18800 BTU/LB

COMBUSTION EFFICIENCY:	63.8	%
AMBIENT TEMPERATURE:	87	°F
STACK TEMPERATURE:	675	°F
OXYGEN:	09.5	%
CARBON MONOXIDE:	25	PPM
CARBON DIOXIDE:	09.1	%
COMBUSTIBLE GASES:	0.62	%
STACK DRAFT (INCHES H2O):	+ 00.0	
EXCESS AIR:	80	%
CARBON MONOXIDE ALARM:	50	PPM

MODE:PPM OXY_REF-TRUE%

#5 DIESEL**Reading = 7 Smoke**

SERIAL # 11002357
 ENERAC MODEL 2000
 COMBUSTION TEST RECORD

FOR: J.E.SIPPEL INC.

TIME: 19:10:32
 DATE: 03/18/92

FUEL #4 OIL: 18800 BTU/LB

COMBUSTION EFFICIENCY:	60.1	%
AMBIENT TEMPERATURE:	89	°F
STACK TEMPERATURE:	706	°F
OXYGEN:	07.5	%
CARBON MONOXIDE:	27	PPM
CARBON DIOXIDE:	10.8	%
COMBUSTIBLE GASES:	1.17	%
STACK DRAFT (INCHES H2O):	+ 00.0	
EXCESS AIR:	52	%
CARBON MONOXIDE ALARM:	50	PPM

MODE:PPM OXY_REF-TRUE%

SMOKE TEST

#2 DIESEL

versus

HYDROFUEL (H/F)

NOTE:

Hydrofuel registers "0%"
in BOTH tests

... MOTORBRANCH ...
SMOKE METER MOD. 590
OMOLOGATION:
3631/4103/82
920/4103/8-L

1) 84 % *
2) 85 % *
3) 84 % *
4) 80 % *
5) 79 %

OPAC. MED.

84 %

CAR: DIESEL

DATE: 30.05.91

DIESEL BURNER.

... GARAGE ...

... MOTORBRANCH ...
SMOKE METER MOD. 590
OMOLOGATION:
3631/4103/82
920/4103/8-L

1) 8 %
2) 97 %
3) 96 % *
4) 96 % *
5) 94 % *

OPAC. MED.

95 %

CAR: DIESEL

DATE: 30.05.91

DIESEL BURNER.

... GARAGE ...

... MOTORBRANCH ...
SMOKE METER MOD. 590
OMOLOGATION:
3631/4103/82
920/4103/8-L

1) 0 %
2) 0 %
3) 0 % *
4) 0 % *
5) 0 % *

OPAC. MED.

0 %

CAR: H/F

DATE: 30.05.91

DIESEL BURNER.

... GARAGE ...

... MOTORBRANCH ...
SMOKE METER MOD. 590
OMOLOGATION:
3631/4103/82
920/4103/8-L

1) 3 %
2) 0 %
3) 0 % *
4) 0 % *
5) 0 % *

OPAC. MED.

0 %

CAR: H/F

DATE: 30.05.91

DIESEL BURNER.

... GARAGE ...

The purpose of this test was to establish any differences in SOX (SULPHUR DIOXIDE) between #5 Diesel Oil and the HYDROFUEL mixture, which consisted of 15 gallons of the same #5 Diesel Oil, 5 gallons of TAP WATER 1350 millilitres of HYDROFUEL ADDITIVE.

HYDROFUEL

SOX TEST = 708 PPM

* NOTE: Deleted figures are not relevant when doing SOX tests as certain elements of the test are exaggerated or eliminated.

SERIAL # 11002357 *HYDROFUEL*
ENERAC MODEL 2000
COMBUSTION TEST RECORD

FOR: J.E.SIPPEL INC.

TIME: 12:36:14
DATE: 01/06/92

FUEL *HYDROFUEL* 18800 BTU/LB

COMBUSTION EFFICIENCY:	82.1 %
AMBIENT TEMPERATURE:	54 °F
STACK TEMPERATURE:	541 °F
OXYGEN:	88.2 %
CARBON MONOXIDE:	27 PPM
CARBON DIOXIDE:	89.9 %
COMBUSTIBLE GASES:	OVER %
STACK DRAFT (INCHES H2O):	+ 88.8
EXCESS AIR:	61 %
OXIDES of NITROGEN:	182 PPM
SULFUR DIOXIDE:	788 PPM
CARBON MONOXIDE ALARM:	100 PPM

MODE:PPM OXY_REF-TRUEX

#5 DIESEL OIL

SOX TEST = 880 PPM

* NOTE: Deleted figures are not relevant when doing SOX tests as certain elements of the test are exaggerated or eliminated.

SERIAL # 11002357 *#5*
ENERAC MODEL 2000
COMBUSTION TEST RECORD

FOR: J.E.SIPPEL INC.

TIME: 12:21:27
DATE: 01/06/92

FUEL *#5 OIL*: 18800 BTU/LB

COMBUSTION EFFICIENCY:	85.5 %
AMBIENT TEMPERATURE:	52 °F
STACK TEMPERATURE:	408 °F
OXYGEN:	86.1 %
CARBON MONOXIDE:	70 PPM
CARBON DIOXIDE:	11.5 %
COMBUSTIBLE GASES:	OVER %
STACK DRAFT (INCHES H2O):	+ 88.8
EXCESS AIR:	60 %
OXIDES of NITROGEN:	198 PPM
SULFUR DIOXIDE:	880 PPM
CARBON MONOXIDE ALARM:	100 PPM

MODE:PPM OXY_REF-TRUEX

* The Enerac 2000 is not capable of measuring Sulphur Dioxide at the same time as other gases, therefore when SOX is measured, all other readings are incorrect, and must be ignored.

The purpose of this test was to establish any differences in NOX (OXIDES of NITROGEN) between #5 Diesel Oil and the HYDROFUEL mixture, which consisted of 15 gallons of the same #5 Diesel Oil, 5 gallons of TAP WATER 1350 millilitres of HYDROFUEL ADDITIVE.

HYDROFUEL

HYDROFUEL

NOX TEST = 95 PPM

* NOTE: Deleted figures are not relevant when doing NOX tests as certain elements of the test are exaggerated or eliminated.

SERIAL # 11002357
ENERAC MODEL 2000
COMBUSTION TEST RECORD

FOR: J.E.SIPPEL INC.

TIME: 13:57:40
DATE: 01/06/92

FUEL #4 OIL: 18800 BTU/LB

COMBUSTION EFFICIENCY: 74.5 %
AMBIENT TEMPERATURE: 90 °F
STACK TEMPERATURE: 501 °F
OXYGEN: 89.3 %
CARBON MONOXIDE: 16 PPM
CARBON DIOXIDE: 89.8 %
COMBUSTIBLE GASES: 8.89 %
STACK DRAFT (INCHES H2O): + 88.8
EXCESS AIR: 76 %
OXIDES of NITROGEN: 95 PPM
SULFUR DIOXIDE: 95 PPM

CARBON MONOXIDE ALARM: 100 PPM

MODE: PPM, OXY_REF=TRUEX

SERIAL # 11002357
ENERAC MODEL 2200

SERIAL # 11002357
ENERAC MODEL 2200
COMBUSTION TEST RECORD

FOR: J.E.SIPPEL INC.

TIME: 13:20:07
DATE: 01/06/92

FUEL #4 OIL: 18800 BTU/LB

COMBUSTION EFFICIENCY: 63.5 %
AMBIENT TEMPERATURE: 64 °F
STACK TEMPERATURE: 452 °F
OXYGEN: 65.7 %
CARBON MONOXIDE: 77 PPM
CARBON DIOXIDE: 12.2 %
COMBUSTIBLE GASES: 6.68 %
STACK DRAFT (INCHES H2O): + 68.0
EXCESS AIR: 54 %

OXIDES of NITROGEN: 120 PPM
SULFUR DIOXIDE: 8 PPM
CARBON MONOXIDE ALARM: 50 PPM

#5 DIESEL OIL

NOX TEST = 120 PPM

* NOTE: Deleted figures are not relevant when doing NOX tests as certain elements of the test are exaggerated or eliminated.

* The Enerac 2000 is not capable of measuring OXIDES of NITROGEN at the same time as other gases, therefore when NOX is measured, all other readings are incorrect, and must be ignored.

DURBS ASSOCIATES INC

2133 Indian Springs Ln.
Newport Beach, CA 92660
Tel. (714) 646-2268 Fax (714) 646-2918

DATE: April 3 / 92 RE: _____

COVER MEMO

TO FAX NUMBER: 202-456-2461

THE FOLLOWING IS TO THE ATTENTION OF:

President George Bush.

COMPANY: _____

DEPARTMENT: _____

LOCATION: _____

TOTAL NUMBER OF PAGES: 7 (INCLUDING COVER PAGE)

FROM: _____

IF YOU DO NOT RECEIVE ALL OF THE PAGES, PLEASE CALL AT ONCE.

FAX: (714) 646-2918

COMMENTS: _____

Registered Head Office 2775 N. Carson Street, Suite 436 Carson City, NV 89706 Tel. (702) 885-9616

THE WHITE HOUSE

WASHINGTON

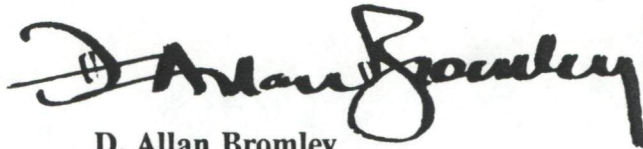
April 20, 1992

Dear Mr. Burton:

Thank you for your suggestion, contained in your letter to President Bush, concerning the June UNCED meeting on the environment to be held in Rio de Janeiro.

While I consider it unlikely that the President will propose specific technologies at that summit, I wish you success as you explore the possibility of marketing your client's product here and abroad.

Sincerely yours,

A handwritten signature in black ink, reading "D. Allan Bromley". The signature is stylized with a large, looping "D" and a long, sweeping underline.

D. Allan Bromley
The Assistant to the President
for
Science and Technology

Mr. Allen J. Burton
Durbs Associates Inc.
2133 Indian Springs Lane
Newport Beach, CA 92660

STAFFING SHEET

EXTERNAL COORDINATION: _____

[illegible]

3/14/92

SUBJECT: Draft Dingell
ORIGINATOR: C. Bretscher
DATE ORIGINATED: 3/10/92
EXTERNAL COORDINATION: _____

Re: Draft (3/10) OSTP letter to Rep Dingell

① I am not expert in these scientific areas and thus can not comment on the science.

② Rep Dingell explicitly directed us to consult with NOAA — he implies that NOAA scientists dispute the findings — yet the folder contains only input from Bob Watson (~~NOAA~~) (NASA).

③ The response sounds evasive on the issue of peer review. We should state that the findings were not peer-reviewed, before arguing that the data are reliable. (There is a profound difference between data and conclusions based on the data.)

④ I believe we should ask Knauss to review the letter, and perhaps others as well.
K. H. S.

6	DIRECTOR	
	CHIEF OF STAFF	
	GENERAL COUNSEL	
5	EXEC. ASST.	
ACTION REQUESTED:		
• Nancy — Please r • Bob Watson, & g - report, as requ • To Tom R, K		
COORDINATION		
	Henderson, D. A.	Concur _____ Nonconcur _____
3	Karl Erb Phillips, W.	Concur _____ Nonconcur _____
4	Ratchford, J. T.	Concur _____ Nonconcur _____
	Wong, E.	Concur _____ Nonconcur _____
1	C.B.	Concur _____ Nonconcur _____
2	N. Maynard	Concur ☒ Nonconcur _____
		Concur _____ Nonconcur _____
		Concur _____ Nonconcur _____
		Concur _____ Nonconcur _____
		Concur _____ Nonconcur _____
		Concur _____ Nonconcur _____
		Concur _____ Nonconcur _____
		Concur _____ Nonconcur _____

ENVIRONMENT - DINGELL LTR. (Cand on to JTR 3/16)

OSTP STAFFING SHEET

473-483

DISCUSSION

DATE ORIGINATED:

DATE DUE

PHONE

x2735

CORR TRACKING NO.:

EXTERNAL COORDINATION:

		COMMENTS	DATE
6	DIRECTOR		
	CHIEF OF STAFF		
	GENERAL COUNSEL		
5	EXEC. ASST.		

ACTION REQUESTED:

- QUESTED:
- Nancy - Please review draft, work any problems w/ Bob Watson, & get a copy of NAST - NOAA press release & report, as requested by Bigell.
 - To Tom R, Karl E, DAB for review prior to submission to OMB

[illegible]

THE WHITE HOUSE
WASHINGTON

RECEIVED

February 12, 1992 FEB 19 AID: 52

MEMORANDUM FOR MANUEL LUJAN
ROCKWELL SCHNABEL
JAMES D. WATKINS
RICHARD G. DARMAN
MICHAEL J. BOSKIN
D. ALLAN BROMLEY
MICHAEL R. DELAND
WILLIAM K. REILLY
BRENT SCOWCROFT
C. BOYDEN GRAY
ROGER B. PORTER

OSTP
MAIL ROOM

FROM:

SAMUEL K. SKINNER 

SUBJECT:

Coordination of Administration Policy on
Environmental Issues

To ensure that the Administration speaks with one voice on environmental policy, the President has asked Clayton Yeutter, who will soon become Counsellor to the President for Domestic Policy, to coordinate for him the work of all agencies involved in environmental matters. Specifically, the President has asked him to coordinate, along with Under Secretary of State Robert Zoellick, the Administration's activities with regard to the upcoming United Nations Conference on Environment and Development (UNCED). I urge each of you not to take any position in the coming weeks that might serve to limit the President's flexibility in this important area without first speaking to the Counsellor to the President.

[29] From: Carl P. Bretscher 3/10/92 4:39PM (1576 bytes: 24 ln)
To: Nancy G. Maynard, J. Thomas Ratchford, Karl A. Erb, Damar Hawkins
cc: Carl P. Bretscher, William F. Raub
Subject: Dingell letter on CFCs

----- Message Contents -----

I am circulating a draft response to Rep. Dingell's letter on CFCs and the President's plan to accelerate the phase-out of CFCs in the U.S. Most of the questions in Dingell's 10+ page letter are best answered by either EPA or DOS, so we got off relatively easy. However, note that many of the questions we answered deal with NASA data and analyses. (NASA drafted the responses.) While we could buck this to NASA, I don't think this would be advisable, given DAB's high visibility on this issue. It would be better, I think, to answer those questions that we reasonably can, because if we appear uncooperative, it could encourage Dingell to bring DAB before his Subcommittee. (On the other hand, this could work the other way as well, but I still think we owe Dingell some kind of answer, given DAB's role.)

Please expedite circulation of this letter within OSTP -- I would like to get the draft through Nancy and Karl this week, and then to Tom and DAB early next week, so that we can get it into clearance and try to meet Dingell's March 30 deadline.

Thank you for your consideration of this matter.

Carl

RECEIVED

92 FEB 28 P 4:

MAIL ROOM

U.S. House of Representatives
Subcommittee on Oversight and Investigations
of the
Committee on Energy and Commerce
Washington, DC 20515

February 26, 1992

JOHN D. DINGELL, MICHIGAN, CHAIRMAN
THOMAS J. BLILEY, JR., VIRGINIA
NORMAN F. LENT, NEW YORK
DAN SCHAEFER, COLORADO
FRED UPTON, MICHIGAN
ROY ROWLAND, GEORGIA
ION WYDEN, OREGON
DENNIS E. ECKART, OHIO
JIM SLATTERY, KANSAS
GERRY SIKORSKI, MINNESOTA
JOHN BRYANT, TEXAS
REID P.F. STUNTZ, STAFF DIRECTOR/CHIEF COUNSEL
STEPHEN F. SIMS, DEPUTY STAFF DIRECTOR

The Honorable James A. Baker III
Secretary
Department of State
2201 C Street, N.W.
Washington, D.C. 20520

Dr. D. Alan Bromley
Assistant to the President on Science
and Technology
The White House
Washington, D.C. 20500

The Honorable William K. Reilly
Administrator
Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

Dear Secretary Baker, Dr. Bromley, and Administrator Reilly:

I note with great interest the President's announcement of February 11, 1992 that the "United States will unilaterally accelerate the phaseout of substances that deplete the Earth's ozone layer" and his call for "other nations to agree to an accelerated phaseout schedule." The statement by the President's Press Secretary, after observing that "fewer than 20 nations have ratified the London amendments to the Montreal Protocol," said that:

The President called upon those nations which have not yet signed and ratified the Montreal Protocol to do so, and urged other nations to join the U.S. in accelerating the phaseout of CFCs and other ozone-depleting gases even faster than required by the Protocol.

I commend the President for urging that other countries sign and ratify the 1987 Protocol and the 1990 amendments thereto. That should be done before the Parties amend the Protocol again. I understand that the U.S. will have an opportunity in Kenya or

The Honorable James A. Baker III
Dr. D. Alan Bromley
The Honorable William K. Reilly
Page 2

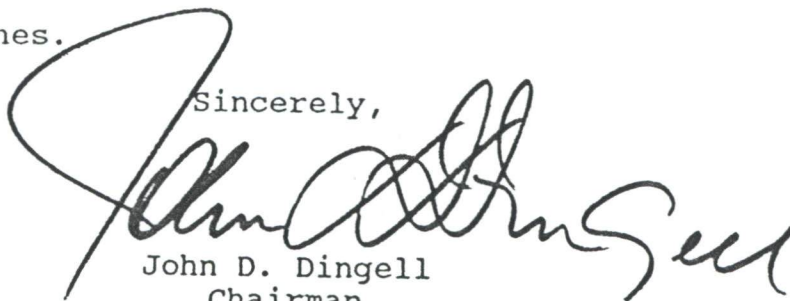
Geneva in April to bring attention to this failure of other Nations to act in concert with the U.S. I urge that the United States do so.

I also applaud the President for pointing out the leadership of the U.S. As the State Department knows, I believe U.S. officials, in dealing with other Nations, do this too infrequently. The U.S. has a long history of leadership on environmental matters, particularly in the area identified by the President, as well as in the area of air and water pollution and protection of endangered species. The Clean Air Act is an excellent example. Most other developed and developing countries are far behind the U.S. Their failure to follow the U.S. in a timely fashion is often detrimental to the global environment and to our economy and competitiveness.

While the announcement is helpful and certainly appears sound and timely, there are aspects of it that I do not quite understand and seek explanation and clarification. There are also other related issues of concern. Therefore, enclosed is a series of questions concerning the Protocol and its status, the President's actions and plans, and related matters. I request your reply before March 30, 1992. Please do not delay. I am providing a copy of this letter to the Secretaries of Defense, Agriculture, and Energy, the National Aeronautics and Space Administration, the National Oceanic and Atmospheric Administration and the Federal Aviation Administration because of their significant involvement in these matters. Please consult with them in replying to this letter.

With best wishes.

Sincerely,



John D. Dingell
Chairman
Subcommittee on
Oversight and Investigations

Enclosure

cc: The Honorable Thomas J. Bliley, Ranking Republican Member
Subcommittee on Oversight and Investigations

The Honorable Dante B. Fascell, Chairman
Committee on Foreign Affairs

The Honorable Wm. S. Broomfield, Ranking Minority Member
Committee on Foreign Affairs

NASA

Office of Space Science and Applications
Earth Science and Applications Division
Washington, DC 20546

Process Studies Program Office		Office Code: SEP
FAX (202) 755-5032	Total Pages: 4	Date: 3/10/92

TO: Ms. Nancy Maynard
OSTP
Fax 202-395-3719

FROM: Dr. Robert T. Watson

SEE ATTACHED DRAFT RESPONSE

Implications of Elevated ClO: The highly elevated concentrations of ClO, and companion measurements of BrO, implied that the ozone levels within the Arctic vortex could decrease at a rate of 1-2% per day, depending upon how long those chemical conditions persisted in the sun-lit portion of the globe.

Ozone Observations: No evidence of ClO-induced ozone loss was reported at the time of the press conference. Only evidence for the potential of significant ozone loss was released.

Temperate Latitudes

Elevated Concentrations of ClO: The average concentration of ClO, at ER-2 altitudes, outside the Arctic vortex over the USA and Canada and extending equatorward to 22 degrees north (the southern limit of the ER-2 flight track), was about 0.1 ppbv. While the concentrations of ClO are slightly higher in the presence of the Mt. Pinatubo cloud, the observed concentrations of ClO both inside and outside of the Mt Pinatubo cloud are much higher than predicted by theoretical models.

Implications of Observed Concentrations of ClO: These concentrations of ClO provide strong evidence linking the observed mid-latitude winter through early summer reductions in ozone to reactions involving chlorine and bromine radicals.

What Magnitude of Ozone Depletion Did NASA and NOAA Predict?

The NASA-NOAA press release warned that under "unfavorable" meteorological conditions significant ozone depletion could occur either this year or some year in the future while the concentrations of chlorine and bromine are comparable to, or higher than those of today. NASA and NOAA did not state that an "ozone hole" would occur this year, nor did they predict an actual amount of ozone depletion that could be expected this year. Ozone at northern high latitudes in winter and spring exhibits significant variability, therefore, to ascertain whether significant ozone depletion has occurred since the press release, or is still occurring, requires a careful analysis of all the available aircraft and satellite data. In fact, the term "ozone hole" should not be used as it is somewhat misleading since a significant erosion of northern high latitude ozone could occur without having the visual appearance of a distinct depression or "hole" from satellite imagery. NASA and NOAA will be in a position to quantitatively determine the extent of this year's seasonal ozone depletion at the beginning of April.

Do We Agree with the European Scientists?

Yes, the atmosphere in the Northern hemisphere is highly perturbed, but not just because of the Mt. Pinatubo eruption. The eruption only slightly modified an atmosphere that was already chemically perturbed. The amount of chlorine injected into the stratosphere by Mt. Pinatubo was quite small, insignificant compared to the amounts from anthropogenic halocarbons. While Mt. Pinatubo did emit a significant amount of sulfur and aerosols directly into the stratosphere, the NASA-NOAA findings suggest that the background (pre-Mt. Pinatubo) levels of sulfate aerosols was sufficient to produce the most of the observed high levels of ClO. However, it is most likely that the enhanced levels of sulfate aerosol, which will last for several years, will increase the amount of ozone depletion that is expected to occur during the next few years.

NASA and NOAA are not yet willing to quantify the extent of ozone depletion that has already occurred, or will occur, this year. Therefore, NASA and NOAA will comment on the European statement about a few percent ozone loss. As stated earlier, the extent of ozone depletion will depend upon the chemical and meteorological conditions.

*** 000 5500 10101 ***

What are NASA's efforts to Assess the Exact Effects of the Eruption?

This is an integral component of the NASA-NOAA campaign that is studying the chemical (including effects of volcanic aerosols) and meteorological processes that control ozone.

What is the Relevance of the Volcano Effects on the Efforts of the President?

The President's approach will lead to a reduction in projected atmospheric chlorine abundances after the middle of this decade, thus reducing the predicted amounts of ozone depletion that will occur during the latter part of this decade and throughout the next century. The impact of Mt. Pinatubo will have largely subsided by the time that the President's action takes effect. However, the President's action will lessen the sensitivity of ozone depletion to future volcanic eruptions. The impact of a major volcanic eruption such as Mt. Pinatubo will last for several years, i.e., more than 3 but less than 10. The impact lasts while the abundance of stratospheric aerosols remain elevated.

DRAFT

March 13, 1992

Dear Chairman Dingell:

Thank you again for your letter of February 26 regarding ozone depletion and chlorofluorocarbons. I have focused my comments on those questions most relevant to my office, and I defer to the Environmental Protection Agency and the State Department for their responses to your other questions. The material below has been prepared with the assistance of the National Aeronautics and Space Administration.

QUESTION: According to the February 6 edition of the Washington Post, Dr. Bromley held a meeting "after NASA researchers reported that satellite and airborne measurements taken over North America recorded the highest level of ozone depleting chemicals ever detected worldwide." Please provide the NASA report of those data and the NASA analysis thereof. Please explain when the data were collected and analyzed. To what extent have the data been peer reviewed and published? Were these "preliminary" findings?

ANSWER: The first point to note is that the scientific data presented in the NASA-NOAA press release significantly strengthened the key conclusions of the peer-reviewed U.N.-sponsored international scientific ozone assessment, which was issued in October 1991. Specifically, these conclusions are that: (i) the weight of scientific evidence suggests that the observed ozone depletions at mid-latitudes throughout the year are in large part due to the chemicals containing chlorine and bromine; and (ii) as the atmospheric levels of chlorine and bromine increase in the future, significant additional losses of ozone are expected at middle latitudes and in the Arctic. This scientific assessment, not the press release, was used by the Administration and industry as the scientific basis for its recent policy statement.

The NASA-NOAA press statement was based on data obtained from more than 20 ER-2 aircraft flights over a six-month period, in conjunction with a number of DC-8 flights and more than several months of near-global satellite observations. The majority of the field deployments were from Bangor, Maine. All critical data reported at the press conference had been obtained by instruments that have been thoroughly tested in the field, including numerous engineering flights and two major polar field deployments (i.e., a six-week Antarctic aircraft campaign in 1987 from Punta Arenas, Chile, and a six-week Arctic aircraft campaign in 1989 from Stavanger, Norway). The prior results of these instruments had been stringently peer-reviewed in the scientific literature.

The scientific information contained within the press release was the result of careful analyses and review by the nearly one hundred scientists involved in the aircraft and satellite activities. These results will be combined with additional data collected since January and published in the peer-reviewed literature later this year. None of the data should be viewed as preliminary, given the heritage of the instruments and experience of the scientific investigators.

QUESTION: Please explain what the new data showed and what ozone loss was predicted. I understand from NOAA scientists that an ozone hole, like that in Antarctica, is not likely or possible in the Arctic area. Is that your understanding as well?

ANSWER: The key findings announced in the press release may be summarized as follows: At high latitudes, highly elevated concentrations of the ClO radical, the key agent responsible for stratospheric ozone depletion, were observed by both the in-situ sensor on the NASA ER-2 aircraft and the microwave limb sounder on the Upper Atmosphere Research Satellite (UARS). In particular, values of ClO as high as 1.5 ppbv were observed over North America (Canada and northern New England). These are the highest values ever observed at any place or at any time -- they are even higher than those observed in Antarctica. The highly elevated concentrations of ClO, and companion measurements of BrO, imply that the ozone levels within the Arctic vortex could decrease at a rate of 1-2% per day, depending upon how long those chemical conditions persisted in the sun-lit portion of the globe.

At temperate latitudes, the average concentration of ClO, at ER-2 altitudes, outside the Arctic vortex but over the United States and Canada and extending toward the equator to 22 degrees north (the southern limit of the ER-2 flight track) was about 0.1 ppbv. While the concentrations of ClO are slightly higher in the presence of the Mount Pinatubo cloud, the observed concentrations of ClO both inside and outside the Mount Pinatubo cloud are much higher than predicted by theoretical models. These concentrations of ClO provide strong evidence linking the observed mid-latitude winter through early summer reductions in ozone to reactions involving chlorine and bromine radicals.

The NASA-NOAA press release warned that under "unfavorable" meteorological conditions, significant ozone depletion could occur either this year or some year in the future, while the concentrations and bromine are comparable to or higher than those of today. NASA and NOAA did not state that an "ozone hole" would occur this year, nor did they predict an actual amount of ozone depletion that could be expected this year. Ozone at higher high latitudes in winter and spring exhibits significantly variability. Therefore, to ascertain whether significant ozone depletion has occurred since the press release, or is still occurring, requires a careful analysis of all the available aircraft and satellite data. In fact, the term "ozone hole" should not be used as it is somewhat misleading, since a significant erosion of northern high latitude ozone could occur without having the visual appearance of a distinct depression or "hole" from satellite imagery. NASA and NOAA will be able to determine quantitatively the extent of this year's seasonal ozone depletion at the beginning of April.

DRAFT

QUESTION: Do you agree with the European scientists (who say that "unprecedented" reactions are now taking place in the atmosphere)? Please explain. What is the status of NASA's efforts to "assess the exact effects of the eruption"? What is the relevance of the volcano effects on the efforts of the President? How will his program affect or mitigate the above effects? Are the volcano effects temporary? If so, what is temporary? Please explain.

ANSWER: I agree with the European scientists that the atmosphere above the northern hemisphere is highly perturbed, but not just because of the Mount Pinatubo eruption. The eruption only slightly modified an atmosphere that was already chemically perturbed. The amount of chlorine injected into the stratosphere by Mount Pinatubo was quite small, even insignificant compared to the amounts from anthropogenic halocarbons. While Mount Pinatubo did emit a significant amount of sulfur and aerosols directly into the stratosphere, the NASA-NOAA findings suggest that the background (pre-Mount Pinatubo) levels of sulfate aerosols was sufficient to produce the most of the observed high levels of CIO. However, it is most likely that the enhanced levels of sulfate aerosol, which will last for several years, will increase the amount of ozone depletion that is expected to occur during the next few years.

NASA's efforts to assess the exact effects of the Mount Pinatubo eruption are integral components of the NASA-NOAA campaign that is studying the meteorological and chemical (including effects of volcanic aerosols) processes that control ozone. NASA and NOAA are not yet willing to quantify the extent of ozone depletion that has already occurred, or will occur, this year. Therefore, NASA and NOAA will comment on the European statement about a few percent ozone loss. As stated earlier, the extent of ozone depletion will depend upon chemical and meteorological conditions.

The President's approach to the CFCs issue will lead to a reduction in projected atmospheric chlorine abundances after the middle of this decade, thus reducing the predicted amounts of ozone depletion that will occur during the latter part of this decade and throughout the next century. The impact of Mount Pinatubo will have largely subsided by the time that the President's action takes effect. However, the President's action will lessen the sensitivity of ozone depletion to future volcanic eruptions.

The impact of a major volcanic eruption, such as Mount Pinatubo, is temporary, for it will last for only several years, perhaps from three to ten years. The impact lasts while the abundance of stratospheric aerosols remains elevated.

Thank you again for your interest in these issues.

Sincerely yours,

D. Allan Bromley
Director

DRAFT

**The Honorable John Dingell, Chairman
Subcommittee on Oversight and Investigations
Committee on Energy and Commerce
United States House of Representatives
Washington, D.C. 20515**

**cc: The Honorable Thomas J. Bliley
Subcommittee on Oversight and Investigations**

**The Honorable James Baker III, Secretary
Department of State**

**The Honorable William K. Riley, Administrator
Environmental Protection Agency**

**The Honorable Richard Truly, Administrator
National Aeronautics and Space Administration**

"Document Control"

TYPE: ACTION

ORIGINATOR: 02

STATUS I

DOCUMENT NUMBER: 9200825

DIRECTORATE STATUS

FROM: DIAKUN, Alan

TO: DR. D.A. BROMLEY

MAR 18 1992

DATE OF
CORRESPONDENCE: 03/09/92

SUBJECT: HE IS WRITING TO REQUEST ASSISTANCE WITH THE
ESTABLISHMENT OF HIS PROGRAM TO CONDUCT AN INTENSIVE
RESEARCH AND PLANNING STUDY ON RENEWABLE SOLAR
ENERGY STORAGE CELLS.

DIRECTORATE

STAFF

ASSIGNED: PHYSICAL SCIENCES

ASSIGNED:

ACTION

STAFF

REQUIRED: DIRECT REPLY

ACTION:

SENDER'S DUE DATE:

OSTP DUE DATE: 03/31/92

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT:

4/6/92

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS:

PHONE:

EXT:

OSTP RECEIVED: 03/17/92

DEPT RECEIVED:

FILE: P-PHYSICAL SCIENCES-ENERGY

CENTRAL FILES:

March 9, 1992

0825 A

Dr. D. Allan Browley
Assistant to the President for Science & Technology
The White House
1600 Pennsylvania Avenue
Washington, D.C. 20500

RECEIVED

92 MAR 17 AID: 12

001F
MAIL ROOM

Dear Dr. Browley —

My name is Alan Diakun. I am 60 years old and retired. My career was in business management and finance, and I once served as Treasurer & Comptroller of the Colonial Williamsburg Foundation.

Over the past few years, I have encountered many gifted young people whose talents are grossly underutilized. I have determined to form a company, Audia Research, Inc., to harness the talents, intelligence and energy of the very best of these people and to devote this pool to addressing imperative national needs.

The group, to start, will include brilliant young scientists, one a Ph.D. physicist, the other a Ph.D. chemist, an innovative, experienced electrical engineer, a highly skilled researcher-writer, a talented statistician-research analyst, a computer expert, and an expert in industrial organization and manufacturing costs who has served as Comptroller for a multi-plant manufacturer. These are not basic academic types, but enormously gifted people with private sector roots.

We have identified the development of on-site, efficient, rapidly renewable solar energy storage cells as the area we wish first to address, and I would be grateful if you could steer us in the proper direction so that we might make a formal proposal for funding to conduct an intensive, focused research and strategic planning study with the following goals: 1.) to develop practical, low-cost, renewable solar storage cells, and generate electricity on site for all common applications (heating, air conditioning, hot water heating, all home electrical needs, automobiles, etc.), revolutionizing the production and distribution of energy in the world, and 2.) to ensure that the U.S. leads in this technology and in the manufacture of its applications, thus guaranteeing its economic health and its pre-eminent position in the world throughout the 21st century. Our study and program will have no involvement with the oil, gas, nuclear, current passive solar, or electric distribution industries — it will concentrate solely on development of an entirely new industry for the 21st century.

We are, of course, grateful for any help you can provide in beginning this worthy endeavor.

Sincerely,
Alan N. Diakun
alan n. diakun
105 Glenn Circle
Williamsburg, Va.

23185

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20506

April 6, 1992

Dear Mr. Diakun:

Thank you for your letter of March 9, in which you outline your plans to form a group to develop solar energy storage cells.

In response to your question about possible sources of Federal funding for your work, I would suggest that you write to the Department of Energy, Office of Conservation and Renewable Energy, 1000 Independence Ave., S.W., Washington, D.C. 20585.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Karl A. Erb', with a stylized, cursive script.

Karl A. Erb
Associate Director--Designate
for Physical Sciences and Engineering

Mr. Alan N. Diakun
105 Glenn Circle
Williamsburg, VA 23185

"Document Control"

TYPE: ACTION
ORIGINATOR: 02

DOCUMENT NUMBER: 9200772
DIRECTORATE STATUS

STATUS I

FROM: BRIGHTWELL, Eddie W.

MAR 11 1992

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 03/03/92

SUBJECT: HE IS WRITING TO ASK FOR ASSISTANCE WITH HIS
RESEARCH ON ALTERNATIVE FUELS.

DIRECTORATE STAFF
ASSIGNED: PHYSICAL SCIENCES ASSIGNED:

ACTION
REQUIRED: DIRECT REPLY

STAFF
ACTION:

Are you sure? 3/14

SENDER'S DUE DATE:
OSTP DUE DATE: 03/24/92 STAFF DUE DATE
DATE COMPLETED: DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #:

CONTACT PERSON:
PHONE:

EXT:

REMARKS:

OSTP RECEIVED: 03/10/92 DEPT RECEIVED:
FILE: PHYSICAL SCIENCES-ENERGY

CENTRAL FILES:



0772 A

RECEIVED

MR. D. ALLAN BROMLEY 92 MAR 10 AIO: 22

March 03, 1992

Dear Sir,

OSTP
MAIL ROOM

My name is Eddie W. Brightwell, and I have always wanted to farm and to help people. Now I see away to do this and to provide a little fuel and food along the way to help offset the increase in demand on Foreign Oil. I am not a schooled scientist, and I am not foolish enough to try and change the design of the wheel, nor think I can change the fuel industry overnight. But, I do have hope in alternative means of producing energy and I will give it my best shot. I am not asking for the millions and billions given to the Oil Companies for their research in fuels, and then again what have they changed in years!! (except the price, and their hold on the motoring public!!) But I am not here to pick bones.

I can help! I want to help! I need to help!

Now I need your help to assist me in the direction I need to proceed to obtain a Grant or Federal Loan, whatever it takes to put this plan and project to work. I am not planning on a huge profitable fuel farm at first, I am really only interested in operating a small test facility to begin the research. I then plan to pass on the findings to the proper and schooled individuals that are capable and have the facilities and the finances to complete the chain of research and development. (I will be the one to work the field and get dirty.)

I need and want to remain small scale to be able to control the conditions of the biotope in the first stages, to be sure of the initial findings. I hope to branch out in the very near future once the foundation has been secured. I also plan to venture into the production of year round fresh fruits and vegetables to supply the local food stores and help offset the cost of start-up and to help repay any debt incurred. This is only the beginning, once I get started there are many things I plan to experiment with in the field of food and fuels.

The Agricultural sector has a role whose full potential is just beginning to be realized. A farm based fuel industry combined with other means of generation and co-generation of fuels can provide a decentralized system of fuel production and a measure of energy self sufficiency for the farm community. This can and will be accomplished as an integral part of normal farming operations following sound agricultural practices. Farm produced fuels can be sold for profit to provide a shock absorber for excess production and a fall back position for adversely affected crops or yield.

Benefits include, but they are not limited to:

1. Direct sales of fuels to the local economy.
2. On the farm uses.
3. Self reliance assisted (implemented) by fuel production.
4. Many organic (indirect) farm benefits.

My plan is to produce and practice in the small farm base the production of naturally occurring fuels in plants and the generation of co-fuels, the resources are endless. I plan to use fuels, co-fuels, and syn-fuels on a small scale to prove their use in larger more productive situations, and to seek out renewable energy sources such as plants can give us. The types and uses of plants are as varied as the face of the earth...Arrow Root, Cattail, Flax, Fruits, Grains, Gopher Plant, Hemp, Jute, Kudzu, Milkweed, memosia, Peanuts, Potatoes, and many more.

This does not include all of the useful and needed by-products that will be found to be beneficial from the production of fuel. Any organic matter can and will be converted into fuel. There are already units working that are capable of producing 100's of gallons of low cost fuel per week and upon this basis I plan to expound my research.

Please Sir, if you can help me in any way I will be most grateful!! This is not something that I just thought of, I have researched this as far as I could and have a real burden in my heart for this to work.

I thank you for your time and for your speedy reply...

Thanks,
Eddie W. Bightwell

The 5 millionth United States patent was awarded to researchers of the University of Florida; Lonnie O.Ingram, Tyrell Conway, and Flavio Alterthum for a genetically engineered microbe that helps convert wastepaper and yard waste into Ethanol fuel. The new bacteria can convert most sugars, making it possible to extract fuel from almost anything produced by plants (grass clippings, wheat stalks, cardboard, grocery bags, and newsprint.)

8 to spend 2 years in "Biosphere" - Four men and four women entered a huge airtight greenhouse, September 26th 1991 with the intention of remaining inside for 2 years. They and their sponsors called the 3.15-acre glass and steel structure Biosphere 2, with the earth itself being described as Biosphere 1. In addition to a farm and the living quarters for its human occupants, the structure contained 5 ecosystems - a rain forest, ocean, marsh, desert, and savanna - populated with 3,800 plant and animal species. The purpose of the \$150 million dollar experiment was to see if all the species could live in ecological harmony without any food from the outside.

Former President Jimmy Carter setup a superfund to help experimenters and scientists develop and produce alternative fuels.

Former President Ronald Reagan immediately cut all programs, except the very expensive ones for the oil companies.

THE
CARTER CENTER



July 3, 1991

Dear Mr. Brightwell:

Thank you for your recent letter informing President Carter of the agricultural research in which you are involved.

You may wish to contact the U.S. Department of Agriculture regarding possible funding sources for your study. The address is:

U.S. DEPARTMENT OF AGRICULTURE
14th Street and Independence Avenue, S.W.
Washington, D.C. 20250

President Carter asked that I convey to you his best wishes.

Sincerely,

A handwritten signature in cursive script that reads "Christopher Mitchell".

Christopher Mitchell
Director of Correspondence

Mr. Eddie W. Brightwell
1370 Oliver Bridge Road
Watkinsville, Georgia 30677

"Document Control"

TYPE: ACTION DOCUMENT NUMBER: 9200614
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS

FROM: GREEN, A.A.: LOS ALAMOS NATIONAL LABORATORY

TO: DR. D.A. BROMLEY

MAR 2 1992

DATE OF
CORRESPONDENCE: 02/20/92

SUBJECT: HE IS WRITING TO ASK HOW HE CAN BEST SUPPORT DR.
BROMLEY'S POSITION IN CONGRESS.

DIRECTORATE STAFF
ASSIGNED: PHYSICAL SCIENCES ASSIGNED: Lee S.

ACTION STAFF
REQUIRED: FOR DAB'S SIGNATURE ACTION:

SENDER'S DUE DATE:
OSTP DUE DATE: 03/11/92 STAFF DUE DATE
DATE COMPLETED: DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #: CONTACT PERSON:
PHONE: EXT:
REMARKS: REASSIGNED TO PHYSICAL SCIENCES PER DH 02/28/92.

OSTP RECEIVED: 02/25/92 DEPT RECEIVED:
FILE: PHYSICAL SCIENCES

CENTRAL FILES: Doer



0017 1

RECEIVED

20 February 1992.

92 FEB 25 P 4: 44

OSTP
MAIL ROOM

D. Allan Bromley
Executive Office of the President
Office of Science and Technology Policy
17th and Pennsylvania Avenue, N.W.
Washington, D.C.
20506

Dear Sir

Thank you for your reply dated the 10th of February, 1992. Let me also thank you and your colleagues on your collaborative efforts with the Department of Energy in averting austere spending cuts in DoE-funded particle and nuclear physics research. I share your relief at the lack of a need for severe funding reductions.

Your reply elicits my help in persuading Congress to accept the presidential request for research and development funding. I agree that Congress is likely to be prone to moving funds elsewhere and so would like to know from you how I might most effectively counter this action. I am interested in knowing what other channels might be open besides writing to my Congressman, Bill Richardson - something which I plan to do anyhow.

A second matter for concern is the funding agenda for the following fiscal year, 1994. Here I would urge a reasonable increase in funding for all nuclear and particle physics research. I would like to emphasize the word "all" since there is always a grave danger of having an overall increase, yet cutting some important projects.

The Los Alamos Meson Physics Facility is one such project. It has done, continues to do, and promises to do, much useful work in the field of hadron physics; yet it is now regularly being marginally funded. It is the only major hadron facility operating in the United States; the work it does augments work done, and to be done, at other major laboratories. With marginal funding it is extremely difficult to enhance the facility to make it an even more useful component of the national laboratory system.

In conclusion, knowing your support for a healthy research and development budget, I would thus urge you to ensure no worthy projects are neglected. Please also advise on how best to support your position in Congress.

Yours sincerely



A A Green
MS H841
Los Alamos National Laboratory
Los Alamos NM
87545

THE WHITE HOUSE
WASHINGTON

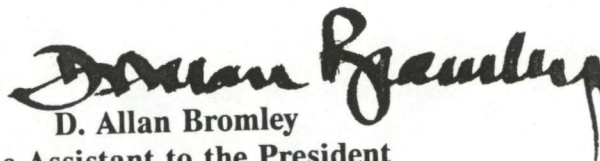
May 14, 1992

Dear Dr. Green:

Thank you for your last letter concerning the President's 1993 budget for DOE-supported particle and nuclear physics research. As indicated in my previous letter the action on the 1993 budget is now on the Congressional side. Concerning your inquiry on what actions you can personally take beyond contacting your local Congressman, you may also wish to contact the Senators from New Mexico and their staff, as well as the staffs of the various House and Senate Committees which deal with the DOE appropriations. In doing so, I urge you to focus your comments on the broader issues of research and the general health of science as indicated in your letter.

With respect to funding for fiscal year 1994, the development of budgets within various agencies of the U. S. government has begun. We will be monitoring these budgets as they develop, again looking to maintaining an overall healthy scientific base for the U. S. research effort.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "D. Allan Bromley", with a stylized, flowing script.

D. Allan Bromley
The Assistant to the President
for
Science and Technology

Dr. A. A. Green
MS H841
Los Alamos National Laboratory
Los Alamos, NM 87545

STAFFING SHEET

SUBJECT: LTR. TO DR. GREEN, COS ALAMOS

ORIGINATOR: K.E.R.B PHONE: ~~9200644~~ 5130

DATE ORIGINATED: 5/14/92 DATE DUE: ASAP CORR TRACKING NO: 920614

EXTERNAL COORDINATION:_____

	COMMENTS	DATE
DIRECTOR		
GENERAL COUNSEL		
EXEC. ASST.		

ACTION REQUESTED:

[illegible]

THE WHITE HOUSE
WASHINGTON

February 10, 1992

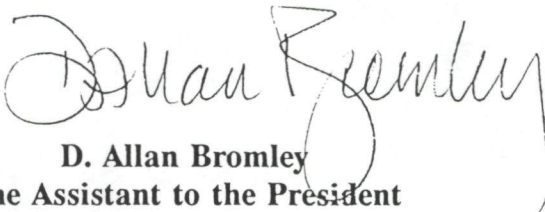
Dear Dr. Green:

Thank you for your letter expressing concern over possible 10% budget reductions for DOE-supported particle and nuclear physics research. We at the Office of Science and Technology Policy (OSTP) shared this concern.

Dr. Karl Erb, OSTP Associate Director for Physical Sciences and Engineering, and I worked closely with DOE and the Office of Management and Budget to explore alternate funding priorities as we prepared the President's FY 1993 budget request. I am pleased that deep reductions in funding proved not to be necessary.

Our next challenge will be to convince Congress to appropriate the funds requested for R&D by the President. Your assistance in this could be pivotal, as Congress will face strong demands to shift funding away from research and into other activities.

Sincerely yours,



D. Allan Bromley
The Assistant to the President
for
Science and Technology

cc: Karl A. Erb

Dr. A.A. Green
MS H841
Los Alamos National Laboratory
Los Alamos, NM 87545

"Document Control"

TYPE: INFORMATION

DOCUMENT NUMBER: 9124754

ORIGINATOR: 02

STATUS C

DIRECTORATE STATUS

FROM: GREEN, A.A.: CLINTON P. ANDERSON MESON PHYSICS FACILITY

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 11/07/91

SUBJECT: RE: HIS CONCERN OVER THE PROPOSED DOE BUDGET FOR
NUCLEAR PHYSICS RESEARCH.

DIRECTORATE STAFF
ASSIGNED: ASSIGNED:

ACTION STAFF
REQUIRED: ACTION:

SENDER'S DUE DATE:

OSTP DUE DATE: STAFF DUE DATE
DATE COMPLETED: DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley
PHYSICAL SCIENCES

WHITE HOUSE TRACKING #:

CONTACT PERSON:
PHONE:

EXT:

REMARKS:

OSTP RECEIVED: 11/12/91
FILE: P-PHYSICAL SCIENCES

DEPT RECEIVED:

CENTRAL FILES:

4751
Allan Bromley
Executive Office of the President
Office of Science and Technology Policy
17th and Pennsylvania Avenue, N.W.
Washington, D.C.
20506

RECEIVED

7 November 1991.

91 NOV 12 P 4: 59

OFFICE OF THE
DIRECTOR

Dear Sir

I write to you on a matter of great concern to me and many of the scientific community: the budget for nuclear physics research.

At the present time severe restraints are being placed on the ability of the nuclear physics programs under the auspices of the Department of Energy to be productive. To date the United States has assumed a leadership role in this type of research. Constant funding for the next few years is inadequate to allow this role to be maintained; reduced budgets may be catastrophic.

Many laboratories and programs are operating on shoe-string budgets. This has caused many well-trained people to seek employment outside the scientific field. This is a serious waste of expertise. With these very tight budgets, the people remaining in the field cannot perform the leading-edge research. The future of American science is threatened by such restraints since the visibility of the above two effects discourages new people from entering the field. To reverse this trend will be more costly than preventing it.

Without requiring a larger budget for the Department of Energy, I propose the following. A modest fractional reduction in the enormous budget assigned to the Super-conducting Super Collider (SSC) will not seriously retard that program yet free up adequate funds for returning the nuclear physics programs at universities and national laboratories to the prominent position they held five years ago.

Summarizing, the nuclear physics community is in a fragile and difficult financial situation which is best repaired rather than rebuilt years down the road. I look to you as a member of the our community to examine this matter more closely and point out the pitfalls of the present policy.

Yours sincerely



A A Green
MS H841
Los Alamos National Laboratory
Los Alamos NM
87545

"Document Control"

TYPE: ACTION

DOCUMENT NUMBER: 9200567

ORIGINATOR: 02

STATUS I

DIRECTORATE STATUS

FROM: ERICKSON, Donald C.: ENERGY CONCEPTS CO.

TO: DR. D.A. BROMLEY

FEB 25 1992

DATE OF
CORRESPONDENCE: 02/13/92

SUBJECT: HE IS WRITING TO INFORM DR. BROMLEY OF A NEW
TECHNOLOGY WHICH ELIMINATES OUR DEPENDENCE ON CFC'S.
HE ASKS FOR ASSISTANCE IN REORIENTING EXISTING
RESEARCH PRIORITIES TO INCLUDE THIS TECHNOLOGY.

DIRECTORATE

STAFF

ASSIGNED: PHYSICAL SCIENCES

ASSIGNED:

ACTION
REQUIRED: AS NECESSARY

STAFF
ACTION:

SENDER'S DUE DATE:

OSTP DUE DATE: 03/05/92

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT:

2/27/92

COPIES TO: D. Allan Bromley
ENVIRONMENT

WHITE HOUSE TRACKING #:

CONTACT PERSON:

PHONE:

EXT:

REMARKS:

OSTP RECEIVED: 02/21/92
FILE: P-PHYSICAL SCIENCES

DEPT RECEIVED:

CENTRAL FILES:





ENERGY CONCEPTS CO.

627 Ridgely Ave., Annapolis, Md. 21401 • 301/266-6521

Fax 301/266-6539

February 13, 1992

Mr. D. Allen Bromley
 Presidential Science Advisor
 Office of Science & Technology Policy
 Executive Office Building
 Washington, D.C. 20506

Dear Mr. Bromley:

No doubt you have read with alarm about the rapid changes in the ozone layer over North America and the potential effect this may have on life as we know it. This letter is to inform you of a new technology which eliminates our dependence on CFCs for refrigeration and space conditioning, and the attendant problems of release into the atmosphere. We believe the urgency of the ozone problem and the promise of this new technology warrant a significant level of federal research support, which at present is almost completely lacking.

Absorption refrigeration, which creates refrigeration by the application of heat, has been known for over 100 years. In recent years the use of absorption refrigeration has been limited by low efficiency and resulting poor economics. In the overwhelming majority of modern refrigeration or space conditioning applications electric drive compression systems are used. The CFCs in those systems cause 30% of our ozone problem.

After twelve years of research in absorption, Energy Concepts has now discovered a new absorption cycle which promises efficiency and economics rivaling the best electric drive CFC-based system without the environmental consequences. The new absorption cycle uses natural gas as the preferred energy source. Additionally, it is adaptable to other forms of supplemental heat such as solar collectors or waste heat from generating plants, incinerators or other sources.

The new cycle uses aqueous ammonia as the working fluid, which is well known and extensively used in refrigeration. Because of the high efficiency, the new cycle not only eliminates all ozone-depleting chemicals, but also reduces CO₂ emissions. We assign great importance to these attributes and contrast them to the voluminous ongoing HCFC research, which fails to eliminate ozone depletion and actually increases CO₂ emissions. The new cycle can be rapidly developed with appropriate research support at relatively low risk.

I have enclosed for your review a few relevant items of reference material which document the information in this letter. Please note especially the evaluation and recommendation from NIST. We would be pleased to provide a more complete presentation of the relevance of this technology at your convenience. Any help you can provide in reorienting the existing research priorities to include this vitally important, overlooked technology will be greatly appreciated.

Yours very truly,

Donald C. Erickson

Donald C. Erickson
 President, Energy Concepts Company

Enclosures

RECOMMENDATION NUMBER 557

Branched GAX Absorption Heat Pump

INVENTOR:
Mr. Donald C. Erickson

NIST

National Institute of Standards And Technology
Office Of Technology Evaluation And Assessment
Technology Services

U.S. DEPARTMENT OF COMMERCE
Technology Administration

EXECUTIVE SUMMARY

Branched GAX Absorption Heat Pump Recommendation Number 557

The subject invention was evaluated by the National Institute of Standards and Technology (NIST), Office of Technology Evaluation and Assessment (OTEA) in accordance with the NIST role in the joint NIST-Department of Energy (DOE) Energy-Related Inventions Program (ERIP). After examining the technical and commercial feasibility and energy impact of the invention, NIST recommends that DOE consider support of its further development and commercialization

The invention is a gas-fired absorption heat pump (AHP) initially intended to be used for residential cooling and heating applications. The proposed AHP uses ammonia-water as a working pair in which ammonia is the refrigerant while water acts as an absorbent. The proposed heat pump cycle is a modification of the generator-absorber-heat exchange (GAX) cycle which was developed by the heat pump industry in cooperation with the Department of Energy. The calculated cooling coefficient of performance (COP) for the proposed heat-pump cycle is about 1.2 while the heating COP is over 2.5. Use of the proposed heat pump on large commercial heat pumps, which are generally water-cooled, will show an even greater improvement in the cooling COP. These performance figures will make the proposed heat pump cycle competitive with vapor-compression type heat pumps.

The invention is still conceptual. The inventor has performed mathematical

modeling with a grant from the Maryland Industrial Partnership program with encouraging results. He is seeking further assistance to build and test a three-ton prototype heat pump based on his Branched GAX cycle principle. The invention is patented under U.S. Patent Number 5,024,063.

Under most conservative assumptions, the invention has the potential to save a significant amount of energy, about the equivalent of two million barrels of oil annually in the residential heating/cooling market alone. The invention would also have applications in commercial heating and cooling systems. Also, since the proposed heat pump uses gas as the energy input, it would enable electric utilities to better distribute peak loads in summer.

The invention has the potential to restructure the residential heat pump market in areas where natural gas is available. The gas-fired heat pumps could become more cost-effective to the point where they would be competitive with electric heat pumps. The invention also would have environmental advantages, with respect to emissions, quietness of operation, and non-destruction of the ozone layer.

A prototype of the proposed heat pump system needs to be tested under actual conditions to validate calculated performance. Also, an economic analysis needs to be performed to determine the cost-effectiveness of the system.



NIST

UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899

September 30, 1991

Mr. Donald C. Erickson
Energy Concepts Company
627 Ridgely Avenue
Annapolis, MD 21401

Dear Mr. Erickson:

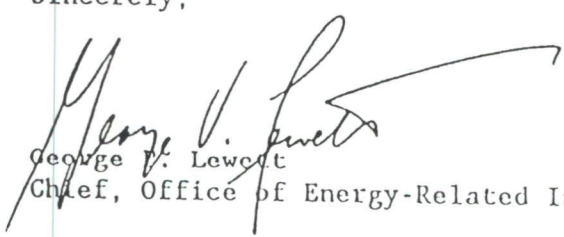
We wish to inform you of the results of our evaluation of the invention entitled "Branched GAX Absorption Heat Pump." The evaluation was conducted in fulfillment of our responsibilities set forth in Section 14 of the Federal Nonnuclear Energy Research and Development Act of 1974.

The invention has been selected for recommendation to the Department of Energy (DOE) as worthy of consideration for possible Government support. Please note that our recommendation does not insure financial support by DOE for the invention. It should also be noted that our recommendation to DOE should not be construed as an endorsement of the invention; in particular the recommendation should not be used for promotional purposes. We are forwarding a copy of the disclosure and the evaluation report to DOE for their consideration; a copy is enclosed for your information.

When our recommendation is received in DOE, an invention coordinator in the Inventions and Innovation Division, Conservation and Renewable Energy, will be responsible for determining the type and amount of support, if any, to be provided to you. You will receive a letter from DOE describing the information that you will be required to furnish them to determine the type of assistance. The decision depends upon our recommendation, a review of the proposed work, the availability of private sector funds, and the availability of Federal funds. Generally the information needed to make the determination will include description of additional technical development and testing required, a marketing plan, and a business plan. DOE will provide more specific details on the information needed.

Your participation in the evaluation program is appreciated. If you have any questions, please do not hesitate to contact us.

Sincerely,


George V. Lewett
Chief, Office of Energy-Related Inventions

Enclosures

**FUTURE DEVELOPMENTS
IN
THERMAL ABSORPTION CYCLE TECHNOLOGY**

by

Donald C. Erickson

présenté dans le cadre du XVIII^e Congrès international du froid/
Written for the XVIIIth International Congress of Refrigeration

Palais des Congrès de Montréal/
Montréal Convention Centre
Montréal, Québec, Canada

10-17 août 1991 / August 10-17 1991

RÉSUMÉ / SUMMARY:

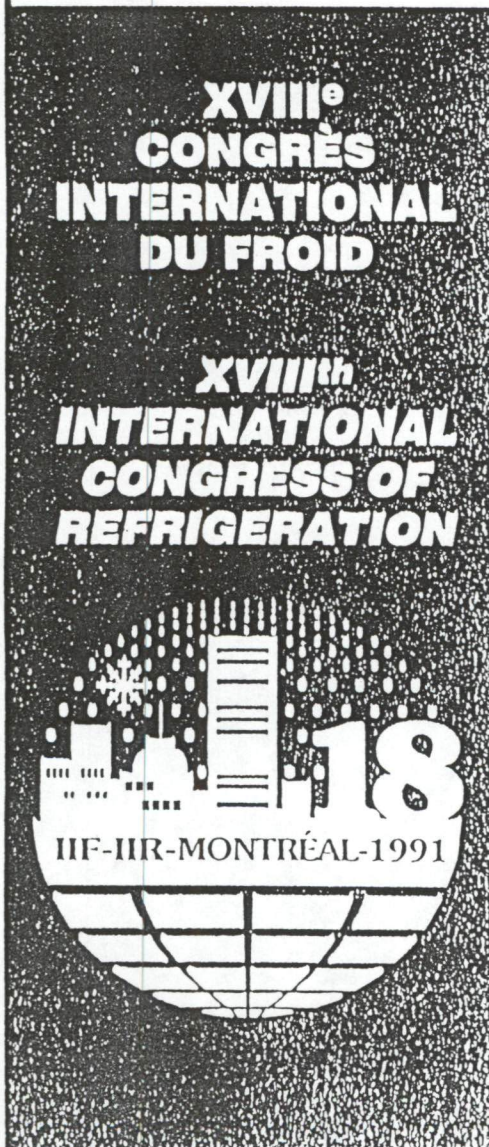
Absorption cycle technology which is now in the laboratory or on the drawing boards holds the promise of helping to solve major global problems including ozone depletion and global warming. New working fluids and new cycles will lead to many new economic applications for saving large amounts of energy.

MOTS-CLÉS / KEYWORDS:

Absorption heat pump, absorption cycle, absorption refrigeration

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This is an original presentation of the authors (s) who alone are responsible for its contents. Reports of presentations are considered to be the property of the International Institute of Refrigeration. Unless released by the Institute, they cannot be offered for publication elsewhere.



1. INTRODUCTION

Recently there has been a conjunction of technical and societal developments which jointly point to a dramatically expanded future role for absorption cycles. This field, long relegated to the back burner, has recently seen important developments in new cycles, new working fluids, new applications, and new components. Those developments are coming available just as societal concerns are recognizing the need for them. The harmful effects of CFCs have largely been acknowledged; the importance of major CO₂ reductions is gaining credibility; and there is a dawning realization that energy deserves treatment as a limited commodity. The new absorption technology can contribute significant solutions in each of those areas. The concepts are already available--they need only be combined in logical groupings, developed, and demonstrated.

2. NEW CYCLES

This paper will focus on the new absorption cycles, cycles which promise to achieve efficiency and performance levels which were unimagined a few short years ago. New working fluids and applications will be treated only to the extent necessary to illustrate the promise of the new cycles. For many years there was only the single-effect cycle--either continuous or intermittent. After sporadic earlier attempts (Altenkirch, 1913; Sellev, 1939), sustained development work on higher efficiency cycles began in the 60's (Richter, 1962). Since the 70's at least one advanced cycle has achieved commercial status, and many are currently under development.

The advanced cycles can be categorized as either multi-effect or multi-GAX (generator-absorber heat exchanger). The multi-effect absorption cycles draw their terminology from industrial evaporation practice. The number of effects is the number of times the primary heat is used to produce useful effect. Effects can be obtained by pressure staging, by concentration staging, or by combinations. Also fractional effects and multiple evaporator cycles are possible.

Interesting new cycles include:

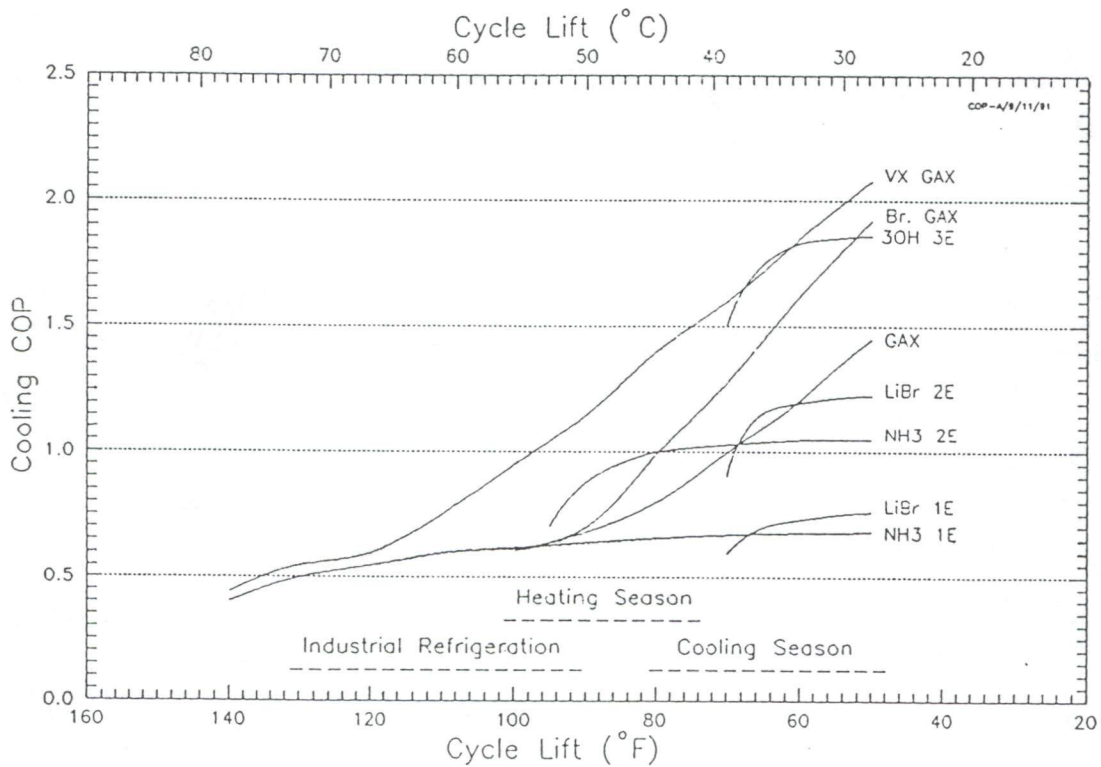
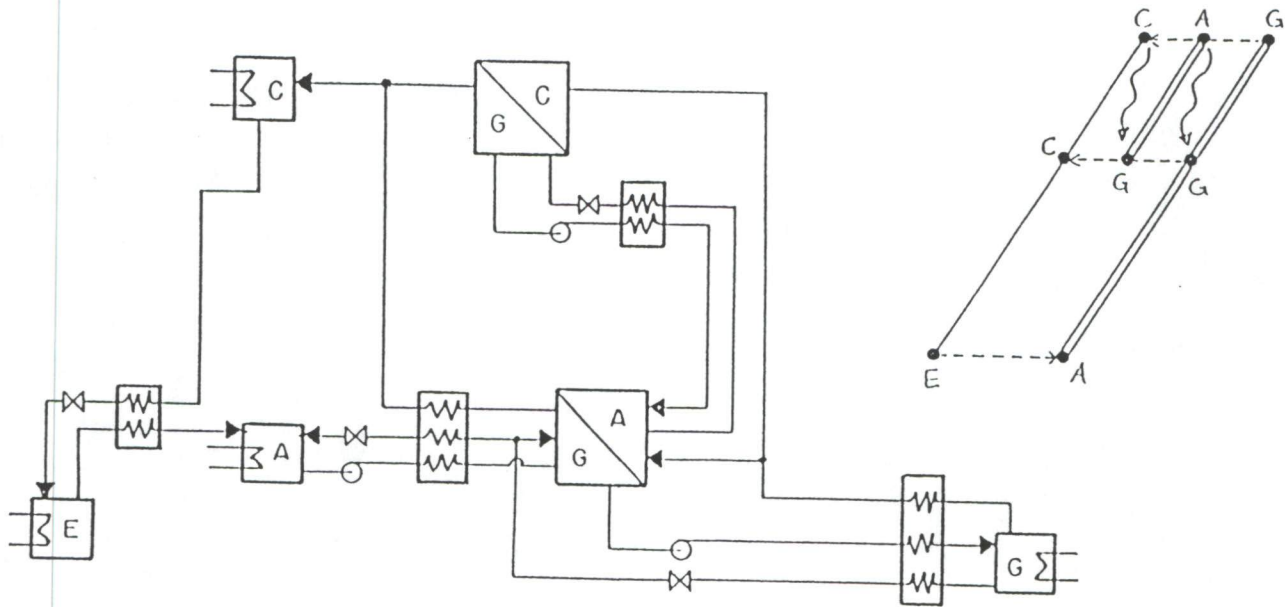
- . Triple-effect: Commercial chiller COP of 1.8 (Alefeld, 1985; DeVault, 1988; DeVault and Marsala, 1990)
- . One-and one-half-effect: Industrial heat pump COP of 2; industrial refrigeration COP of 0.9 (Erickson, 1991)
- . Hybrid heat amplifier/temperature amplifier (Alefeld, 1989)
- . Hybrid compression/absorption (Alefeld, 1985)
- . Open cycle, direct compression of steam and other vapors: 40% fuel savings in many steam-consuming processes (Erickson, 1989; Erickson, 1989)
- . Advanced GAX (next section)

3. GAX CYCLES

The basic GAX cycle was disclosed by Altenkirch in 1913. It was resurrected by Phillips in the early 80's, (Phillips, 1991; Phillips, 1976) and is now approaching the point of commercial activity.

PRESSURE-STAGED ONE-AND-A-HALF EFFECT

ABSORPTION CYCLE



Comparison of Absorption Cycle COPs

The basic GAX cycle has two major limitations. First, there is an inherent mismatch of heat in the temperature overlap zone of the absorber and generator (Scharfe et al., 1986). Secondly, the GAX benefit does not begin until the lift is small enough that double effect operation is also possible. Therefore the double-effect cycle initially has the potential for higher COP.

The various advanced GAX cycles overcome one or more of the known limitations of basic GAX. Three have been publicly disclosed thus far, and many more are in the works.

Branched GAX--overcomes the heat mismatch between GAX absorber and GAX desorber (Erickson, 1991).

Regenerative GAX--more GAX effect, plus GAX effect extends beyond ideal double-effect lift (Rasson and Wahlig, 1986).

Variable Effect GAX--same as regenerative cycle, but requires one less pump and three fewer components (Kauffman, 1982).

Generically these advanced GAX cycles enjoy the advantages:

- . ambient-responsive efficiency (major efficiency gains at milder ambient temperatures)
- . very low pumping requirements
- . reduced heat transfer surface requirements
- . joint production of heat and cold

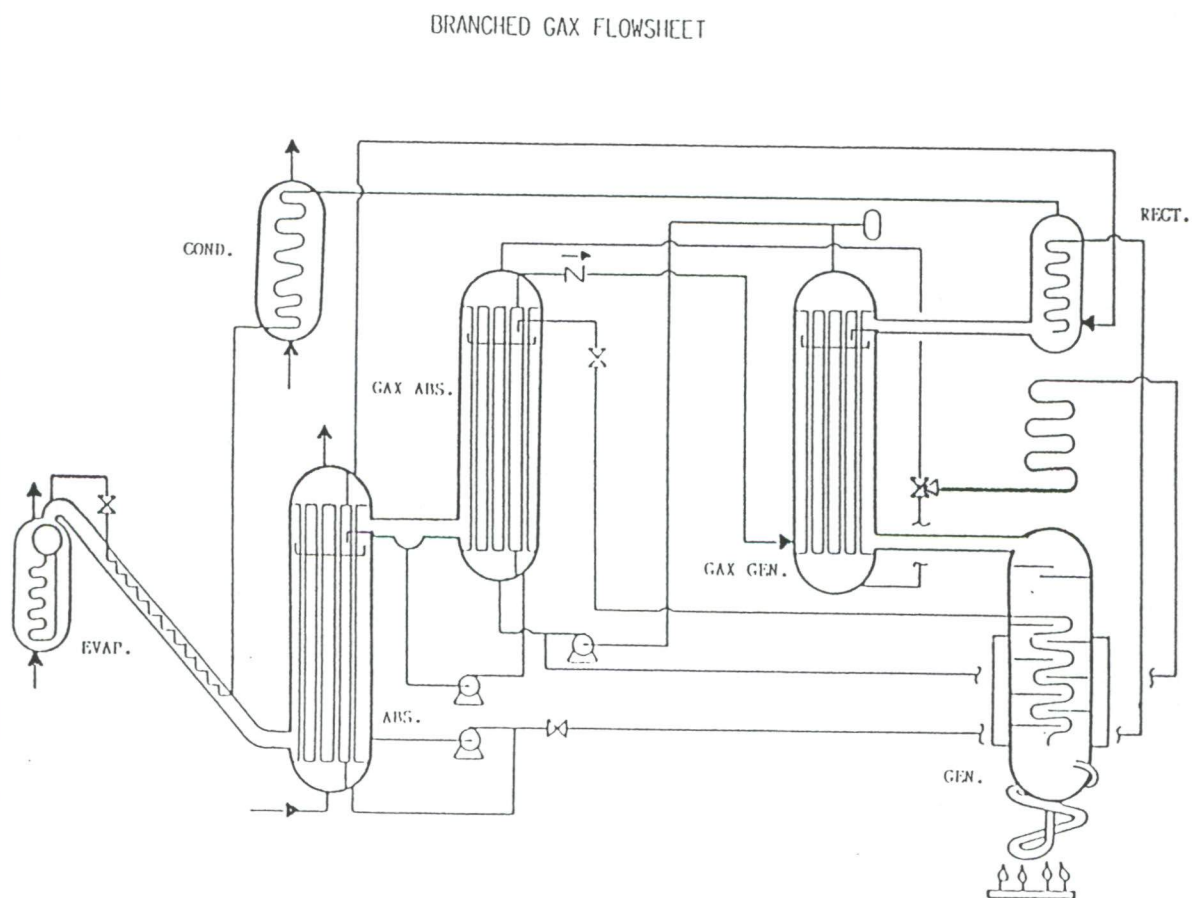
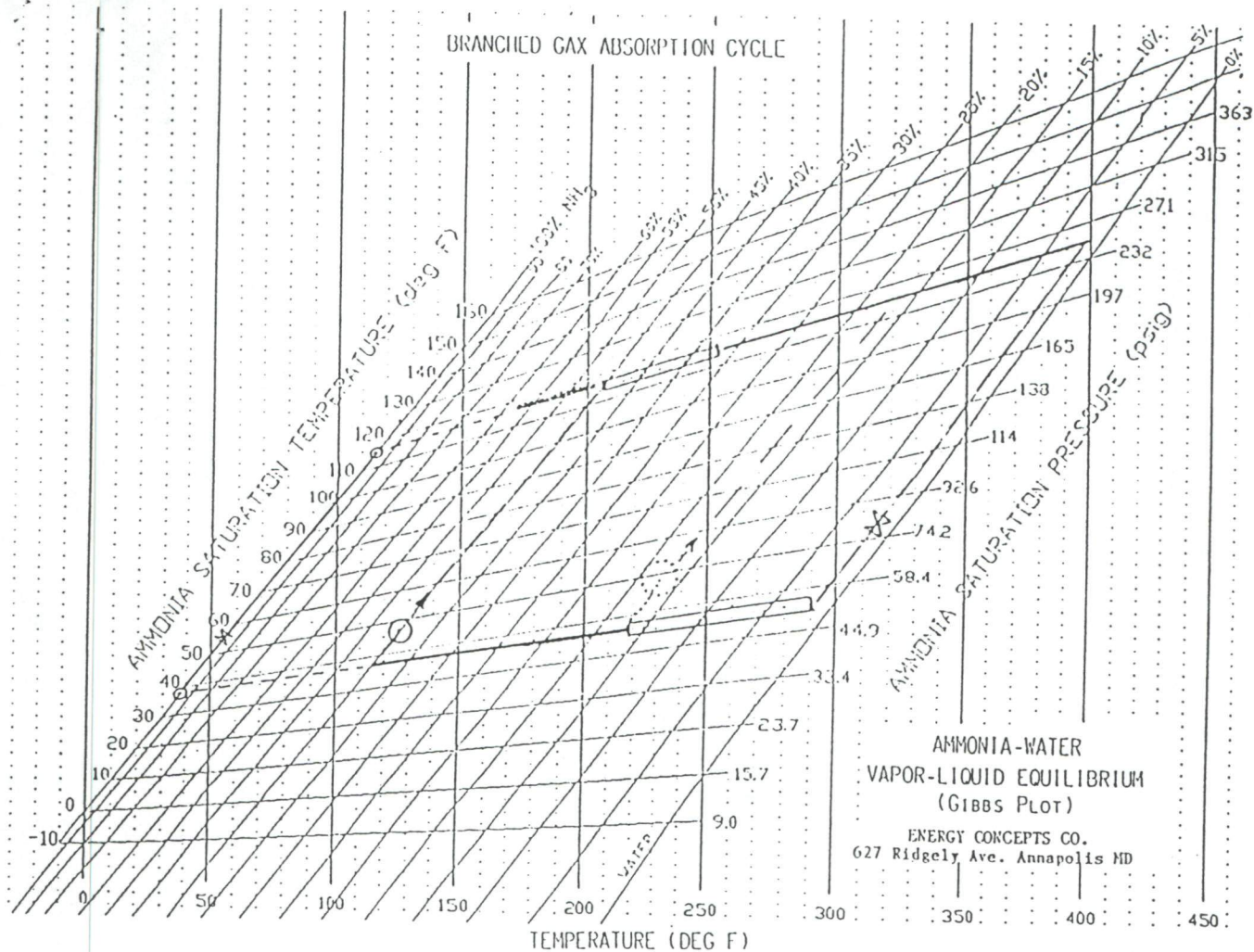
One quite remarkable aspect of many of the new cycles, especially the various GAX cycles, but also open cycle and triple-effect cycle, is that the increase in cycle COP is accompanied by a substantial reduction in capital cost. This is due primarily to the substitution of internal heat exchange for external heat exchange. This quantum increase in cycle efficiency accompanied by a quantum decrease in capital cost makes existing thumbrules and assumptions about absorption heat pump economics obsolete. A technology which until recently could only satisfy niche markets is now destined for center stage.

Example applications of advanced GAX cycles include:

- . Industrial refrigeration (-30°C at $\text{COP} = 0.9$)
- . Space conditioning (cooling COP of 1.8, heating COP of 2.4)
- . Industrial evaporation (COP of 5+)
- . Joint production of low temperature refrigeration (-20°C , $\text{COP} = 1$) and useful temperature hot water (70°C , $\text{COP} = 1.3$).
- . Joint production of air conditioning (2°C , $\text{COP} = 1.7$) and useful temperature hot water (70°C , $\text{COP} = 1.1$).
- . Supermarket refrigeration without CFCs.

4. CONCLUSIONS

Very few single areas of technology hold as much promise of providing solutions to pressing global energy problems as does this emergent absorption technology. The production of heat and of cold is on the brink of a new era of revolutionary implications. Across-the-board energy reductions of at least 20% compared to best currently available technology



are very likely. This is not yet realized by policy makers, by funding agencies, by the general public, and not even by most members of the engineering community.

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EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20506

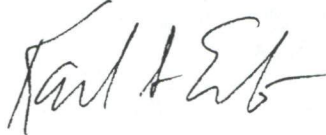
February 27, 1992

Dear Mr. Erickson:

Thank you for alerting OSTP to your company's work in the area of absorption-cycle refrigeration.

I trust that you have been contacted by the Department of Energy in connection with possible further technical development and testing of your concept, as a result of the NIST recommendation, and I wish you success in your project.

Sincerely,

A handwritten signature in dark ink, appearing to read "Karl A. Erb". The signature is fluid and cursive, with the first name "Karl" being more prominent than the last name "Erb".

Karl A. Erb
Acting Associate Director
for Physical Sciences and Engineering

Mr. Donald C. Erickson
President
Energy Concepts Company
627 Ridgely Ave.
Annapolis, MD 21401

"Document Control"

TYPE: ACTION
ORIGINATOR: 02

STATUS I

DOCUMENT NUMBER: 9200421
DIRECTORATE STATUS

FROM: BROWN, Don: ABDELMALEK ASSOCIATES INC.

TO: DR. D.A. BROMLEY

FEB 17

DATE OF
CORRESPONDENCE: 02/11/92

SUBJECT: HE IS REQUESTING DR. BROMLEY'S ASSISTANCE IN
SECURING FUNDING FOR THEIR PROPOSED INVENTION THAT
WILL CLEAN BOILER FLUE GASES, INCREASE POWER, AND
LIQUEFY SO2 AND CO2.

DIRECTORATE
ASSIGNED: PHYSICAL SCIENCES

STAFF
ASSIGNED: Dave Gannon 2/23

ACTION
REQUIRED: DIRECT REPLY

STAFF
ACTION: Please consult with Don Pryor and then draft a reply for my signature. KSE

SENDER'S DUE DATE:
OSTP DUE DATE: 02/26/92
DATE COMPLETED:

STAFF DUE DATE
DATE COMPLETED/DEPT: 2/24/92

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #:

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OSTP RECEIVED: 02/12/92 DEPT RECEIVED:
FILE: P-PHYSICAL SCIENCES-ENERGY

CENTRAL FILES:





Abdelmalek Associates, Inc.

Engineers &

Construction Managers

13610 Barrett Office Drive, Suite 200

Saint Louis, Missouri 63021

TEL 314-965-7000

FAX 314-965-7021

RECEIVED

82 FEB 12 A9 57

February 11, 1992

MAIL ROOM

The Honorable D. Allan Bromley
The Assistant to the President for Science and Technology
Old Executive Office Building
17th Pennsylvania Avenue
Washington, D.C. 20506

Dear Honorable Bromley,

Our purpose of contacting you is to make you aware of a new invention that will clean boiler flue gases, increase power production and liquefy SO^2 and CO^2 .

The flue gas cooling process will be capable of reducing the temperature of the boiler flue gas below its vapor dew point temperature to condense approximately 75% of the acid vapor and recover its heat of evaporation.

Users will recover enough energy from flue moisture to increase their power production enough to recover their capital investment in five to six years or less.

This process can burn high sulfur coal without going to the use of an expensive scrubbing method.

The system will desulfurize gas and liquefy SO^2 and CO^2 which are marketable products in other industries.

The process shall comply with the goals of the Clean Air Act of E.P.A. and D.O.E. for the Flue Gas Emission Reduction and Conservation of Energy.

This has excited Engineers and Scientists in the Illinois and Missouri area, and no one has disagreed on the methods of its application.

Here are some of the persons whom have reviewed this process.

Dr. Yoginder (Paul) Chugh, SIU Carbondale
John S. Mead, Director Coal Research Center,
SIU Carbondale
Professor William O'Brien, SIU Carbondale
EPRI, California
PETC, California
U.E., St. Louis

We have also been endorsed by Congressman Jerry Costello, Illinois and Glenn Poshard, Illinois, and Senator Bond, Missouri.

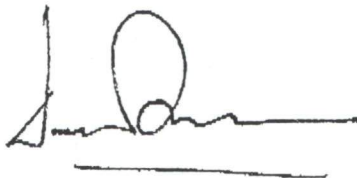
We are at the moment trying to find money to construct a prototype model in conjunction with SIU Carbondale, and possibly a host power company to build this as soon as possible.

Since you are the Assistant to President Bush, we are in hopes you can help us pursue this through EPA Administrator William K. Reilly (202-206-4700).

The E.P.A. has funds for exploratory research and since our model will have to be on a small scale, we do not need a large amount of money. This project can be done in a very short time, as little as four months.

This process when proven, will put thousand of miners back to work and save enormous amounts of money and coal resources.

Sincerely,



Don Brown

COMMENTARY

Bushspeak On The Environment

President's Support Of Worthy Programs Stops Short Of Funding Them

By Edward Flattau

Neither President Bush's State of the Union address nor budgetary blueprints offer a clue as to how this nation should proceed to assure sustainable economic prosperity and maintain a biologically robust environment.

The main reason for this glaring deficiency is clear: a failure to perceive the interdependency between a flourishing economy and a stable, healthy natural resource base.

Without recognition of this linkage, the president is powerless to deal in any meaningful long-term way with environmental degradation's relentless advance, the fossil fuel era's gradual winding down, an ever-increasing debt load and the global spread of poverty.

Instead, we are left with a few scattered, uncoordinated but commendable ideas that because of their isolation are either diminished in effect, neutralized elsewhere in the president's strategy or just plain likely to be lost in the shuffle.

For example, in his 1993 budget, the president requests an increase of \$70 million for sorely needed energy conservation research and development. In another section of the document, he slashes the money for state and local conservation research programs by \$85 million, producing a net \$15 million loss for improved fuel efficiency.

Bush proposes to encourage mass transit by tripling the tax-free subsidy that employers can provide to employees who utilize that mode of travel. Yet in his budget, Bush seeks to slash by a whopping 40 percent the \$5.2 billion mass transit appropriation approved by Congress last year.

The president urges an increase in funding for endangered species protection while his administration lobbies behind the scenes to drastically weaken the federal law.

Bush has ordered a 90-day moratorium on new regulations while his aides review the cost-effectiveness of all federal rules. But before the economics of



the laws of the land are examined, Bush should order an investigation as to whether they are being enforced. Five federal employees recently testified before the House Civil Service Subcommittee that their superiors in the Bush administration had, for political reasons, circumvented a number of environmental laws designed to protect natural resources for future generations.

What are some of the missing elements for preparing Americans to meet the environmental and economic challenges of the 21st century? Bush omits any mention of reforming the federal tax code to furnish incentives and disincentives to discourage pollution. The president doesn't come to grips with the need to begin making the transition from polluting fossil fuel to clean, renewable energy sources. Even though solar, wind, hydropower and other renewable sources already provide this country with more energy than the beleaguered atom does, the presidential request for nuclear research and development is more than five times (\$1.4 billion) that of renewables (\$247 million).

And in his budget, Bush continues to subordinate energy conservation and wilderness preservation to an overdependence on oil. He restates his congressionally repudiated demand that the nation's foremost remaining intact ecosystem, the Arctic National Wildlife Refuge, be opened up to petroleum exploitation.

Runaway population growth threatens to overwhelm many developing countries' natural resources base and create political turmoil with grave international security ramifications.

The president's response is to keep family planning assistance at about half the level required to accommodate the developing world's family planning needs and stabilize its population.

Scaling back military spending presents Bush with a major opportunity to redirect billions of dollars to building a sustainable, environmentally sound economy. But he continues to be more prone to distribute this money through Ronald Reagan's plutocratic "trickle down" formula than from the grass roots up, despite the conspicuous failure of the former method to benefit the disadvantaged during the past decade.

Finally, the great disparity between the rich and poor nations must be narrowed if global political stability is to be realized in the 21st century. We can contribute to the solution by transferring technology and financial aid where appropriate to developing nations. But it will also require behavioral modification in the form of consuming less so that those with virtually nothing can acquire more.

The transition can be made without great sacrifice in creature comforts by simply attaching more importance to the quality than quantity of our possessions.

Unfortunately, Bush is not helping us prepare for that adjustment either.

Edward Flattau, Washington, writes on environmental matters.

Copyright 1992 Edward Flattau

FEB 11, 1992

EARTHWORKS

St. Louis Post Dispatch



Make The Earth An Issue In '92 Elections

By The EarthWorks Group

IT'S THE beginning of the political primary season. Soon, the 1992 election campaign will be the focus of American life. Are you ready to be a part of it?

Less than half of all eligible adults vote in national elections. And in primaries, that figure is considerably lower. This means that a small minority of Americans will be choosing the candidates you can vote for in November.

If you're an environmentalist, this should concern you, because you know we're at a turning point with many serious issues.

The people we elect this year will make critical choices about global warming, our overdependence on oil, acid rain, sick forests, polluted beaches and bays, and destruction of wetlands and woods. And it may be your vote that decides whether these elected officials are people who want to help save the Earth... or let it get worse.

That may sound like an exaggeration. After all, what difference can one vote make?

But according to Jim Maddy, director of the League of Conservation Voters, in one recent campaign every pro-Earth voter counted: "We were working with a strong

environmental candidate who was running for the Virginia state senate in last year's elections. Everyone knew it was going to be a close race, but no one had any idea how close. Our candidate won — by a single vote!"

You'll be hearing a lot from us on this subject during the year, because we believe that in 1992, voting for pro-Earth candidates, whether on local, state or national levels, is the single most important thing you can do to help protect the planet.

But first things first: Are you even registered to vote? It's easy:

■ Pick up a voter registration form. Post offices usually have them, but you can also get them from the city clerk's office or the County Registrar of Voters. If you can't get to one of these offices, call and have them mail you a form.

■ Check the deadlines. Most states require registration at least 30 days before an election. But some require registration up to 50 days in advance.

■ If you've recently moved, don't forget to re-register at your new address.

Food for thought:

"The environment has gradually become a more important national issue," Maddy says.

"But presidential candidates have never been elected based on their environmental positions — it's always been the economy, national security and personal integrity."

"When is saving the planet going to become an issue in the presidency? Before that happens, environmentalists have to organize into a cohesive political force."

"We have to say to candidates, at all levels: 'Whatever else you're saying about taxes, the economy, the schools and other good issues, you also have to show us that you're truly concerned about environmental issues, too.' That hasn't happened yet."

Maybe this year. It's up to you.

□

If you have questions or comments about our environment and what you can do to help, please write: EarthWorks, P.O. Box 41014, Kansas City, Mo. 64141. Because of the volume of mail, personal replies cannot be made, but issues of general interest will be addressed in the column.

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20506

February 26, 1992

Dear Mr. Brown:

Thank you for making us aware of your technology for cleaning boiler flue gases. I would suggest that you contact the EPA directly regarding the procedures required to examine your proposal to build a prototype model, and would also suggest that you contact the Fossil Energy program at the Department of Energy, which also might consider funding the work. As you are undoubtedly aware, each agency of the Federal government has its own procedures for processing proposals. OSTP is a policy organization, and we rely on the individual agencies to conduct technical evaluations and to make the associated funding decisions.

I wish you every success in your endeavors.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Karl A. Erb', with a stylized, cursive script.

Karl A. Erb
Acting Associate Director
for Physical Sciences and Engineering

Mr. Don Brown
Abdelmark Associates, Inc.
13610 Barrett Office Drive
Suite 200
Saint Louis, MO 63021

"Document Control"

TYPE: INFORMATION DOCUMENT NUMBER: 9200212
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS

FROM: O'CONOR, Patrick: COLUMBIA TECHNOLOGIES INC.

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 01/17/92

SUBJECT: HE IS PROVIDING DR. BROMLEY WITH A COPY OF THE
NATIONAL ENERGY MODELING SYSTEM. HE ALSO OFFERS A
BRIEFING FOR DR. BROMLEY IF HE SHOULD SO DESIRE.

DIRECTORATE STAFF
ASSIGNED: ASSIGNED:

ACTION STAFF
REQUIRED: ACTION:

SENDER'S DUE DATE: STAFF DUE DATE
OSTP DUE DATE: DATE COMPLETED/DEPT: 02/03/92
DATE COMPLETED:

COPIES TO: D. Allan Bromley
PHYSICAL SCIENCES

WHITE HOUSE TRACKING #: CONTACT PERSON:
REMARKS: PHONE: EXT:

OSTP RECEIVED: 01/22/92 DEPT RECEIVED:
FILE: PHYSICAL SCIENCES-ENERGY
CENTRAL FILES:



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92 JAN 22 P12:31

OSTP
MAIL ROOM

Dr. D. Allan Bromley
Office of Sci. & Tech. Policy
Rm 360
Old EOB 17th & Penn NW
Washington DC 20500

January 17, 1992

Dear Dr. Bromley:

Enclosed please find your copy of the briefing paper that I discussed on the phone with your assistant. In it we have emphasized the role this project may emerge to play in the political debate, why it is relevant to the debate, and why awareness of it is justified.

I hope you find the paper informative. If I can be of any assistance, or if you wish a private, pro bono, briefing expanding on this topic please feel free to call at the 800 number below.

Yours Truly,



Patrick O'Connor

Columbia Technologies Inc.

Mathematical Modeling, Computer Science,
Energy Consulting
800-437-1005

• Columbia Technologies •

Purpose and Emphasis:

The purpose of this briefing paper is to provide the reader an overview of the National Energy Modeling System Project (hereinafter called NEMS) of the United States Department of Energy, Energy Information Administration (USDOE/EIA). The political purposes and potentials, and possible difficulties impacting policy that may develop are discussed.

NEMS Acronym

This document gives its emphasis to the political ramifications of the facility posited by the subject. Technical matters are treated herein as being of importance insofar as they create significant impacts upon political or economic matters.

Political Emphasis

Who, What, When, Where, Why:

The Secretary of Energy, Admiral James D. Watkins, Deputy Secretary W. Henson Moore, Deputy Under Secretary Linda G. Stuntz, and Administrator Calvin A. Kent, have initiated a major activity for the creation of a National Energy Modeling System. NEMS is a large scale computer software modeling effort, now beginning and scheduled through mid 1993. The activity is primarily found within the Energy Information Administration¹. The Office of Policy Planning and Analysis, USDOE; the Nuclear Energy, Fossil Energy, and Conservation and Renewable Energy offices of USDOE; and the National Research Council; are peripherally involved as potential users or advisors on NEMS.

The project is politically and technically ambitious. The intention is to create a comprehensive and unified software facility, with accompanying data, for modeling political policy in the energy sector of the economy set in national and world economic contexts. As such it may become a policy development tool, perhaps the primary tool, for all legislation and regulation of energy economics and energy related environmental concerns.

Primary Purpose:

NEMS is to serve as a quantifying policy testbed in the biannual political process for the National Energy Strategy. In effect, NEMS is to be an energy policy information utility: directly, a

Policy Testbed:
National Energy
Strategy

¹ Energy Information Administration: EIA is a unit of USDOE whose charter empowers it to collect, analyze and disseminate, information on energy related matters. EIA has often acted as "learned advisor" on energy matters to the Congress and the Administration generally. EIA publishes numerous, descriptive, energy studies; EIA's primary product is the "Annual Energy Outlook".

The subunit within EIA tasked to actualize NEMS is the Office of Integrated Analysis and Forecasting (IAF). This office was created in early October of 1991 in a major reorganization of EIA after the first National Energy Strategy round. A new Administrator was appointed for EIA after NES-1 with Dr. Calvin Kent replacing long time Administrator, Dr. Helmut Merklein.

facilitator of the political processes arising in energy and environmental matters. As such it may play a substantial role in advancing or retarding major legislative and regulatory proposals in energy, the environment, and matters of the economy generally.

Using NEMS, a policy maker would specify on a Basic concept computer screen a detailed tableaux of energy policies. The policy maker would then evaluate the tableaux numerically using the NEMS energy sector model to produce predicted consequences of the policies over time. Policy results would be displayed for their effect on factors such as; pollution levels, employment, GNP growth rates, sector profits, et al. The policy maker may then alter policy details, determine the impact for good or ill of the changes, and by so doing move toward policies having desirable results.

If NEMS becomes authoritative it will grant users with access to NEMS substantial advantages in influencing energy and environmental affairs. Conversely, lack of access to NEMS would clearly become a major handicap in the energy/environment political arena.

The Secretary's Intentions:

Deputy Secretary Moore has set an explicit tone characterizing the nature, importance, and degree of access to NEMS as envisioned by the Secretary and the other primary USDOE policy makers. This vision for NEMS is of broad sweep with intimate implications for policy formation in energy and environmental matters. He said²,

Dep. Sect. Moore
speaks on NEMS

"(USDOE)...plans to develop comprehensive computer modeling systems on which to base a U.S. energy policy."

Ergo, NEMS is to be a methodological linchpin for arriving at U.S. energy and energy related environmental policy. He also said,

"The computer model(s) will be certified by the National Academy of Sciences and widely accepted by all parties, producers and marketers, consumers, environmentalists, state and local officials, and members of Congress."

This a firm commitment to a level, bipartisan playing field with unbiased evaluation methodologies, and also to the technical quality of the work. Further, he said in April of 1990,

". . . But what we will have when we are finished, we've never had before. Our goal is to have the best

² In a speech to the Edison Electric Institute, 25-May-89.

energy computer model anywhere. We intend to make it available to private business, to the press, and particularly to public service commissions and legislatures across the country, letting their computers interface with ours and simply draw out whatever data they need."

The NEMS Constituency:

Directly or by implication the Deputy Secretary's public statements identify the NEMS user group: the energy and environment relevant legislators and staffs of the Congress, state legislative bodies; the press; and energy and environment related groups of the body politic at large. In a political sense, the Deputy Secretary has in effect identified the user group for the NEMS software and data as a constituency to be served. "How best to serve this constituency?", is the core question for NEMS decision makers in the USDOE hierarchy and in EIA.

How best
to serve?

Political Potentials:

It is the intimate role in political policy formation matters envisioned for NEMS that sets it apart from other software projects. As technical projects go it is far from bean counting because of the influence of its users. NEMS will be highly leveraged in this sense in its impact on the political and economic life of the nation. NEMS users set the national agenda, write and pass legislation, issue wide reaching regulations, and will give NEMS an impact far out of proportion to the size of its budget. Billions of GNP dollars may be at stake in its accuracy and methods because NEMS will directly influence policy makers.

High political
leverage factor

Assuming; that NEMS is successfully built³, that it has a design approach with politically appropriate characteristics for its constituency, and that it becomes widely accepted as authoritative, it will then:

- o Play an important political role carrying formal, sanctioned energy modeling for policy formation beyond the confines of USDOE: this is the role of evaluation assistant of policy alternatives advocated by debate participants
- o Become essential in avoiding chaotic economic states that can result from well intended policies that may otherwise produce unforeseen and adverse long term results
- o Provide a common ground for policy study and development

³ Successful completion of the project and the consequent satisfaction of the NEMS constituency is not by any means, guaranteed: the project is exceedingly difficult and complex. "Deus Ex Singulae." -- "God Is In The Details."

- o Help to educate the NEMS constituency and others in regards energy economics, environmental matters and the linkages between them
- o Help to serve as an impartial arbiter and meeting ground in the energy debate; helping to reduce the strain of the ongoing political engagement

The Secretary's vision of NEMS can be strongly supported by all parties to the energy and environmental debate because all parties will directly benefit. The Secretary's view of access is key to the political utility of the project: namely, the widest possible freedom of political access to the essential informational tools of energy policy formation. All parties should support wide and direct access as contemplated by the Secretary for the sake of their own interest.

All parties
benefit

Policy makers and energy related committee staffers in the legislative branch may wish to review the status of the project for correct relative emphasis with respect to current political issues and for the utility of the design approach to their needs.

A legislative
branch review
would be of value
to the legislature

The formal technical design has not yet been established and the directions of the project are still malleable. As work progresses from this point forward; however, it will be progressively harder to effect changes without substantial budget and schedule impacts. Policy makers in the legislative branch wishing to influence the developmental directions and relative emphases of the project should make inquiries now with their USDOE correspondents.

Speak now
changes will be
harder later

NEMS, if successfully completed as currently scheduled, will emerge as a factor for energy and environmental policy makers in the Fall of 1992.

Fall 1992

The Project In Perspective:

In order to establish points of reference for the reader concerning the scope of this project and the magnitude of the task confronting EIA, the following factual observations are offered:

- o This is by far the largest software project yet undertaken by EIA; with data management included, it is fully two orders of magnitude (100 times) larger than a typical EIA model building task

- o This project will replace, modify and expand the entire current EIA inventory of computer models⁴, as well as providing a matching set of formal data management software for energy related modeling
- o The existing inventory was built up over a period of fifteen years; it is to be replaced in less than eighteen months
- o Modeling related software activities alone may take as much as 150 to 200 person years of technical effort. There are 50 or so submodels to be constructed, or completely rebuilt, in the NEMS technical context. This may require at least two to three person years to; design, build, interrelate, gather and formalize data, validate, and document each submodel. Related data management activities for each submodel will be larger than the submodels themselves (two to three times)
- o NEMS will internally include complete, but simplified, regional, national, and world economic projection models setting US energy policy in its context
- o The Integrated Analysis and Forecasting Office of EIA is newly organized and short staffed in computer science and software engineering. It will be called upon to perform heroic service to meet the existing milestones⁵.

Avoiding Difficulties Ahead:

During interviewing and document review for preparation of this briefing, two factors emerged from the background as potential points of difficulty. One factor is math related, the other is design based. These factors have direct political consequences either in terms of the potential for embarrassing project problems, or for failing to meet the needs of the wider NEMS constituency.

Lengthy technical discussions, or mathematical proofs are beyond the scope of this briefing. Expansion of discussions and details on the points remarked below can be provided to interested parties⁶.

⁴ EIA has 38 active computer models in its inventory.

⁵ See the section on milestones later in the briefing.

⁶ Parties in the legislative or executive branches are encouraged to call for private briefings, pro bono, to expand on the topic of this briefing paper.

1) Math Issue:

EIA now operates its model inventory separately⁷ as stand alone computing applications; these applications are mathematically deterministic⁸ entities. The current design in effect harnesses these otherwise unrelated⁹, EIA model inventory members together as submodels in a holistic NEMS. NEMS will then move through the time domain¹⁰ computing energy numbers under an intricate system of feedbacks¹¹ between the submodels.

Thus, EIA is creating a nonlinear dynamical¹² model, which correctly replicates the actual behavior of the economy which is also dynamical. But this is mathematically a very different thing¹³ from the current deterministic linear modeling methodology wherein the EIA models are not connected together under feedbacks.

The software¹⁴ so built; because of transients, bifurcation of function values, and the other inherent chaotic properties arising in feedbacks; may produce results that are unpredictable: it may appear to behave erratically in a manner that is not readily comprehensible even though accurately modeled. EIA has recognized the potential for this in several of its documents

⁷ The EIA model inventory components were not built with each other in mind originally. But rather as separate, technically unrelated modeling projects by different offices within EIA. Often these offices operated in a highly compartmentalized manner along topical lines (oil, gas, nuclear, demand, etc.) with little cross communication. The existing software reflects this and will require complete reconstruction. EIA understands this and accordingly does not map the inventory to the new NEMS.

⁸ A math term meaning: a particular input for an equation produces a predictable output, ie. the results are computable and reliable.

⁹ Occasionally it is found that some, but not all, of the existing EIA models have been connected in various technical ways, such as reading common file formats or via "piping" (the reading of one program's output as input by a second program). Also EIA has three "integrating" systems: larger scale models that have been designed and built expressly as systems of related programs.

¹⁰ Preparing a projection time step by time step into the future. A time step is currently conceived in NEMS as one year.

¹¹ Feedbacks such as; the effect of prices on capital formation, resource accounting, and many others.

¹² The mathematical term descriptive of NEMS as a mathematical object.

¹³ Markets are stepped, time dynamical systems under feedbacks and subject to chaoticity. They are not systems of linear equations solvable via linear programming or other traditional methods as has been attempted since the early part of the century.

¹⁴ Earlier experience with the EIA model: "Domestic Eureka", which was used as the analytical basis for the Domenici Uranium Market Viability Hearings of 1981 supports these remarks. Domestic Eureka accurately modeled the market for fissile materials. This market had inherent nonlinear and autocorrelation properties related to price feedback effects on capital investment and other factors. This required monte carlo treatment to express the computation in terms of shaping phase space as the attractor of the economic, nonlinear processes of the model. Phase space was presented as a measurement of central tendency with confidence intervals. Nonlinearity in economics often manifests itself as market volatility and sudden shifts in price and quantity levels due to unrecognized cyclic or chaotic behavior from supply and demand parameters.

saying it would "lack transparency"¹⁵ in such cases. This factor, the inherent nonlinear nature of the economy reflected in the structure of the model, could cause project problems in the form of lack of confidence in NEMS with consequent political problems.

EIA may wish to employ the mathematical work on nonlinear dynamics that has emerged in the last ten years to help guide its model integration work and guard against unhappy eventualities from this source.

2) Design Issues:

The current design approach is not yet finalized. PC, particularly, the decision as to what computer type will be used is soon to be made. Will a mainframe, personal computer, or dual targeted software approach to construction that can run on both mainframes and PCs¹⁶ be adopted. The legislative branch, an important NEMS constituency member, and particularly the staffs of the energy and environment related committees of the Congress, may wish to decide whether or not they will want to have NEMS available for use on their personal computers for private policy study in their offices. The alternative would be for the legislature to conduct NEMS energy policy studies via EIA employees who would use a "mainframe only" NEMS and interpret NEMS results on behalf of the legislature.

mainframe, or both?
The legislature may wish to make its desires known

These options are not mutually exclusive. Software can be written so as to be executable on both personal computers and mainframes. The legislature could then take advantage of EIA's expertise and its mainframe as needed, but still retain a measure of independence for its own policy efforts. However, the decision to dual target the machine type needs to be made early in implementation stages. NEMS, if developed at the outset for a mainframe only application, is unlikely thereafter to be "portable" to personal computers. Consequently the decision to dual target the machine type for NEMS is a key factor to the

¹⁵ "Understandability": More formally, "computed as intended" and without "sensitive dependence on initial conditions". However, sensitive dependence, multimodal effects from bifurcation, and other chaotic effects, are virtually inescapable in nonlinear feedback systems such as the economy or models that reflect the economy accurately. Recall the stock market crash of 1987: a nonlinear event related to the tight telecommunications coupling of automated trading systems (the coupling created a feedback loop that had not existed prior to the electronic era). NEMS has many feedbacks and will require nonlinear analysis that can cope with chaoticity without compromising the modeling accuracy of NEMS with respect to the actual economy.

¹⁶ Personal computers with DOS and advanced coprocessing now have the power and storage capacity to serve as the hardware basis for NEMS, and would provide for the widest possible distribution of NEMS should that be desired. Dual targeting does not double the cost of the system effort. Most of the software would be identical, or effected only in an incremental way because equivalent language compilers are now available on both mainframes and PCs.

ASIDE: NEMS, if available on PCs, could also be distributed to university economics and engineering departments for use in environmental and economic education. This would help to fulfill part of the Secretary's energy education policies as set forth in the current National Energy Strategy and increase NEMS' intrinsic utility as a national resource.

important access issue: who will be able to directly use and possess copies of NEMS?

The major current issue

DISCUSSION:

The Secretary's intentions concerning free access to the software would seem to militate in favor of personal computer based NEMS software as the public distribution medium for the project, rather than achieving the needed public distribution via a "dial in consultation" method as may otherwise emerge.

PC software as the medium of distribution?

EIA also, may find advantages in dual targeting the software. The difficulty of granting access to the public to a secure federal mainframe installation¹⁷, would seem to indicate that EIA would be happiest serving much of the NEMS constituency with desktop software. NEMS could be published by EIA as a personal computer application in much the same sense that WordPerfect, Lotus, or any other commercial software is published: a carton is delivered containing diskettes and documentation.

Milestones:

The schedule requires a fully operational start up date of 1-Jun-93 with a prototype to be operational as of 1-Oct-92. Construction is to begin 2-Jan-92.

Sincerely Given 31-Dec-91,

Patrick O'Connor
Columbia, Maryland

¹⁷ EIA's computing facilities, like all federal mainframes, are closed to the public and rigidly secured behind physical and electronic barriers, which are designed to prevent outside use. A complete reversal of this to allow outsiders to dial in freely and use the NEMS data base and software may require extensive reorganization of EIA's mainframe operations.



Patrick O'Connor: B. Arch., M.S. Comp. Sci.

Mr. O'Connor received his undergraduate engineering education in architectural design at Texas Technological Univ.; and attended graduate school at The Johns Hopkins Univ., Whiting School of Engineering, emphasizing computer science, applied mathematics, and the mathematical design of digital computer hardware.

Mr. O'Connor is the principal author of the briefing.

Mr. O'Connor has twenty two years of experience in designing and building computer systems in major institutional settings ranging from research at the Johns Hopkins Medical Institutions to policy formation activities of government agencies such as; the Health Care Financing Administration, the Dept. of Education, the Office of the Sect. of DHHS, and the Dept. of Energy. Mr. O'Connor writes 28 computer languages and has spent much of the past twelve years building energy economic models and data base management software under contract to the Energy Information Administration of USDOE; including five computer models and data managers for nuclear materials, and coal. His work has included monte carlo simulation, stochastics and other math topics, and extensive use of computer graphics and data base management. As a contract manager he has had responsibility for the execution of more than 120 USDOE computer systems tasks. His research interests are nonlinear dynamics in modeling, energy policy modeling, and mathematical imaging. [Full resume' on request to responsible parties.]

Briefing on the
National Energy Modeling System: (NEMS)

of the
U. S. Department of Energy
Energy Information Administration
31-Dec-91

Summary:

At the direction of the Secretary of Energy, and in support of the biannual process for the National Energy Strategy, the Energy Information Administration has undertaken to create a unified energy sector computer model to assist policy makers by providing a software facility to quantify energy policy propositions.

The intention of the Secretary is to make the facility widely available to all policy makers and interested parties. The constituency of this project includes; energy and environment congressional staffs, senior USDOE policy makers, industry and environmental groups, and others.

The project has a high political leverage factor with regard to its potential long term influence on energy and economic matters because of the influence of its constituency.

It has the prospect of becoming an influential tool in energy matters. Access to use of, or possession of a copy of, the computer model software will be a substantial advantage to those wishing to influence or study energy policy.

The project is likely to consume on the order of 200 to 400 person years of technical effort and 15 to 25 million contract budget dollars as currently conceived, (a rough estimate).

A major reorganization of the Energy Information Administration (EIA) related to the project and the National Energy Strategy support role of EIA was actualized as of October of 1991. A new office in EIA was formed: the Office of Integrated Analysis and Forecasting.

Issues:

- o Access to, and use of, the system.
- o The legislative branch may wish to review the project design, for points of emphasis with respect to current political issues (energy related pollution, jobs, recession factors et al).
- o Certain technical problems are potentially project threatening.

OFFICE OF SCIENCE AND TECHNOLOGY POLICY

STAFFING SHEET

SUBJECT: Ltr. to P. O'Connor: Columbia Fed. Inv.

ORIGINATOR: K. ERB PHONE: 513 0

DATE ORIGINATED: 2/3/92 DATE DUE: ASAP CORR TRACKING NO: 9200212

EXTERNAL COORDINATION:_____

	COMMENTS	DATE
DIRECTOR		
GENERAL COUNSEL		
EXEC. ASST.		

ACTION REQUESTED: Jocelyn, Please send back w/ signed letter + I will mail out. Thank. Priscilla

[illegible]

THE WHITE HOUSE
WASHINGTON

February 3, 1992

Dear Mr. O'Connor:

Thank you for providing my office with a copy of your briefing paper on Columbia Technologies' Energy Modeling System.

Sincerely,

A handwritten signature in cursive script, reading "D. Allan Bromley". The signature is written in dark ink and is positioned above the printed name.

D. Allan Bromley
The Assistant to the President
for
Science and Technology

Mr. Patrick O'Connor
Columbia Technologies Inc.
Twin Knolls Professional Center
5537 Twin Knolls Road
Columbia, MD 21045

STAFFING SHEET

[illegible]

"Document Control"

DOCUMENT NUMBER: 9200513

TYPE: ACTION

ORIGINATOR: 02

STATUS I

DIRECTORATE STATUS

FROM: PAILY, John

TO: OSTP

DATE OF
CORRESPONDENCE: 01/02/92

SUBJECT: HE IS WRITING TO ASK FOR REVIEW OF HIS ARTICLE
"ENERGY TIME AND MOTION-THE FUNDAMENTALS OF ORIGIN,
EVOLUTION, END AND ORIGIN".

DIRECTORATE
ASSIGNED: PHYSICAL SCIENCES

STAFF

ASSIGNED: Lee Schroeder

ACTION
REQUIRED: AS APPROPRIATE

STAFF

ACTION:

SENDER'S DUE DATE:
OSTP DUE DATE: 03/05/92
DATE COMPLETED:

STAFF DUE DATE

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CONTACT PERSON:
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OSTP RECEIVED: 02/20/92
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Karl
Karl: Appropriate response is
no response.

CENTRAL FILES:

I agree no response is
needed ★
WSE
2/24/92

"Document Control"

TYPE: ACTION

DOCUMENT NUMBER: 9200513

ORIGINATOR: 02

STATUS I

DIRECTORATE STATUS

FROM: PAILY, John

TO: OSTP

DATE OF
CORRESPONDENCE: 01/02/92

SUBJECT: HE IS WRITING TO ASK FOR REVIEW OF HIS ARTICLE
"ENERGY TIME AND MOTION-THE FUNDAMENTALS OF ORIGIN,
EVOLUTION, END AND ORIGIN".

Don't do reviews!
DSB
4/21

DIRECTORATE

STAFF

ASSIGNED: PHYSICAL SCIENCES

ASSIGNED:

ACTION
REQUIRED: AS APPROPRIATE

STAFF
ACTION:

SENDER'S DUE DATE:
OSTP DUE DATE: 03/05/92
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