

PN-AAQ-426

FINAL REPORT

THAILAND - UNITED STATES
OIL SHALE/LIGNITE SYMPOSIUM

SPONSORED BY

THE TRADE AND DEVELOPMENT PROGRAM, UNITED STATES
DEPARTMENT OF MINERAL RESOURCES, THAILAND

ORGANIZED BY

U.S. BUREAU OF MINES
AER ENTERPRISES

JUNE 1, 1982

FINAL REPORT

THAILAND - UNITED STATES
OIL SHALE/LIGNITE SYMPOSIUM

SPONSORED BY

THE TRADE AND DEVELOPMENT PROGRAM, UNITED STATES
DEPARTMENT OF MINERAL RESOURCES, THAILAND

ORGANIZED BY

U.S. BUREAU OF MINES
AER ENTERPRISES

JUNE 1, 1982

TABLE OF CONTENTS

	<u>Page</u>
Introduction	1
Preparation	1
Symposium	3
Field Trip	4
Overall Impression	4
APPENDICES	
I Cable Traffic	6
II Advertising Brochure	38
III Handout Booklets of Speakers' Abstracts and Biographical Sketches	43
IV Symposium Agenda	64
V Lists of Participants	68
VI Field Trip Itinerary	91
VII New Item	94
VIII Critiques by Dr. Henrie and Mr. Brooks Ryno	103

FINAL REPORT

THAILAND - U.S. OIL SHALE/LIGNITE SYMPOSIUM

Introduction

The Kingdom of Thailand requested that the U.S. Government help them organize a symposium that discusses both oil shale and lignite. This symposium was sponsored by the U.S. Trade and Development Program (TDP) and Thailand's Department of Mineral Resources (DMR). It was organized by the U.S. Bureau of Mines and AER Enterprises. AER Enterprises was the contractor. A copy of the cable traffic that flowed between the various Government agencies can be found in Appendix 1.

The symposium entitled "Thailand - United States Oil Shale/Lignite Symposium" was held from February 1-6, 1982. The first three days, February 1-3, 1982, involved the presentation of papers and was held at the Siam Intercontinental Hotel, Bangkok, Thailand. The following three days involved a field trip to visit the oil shale and lignite deposits.

Preparation

The contractor made two trips to Thailand to discuss the symposium. On both of these trips, the principal contacts in Thailand were Mr. Lee Barnes, U.S. Embassy and Mr. Napadon Montajit, Senior Geologist, Department of Mineral Resources, Ministry of Industry, Thailand. Extreme caution was exercised by the contractor so as not to offend anyone in Thailand. He recognized that even the slightest infraction could reflect badly on the U.S. Government and its relations with Thailand, as well as adversely affect the objectives and goals of the proposed symposium. He also recognized that it was an absolute necessity that the symposium be so well organized that it would run smoothly from the very start. As a result, the preparation phase was extremely sensitive. It could and did set the tone for the conference. Everyone in Thailand, including the U.S. Embassy, were extremely conscientious about their particular tasks and were very helpful.

During the visits, the contractor discussed the following items with the Thai Government representatives; U.S. Embassy personnel were present at these meetings:

- Dates of the meeting
- Hotel and accommodations

- Food and coffee breaks for the registrants
- Technical and logistical outline of the meeting and field trip
- Cost sharing
- Technical content of the papers
- Particular speakers requested by DMR

Three hotels were invited to bid on this conference. They were:

- Siam Intercontinental
- Dusit Thani
- Oriental

By negotiating with them, the three hotels proposed similar cost estimates. The Siam Intercontinental was finally selected because they had the better meeting room setup and also because they had better parking facilities than the other two hotels. These parking facilities were important to the Thai delegates.

During the second visit, the contractor requested that he be allowed to make a dry run of the proposed field trip. This was done to insure that the field trip would run smoothly from start to finish. DMR supplied a driver, guide and a vehicle to take the contractor to the oil shale and lignite deposits.

During this two-day field trip, the contractor was able to negotiate with the particular hotels in which the Americans would be staying. He made absolutely certain that the food and accommodations would satisfy the American delegates; that the bus traveling time was not too exhausting and that the countryside was safe to Americans.

In the United States, the contractor invited American companies to deliver papers in Thailand. He had to match the proposed program agreed upon with DMR to the American companies that were willing to expend their money to prepare and deliver a paper in Thailand. They had to be willing to spend approximately \$10,000 per company representative. This figure includes travel expenses, salaries and per diem for the one week stay. It doesn't include preparation time of their paper.

Appendix 2 contains the advertising brochure that was sent to 20,000 different people. The mailing lists that were used to accumulate these many names were rented from McGraw-Hill Inc.

Just prior to the actual symposium, two booklets containing abstracts of the papers and biographical sketches of the authors were prepared. These booklets are included in Appendix 3. The Thai papers were not included in the booklet prepared in the U.S. because the Thai speakers didn't supply them in sufficient time to include them in the U.S. prepared booklet.

The agenda of the papers that were presented can be found in Appendix 4. The Thai papers were presented on February 1 and the Americans presented the last two papers in February 1 and all the papers presented on February 2 and February 3. A copy of the papers has been submitted under separate cover.

Symposium

The list of participants, both Thai and U.S., can be found in Appendix 5. There are 237 names on this list. It is estimated that approximately 20-30 people that attended the symposium are not on this list. This list also contains five people that represented other countries; one from Malaysia, two from the Phillipines and two from Indonesia. These people came at the invitation of the TDP. TDP paid their expenses.

Forty-eight people represented the United States. The highest ranking government official that attended from the U.S. was Dr. Thomas A. Henrie, Chief Scientist, U.S. Bureau of Mines. The names of these people, as well as the foreign country participants, can also be found in Appendix 5 in another list. Another American participant, Mr. Heiko Oterdoom, Geologist, Shell Oil Co., is not on this list because he claimed that he was a guest of the DMR and refused to pay the required registration fee.

The participants from the U.S. represented, for the most part, Fortune 500 companies that were interested in starting a business base in Thailand. During the meeting, they had occasion to meet with Thailand's upper echelon. The Minister of Industry, H. E. Major General Chatichai Choonhaven; the Director General, Dr. Prabhas Chakkaphak and Mr. Decha Boonchoochay, Deputy Secretary-General, Board of Investment of Thailand made themselves accessible to discussions between themselves and the American participants. In fact, Mr. Decha went on the entire field trip and Dr. Prabhas joined everyone for lunch on February 5 at the Mae Moh Power Plant and Lignite Mine.

Most of the in-depth discussions were arranged during both the Thai and American receptions. For instance, Dr. Blaustein of Acres American arranged several appointments to discuss the pelletizing of lignite. Mr. Peterson of Dravo had an opportunity to discuss the continuance of his contract to explore for additional lignite. Drs. Hite and Dyni of USGS arranged for side trips to examine more of the geology of Thailand. Mr. Legrand and Mr. McCullum arranged to visit additional oil shale sites other than at Mae Sot. These sites are in the center of Thailand closer to Cambodia.

Field Trip

The schedule of the field trip can be found in Appendix 6. Because of the limitation of vehicles to visit the oil shale deposits, only 30 participants were allowed on the field trip.

The field trip took the participants to the oil shale deposits at Mae Sot, the Bhumibol Dam, a large hydroelectric dam, and Mae Moh where there is a large power plant that is fed with lignite from a nearby open pit mine. The Thais are planning to expand the mine from 6,000 tons/day to 15,000 tons/day. Rheinbraun of West Germany has this contract but Burns & Roe and Morrison-Knudsen may see sufficient opportunity to start competing with Rheinbraun.

Overall Impression

The entire meeting, including the field trip, went very smoothly. The Americans were very impressed with the caliber of the technology as practiced in Thailand. The quality of the Thai engineers is very high.

Unfortunately, the oil shale deposit is just not well enough defined to allow the American participants to truly evaluate the potential. USGS spent three years accumulating the necessary data to make such an analysis but, at the time of the symposium, it wasn't ready for presentation.

All of the companies that were represented at the symposium would like to do work in Thailand, especially because the Minister of Industry, Major General Chatichai Choonhaven made it very clear during his opening remarks that the country is interested in reducing its dependence on foreign oil from 75% to 46%. As a result, to speed up industrial development particularly with respect to energy resource projects, he made the following statement: "The Government has no intention whatsoever to nationalize any natural resource development activities owned by private sectors. On the contrary, the Government has its determination to update regulations and laws to suit the present situation and to modify taxation systems and royalties to a more appropriate rate, leaving a proper capital return to investors. In addition, certificates of investment promotion will be given to any investor who is interested in the development of oil shale deposits as an energy resource supply".

This broad incentive statement, the best offered by any Government, was cited in an article that appeared in the February 5 issue of Synfiels (page 2). Appendix 7 contains this issue.

Synfuels is a weekly publication published by McGraw-Hill Publications Company.

Appendix 8 contains a letter from Dr. Henrie in which he describes his overall impression of the symposium as well as his opinion as to the needs of Thailand. Also included are letters from Dr. Forshey to Mr. Brooks Ryno, Commercial Attache, U.S. Embassy in Thailand and Mr. Ryno's response. His response discusses the overall success of this meeting and the beneficial effects it had to the Thai-U.S. relationship.

Hopefully, this symposium and articles such as that which appeared in Synfuels will help spur oil shale and lignite development in Thailand.

APPENDIX I
CABLE TRAFFIC

ACTION

RR RUMTPK
DE RUEHML #1978 0220 '7
ZNR UUUUU ZZH
R 220506Z JAN 82
FM AMEMBASSY MANILA
TO RUMTBK/AMEMBASSY BANGKOK 3711
INFO RUEHC/SECSTATE WASHDC 9193
FT
UNCLAS MANILA 01978

22 JAN 82
TOR: 0506
CN: 07033
CHRG: CML 3
INFO EC2 AMB DCM2 CBRON 9LJS

FOR FCS L BARNES

E.O. 12065: NA

TAGS:

SUBJECT: TDP SPONSORED THAILAND - UNITES STATES OIL
SEALE/LIGNITE SYMPOSIUM

REF: STATE 336824



1. IN RESPONSE TO REFTEL, FOLLOWING ARE NOMINEES FROM
PEILIPPINE MINISTRY OF ENERGY TO ATTEND SUBJECT SYMPOSIUM

- MR. ARTURO MCRI, SENIOR GEOLOGIST, BUREAU OF ENERGY DEVELOPMENT
- MR. FRANCISCO REYES, EXPLORATION MANAGER, PNOC-COAL CORPORATION

2. CAPLE ETA AND OTHER DETAILS FOLLOWS. ROSENTHAL
FT
#1978

NNNN

UNCLASSIFIED

MANILA 1978

VZCZCESA953ESC429
PP RUMTFK
DE RUMJKL #2316 01504
ZNR UUUUU ZZH
P R 150354Z JAN 82
FM AMEMEASSY KUALA LUMPUR
TO RUEHC/SECSTATE WASHDC PRIORITY 2125
RUMTFK/AMEMEASSY BANGKOK PRIORITY 8574
INFO RUMJNG/AMCCNSUL HONG KONG 5893
RUEHJA/AMEMEASSY JAKARTA 9164
RUEHML/AMEMEASSY MANILA 0577
RUEHGP/AMEMEASSY SINGAPORE 2456
BT
UNCLAS KUALA LUMPUR 0316

15 JAN 82
TOR: 0550
CN: 05695
CERGE: AID 4
INFO: AME DCM2
ECO: CERON

9/KL

AIDAC

E. O. 12865: N/A
SUEJ: TDP SPONSORED OIL SEALE/LIGNITE SYMPOSIUM

REFS: (A) 81 STATE 336524, (E) 81 KUALA LUMPUR 8715

FOR: TDP/KRANKER/AID
TDP/SLEEPER/HONG KONG

1. NATIONAL ELECTRICITY BOARD (NEB) HAS NOMINATED MR. TARA SINGE GILL, CHIEF ENGINEER (DEVELOPMENT PLANNING) TO ATTEND THE SUBJECT SYMPOSIUM. AS IN REFTEL (E), PETRONAS HAS NOMINATED MR. WAN HASSAN BIN WAN ZAKARIA, GEOLOGIST IN THE DEPARTMENT OF EXPLORATION, TO PARTICIPATE IN THE SUBJECT SYMPOSIUM.

2. BOTH MR. T.S. GILL OF NEB AND MR. WAN HASSAN OF PETRONAS WOULD LIKE TO ARRIVE BANGKOK JANUARY 31 AND DEPART BANGKOK FEBRUARY 4.

3. PLEASE PROVIDE US THE FUND CITATION SO THAT WE CAN GO AHEAD IN ARRANGING AIR TRANSPORT AND ADVANCE PER DIEM. AS JANUARY 25 AND 26 ARE PUBLIC HOLIDAYS (CHINESE NEW YEAR) IN MALAYSIA AND THE FACT THAT THERE IS VERY LITTLE WORK THAT CAN BE DONE DURING THE WEEK OF JANUARY 25, WE WOULD APPRECIATE IT IF THE FUND CITATION CAN BE GIVEN TO US EARLY NEXT WEEK.

4. FOR BANGKOK: PLEASE MAKE A SINGLE ROOM RESERVATION FOR MR. T.S. GILL AT SIAM INTERCONTINENTAL HOTEL FOR THE NIGHTS JANUARY 31, FEB. 1, 2, 3. PETRONAS HAS TELEXED SIAM INTERCONTINENTAL FOR RESERVATION AT THE HOTEL FOR WAN HASSAN. BRECKON

BT
#0316

NNNN

UNCLASSIFIED

KUALA LUMPUR 0316

UNCLASSIFIED

..GKOK 61701



VZCZCEA *
RR RUEHC RUMJNG
DE RUMTBK #1701 365 **
ZNR UUUUU ZZH
R 310653Z DEC 81
FM AMEMBASSY BANGKOK
TO RUEHC/SECSTATE WASHDC 1986
INFO RUMJNG/AMCCNSUL HONG KONG 4011
BT
UNCLAS BANGKOK 61701

CLASS: UNCLASSIFIED
CHRG: CML 12/31/81
APPRV: CML:JLEARNES
DRFTD: CML:JLEARNES:SD
CLEAR: NONE
DISTR: CML:AMB DCM
CIRON

AIDAC FOR IDCA/TDP/KRANKER
HONG KONG FOR SLEEPER

EO 12065: NA
TAGS: EGEN, TH
SUBJ: OIL SHALE-LIGNITE SYMPOSIUM ?

TDP 2-?

REF: BANGKOK 56724

1. COPY OF AMEASSADOR'S LETTER TO MINISTRY OF INDUSTRY
OUTLINING CONDITIONS OF TDP GRANT BEING POUCHED TO
KRANKER.

2. TDP FUNDING FOR THIS STUDY HAS BECOME EVEN MORE
IMPORTANT AS FINANCIAL ASSISTANCE FROM JAPANESE AND
OTHER COUNTRIES COMES INTO PLAY.

3. DURING KRANKER'S VISIT TO THAILAND DOR OIL SHALE-
LIGNITE SYMPOSIUM, DR. PISOOT HAS REQUESTED MEETING TO
NEGOTIATE TERMS OF ASSISTANCE. KRANKER IS WELL KNOWN
AND RESPECTED BY PISOOT. MEETING WILL FURTHER AIMS
OF THIS TDP FUNDING. MEETING HAS BEEN SCHEDULED,
TENTATIVELY, FOR FEBRUARY 1.

4. BECAUSE OF KRANKER'S FAMILIARITY WITH MINISTRY OF
INDUSTRY AND MINISTRY OFFICIALS WE STRONGLY RECOMMEND
HIS ATTENDANCE AT SYMPOSIUM AND CONFIRMATION OF HIS
WILLINGNESS TO MEET WITH PISOOT. DEAN

BT
#1701

NNNN

UNCLASSIFIED

BANGKOK 61701

PP RUMTBK
DE RUEEGP #0596 0190529
ZNR UUUUU ZZE
P 190526Z JAN 82
FM AMEMBASSY SINGAPORE
TO RUEHC/SECSTATE WASHDC PRIORITY 2114
INFO RUEEML/AMEMBASSY MANILA 8667
RUMJKL/AMEMBASSY KUALA LUMPUR 2677
RUEHJA/AMEMBASSY JAKARTA 2002
RUMJPG/AMEMBASSY PEIJING 0925
RUMJRV/AMEMBASSY RANGOON 1946
RUMTBK/AMEMBASSY BANGKOK 4014
RUMJNG/AMCONSUL HONG KONG 756C
BT
UNCLAS SINGAPORE 00596

19 JAN 82
TOR: 0527
CN: 06716 **CML**
CHRG: ~~AID 1~~
INFO AMB DCM2 EC CHRON
9LJS

AIDAC

E.O. 12065: NA
SUBJECT: TDP SPONSORED OIL SHALE/LIGNITE SYMPOSIUM

REFS: A) SINGAPORE 00369, B) 81 STATE 336824

1. GOS NOW INFORMS EMBASSY THAT THEY HAVE NO
NOMINATION FOR SUBJECT SYMPOSIUM. THEY REGRET
HAVING INFORMED US EARLIER THAT THEY WERE INTERESTED
IN THE SYMPOSIUM AND HAVING ASKED FOR EXTENSION OF
LEADLINE FOR NOMINATION.

SMITH
BT
#0596

NNNN

UNCLAS

SINGAPORE 596



FS22953811
IMIPY
FHIC #1395 0150913
JUN 22
242 JAN 82
DCSTATE WASHDC
MIRK/AMEMBASSY BANGKOK PRIORITY 7308
L/AMEMBASSY MANILA PRIORITY 1213
RUMJNG/AMCONSUL HONG KONG PRIORITY 4023

ACTION

16 JAN 82
TON: 0914
CN: 0604
CHRG: CML 3
INFO RC DCHZ CHRON
7LJS

S STATE 011395

BANGKOK FOR FCS, LEARNES, MANILA FOR FCS, PWALTERS

12065: N/A

CT: TDY H.L. KRANKER-ASSISTANT DIRECTOR ASIA, TDP
KONG (FOR TDP, L.G. SLEEPER)
OF 55004 (NOTAL) (F) STATE 302244 (NOTAL)
NKEI RUMS TFLCOM JANUARY 13, 1982
ON? KONG 1992B (NOTAL)
ANILA 22007 (NOTAL)
TATF 336824

SAID BANGKOK PASS TO EMPASSY FCS PARNES. USAID MANILA
TO EMPASSY FCS WALIENS.

OR BANGKOK: (A) 1) OIL SHALE/LIGNITE TECHNICAL
SIUM: PFR REF (C) UNDERSTAND PELOFSKI ALREADY MADE
RESERVATIONS FOR USC PARTICIPANTS FORSITNEY, HENRIE,
L. SHANG AND STEVENS. PLEASE CONFIRM WITH SIAM
CONTINENTAL THAT USC DISCOUNTED RATE WILL APPLY. ALSO
STAND FCS CONFIRMED KRANKER'S RESERVATION (CONFIRM
ARRIVAL WITH HOTEL - SEE P) FOLLOWING). IF AMBASSADOR
WAKE WELCOMING ADDRESS PLEASE TRY TO HAVE TEXT AVAIL-
TO ASSURE KRANKER'S ADDRESS IS NOT REPETITIVE.

Source

ALTHOUGH OTHER EMPASSIES HAVE NOT YET CONFIRMED
CIPANTS PER REF F) SUGGEST EMEASSY FCS PYSERVE 12

Source

TO ASSURE SPACE IF AND WHEN INVITATIONS ACCEPTED.
CAN BE RELEASED BY JANUARY 22 IF RESPONSES NOT
VED THEN.

STEPH MILL: TEXT OF PROPOSED GRANT BEING SENT
L. KRANKER ARRIVING FROM HONG KONG VIA THAI 607 ETA
NY 28, 8:55 PM. REQUEST MEETING (PFR REF A) WITH MOI
Y UNDERSECRETARY PISOTT FOR AM FRIDAY, JANUARY 29 TO
55 IRMS. SUGGEST FCS HAVE GRANT AGREEMENT TYPED IN
IN TIME FOR MEETING.

Source

MOI COMMUNICATION EXPANSION. PFR REF P. REQUEST
S WITH APPROPRIATE RTG OFFICIALS (SUGGEST KITUN
RI, DIRECTOR P.T.T. AND KHON PRINYA, MOI CHIEF OF
UNICATIONS) TO DISCUSS RTG EXPANSION PLANS AND POSSIBLE
INVOLVEMENT. (SEE COPY OF AUGUST 18, 1981 LETTER FROM

Source

UNCLAS

STATE 11395

FORD AEROSPACE & COMMUNICATIONS REP. LARKIN KRANKER LEFT
WITH FCS DURING AUGUST 81 VISIT.

2. *Source* STATE 11395

(P) 3): OTHER APPOINTMENTS FOR KRANKER: SINCE I WILL
REMAIN IN BANGKOK UNTIL LEAVING FOR MANILA FEBRUARY 7,
SUBJECT TO PARTICIPATION WITH AID PRE TEAM AND ASSISTANCE
TO USAID ON PRIVATE-SECTOR PROJECT, WOULD LIKE TO MEET WITH
THE FOLLOWING:

KITUN PANYONG LAMSON, PRESIDENT, THAI FARMERS BANK
KIUN KASAME CHATIKAVANIJ, GENERAL MANAGER EGAT
MR. JAMES ROONEY, PRESIDENT APCAC
MR. JACK SCOTT AND NEW PRESIDENT OF AMCHAM COOPER

Source

3. FOR MANILA: (A) ARRIVING FROM BANGKOK SUNDAY, FEB. 7
VIA THAI 790 ETA 6:25 PM. PLEASE CONFIRM INTERCONTINENTAL
HOTEL LATE ARRIVAL, DEPARTURE WEDNESDAY, FEBRUARY 10 KW 2
ETD 10:30 AM.

3(B): TECHNICAL AND VOCATIONAL EDUCATION: (REF D). PRIOR
TO MEETING WITH APPROPRIATE GOP OFFICIALS ON POSSIBLE
SYMPOSIUM, REQUEST MEETINGS WITH THE FOLLOWING:

MR. FRED J. ELIZALDE - ELIZALDE GROUP
MR. DAVID SYCIP - PRFS., RIZAL COMMERCIAL BANKING GROUP
MR. DANTE SANTOS - CHAIRMAN, PHILACOR
MR. EDUARDO RODRIGUEZ - EJR CORP.

ALL OF THE ABOVE ARE ACTIVE IN ASFAN-U.S. BUSINFSS COUNCIL,
AND ANY SYMPOSIUM WE PLAN SHOULD INCLUDE INPUTS FROM THEM.

3(C) ENERGY RECYCLING (REF E). PLEASE ARRANGE MEETING WITH
APPROPRIATE GOP AND/OR MUNICIPAL OFFICIALS TO DISCUSS

POTENTIAL PROJECT. HAIG
PT
#1395

NNNN

UNCLAS

STATE 11395



Best Available Document

VZCZCESA175FSC555
 OO RUMTIK
 DE RUEEC #1290 0160647
 ZNR UUUUU ZZJ
 O 160416Z JAN 82
 FM SECSTATE WASHDC
 TO RUMJPG/AMEMBASSY BEIJING IMMEDIATE 9636
 RUEHML/AMEMBASSY MANILA 1203
 RUEEJA/AMEMBASSY JAKARTA 3687
 RUMJRV/AMEMBASSY RANGOON 7231
 RUEEGP/AMEMBASSY SINGAPORE 2792
 RUMJKL/AMEMBASSY KUALA LUMPUR 1555
 RUMJNG/AMCONSUL HONG KONG 4420
 RUMTBT/AMEMBASSY BANGKOK 7333
 BT
 UNCLAS STATE 211220

16 JAN 82
 TOR: 2649
 CN: 26026
 CHRG: AID 4
 INFO AME DCM2
 ECON CERN 9/G

CML

AIDAC HONG KONG FOR SLEEPER, RANGOON FOR FCS

E.O. 12065: N/A

TAGS:
 SUBJECT: TDP-SPONSORED TEAI-U.S. OIL SHALE/LIGNITE
 SYMPOSIUM

REF: STATE 338824

1. USAIDS PASS TO EMBASSY FCS.

2. IN ORDER TO AVOID DELAYS IN FINANCING TRAVEL AND PER
 DIEM FOR INVITEES NOMINATED PER REFTEL, TDP TRANSMITS
 HERewith FUNDING CITATIONS FOR EACH POST. POSTS ARE
 AUTHORIZED TO PROVIDE AIR TRANSPORT AND TO ADVANCE PER DIEM
 TO PARTICIPANTS (PRESENT PER DIEM IN BANGKOK \$87 PLUS
 \$21). TDP LEAVES IT TO POSTS TO SATISFY THEMSELVES THAT
 EXPENSES ARE ACCOUNTED FOR AND REQUESTS ONLY THAT POSTS
 REPORT ACTUAL AMOUNTS DISBURSED AND ANY UNDISBURSED FUNDS
 FOR WITHDRAWAL.

3. FOLLOWING FUNDING CITATION APPLIES TO ALL POSTS:
 AUTHORIZATION: 7415048: APPROPRIATION: 72-1111021.6
 ALLOTMENT: 2DAA221-71004-IG71 (146-74-099-20-47-23).

4. AMOUNTS INDICATED BELOW ARE FOR TWO PERSONS:

MANILA: AIRFARE 1000
 PER DIEM: (4 DAYS) 864
 TAXIS/MISCELLANEOUS 100

JAKARTA: AIR FARE 1200
 PER DIEM 864
 TAXIS/MISCELLANEOUS 100

SINGAPORE: AIR FARE 1000
 PER DIEM 864
 TAXIS/MISCELLANEOUS 100

KUALA LUMPUR: AIR FARE 1000

UNCLAS

STATE 11290

864

100

MISCELLANEOUS

HOON: AIR FARE 1000

PER DIEM 864

TAXIS/MISCELLANEOUS 100

BEIJING: AIR FARE 2000

PER DIEM 864

TAXIS/MISCELLANEOUS 100 BAIG

BT

#1290

NNNN

UNCLAS

STATE 11290

No. MOI 0207/ 7308

Ministry of Industry
Rama VI Road
Bangkok 4

December 30, 1981

H.E. John Gunther Dean
The Ambassador of the United States of America
Bangkok

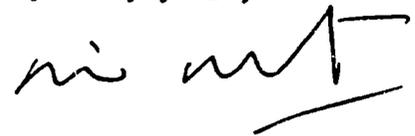
Excellency ,

We have the honour to acknowledge with many thanks the receipt of Your Excellency's letter dated December 18, 1981, confirming a United States Government Trade and Development Program grant to the conditions we have discussed with Mr. J. Lee Barnes of the Embassy.

We are seeking guidance in this matter from the Ministry of Finance and from the Budget Bureau, and we shall contact Mr. Barnes accordingly without delay.

Please accept, Excellency, our deep gratitude and highest consideration.

Very truly yours,



Wimon Wiriyawit
Under Secretary of State

NNNN

ZCZC XRM043 UTH417 VIA ITT XE00876000

THBK CG UIPX 107

ENGLEWOODNJ 107/105 08 1740



MR J LEE BARNES
COMMERCIAL OFFICER
AMERICAN EMBASSY
SHELL HOUSE
WIRELESS ROAD
BANGKOK 5

JL

DEAR LEE,

I AND MRS PELOFSKY WILL ARRIVING 26TH JANUARY AT 7:30 AM
ON PAN AM 2. IT WOULD BE PREFERRED TO GIVE THE HOTEL SOME IDEA OF
HOW MANY PEOPLE WILL BE ATTENDING FROM THAILAND. THERE WILL BE
APPROXIMATELY 40 ATTENDEES FROM THE UNITED STATES. AS I UNDER-
STAND, WE WILL BE PRINTING THE AGENDA, REGISTRATION LIST, NAME
TAGS IN BANGKOK. I UNDERSTAND THAT YOU ARE PRINTING THE THAI
ABSTRACTS AND BIO SKETCHES IN THAILAND. I WILL BRING ME THE
ABSTRACTS AND THE BIO SKETCHES FROM THE AMERICANS.

SINCERELY

DR PELOFSKY

CDL 26TH 7:30 2. 40

IMMEDIATE

UNCLASSIFIED

JAKARTA 0245

Sirintay

VZCZCESA285ESC346
OO RUMTPK
DE RUEHJA #0245 0070319
ZNR UUUUU ZZB
O 070319Z JAN 82
FM AMEMBASSY JAKARTA
TO RUEHC/SECSTATE WASHDC IMMEDIATE 9232
RUMTBK/AMEMBASSY BANGKOK IMMEDIATE 3870
RUMJNG/AMCONSUL HONG KONG PRIORITY 5943
BT
UNCLAS JAKARTA 00245

ACTION

RECEIVED

07 JAN 82
TOR: 0319
CN: 03214
CHRG: **CML-3**
INFO: **AME LCM2**
ECON CHRON

2/KL

AIDAC
STATE PASS TDP/RKRANKER
HONG KONG FOR TTP/LSLEEPER
BANGKOK FOR FCS/LBARNES

E.O. 12065: N/A
TAGS: BEXP, EPET, ASEAN, ID
SUBJECT: TTP-SPONSORED THAI-U.S. OIL SHALE/LIGNITE
SYMPOSIUM

REF: 81 STATE 336824

1. DUE TO USE OF AIDAC CHANNEL AND ABSENCE OF RELEVANT AID OFFICER ON HOLIDAY LEAVE, FCS JAKARTA DID NOT RECEIVE REFTEL UNTIL 1/6/82.
2. WE ARE WORKING WITH PETROLEUM AND ECON OFFICERS TO IDENTIFY SUITABLE CANDIDATES FOR SYMPOSIUM, WHICH WE BELIEVE WILL BE OF SIGNIFICANT INTEREST TO GOVERNMENT OF INDONESIA OFFICIALS.
3. AS REPLY WAS REQUESTED BY 12/31, WE WISH TO BE REASSURED ASAP THAT OFFER STILL STANDS. FYI, AID OFFICER HAS RETURNED FROM LEAVE SO WE WILL NOW RECEIVE ANY CABLES SENT THROUGH AIDAC CHANNEL, BUT WE CONTINUE TO FIND THAT CHANNEL MOST CUMBERSOME AND WOULD PREFER DIRECT COMMUNICATIONS WITH BEXP TAGS WHICH WOULD COME STRAIGHT TO US WITHOUT DELAY.
4. FYI: LOCAL SRI REPRESENTATIVE ADVISED COMATT ON 1/6 THAT THEY ARE EXPLORING WITH GOI POSSIBLE PROJECT FOR STUDY OF DEVELOPMENT AND UTILIZATION OF LOW GRADE COAL/LIGNITE IN CONNECTION WITH EUKIT ASAM COAL MINE DEVELOPMENT PROJECT IN SOUTH SUMATRA; AND QUERIED APPROPRIATENESS OF SUCH A STUDY FOR TDP FUNDING. COMATT TOLD HIM THAT THIS WOULD BE DEPENDENT ON MORE DETAILED INFORMATION ON PROPOSAL AS IT RELATES TO TEP PROJECT SELECTION CRITERIA, AND HE SAID HE WOULD PULL TOGETHER FURTHER DETAILS. WINDER

BT
#0245

OFFICE/PERSON CALLED DATE/TIME CALLED: 5 AM 7/10/82 AM CALLER'S INITIALS: YS	CML / KUN SURGE	IMMEDIATE

NNNN
IMMEDIATE

UNCLASSIFIED

JAKARTA 0245

NNNN

ZCZC XRM007 UTH762 VIA ITT YB30283600

TH BKRM HL UIPX 060

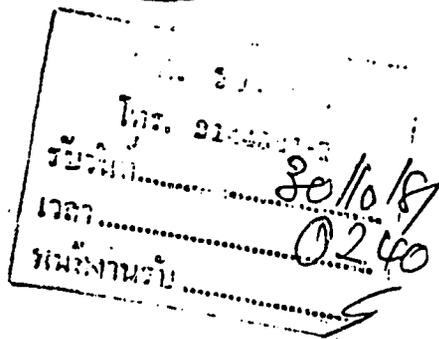
EAST BRUNSWICK NJ 60/59 29 1247



4406

LT

MR J. LEE BARNES
 COMMERCIAL OFFICER
 AMERICAN EMBASSY
 WIRELESS ROAD
 BANGKOK



RE: THAILAND UNITED STATES OIL SHALE LIGNITE SYMPOSIUM
 I SENT 250 BROCHURES TO YOU AND TO MR NOPADON. PLEASE
 ACKNOWLEDGE RECEIPT. PLEASE CALL THE VIANG TAK HOTEL
 TO RECONFIRM 30 ROOMS FOR FEBRUARY 3 AND 4. ALSO
 RECONFIRM CHIANG INN FOR FEBRUARY 5.

511910
511950
55
51100

SINCERELY

ARNOLD H. PELOFSKY

053 235201 confirmed
655

COL 250 30 3 4. 5.

UNCLAS

BKK 52326

VZCZCBIA #
 OO RUEHC RUEHDC
 DE RUMTBZ #2326 314 **
 ZNR UUUUU ZZH
 O 180936Z NOV 81
 FM AMEMBASSY BANGKOK
 TO RUEHC/SECSTATE WASHDC IMMEDIATE 8885
 INFO RUEHDC/USDOC WASHDC
 BT
 UNCLAS BANGKOK 52326

CLASS: UNCLASSIFIED
 CEREG: CML 11/18/81
 APPRV: CML:JLBARNES
 DRFTD: CML:SIRIPAJ:SS
 CLEAR: NONE
 DISTR: CML3 CROM

AIDAC/R. FRANKER

E.O. 12958: N/A
 TAGS: EGEN, TH
 SUBJ: TDP TECHNICAL SYMPOSIUM ON OIL SHALE/LIGNITE

TDP - Oil Shale
 Co. - DMR

1. PLEASE PASS THE FOLLOWING MESSAGE TO A. PELOFSKY.
2. MR. NOPADON HAS NOT REPEAT NOT RECEIVED THE 250 BROCHURES. SUGGEST YOU SEND THEM AGAIN TO EMBASSY VIA APO. RESERVATIONS AT VIANG TAK (FEB. 3RD AND 4TH) AND CHIANG INN (5TH) HAVE BEEN CONFIRMED. DEAN
 BT
 #2326

NNNN

UNCLAS

BKK 52326

UNCLAS

BKK 41955

VZCZCBA *
RR RUEEC
DE RUMTBZ #1955 252 **
ZNR UUUUU ZZB
R 150822Z SEP 81
FM AMEMBASSY BANGKOK
TO SECSTATE WASHDC 9437
BT
UNCLAS BANGKOK 41955

CLASS: UNCLASSIFIED
CHRG: CML 09/15/81
APPRV: CML:JLBAR/TS
DREFD: CML:SIRITAF:SR
CLEAR: NONE
DISTR: CML: CERON

FOR AIDAC/R. KRANKER

E.O. 12355: N/A
TAGS: EGEN, TE
SUBJ: TDP TECHNICAL SYMPOSIUM ON OIL SHALE

*TDP
Oil State*

1. PLEASE PASS THE FOLLOWING MESSAGE TO A. PELOFSKY:
CIE REFER TO HIS LETTER OF AUGUST 21. MR. NOPADON
LEFT FOR CHIANG MAI ON SEPTEMBER 19 AND WILL RETURN TO
BANGKOK ON THE 21ST. UNABLE TO CONTACT MR. NOPADON
REGARDING THE BROCHURE. OTHER DMR OFFICIALS HAVE REFERRED
MATTER TO NOPADON. UNCTE.

2. REGARDING THE MINISTRY OF INTERIOR(MOI) COMMUNICATION
EXPANSION, DIRECTOR-GENERAL OF POST AND TELEGRAPH
DEPARTMENT WILL BE FREE FOR APPOINTMENT AFTER SEPTEMBER 21.
HOWEVER, CHIEF OF MOI TELECOMMUNICATION CENTER, WILL
RETURN FROM UP-COUNTRY ON THE 14TH. WE WILL TRY TO DISCUSS
THE MATTER WITH HIM THIS WEEK. LEVIN
BT
#1955

NNNN

UNCLAS

BKK 41955

AER Enterprises
12 Redcoat Drive
East Brunswick, N.J. 08816
(201) 254-6930

ARNOLD H. PELOFSKY, Ph.D.

21 August 1981

Mr. J. Lee Barnes
Commercial Officer
American Embassy
Shell House
Wireless Road
Bangkok, Thailand

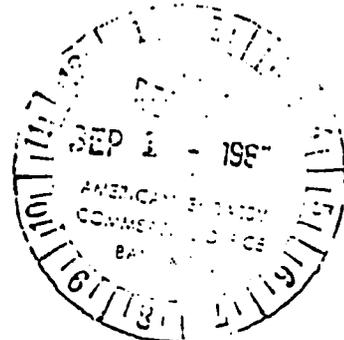
Dear Lee;

Thankyou for the hospitality and the courtesies that were extended to me during my August visit to Bangkok.

I am enclosing a copy of the advertising brochure and the letter I sent to Mr. Nopadon. I would appreciate it if you could follow up and make sure I get the corrections by 15 September.

Sincerely,


ARNOLD H. PELOFSKY
Symposium Coordinator



AHP/1

enclosures

P.S. Both Oraso and Union have refused to give a paper. See what you can do.

AER Enterprises
12 Redcoat Drive
East Brunswick, N.J. 08816
(201) 254-6930

A. PELOFSKY, Ph.D.

21 August 1981

Mr. Nopadon Mantajit
Senior Geologist
Geological Survey Division
Department of Mineral Resources
Rama VI Road
Bangkok, Thailand

Dear Mr. Nopadon;

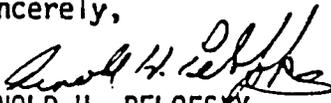
Thankyou for the hospitality and the courtesies extended to me during my August visit to your wonderful country.

I am enclosing a copy of the advertising brochure concerning "The Thailand-United States Oil Shale/Lignite Symposium" for your review and comment. I would sincerely appreciate it if you could write or call me with any changes you might wish to make. If you wish to call me, please reverse the charges.

I need your changes by 15 September at the latest. If I don't hear from you by that date I will assume that everything is in order and that I could send these brochures to people that may be interested in attending.

The list of American speakers is still preliminary. I am trying to get someone to deliver a paper on the briquetting of lignite as was requested during our meetings.

Sincerely,


ARNOLD H. PELOFSKY
Symposium Coordinator

AHP/1

enclosure

VZCZCB&A #
OO RUEHC RUMJDH
DE RUMTB& #2392 204 **
ZNR UUUUU ZZH
O 230730Z JUL 81
FM AMEMBASSY BANGKOK
TO RUEHC/SECSTATE WASHDC IMMEDIATE 3413
INFO RUMJDH/AMCONSUL HONG KONG 2792
BT
UNCLAS BANGKOK 32392

CLASS: UNCLASSIFIED
CHRG: CML 07/23/81
APPRV: CML:JLBARNES
DRFTD: CML:SIRITAJ:SR
CLEAR: NONE
DISTR: CML4 ECON CHRON

SEOSTATE FOR AIDAC, HONG KONG FOR TDP SLEEPER

E.O. 12065: N/A

TAGS:

SUBJ: TDP TECHNICAL SYMPOSIUM ON OIL SHALE

TDP - Oil Shale

REF: A) BANGKOK 29048; B) STATE 160567; C) STATE 189661

1. MR. NOPADON MANTAJIT OF DMR IS STILL UNABLE TO PROVIDE THE INFORMATION REQUESTED RE FA. HE EXPLAINED THAT DETAILED INFORMATION ABOUT THE SYMPOSIUM WAS REPORTED TO THE DIRECTOR-GENERAL FOR HIS COMMENTS AND APPROVAL. DUE TO HEAVY WORKLOAD, DIRECTOR-GENERAL HAS BEEN UNABLE TO DISCUSS DETAILS WITH MR. NOPADON. MR. NOPADON WILL ATTEMPT TO GET DECISION BY JULY 31.
UNCLASSIFIED

2. MR. NOPADON MENTIONED AN AGREEMENT TO INVITE DIRECTOR-GENERAL OF DMR AS CHAIRMAN OF SYMPOSIUM. HE NEEDS YOUR CLARIFICATION RE RESPONSIBILITY AND/OR NEED FOR CO-CHAIRMAN. ABRAMOWITZ
BT
#2392

NNNN

UNCLASSIFIED

BANGKOK 32392

VZCZCESA232ESA967
OO RUMTBK
DE RUEHC #9661 1990240
ZNR UUUUU ZZH
O R 180212Z JUL 81
FM SECSTATE WASHDC
TO RUMTBK/AMEMBASSY BANGKOK IMMEDIATE 1618
INFO RUMJDH/AMCONSUL HONG KONG 1384
BT
UNCLAS STATE 189661

0
ACTION

IMMEDIATE

18 JUL 81
TOR: 0302
CN: 15653
CHRG: **CML 3**
INFO EC AID **DO**
-CHRON 7/

AIDAC, BANGKOK: FOR FCS LBARNES, HONGKONG: FOR TDP SLEEPER

E.O. 12065: N/A

TAGS:

SUBJECT: TDP TECHNICAL SYMPOSIUM OIL SHALE/LIGNITE

JUL 2 0 1981

REF: (A) BANGKOK 29048, (B) STATE 150567

1. REF A PROMISED RESPONSE TO REF B FIRST WEEK IN JULY.
2. URGENTLY REQUEST DMR ADVICE REF B PARTICULARLY PARA ONE A AND THE FOLLOWING:
 - A. THE TITLES OF SIX OR SEVEN PAPERS TO BE PRESENTED BY RTG OFFICIALS.
 - B. NAMES AND TITLES OF RTG OFFICIALS PRESENTING PAPERS.
 - C. NAME AND TITLE OF DMR CO-CHAIRMAN OF SYMPOSIUM.
3. FOREGOING INFORMATION REQUIRED BY JULY 21 TO ALLOW TIMELY PREPARATION, DMR CLEARANCE AND PRINTING OF BROCHURE. HAIG
BT
#9661

NNNN
IMMEDIATE

UNCLAS

STATE 189661

IMMEDIATE

DO

OFFICE/PERSON CALLED _____

DATE/TIME CALLED: _____

CALLER'S INITIALS: *hp*

UNCLAS

BANGKOK 29048

*Somchai
pls call*

VZCZCEKA *
RR RUEEC RUMJDE
DE RUMTEK #9048 177 **
ZNR UUUUU ZZZ
R 260359Z JUN 81
FM AMEMBASSY BANGKOK
TO RUEEC/SECSTATE WASHDC 1734
INFO RUMJDE/AMCONSUL HONG KONG 2311
BT
UNCLAS BANGKOK 29048

CLASS: UNCLASSIFIED
CEREG: CML 06/25/81
APPRV: CML:JLEARNES
DRETD: CML:SOMSAI:PU
CLEAR: CML:JLEARNES
DISTR: CML4 CERON

STATE FOR TDP PELOFSKI
HONG KONG FOR TDP L.G. SLEEPER

E.O. 12065: N/A
TAGS: TSEM, TS
SUBJ: TDP TECHNICAL SYMPOSIUM ON OIL SHALE

file

REF: STATE 150567

1. DMR WILL NOT RPT NOT PROVIDE AIR TRANSPORT FORM CHIANG MAI TO BANGKOK FOLLOWING THE FIELD TRIP.
2. DMR TENTATIVELY CONCURS WITH SUGGESTIONS PER REFTEL'S PARA 1 C, D, E AND F BUT NEEDS CLEARANCE FROM HIGHER AUTHORITY. DMR WILL CONFIRM THESE AND ANSWER QUESTION 1A FIRST WEEK OF JULY.
3. SIAM INTERCONTINENTAL CONFIRMS THE RATES QUOTED ARE THE MOST FAVORABLE FOR PEAK SEASON IN FEBRUARY AND CANNOT BE REDUCED. HOWEVER, THE HOTEL WILL WAIVE THE 1,000 DOLS DEPOSIT. ABRAMOWITZ

BT
#9048

NNNN

UNCLAS

BANGKOK 29048

VZCZCESA611ESA593ESA555

PP RUMTBK

DE RUEHC #7245 1760000

ZNR UUUUU ZZH

P 250220Z JUN 81

FM SECSTATE WASHDC

TO RUMTBK/AMEMBASSY BANGKOK PRIORITY 2560

INFO RUMJDH/AMCONSUL HONG KONG PRIORITY 1007

BT

UNCLAS STATE 167245

JUN 26 1981

25 JUN 81

TOR: 0341

CN: 07505

CHRG: AID 4

INFO ECON CHRON

6/WR

AIDAC

E.O. 12065: N/A

File Oil Shale Symposium

TAGS:

SUBJECT:TDP PROJECTS (EGAT AND DMR)

REF: (A) KRANKER/BARNES TELCON 6/18/81, (B) STATE 162557

BANGKOK FOR EMBASSY COMMATT - BARNES
HONGKONG FOR TDP L.G.SLEEPER

1. MAE MOH EHV TRANSMISSION LINE PROJECT (EGAT):
PROPOSE FORMAL PRESENTATION OF FINAL REPORT IN BANGKOK
AUGUST 17, 1981. AT PRESENT PLAN IS FOR SENIOR
EMBASSY OFFICER REPRESENTATION, INTRODUCTION BY TDP
OFFICIAL AND TECHNICAL OVERVIEW BY BPA IN A.M.
(ESTIMATED TWO HOURS TOTAL), FOLLOWED BY CONTRACTOR
(LEMCO) PRESENTATION IN P.M. (ABOUT TWO HOURS). TECHNICAL
REVIEW WILL BE HELD DURING TWO OR THREE DAYS FOLLOWING
FORMAL CEREMONY.

2. NAMES OF TDP, BPA AND LEMCO PARTICIPANTS AND ETA'S
WILL BE FORWARDED SEPTEL.

3. PLEASE ADVISE CONCURRENCE ASAP.

4. TECHNICAL SYMPOSIUM ON OIL SHALE (DMR):
ALTHOUGH ORIGINALLY REQUESTED BY DMR, IT WAS INITIALLY
FELT THAT INCLUSION OF SIGNIFICANT DISCUSSIONS ON LIGNITE

DURING OIL SHALE CONFERENCE WERE NOT FEASIBLE. TDP
HAS SINCE DETERMINED THAT THE TWO TOPICS WOULD BE
COMPLIMENTARY ESPECIALLY SINCE MANY U.S. FIRMS HAVE
EXPERTISE IN BOTH FIELDS. ACCORDINGLY BOTH TOPICS WILL
BE COVERED DURING SYMPOSIUM. (NO ADDITIONAL TIME REQUIRED)

5. REQUEST EMBASSY SECURE DMR AGREEMENT TO PROJECT TITLE
"THAILAND/UNITED STATES OIL SHALE AND LIGNITE SYMPOSIUM"
INSTEAD OF ONLY OIL SHALE AS INDICATED IN REF B. STOESEL

BT
#7245

NNNN

UNCLASSIFIED

STATE 167245

Summit

VZCZCZCZCZ
FM RUENEC BANGKOK
TO RUEKJDE/AMCONSULT BANGKOK
INFO RUEKJDE/AMCONSULT BANGKOK
UNCLAS BANGKOK 2015

CLASS: UNCLASSIFIED
ORIG: CML 18/05/01
APPW: CML:JLDR
REFID: CML:SCNSA
CML:JLDR
CML:JLDR

SIAM FOR TDP PROJECT
TO BE ALONG FOR TDP L.O. SUPPORT

TDP
Maj. Proj.
(Oil Shake)

L.O. 15050: N/A
TAGS: TDM, TR
SUBJ: TDP TECHNICAL SYMPOSIUM ON OIL SHALE

REF: STATE 150507

1. DMR WILL NOT RPT NOI PROVIDED AIR TRANSPORT FROM CHIANG MAI TO BANGKOK FOLLOWING THE FIELD TRIP.
2. DMR TENTATIVELY CONCURS WITH SUGGESTIONS PER REFTTEL'S PARAS 1 C, D, E AND F BUT NEEDS CLEARANCE FROM ENERGY AUTHORITY. DMR WILL CONFIRM THESE AND ANSWER QUESTION IN FIRST WEEK OF JULY.
3. SIAM INTERCONTINENTAL CONFIRMS THE RATES QUOTED ARE THE MOST FAVORABLE FOR THAT SEASON IN FEBRUARY AND CANNOT BE REDUCED. HOWEVER, THE HOTEL WILL WAIVE THE 1,000 BOMB DEPOSIT. ABRAMOVITZ

BT
#3345

UNCLAS BANGKOK 2015

UNCLASSIFIED

STATE 160567

ZCZCESA259ESA944

FIS (TDP - H.K.)

O/FIN
CYR

UP RUMTB1

DE RUEHC #0567 1690304

ZNR UUUUU ZZH

P 182231Z JUN 81

FM SECSTATE WASHDC

TO RUMTB1/AMEMBASSY BANGKOK PRIORITY 0655

INFO RUMJDT9/AMCONSUL HONG KONG PRIORITY 0925

BT

UNCLAS STATE 160567

Received

JUN 22 1981

19 JUN 1981

19 JUN 81

TOR: 0303

CN: 05245

CHRG: AID 4

INFO ECON2 CHRON

7/FJV

AIDAC

E.O. 12065: N/A

TAGS:

SUBJECT: TDP TECHNICAL SYMPOSIUM ON OIL SHALE

REF: (A) STATE 133500, (B) STATE 113333

BANGKOK FOR EMBASSY COMATT
HONG KONG FOR TDP L.G. SLEEPER

1. REQUEST RESPONSES TO FOLLOWING:

A) HOW MANY ROOMS WILL DMR MAKE AVAILABLE IN GUEST HOUSE FOR FIELD TRIP?

B) WILL DMR PROVIDE AIR TRANSPORT FROM CHIANG MAI TO BANGKOK FOLLOWING THE FIELD TRIP? (NOTE: PELOFSKI STATES THAT WARD INDICATED THIS MAY BE POSSIBLE)

C) DOES DMR CONCUR WITH SYMPOSIUM DATES OF FEBRUARY FIRST THROUGH SIXTH?

D) DOES DMR CONCUR WITH FIELD TRIP DATES OF FEBRUARY FOURTH THROUGH SIXTH?

E) IS PROPOSED TITLE "THAILAND/UNITED STATES OIL SHALE AND LIGHTS SYMPOSIUM" ACCEPTABLE TO DMR?

F) DOES DMR/RTG AGREE TO POSSIBLE TDP INVITATIONS TO PARTICIPANTS FROM BURMA, THE PRC AND OTHER INTERESTED ASEAN NATIONS?. (REF B PARA FOUR)

G) CAN EMBASSY NEGOTIATE MORE FAVORABLE RATES FOR PARTICIPANTS WITH SIAM INTERCONTINENTAL (PRESENT QUOTES 75 DOLS. SINGLE 84 DOLS DOUBLE PLUS TAXES) AND IS IT POSSIBLE TO WAIVE THE 1,000 DOLS DEPOSIT?

2. PELOFSKI'S DMR CONTACT PERSON: KHUN NOPADON MANTAJIT TELEPHONE 2919940.

3. PLEASE ADVISE ASAP. STOESSEL CHIANG MAI

BT

#0567

File

ACTION TO:	
DUE DATE:	6-23-87
ACTION TAKEN:	
INITIAL:	
DATE:	

DISTRIBUTION	
ACT	INFO
	D ✓
	EXO
✓	O/FIN 3
	O/PPD
	O/EST
	O/RHUD
	O/RD
	O/HPN
	O/HRT
	TRG
	EMB ✓
	C&R ✓

No
O.K. ✓

O.K. ✓

O.K. ✓

O.K.

Rates - No deposit
Deposit - waived

RECEIVED
JUN 22 9 34 AM '81
STATE DEPARTMENT
OFFICE OF THE ASSISTANT SECRETARY FOR
POLICY AND PLANNING

ACROSS THE GULF
GEOLOGICAL SURVEY

UNCLAS

BANGKOK 29048

VZCZCEKA *
RR RUEEC RUMJDE
DE RUMTEK #9848 177 **
ZNR UUUUU ZZE
R 232359Z JUN 81
FM AMEMBASSY BANGKOK
TO RUEEC/SECSTATE WASHDC 1734
INFO RUMJDE/AMCONSUL HONG KONG 2514
BT
UNCLAS BANGKOK 29048

CLASS: UNCLASSIFIED
CREATED: CML 26/25/81
APPROV: CML:JLEARNES
DREFD: CML:SOMSAK:PJ
CLEAR: CML:JLEARNES
DISTR: CML: CROM

STATE FOR TDP PELOFSKI

HONG KONG FOR TDP L.G. SLEEPER

E.O. 12865: N/A
TAGS: TGEN, TE
SUBJ: TDP TECHNICAL SYMPOSIUM ON OIL SHALE

REF: STATE 150567

1. DMR WILL NOT RPT NOT PROVIDE AIR TRANSPORT FOR 4 CHIANG MAI TO BANGKOK FOLLOWING THE FIELD TRIP.
2. DMR TENTATIVELY CONCURS WITH SUGGESTIONS PER RETTEL'S PARA 1 C, D, E AND F BUT NEEDS CLEARANCE FROM HIGHER AUTHORITY. DMR WILL CONFIRM THESE AND ANSWER QUESTION 1A FIRST WEEK OF JULY.
3. SIAM INTERCONTINENTAL CONFIRMS THE RATES QUOTED ARE THE MOST FAVORABLE FOR PEAK SEASON IN FEBRUARY AND CANNOT BE REDUCED. HOWEVER, THE HOTEL WILL WAIVE THE 1,000 DOLS DEPOSIT. ABRAMOWITZ

BT
#9848

NNNN

UNCLAS

BANGKOK 29048

Best Available Document

UNCLASSIFIED

DATE 160567

O/FIN
CYR

VZCZCESA259ESA944
PP RUMTB1
DE RUEHC #0567 1690304
ZNR UUUUU ZZP
P 182231Z JUN 81
FM SECSTATE WASHDC
TO RUMTB1/AMEMBASSY BANGKOK PRIORITY 0655
INFO RUMJDR/AMCONSUL HONG KONG PRIORITY 0925
BT
UNCLAS STATE 160567

Received

19 JUN 1981

19 JUN 81
TOR: 0303
CN: 05245
CHRG: AID 4
INFO ECON2 CHRON
7/FJV

ACTION TO:	
DUE DATE:	6-23-81
ACTION TAKEN:	
INITIAL:	
DATE :	

AIDAC
E.O. 12065: N/A
TAGS:

SUBJECT: TDP TECHNICAL SYMPOSIUM ON OIL SHALE

REF: (A) STATE 133600, (B) STATE 113333

BANGKOK FOR EMBASSY COMATT
HONG KONG FOR TDP L.3. SLEEPER

DISTRIBUTION

ACT	INFO
D	<input checked="" type="checkbox"/>
EXO	
O/FIN	3
O/PPD	
O/EST	
O/RHUD	
O/RD	
O/HPN	
O/HRT	
TRG	
EMB	
C&R	<input checked="" type="checkbox"/>

1. REQUEST RESPONSES TO FOLLOWING:

- A) HOW MANY ROOMS WILL DMR MAKE AVAILABLE IN GUEST HOUSE FOR FIELD TRIP?
- B) WILL DMR PROVIDE AIR TRANSPORT FROM CHIANG MAI TO BANGKOK FOLLOWING THE FIELD TRIP? (NOTE: PELOFS&I STATES THAT WARD INDICATED THIS MAY BE POSSIBLE)
- C) DOES DMR CONCUR WITH SYMPOSIUM DATES OF FEBRUARY FIRST THROUGH SIXTH?
- D) DOES DMR CONCUR WITH FIELD TRIP DATES OF FEBRUARY FOURTH THROUGH SIXTH?
- E) IS PROPOSED TITLE "THAILAND/UNITED STATES OIL SHALE SYMPOSIUM" ACCEPTABLE TO DMR?
- F) DOES DMR/RTG AGREE TO POSSIBLE TDP INVITATIONS TO PARTICIPANTS FROM BURMA, THE PRC AND OTHER INTERESTED ASEAN NATIONS? (REF B PARA FOUR)
- G) CAN EMBASSY NEGOTIATE MORE FAVORABLE RATES FOR PARTICIPANTS WITH SIAM INTERCONTINENTAL (PRESENT QUOTES 75 DOLS. SINGLE 84 DOLS DOUBLE PLUS TAXES) AND IS IT POSSIBLE TO WAIVE THE 1,000 DOLS DEPOSIT?

2. PELOFS&I'S DMR CONTACT PERSON: KHUN NOPADON MANTAJIT
TELEPHONE 2919840.

3. PLEASE ADVISE ASAP. STOESSEL

BT
#0567

RECEIVED
JUN 22 9 34 AM '81
OFFICE OF FINANCE
DEPT. OF STATE
WASHINGTON, D.C.

Thai Papers on Oil Shale Symposium

1. Thailand's Energy & Investment Policy
 - a) Discussion of Energy Consumption
Present & Future
 - b) Population Growth
 - c) Energy Plans
 - d) Financial Structure
2. Oil Shale Development Project in Thailand
3. The Result of Lurgi Pre-feasibility study
4. Geology of Mae Sot Oil Shale Deposit
5. Geology of Mae Sot
6. Infrastructure of the Mae Sot Area

HOTEL
Siam
INTER-CONTINENTAL

Mr. Arnold H. Pelofsky, PH. D.
AER Enterprises
12 Woodcoat Drive
East Brunswick, N.J. 08816
U.S.A.

May 27, 1981

Dear Mr. Pelofsky,

With reference to the discussion had on May 24th, 1981, concerning the proposed Energy Symposium to be held during the month of February, 1982, the Hotel Siam Inter-Continental is pleased to confirm that we will hold for your participants a minimum of 50 rooms with option of an additional 10 rooms during the specified period.

Accommodation Rates:

The applicable room rates per day are as follows:

Single Occupancy:	US\$ 75.-
Double Occupancy:	US\$ 86.-
Lanai Suite:	US\$ 230.-
Executive Suite:	US\$ 300.-

We will provide complimentary rooms for group leaders based on 1 per 50 participants.

Rates are subject to 10% service charge plus 16.50% government tax, 10% commissionable on room rates less 20% income tax on the commissionable amount.

We also enclosed for your ready reference, our ballroom/conference fact-sheet on our facilities and layout of the center. Please note that our conference room can be partitioned into 3 separate sections, sound-proof.

Conference Room Rental

Since you have indicated that lunches will be consumed at the hotel there will be no charge for the conference room. For your kind information, our normal rental charge in US\$ 1.500 per day.

HOTEL
Siam
INTER-CONTINENTAL

2/.

Food and Beverage Rates:

Breakfast (per person):

Full American Breakfast, set or buffet: US\$ 5.-

Coffee Breaks (per person per break):

Coffee/Tea with cookies: US\$ 1.75.-

Lunch (per person):

- a) Set menus - choice of US\$ 7.50, US\$ 8.00, US\$ 10.00
- b) Buffet - choice of US\$ 10.00, US\$ 11.00, US\$ 12.00

Cocktails (per person):

2 hours open bar with hot and cold hors d'oeuvres at US\$ 20.00

or if you wish to provide your own liquor, the hotel will provide hot and cold hors d'oeuvres from a selection of cocktails menus from US\$ 5, US\$ 6, US\$ 7.50

Soft drinks & mixes at net rate of US\$ 2.50 per person - (2 hours)

Corkage at net rate of US\$ 4.00 per bottle - (26oz.)

The food and beverage rates quoted above are subject to 10% service charge plus 8.25% government tax.

Terms of Business

Upon receipt of your confirmation of acceptance a US\$ 2,000 deposit is required. An additional US\$ 2,000 will have to be made 30 days prior to the group's arrival date. And to ensure smooth check-in we would appreciate your advice on the rooming list, 3 weeks prior to the group's arrival. All billings to be settled prior to group's departure.

We shall also appreciate your advice on the exact period required at the earliest as already conveyed to you, January and February are our peak period.

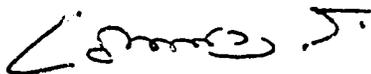
HOTEL
Siam
-INTER-CONTINENTAL

3/.

We would like to take this opportunity to thank you for your interest in the Hotel Siam Inter-Continental and we do hope our information above meets your requirements.

Looking forward to hearing from you, we remain.

Yours sincerely,



Chaiyant Dhaneswongse
Director of Marketing
SP/ss

cc: E.A.M.
Director of Banquet & Conference Sales
F & B Manager
Front Office Manager
Banquet Manager

The Hotel Siam Inter-Continental's Ballroom and Conference Center's Capacities and Dimensions.

General Comments – The New Ballroom will accommodate up to 600 for conference, 800 for reception and 450 for banquet. The ballroom will have a separate outside entrance, direct entrance from hotel and special service entrance. In addition it will have a prefunction area, projection room, stage, dressing room and service corridor. Electricity in meeting rooms is 220 Volts, 50 Cycles, A.C. Additionally there is a businessman's Boardroom catering for Banquets up to 80, Receptions up to 140 and Conference up to 140 with a Pantry, Foyer and Service entrance.

Name of Room	Location	DIMENSIONS						CAPACITY:							
		Meters	Feet	Square Meters	Square Feet	n. Portable Walls	Floor Cover	Auditorium	Classroom	U-Shape	Reception	Banquet	Electrical Outlets	ceiling Height	
													m	ft.	
Prefunction	Ballroom Bldg.	25.5x6	84x20	153	1,655	-	Carpet	-	-	-	235	135	-	4	13
Ballroom A	Ballroom Bldg.	8.5x14.7	28x48	125	1,344	1	Carpet	200	85	70	185	105	-	4.5	14.8
Ballroom B	Ballroom Bldg.	8.5x14.7	28x48	125	1,344	1	Carpet	200	85	70	185	105	-	4.5	14.8
Ballroom C	Ballroom Bldg.	8.5x14.7	28x48	125	1,344	1	Carpet	200	85	70	185	105	-	4.5	14.8
-Combined		25.5x20.7	84x68	528	5,691	2	Carpet	600	250	200	790	450	-	4.5	14.8
Roof Top Terrace	Top of Ballroom Bldg.	25.5x20.1	84x68	528	5,691	-	Concrete	-	-	-	800	450	-	-	-

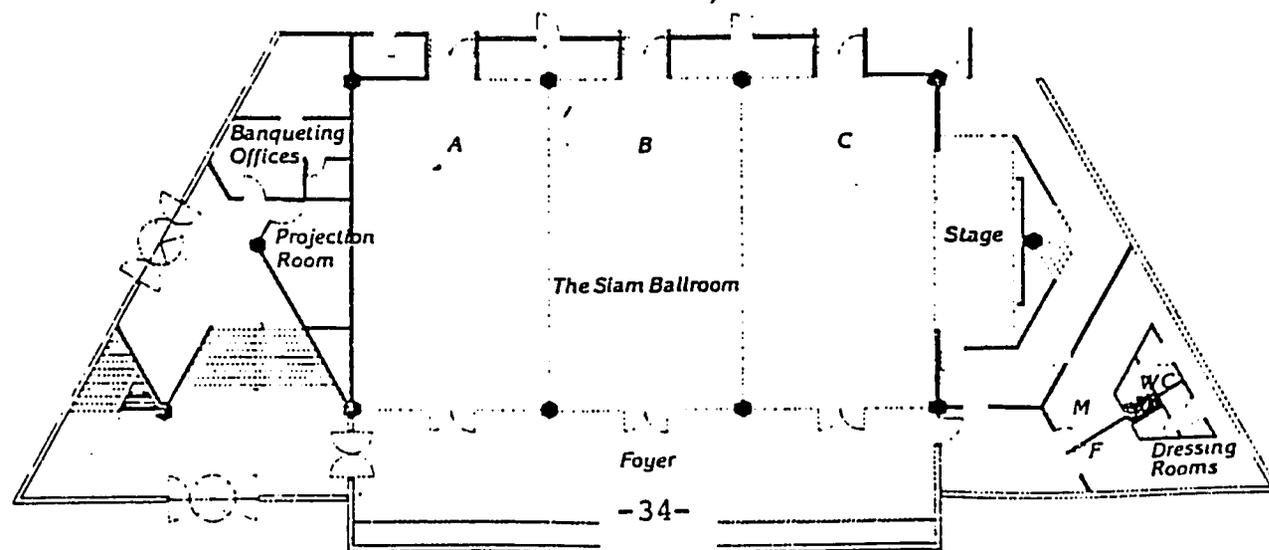
Meeting Equipment Supplied By Hotel: P.A. System; Tape Recorders (Players, Reel, Cassette); Microphones (Lectern, Portable and Floor); Audio/Visual Replacement Parts; Projectors (Rear Screen, Overhead, 16mm Sound, 35mm Slide); Projection Screens; Projection Rooms; Remote Control Cords; Portable Stages; Lecterns with Lights; Podiums; Padded Metal Stack Chairs; Blackboards; Easels/Tablets; Cork Boards; Flannel Boards; Writing Pads, Pens and Pencils; Typewriters; Duplicating Machines; Lobby Bulletin Board; Individualized Direction Signs; Truck/Van.

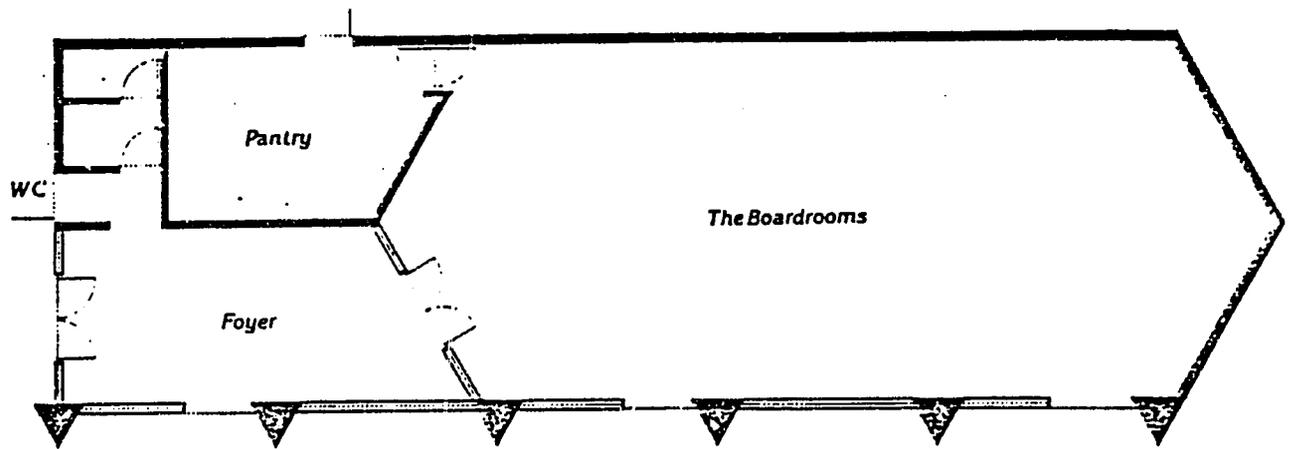
Meeting Support Services Provided by Hotel (free of charge): Electrician; Audio/Visual Operators; Audio/Visual Repairmen; Messenger Service; Photographer/Photo Shop; Musicians; Security Guards.

Meeting Support Services Provided by Hotel (at a charge): Locksmith; Stenographer; Print Shop; Carpentry Shop; Translation Personnel; Sign Painter; First Aid.

Equipment/Support Services Provided by Local Vendors: Tape Recorders (Players, Reel, Cassette); Microphones (Lectern, Portable and Floor); Audio/Visual Replacement Parts; Projectors (Rear Screen, Overhead, 70mm Sound, 16mm Sound, 8mm Sound, Film Strip, Opaque, 70mm Slide, 35mm Slide); Projection Screens; Projection Room; Closed Circuit TV Cameras, Monitors, Recorders, Spotlights; Remote Control Cords; Portable Stages; Lecterns with Lights; Podiums; Padded Metal Stack Chairs; Blackboards; Easels/Tablets; Cork Boards; Flannel Boards; Writing Pads, Pens and Pencils; Typewriters; Duplicating Machines; Lobby Bulletin Board; Individualized Direction Signs; Name Cards/holders; Truck/Van; Electrician; Locksmith; Labourers; Audio/Visual Operators; Audio/Visual Repairmen; Messenger Service; Stenographer; Notary Public; Print Shop; Photographer/Photo Shop; Carpentry Shop; Display Builder; Translation Personnel; Sign Painter; Paint Shop; Plumber; Musicians; Security Guards; Decorating Service; First Aid; Attendee Registration; Tours and Entertainment.

Ballroom and Conference Center





The Boardroom

<i>Location</i>	: <i>Ballroom building</i>
<i>Capacities</i>	
<i>Theatre Style (centre aisle)</i>	: 140
<i>Classroom (plus top table)</i>	: 60
<i>U-Shape (plus top table)</i>	: 50
<i>Reception/Cocktail</i>	: 140
<i>Banquet, tables of 10</i>	: 80



The Dusit Thani Hotel

SALADAENG CIRCLE, RAMA IV ROAD, BANGKOK, THAILAND.
TEL. 233-1133 CABLE 'DUSITOTEL' TELEX TH 1170 31027

Executive Offices

28th May, 1981

Dr. A.H. Pelofsky, Ph. D.
AER Enterprises
12 Redcoat Drive
East Brunswick, N.J. 08816
U. S. A.

Dear Dr. Pelofsky:

*Re: Thailand United States
Oil Shale Symposium
January 30 - February 4, 1982*

It was indeed my pleasure to have an opportunity to discuss more details with you for the above mentioned meeting in January 30 - February 4, 1982 which I am pleased to confirm our discussion as follows:

Accommodation

<i>Requirements:</i>	<i>30 Singles, 20 Twins</i>
<i>Rates:</i>	<i>Single Baht 1,210.00</i>
	<i>Twin Baht 1,320.00</i>

The above rates are plus 16.5% government tax and are including service charge and commissionable 10%.

Food & Beverage

<i>2 Coffee breaks with cakes:</i>	<i>Baht 45.00 plus 8.25% tax</i>
	<i>per person</i>
<i>Lunch:</i>	<i>Baht 140.00 plus 8.25% tax</i>
	<i>- per person</i>

*Requirements: Microphone
- slide projector
over-head projector
flip chart & blackboard*

These are free of charge.

— *Dr. A.F. Pelofsky, Ph. D.*
AER Enterprises

page 2

I am also pleased to inform you that we are now building a car park building to accommodate 350 cars which will be ready end of this year, (at the moment we can accommodate about 800 cars) so there is no problem at all for parking space.

I suppose I have touched on all the points which we discussed but if there should be anything else or any further details you may like to know please do not hesitate to contact me.

Looking forward to hearing from you.

Yours sincerely,



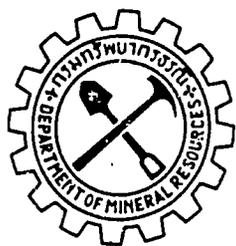
Somruedee Lobeck
Sales Manager

SL/sp

cc: Reservations Manager
Catering Manager

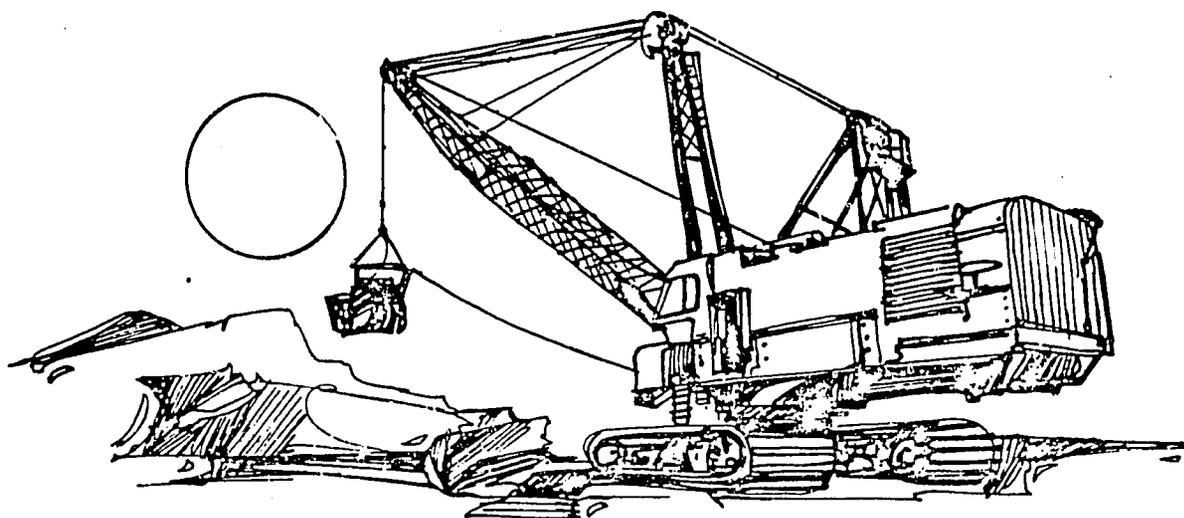


APPENDIX II
ADVERTISING BROCHURE



THAILAND- UNITED STATES OIL SHALE/LIGNITE SYMPOSIUM &

...ON-SITE TOUR OF OIL SHALE
AND LIGNITE DEPOSITS



Geology	Mining
Exploration	Impact
Reserves	Economics
Technology	Incentives
Processing	Financing
Environmental	Cooperation

FEBRUARY 1-6, 1982
BANGKOK, THAILAND
SIAM INTERCONTINENTAL HOTEL

ORGANIZED BY:
DEPARTMENT OF MINERAL RESOURCES,
THAILAND
U.S. BUREAU OF MINES

SPONSORED BY:
KINGDOM OF THAILAND
& UNITED STATES GOVERNMENT
(The U.S. Trade & Development Program)

PRELIMINARY AGENDA

Monday — February 1, 1982

Welcoming Addresses

- *Daniel N. Miller, Jr.*,
Assistant Secretary, Energy and Minerals, U.S. Department of the Interior, USA
- *Richard Kranker*,
Assistant Director, The U.S. Trade and Development Programs, USA
- *Prabhas Chakkaphak*,
Director General, Department of Mineral Resources, Thailand

Opening Address

- *H.E. Major General Chatichai Choonhavan*
Minister of Industry, Thailand

Thailand's Energy Policy

- Representative of the National Energy Authority, Thailand

The Oil Shale Development Project and Investment Policy

- *Sunt Rachadawong*,
Director, Economic and Information Division, Department of Mineral Resources, Thailand

The Lignite Development Project

- Representative of the Electricity Generating Authority of Thailand, Thailand

Geology of the Mae Sot Oil Shale and Lignite Deposits

- *Nopadon Mantajit*,
Senior Geologist, Geological Survey, Department of Mineral Resources, Thailand

Infrastructure of the Mae Sot Region

- *Prakong Palaharn*,
Director, Natural Fuel Division, Department of Mineral Resources, Thailand

Project Selection Criteria

- *John G. Reed*,
Partner, White & Case, USA

Computer Applications for the Mae Sot Oil Shale Resource Assessment

- *Jennifer L. Cook*,
Computer Applications Specialist, Geological Survey, U.S. Department of the Interior, USA

Reception

Hosted by the Minister of Industry, Thailand

Tuesday — February 2, 1982

Mining

Oil Shale -

- *Bruce Kennedy*, Vice President, Golder Associates, USA

Lignite -

- *Robert A. Tinstman*, General Manager, Mine Design, Morrison Knudsen, Inc., USA

Processing — Oil Shale

- *The Paraho Process*,
• *John Jones*, President, Paraho Corp., USA

The Tosco Process,

- *Donald C. McCullum*, Director, Licensing, Tosco Corp., USA

The Dravo Process,

- *F.W. Kinsey*, Technical Manager, Oil Shale Retorting; and *L.J. Colaianni*, Manager, Oil and Gas Processing, Dravo Corp., USA

Batch Retorting,

- *William J. Carter*, Director, Special Projects; and *Chang Yul Cha*, Assistant Vice President, Chemical Engineering, Science Applications Inc., U.S.A.

The Horizontal In Situ Process,

- *Mitchell A. Lekas*, President, Geokinetics, Inc., USA

Processing — Lignite

- *The U-Gas Process*,
• *F.C. Schora*, President, Hycrude Corp., USA

A Workable Lignite Pelletizing Process

- *Eric W. Blaustein*, Manager, Engineering, Acres American Inc., USA

Chemical Structure of Lignite and Its Impact on the Design of Power Plant Components

- *Swadesh Raj*, Coal Specialist, EBASCO Services, Inc., USA

Reception

Hosted by the American Embassy

Wednesday — February 3, 1982

Processing — Lignite (continued)

Underground Coal Gasification in the United States, Rawlins I & II

- *Richard H. Graham*, Manager, Minerals Technology, Gulf Research & Development Company and *R.L. Robertson*, Manager, Resource Development, TRW, Inc., USA

Underground Coal Gasification: A Leading Contender in Syntuels

- *Douglas R. Stephens*, Project Leader, UCG, Lawrence Livermore National Laboratory, USA

Fluidized Bed Combustion — Lignite and Oil Shale

Direct Combustion of Oil Shale and Lignite,

- *Gopal D. Gupta*, Manager, Engineering Science and Technology Department, Foster Wheeler Energy Corp., USA

Fluidized-Bed Combustion of Low Grade Fuels and Fluidized Bed Retorting of Low-Grade Oil Shale

- *J.Y. Shang*, Deputy Director, Technology Development and Engineering Division, *J.E. Notestein*, Director, Technology Development and Engineering Division, and *A.A. Pitrolo*, Director, Morgantown Energy Technology Center, U.S. Department of Energy, USA

Environmental Concerns — Lignite and Oil Shale

Management of Spent Shale and Lignite Ash,

- *John M. Heckard*, Partner, Dames and Moore, USA

Environmental Concerns of Surface Mining Oil Shale,

- *Arnold H. Pelofsky*, President, AER Enterprises, and *Robert Lappi*, Director, Mining Studies, Mattech, Inc.

Legislation Considerations,

- *David R. Forshey*, Director, Division of Minerals, Environmental Technology, The U.S. Department of the Interior, USA

Depart on field trip by bus.

- Overnight at the Viang Tak Hotel

Thursday - February 4, 1982

- Visit the oil shale and lignite deposits by Land Rover
- Overnight at the Viang Tak Hotel

Friday - February 5, 1982

- Visit the Bhumipol Dam
- Visit the Mae Moh Lignite Mine and Power Plants
- Overnight at the Chiang Inn Hotel, Chiang Mai
- Field trip ends

Saturday - February 6, 1982

- Depart by air to Bangkok

SYMPOSIUM DESCRIPTION -

The Kingdom of Thailand has potentially substantial deposits of oil shale and lignite. Since the Royal Thai Government has adopted a national policy of energy self-sufficiency, The U.S. Trade and Development Program of the U.S. International Development Cooperation Agency, the U.S. Bureau of Mines and the U.S. Department of State have agreed to collaborate in organizing this Oil Shale/Lignite Symposium with the Department of Mineral Resources of the Ministry of Industry of the Kingdom of Thailand.

This meeting has two objectives; the first is for the Kingdom of Thailand to outline its deposits and reserves as well as present its business

incentive program that is designed to attract U.S. industry; the second is to present U.S. technology to the technical and business sectors of the Kingdom of Thailand.

Sessions will be held on Geology, Exploration and Mining Techniques, Processing Techniques, Research, Environmental, Economics, Incentives and Cooperation. The material that will be presented is intended to help stimulate an intensive mining and energy program.

A three day field trip will follow the formal presentations. During this trip, participants will be taken to the oil shale and lignite deposits at Mae Sot, the Bhumipol Dam (capacity 680 MW), and to the Lignite Mine and Power Plant at Mae Moh (capacity 225 MW).

FOR WHOM INTENDED

Companies that represent the following industries should consider attending this Symposium:

- A & E Firms
- Consulting Firms
- End Users
- Investment Bankers
- Management Firms
- Metals Manufacturing Companies
- Mineral Exploration Companies
- Mining Companies
- Mining Equipment Manufacturers
- Process Developers
- Process Equipment Manufacturers

The Kingdom of Thailand desires to delineate and expand its mining operations utilizing the oil shale and lignite reserves for the country's needs by granting leases as well as other incentives and financial opportunities to qualified companies.

This meeting will present a forum for U.S. company decision makers to meet the Thai Officials that are charged with the responsibility of starting this industry as quickly as possible.

GENERAL CHAIRMEN

Prabhas Chakkaphak
Director General
Department of Mineral Resources
Ministry of Industry
Thailand

David R. Forshey
Director, Minerals Environmental
Technology
Bureau of Mines
U.S. Department of Interior
United States

ASSOCIATE CHAIRMAN

Sa-Ngob Kaewbaidhoon
Deputy Director General
Department of Mineral Resources
Ministry of Industry

SYMPOSIUM COORDINATORS

Nopadon Mantajit
Senior Geologist, Geological Survey
Department of Mineral Resources
Ministry of Industry
Thailand

Arnold H. Pelofsky
President, AER Enterprises, under
contract to U.S. Bureau of Mines
United States

REGISTER EARLY SINCE REGISTRATION WILL BE LIMITED

(This application must be returned to ensure enrollment.)

FEBRUARY 1-6, 1982 SIAM INTERCONTINENTAL HOTEL BANGKOK, THAILAND

REGISTRATION FEES:

Meeting Alone \$300 (U.S.)
Field Trip Alone \$200 (U.S.)
Meeting and Field Trip . . . \$400 (U.S.)

Registration Fee	\$ _____
Transportation	\$ _____
Hotel(s)	\$ _____
Total	\$ _____

The registration fee includes admission to the Symposium, admission to the receptions, reprints that are available, lunch on Feb. 3, and coffee breaks. On the field trip, the registrants are entitled to ground transportation and lunches. The field trip to visit the oil shale and lignite deposits will be limited to 30 registrants. Spouses will not be allowed to visit the oil shale and

lignite deposits due to the limited number of Land Rovers. A special program has been arranged for the spouses. This portion of the trip will take place on Feb. 4.

The registrants will be returning to the Viang Tak Hotel to spend the evening of Feb. 4. The spouses can accompany the registrants on the rest of the trip. There will be no extra charge for the spouses.



P.O. Box 454, East Brunswick, New Jersey 08816 • (201) 254-6930

Dr. Mr.
Miss Mrs. Ms.

Spouses Name _____

Signature _____

Job Title _____

Company/Institution _____

Company Address _____

Street _____

City _____

State _____

Zip _____

Business Phone/Telex _____

Home Phone _____

TRANSPORTATION:

To secure air transportation at prices shown, please include entire airfare (per person).

No. Seats

January 29, JFK to Bangkok — return February 6, Bangkok to JFK via Pan American \$1370 per RT _____

January 29, San Francisco to Bangkok — return February 7, Bangkok to San Francisco via Pan American \$1050 per RT _____

February 6, Chiang Mai to Bangkok via Air Thai \$ 50 one way _____

Prices are guaranteed up to January 8, 1982.

Please advise if you desire another return flight. The same airfare may apply.

HOTELS:

To secure hotel space, include one night deposit for each hotel.

Rates are approximated due to currency fluctuations.

Siam Intercontinental Hotel (Jan. 30 – Feb. 3) \$86/single \$75/double \$ _____

Field Trip Hotels

Viang Tak (Feb. 3 & 4) \$20/single \$25/double \$ _____

Chiang Inn (Feb. 5) \$35/single \$40/double \$ _____

TOTAL \$ _____

**FOR FURTHER INFORMATION ON HOTELS AND THE MEETING
CONTACT AER ENTERPRISES**

**FOR FURTHER INFORMATION ON FLIGHTS
CONTACT Mrs. Jeanne Sowa, Sowa Travel, (201) 254-6655**

Flights are subject to a 25% charge if cancelled after Jan. 8, 1982. Hotels can be cancelled up to January 20, 1982. Cancellations of the registration are subject to a \$50 service charge. SUBSTITUTIONS MAY BE MADE AT ANY TIME SUBJECT FOR THE FLIGHTS (by Government Regulations).

APPENDIX III

HANDOUT BOOKLETS OF SPEAKERS' ABSTRACTS
AND BIOGRAPHICAL SKETCHES

THAILAND- UNITED STATES OIL SHALE/LIGNITE SYMPOSIUM



FEBRUARY 1-6, 1982
SIAM INTERCONTINENTAL HOTEL
BANGKOK, THAILAND



GENERAL CHAIRMEN

Prabhas Chakkaphak
Director General
Department of Mineral Resources
Ministry of Industry
Thailand

David R. Forshey
Director, Minerals Environmental
Technology
Bureau of Mines
U.S. Department of Interior
United States

ASSOCIATE CHAIRMAN

Sa-Ngob Kaewbakhon
Deputy Director General
Department of Mineral Resources
Ministry of Industry
Thailand

SYMPOSIUM COORDINATORS

Nopadon Mantajit
Senior Geologist, Geological Survey
Department of Mineral Resources
Ministry of Industry
Thailand

Arnold H. Pelofsky
President, AER Enterprises, under
contract to U.S. Bureau of Mines
United States

Table of Contents

	<u>Page</u>
Abstracts	1
Biographical Sketches	15

ABSTRACTS
PROJECT SELECTION CRITERIA

PROJECT SELECTION CRITERIA
 John G. Reed, Partner
 White & Case
 Washington, D.C.

This paper will discuss project selection criteria that have been developed by the synthetic fuels industry in the United States. The criteria that will be discussed include resource base; technological factors; management capability; economic viability; products; environmental; health and safety considerations; availability of water; labor force; waste disposal facilities; socioeconomic factors; and financial resources.

GEOLOGY

LIGNITE EXPLORATION - THAILAND
 Peter Peterson, Senior Geologist
 Dravo Engineers and Constructors
 Denver, Colorado

Fifty seven tertiary age basins are known to exist in Thailand. Two basins, Mae Moh in Northern Thailand, Krabi in Southern Thailand currently produce 1.6 million metric tonnes of lignite for power generation. Remaining basins within Thailand may also contain recoverable lignite reserves.

In 1981, under a U.S. Government Trade and Development Program, Dravo Engineers and Constructors assisted and supervised the Electricity Generating Authority of Thailand (EGAT) in exploring for and evaluating the lignite potential of Mae Ramat, Thae Hom, Wang Nua Basins of Northern Thailand. Sixty seven reconnaissance drill holes were completed during a seven month period. The drilling results, unsuccessful in locating minable lignite reserves, provided sufficient data for future exploration philosophies and procedures.

Previously developed data from Ngao, Kradi and Kantang Basins were all also evaluated for future exploration programs.

The work completed under the U.S. Government Trade and Development Programs assisted in setting basic parameters to develop a systematic procedure for a nationwide evaluation of the lignite potential in Thailand.

MINING OF OIL SHALES IN THE EASTERN AND WESTERN UNITED STATES
 R. M. DeGabrielle
 General Manager, Western Operations, Cleveland-Cliffs
 Vice President, Cliffs Engineering, Inc. Rifle, Colorado

This paper represents a discussion of the various mining techniques available for mining oil shale with particular emphasis on open pit mining. Specific mining methods are discussed for mining oil shales in the eastern and western United States including underground mining of eastern and western oil shales and open pit mining of eastern oil shales. A comparison of capital and operating costs for the various mining techniques and locations will be discussed.

SURFACE AND UNDERGROUND LIGNITE MINING METHODS
 R. A. Tinstman, General Manager of Engineering
 Charles Schoenfelder, Senior Engineer-Mining
 Morrison-Knudsen Company, Inc.
 Boise, Idaho

The enthusiasm to develop lignite as a valuable energy source in the world has never existed at such a high level as now. The market for lignite, especially as a boiler fuel, primarily for the generation of electricity is increasing.

Lignite is attractive now because it can be economically mined and consumed using current technology. As oil prices continue to rise, lignite and coal become more economical alternate sources of energy.

As the thicker, near surface seams become mined out, it becomes important to understand the mining methods available. Lignite mines, both surface and underground, are becoming deeper and are encountering thinner, steeply dipping, faulted and more irregular seams. The economical margin for error becomes smaller as capital and operating costs increase.

The increased complexity of surface lignite mines emphasizes the importance of understanding the mining methods available, including dragline, truck-shovel, bucket wheel excavator, and scrapers. Selecting the mining method best suited is a difficult task.

While underground lignite mines are not common, this trend may change in the future. Selecting from conventional, continuous, and longwall systems can be difficult when considering available capital and labor.

Operators are spending more time and money, not only for exploration and predevelopment, but also in reviewing numerous mining alternatives. Continuous material transport methods are becoming more attractive as the price of diesel fuel increases.

Increased demands for energy and advances in technology ensure an expanding market for lignite.

PROCESSING - OIL SHALE

PARAHO OIL SHALE TECHNOLOGY - A PROGRESS REPORT

Donald B. Jones, Process Engineer
John B. Jones, Jr., President
Paraho Overseas Corporation
Grand Junction, Colorado

The background and development of the Paraho Technology will be described. The Paraho D H Retorting Process has been selected to recover energy values from the Western oil shales in the U.S.A., typical data from the pilot and semi-works retort operation will be presented.

The paper also describes the current projects including the design of an 18,000 ton per day commercial size retorting facility. Also discussed, are plants to expand production from this facility to a capacity of 42,000 barrels of partially refined oil per day.

"PROCESSING RICH OR LEAN FOREIGN OIL SHALES - TOSCO'S WORK IN MOROCCO AND CHINA"

Donald C. McCullum
Director of Licensing
Tosco Corporation
Los Angeles, California

The TOSCO II Process

Tosco Corporation is a leading oil shale technology developer and a partner in the Colony Shale Oil Project which is now under construction in northwest Colorado. The TOSCO II retorting process has been successfully tested for sustained operating periods in a 1,000 ton per day semiworks plant at Colony. This technology has been licensed for use on oil shales in the United States and abroad to several companies including Exxon Corporation, which is Tosco's venture associate in the Colony project.

Technology Improvements

Improvements continue to be made in Tosco's oil shale and related technologies, particularly development of effective means of utilizing the residual carbon on rich or lean foreign shale deposits. Tosco recently has completed a multi-million dollar expansion of its research center to further improve its capabilities for adapting its technologies to varied energy resources, including coal and other solid hydrocarbons.

International Activities

Tosco has an active interest in international oil shale development. With the French bank, Paribas, Tosco has undertaken an 18-month joint feasibility study of the potential for commercial development of Morocco's Timahdit deposit. Also, Tosco has been selected by the People's Republic of China to assist in the development of the oil shale deposits at Maoming and elsewhere. In recent years, the company has discussed the prospects for commercial oil shale development with officials of Australia, Brazil, Jordan, Thailand, Japan and Yugoslavia.

THE BRAVO TRAVELING GRATE PROCESS
FOR OIL SHALE RETORTING
Forrest W. Kinsey
Technical Manager, Oil Shale
Louis J. Colaianni
Process Manager, Oil and Gas-Oil Shale
Dravo Engineers and Constructors
Pittsburgh, Pennsylvania
Peter M. Peterson
Senior Geologist
Dravo Engineers and Constructors
Denver, Colorado

The Dravo traveling grate process has been used for years to process large tonnages of iron ores efficiently, using either the sintering or pelletizing processes. In late 1979, Dravo began an investigation into the feasibility of using this equipment to retort large tonnages of oil shale in a carefully controlled process.

This paper will review the results of the laboratory investigation in an adiabatic retort, the development of our 300 ton per day pilot plant in Cleveland, Ohio, and the requirements of a commercial facility processing up to 50,000 tons per day. Retorting efficiency, oil and gas characteristics along with spent shale properties will be discussed.

BATCH RETORTING
Chang Yul Cha
Assistant Vice President
Science Applications, Inc.
Golden, Colorado

The batch retorting process has the longest history of operation in producing oil from oil shale and has also provided the foundation for all continuous processes which utilize the internal combustion (direct heating) and the indirect heating process with hot inert gas. Because of its long history and the simplicity of the process, a large amount of research and development work has been conducted to develop the batch retorting process.

There are twenty or more identified individual retorting processes in use around the world for the production of shale oil; but at the present time, no single process has been universally accepted or demonstrated as an optimum solution to shale oil production problems. Because of the high technical risks involved in the scale up of continuous processes, serious consideration should be given to using the batch retorting process for the initial commercial development of oil shale, especially in developing countries. The application of the batch retorting process in the small scale commercial operation does not require a large capital investment. Furthermore, it

will provide not only the opportunity to train technical personnel, but also provides a large enough quantity of shale oil for conducting the evaluation of shale oil utilization.

PROGRESS REPORT ON THE GEOKINETICS HORIZONTAL
IN SITU RETORTING PROCESS - 1981
Mitchell A. Lekas
President
Geokinetics, Inc.
Salt Lake City, Utah

Geokinetics, in cooperation with the United States Department of Energy is engaged in developing an in situ process for the extraction of oil from shale. The process is designed for use in areas where the oil shale beds are relatively close to the surface. Suitable deposits occur in many locations throughout the world.

In the process, a pattern of blast holes is drilled from the surface of the earth through an oil shale bed below. The holes are loaded with explosives, and detonated. The blast produces an uplift of the overburden, and a fragmentation of the oil shale bed. The result is a permeable zone of fragmented shale that constitutes an in situ retort. The bottom of the retort is sloped to provide for drainage of the oil. The oil shale is ignited, and air is injected to establish and maintain a burning front that occupies the full thickness of the fragmented zone. The front is moved in horizontal direction through the fragmented shale towards the gas exhaust holes at the far end of the retort. The burning front heats the oil shale ahead of the front, driving out the oil, which drains to the bottom of the retort, and flows along the sloping bottom to a sump, where it is lifted to the surface by conventional oil field pumps. As the burning front moves through the retort, it burns residual coke on the retorted shale as fuel and produces a large volume of combustible gas.

Field tests on the process began in 1975, and have continued without interruption to date. Twenty-five retorts have been blasted, sixteen retorts have been burned and thirty thousand barrels of oil have been produced. Three full sized retorts, each covering more than one acre, have been blasted. One was burned in 1981, and two will be burned in 1982.

PROCESSING - LIGNITE

THE U-GAS PROCESS
F. C. Schora, Senior Vice President,
Gas Development Corporation,
J. G. Patel
Institute of Gas Technology
Chicago, Illinois

The U-GAS process has been developed by the Institute of Gas Technology to produce a low to medium Btu (150 to 300 Btu/SCF) fuel gas from coal in an environmentally acceptable manner. The process accomplishes coking, devolatilization, and gasification of coal in addition to separation of ash in a single-stage fluidized-bed reactor. A 24 ton per day pilot plant has been successfully operated on a variety of feedstocks covering major U.S. coal deposits and several foreign coals. The total operating time for the pilot plant has been over 7000 hrs, during which more than 120 test runs have been conducted. A raw product gas having a heating value of about 300 Btu/SCF and ash agglomerates containing 95 per cent ash have been repeatedly produced in the pilot plant. This corresponds to an overall gasifier coal utilization efficiency of above 93 per cent. Operation of the pilot plant has firmly established process feasibility, safe and reliable operability, and provided a strong data base for design of the first commercial plant.

The U-Gas process has been selected by Memphis Light, Gas and Water Division (City of Memphis) for construction of a plant in Memphis to produce 50 billion Btu of industrial fuel gas daily from 3200 tons of coal. Currently detailed design is well underway, all construction and environmental permits have been obtained and construction is to begin in summer of 1982 after discussions with U.S. Synthetic Fuel Corporation for a loan guarantee are completed. This plant is expected to be the first of the "second generation" gasification technology based plants to be erected in the U.S.

Besides industrial fuel gas, product gas from the U-Gas process, in the form of synthesis gas, can be used as a chemical feedstock for production of hydrogen, ammonia, or methanol. The gas is also suitable for power generation with more advanced technology: a combined gas turbine/steam turbine or a fuel cell. This paper will discuss the details of the process, its application to utilize lignites and the Memphis plant design.

A WORKABLE LIGNITE PELLETIZING PROCESS

Eric W. Blaustein
Manager, Engineering
Acres American, Inc.
Pittsburgh, Pennsylvania

This paper discusses the research efforts that were undertaken to develop a workable lignite pelletizing process. It describes the 50 ton demonstration unit and the characteristics of the finished lignite pellets. It then discusses the conceptual design of a 4000 TPD facility and its capital and production costs.

LIGNITE COALS AND ITS IMPACT ON THE DESIGN OF POWER PLANT COMPONENTS

S. Raj
Senior Coal Specialist Engineer
Ebasco Services
New York, New York
R. Raj
Consultant, Curtiss-Wright Corporation
and Associate Professor
Turbomachinery Laboratory
Department of Mechanical Engineering
City College of New York
New York, New York

Coal - having been formed from plant substances preserved from complete decay in a favorable environment and acted upon by various chemical and physical agencies - is not a simple substance but a complicated mixture of organic and inorganic structures. Oxidation of these coal structures carried differently will provide different variety of products depending upon the untying the skeins of linkages between the atoms specially of nitrogen and sulfur. The chemical structure of coal lignites can influence the products of combustion, particle size, and static charge on particles in hot gas stream. It can also influence the complex compound formation in reactions with dolomite and other additives added to remove sulfur and other undesirable substances from coal.

Chemical structure of coal lignites is analyzed in this paper from the point of view of combustion products which pass through the turbine blade passages. The burning of coal and unremovable coal ash particles passing through the turbine blade passages cause erosion and deposition of the blades and

hence reduce the blade life, heat transfer properties, aerodynamic efficiency and also leads to the inception of corrosion. The variation in the chemical structure of coal and coal lignites and its influence on the turbine blade design specifications and overall design of power plant components running on coal or coal derived fuel, is also considered. It is shown that the electrostatic charge which appears on the particles during the process of combustion and fine grinding is partially dependent upon the chemical structure of Coal Lignites, and is a leading phenomenon causing deposition on the power plant components.

UNDERGROUND COAL GASIFICATION IN THE UNITED STATES, RAWLINS I & II

Richard H. Graham, Manager, Minerals Technology,
Gulf Research & Development Co.
Pittsburgh, Pennsylvania
R. L. Robertson, Manager, TRW Resource Development Operations,
McLean, Virginia

Underground coal gasification of coals in steeply inclined beds has been studied in the United States by the Gulf Research & Development Company assisted by TRW, Inc. under sponsorship of the U.S. Department of Energy. Two major field experiments have been conducted - in 1979 and 1981. Those experiments have demonstrated that gas of significant energy content can be produced over sustained periods with oxygen injection. Experience to date permits design of further experiments necessary before commercialization can be considered.

UNDERGROUND COAL GASIFICATION - A LEADING CONTENDER IN THE SYNFUELS INDUSTRY

D. R. Stephens
Project Director, In-Situ Coal
Lawrence Livermore Laboratory
Livermore, California

Underground coal gasification (UCG) offers a relatively low cost, environmentally sound method to produce clean fuels from coal deposits which are unattractive for mining. These fuels include electricity, methanol, pipeline quality gas or gasoline. Underground coal gasification (UCG) is similar to conventional coal gasification except that the coal is not mined - gasification takes place underground. Steam and oxygen are injected underground, reacting the coal to produce a medium heating value gas which can be converted into a wide variety of products in surface facilities.

Little was known about UCG in the USA until 1973, when the U.S. Government resumed field testing. Since that time, sixteen successful UCG tests have been carried out, of which eleven were funded by the Federal Government. The encouraging technical

successes of these tests together with environmental, theoretical and laboratory programs have led ARCO Coal Co. Inc. and Basic Resources, Inc. to develop commercialization programs. ARCO Coal Co. has announced a 70 MS plan to commercialize UCG by the 1990's; they have stated that UCG is a leader in the ranks of the developing synfuels industry and that products from UCG could have a decided economic advantage over other synfuels alternatives.

Basic Resources, Inc. purchased the rights to the extensive Soviet UCG technology in 1975 and, after conducting a number of tests in Texas lignite, have announced plans for a commercial 15 MWe generator using UCG.

Although the results to date have been very encouraging, much remains to be done. Important technical, environmental and economic questions remain unanswered. These include: effects of coal and overburden upon the process, groundwater and subsidence effects, methods to convert (or link) process boreholes, and effects of larger scale tests. With the continued joint support of the Federal Government and industry, these uncertainties should be resolved and the technology in commercial use in the USA by the 1990's.

COMBUSTION

DIRECT COMBUSTION OF OIL SHALE AND LIGNITE FUELS

H. Phillips
President
Foster Wheeler Development Corporation
Livingston, New Jersey

A discussion of the effect fuel properties have on the design of steam generators firing low-grade fuels in either pulverized coal-fired units or fluidized bed steam generators.

THE APPLICATION OF FLUIDIZED BEDS IN THE COMBUSTION OF LOW-GRADE AND FLUIDIZING-BED RETORTING OF LOW-GRADE OIL SHALE

J. Y. Shang
Deputy Director, Technology Development and Engineering Division
J. E. Notestein
Director, Technology Development and Engineering Division
A. A. Pitrolo
Director, Morgantown Energy Technology Center,
U.S. Department of Energy
Morgantown, West Virginia

The fluidized-bed reactor has demonstrated its versatility in the combustion of low-grade fuels and the retorting of low-grade oil shales.

In combustion of low-grade fuels such as low-yield oil shales with high limestone, sulfur, and nitrogen content, innovative methods were developed to address these problems. One, a pseudo two-stage fluidized bed, was used to insure the maximum extraction of heat energy from the combustion of oil shales without excessive heat consumption resulting from limestone calcination. It was also found that low-grade oil shales with high nitrogen content could be burned in the pseudo two-stage bed for reduced nitrogen oxide emissions.

A number of low-grade fuels such as high sulfur coals, lignites, anthracite culms, and scrap tires were test burned at the Morgantown Energy Technology Center to demonstrate the feasibility of burning these low grade fuels in a fluidized-bed combustor. The special features of these low-grade fuels and the design information pertaining to the design of low-grade fuel fluidized-bed combustors is gathered and presented.

The fluidized bed can also perform as a high throughput oil shale retort for the production of shale oil. A 2-inch diameter electrically heated fluidized-bed retort was designed and assembled at the Morgantown Energy Technology Center. This electrically heated fluidized-bed retort was used to study the effects of process variables, feed rate, and retorting temperatures on shale oil yield and composition. The results of the process variable study coupled with a devolatilization cell experiment, intended to determine the rate and yield of devolatilization, will be utilized to design commercial-size retort.

A number of innovative designs are presented for the efficient utilization of low-grade oil shales (eastern U.S. and low-grade western U.S. shales).

ALTERNATIVE MEANS OF FIRING LIGNITE IN LARGE BOILERS

W. J. Bradley
Manager, Fossil Fuel Technologies
E. A. Kimmel
Project Manager
Senior Supervising Mechanical Engineer
Burns and Roe Inc.
Oradell, New Jersey

In many countries lignite represents a major and largely untapped energy resource. The high volatile matter content and low ignition temperature of lignite make it relatively easy to burn, but the impurities such as moisture and mineral matter, particularly their inherent alkaline constituents, can be variable and troublesome. These impurities require careful consideration during equipment design to preclude operating problems. Lignite can be fired in pulverized form in large pulverized lignite-fired boilers, or in granular form in large cyclone furnaces or

or fluidized bed combustion boilers. The paper presents the results of recent studies performed by Burns and Roe for the U.S. Department of Energy and for the Electric Power Research Institute in which conceptual designs of atmospheric fluidized bed boilers were developed for firing Western sub-bituminous coals and Gulf Coast lignites. Estimated capital and operating costs are compared for pulverized and fluidized bed lignite combustion plants.

"LIGNITE/TAR SANDS -- HANDLING AND COMBUSTION PROBLEMS"

Raymond J. Jaworowski
Assistant Vice President
International Operations
Apollo Technologies Inc.
Whippany, New Jersey

To extract the relatively cheap energy stored in lignite and/or tar sands requires dealing with a number of environmental, combustion and process problems. A change of a few percent of moisture can turn lignite from a dust producing form, which exhibits health and/or explosion hazards, to a wet sticky material, which clogs transfer hoppers inhibiting movement of the fuel to the furnace. Once the lignite enters the combustion zone, the inorganic constituents can form significant slag deposits in the boiler which can inhibit heat transfer and can lead to serious mechanical and/or operational problems within the system.

In the tar sands process after the crude is extracted, it is sent to a catalytic cracker for refining. Both the CO laden off gas and the residual coke offer serious environmental problems. The gas stream is passed to a CO boiler and electrostatic precipitator to control both the gaseous and particulate emissions. In many cases serious emission problems can result, due to the chemical nature of the particulate being emitted. The coke fines offer another type of environmental problem due to both their disposal and/or utilization as feed stock for other processes.

This paper will describe each of these situations in detail and show how the proper application of chemical technology has helped in controlling the various environmental and hazardous problem areas.

ENVIRONMENTAL ISSUES

MANAGEMENT OF OIL SHALE AND LIGNITE WASTE PRODUCTS

John M. Heckard, Partner
James & Moore
Cincinnati, Ohio

Planning for the development of oil shale resources must also accommodate planning for the management of liquid, solid and gaseous wastes. In pristine areas such as North Thailand, particular attention must be paid to the quality of the environment and the health and safety of its inhabitants.

Major impacts of oil shale mining and processing are described, and special attention is given to pollution control technology and recommendations for the establishment of a regulatory program which is designed to hold impacts to an acceptable level.

An environmental policy to deal with environmental problems should be drafted. Actions to minimize impacts should be implemented in the early planning process to be most effective and economical. Typical actions include pre-operational, operational and post-operational requirements. Examples of these include, respectively, definition of the existing environment and consideration of alternative plans; control and possible reuse or utilization of discharges, and requirements and guidelines for restoration and rehabilitation.

LEGISLATIVE CONSTRAINTS TO OIL SHALE AND LIGNITE UTILIZATION

David R. Forshev
Director, Division of Minerals Environmental Technology
Bureau of Mines

In the United States there are numerous legislative documents and regulations implemented by both Federal and State agencies that govern the potential growth of oil shale and lignite production. This body of legislation and regulation contains a number of environmental constraints-the most important of which are air and water quality, water resources, waste disposal and reclamation. This paper analyzes the five most important U.S. Acts affecting oil shale and lignite utilization and highlights the most important aspects which should be considered by any potential oil shale or lignite operation. The Acts covered are: Clean Air Act; Clean Water Act; National Environmental Policy Act; Resource Conservation and Recovery Act; and Surface Mining Control and Reclamation Act.

Oil Shale and lignite mining may disrupt water quality and/or water reserves with the most severe constraints involving water quality and solid waste disposal. The severity of the impact varies with location and the type of mining aquifers. Underground mining in high sulfur regions may result in acid mine water formation. Solid waste disposal is a serious concern. Disposal of spent shale and storage of raw shale could create land disturbances of large magnitude, result in potential accumulation of toxic substances in vegetation, and cause further contamination of ground and surface waters. Coal mining and preparation operations generate solid waste that is normally disposed of in surface refuse piles. These piles occupy substantial land areas and are subject to spontaneous combustion. They may also contain acid-forming materials that will contribute to stream pollution and complicate restoration of the aquifer.

The relative importance of these impacts and suggested ways of dealing with related legislative constraints are enumerated.

"ENVIRONMENTAL CONCERNS OF SURFACE MINING OIL SHALE"

Arnold H. Pelofsky
President, AER Enterprises

This presentation will discuss a study that has been completed for the U.S., Environmental Protection Agency (EPA) on the environmental concerns of surface mining oil/shale in the Piceance Creek Basin to produce 100,000 bbl/day, 400,000 bbl/day and 1,000,000 bbl/day. The study develops the mine plan and then evaluates the environmental factors that must be analyzed. Based on this work it appears that aquifer water could be used as process water, that the probable dust problem could be substantially reduced by the use of aquifer water and that disposal of spent shale could be significantly reduced in its importance as an environmental hazard. One of the most important aspects of this study is that it shows that if environmental concerns are evaluated at the onset of the preliminary design phase, their impact could be reduced by proper engineering.

BIOGRAPHICAL SKETCHES

BLAUSTEIN, Eric W. is Manager, Engineering for Acres American Inc. At present, he is responsible for the direction and coordination of the professional and technical functions of the Pittsburgh Regional Office. As such, he is also responsible for all activities involving agglomeration-including lignite, coal plant waste and combustion, fly-ash, and in-field coal mine fire control systems.

BRADLEY, W. J. is Manager of the Fossil Fuel Technologies Department of Furns and Roe, Inc. He is responsible for the technical content of engineering and economic studies of fluidized bed combustion, MHD, coal mixtures, fuel cells, material handling systems, and flue gas cleanup systems. He has served as manager for major projects for the U.S. Department of Energy, the Electric Power Research Institute, and electric utility companies. Mr. Bradley previously served as an Assistant Professor of Mechanical Engineering at Manhattan College, N.Y.

CHA, CHANG YUL is presently Assistant Vice President of Science Applications Inc. and also retains the responsibility of being the Director of the Chemical Engineering Department.

He has extensive experience in the development and evaluation of various oil shale processes including in-situ and T³ surface processing technology. Some areas of expertise include process design and development, mathematical modeling, oil shale retorting, true and modified in-situ oil shale process development, computer programming, reaction kinetics, wastewater treatment, mass and heat transfer, fluid dynamics, thermodynamics, process dynamics, and coal gasification.

COLAIANNI, LOUIS J. has an eighteen year background in chemical process design and engineering coordination. His experience includes oil refining, petrochemicals, synthetic fuels development, fuel conversion and coal chemicals. Presently Mr. Colaianni is Process Manager, Oil and Gas-Oil Shale. In this capacity he is responsible for process development related to the oil and byproducts from oil shale retorting in the laboratory, pilot plant and for commercial facilities.

Mr. Colaianni is a graduate of Pennsylvania State University with B.S. degrees in Chemical Engineering and Fuel Technology.

FORSHEY, DAVID R. has worked for the Bureau of Mines since graduating from Carnegie Mellon University in 1961. He has held various technical, supervisory, and staff positions in research on mine health and safety at the Bureau's Pittsburgh (Pa.) Research Center and Washington headquarters, serving as Program Director for all Bureau mine health and safety research from 1977 to 1979. Since 1979 Dr. Forshey has been Program Director of the Bureau's research on minerals environmental technology. In this role he manages research that covers the mining and processing spectrum of premine planning, mine hydrology, mine waste, tailings stability and seepage control, mine land reclamation, revegetation, subsidence control, abandoned mine land reclamation, processing

effluents control, and process modifications to reduce toxic byproduct release. Holder of a Ph.D in Physical Chemistry from Duquesne University and a Master of Public Administration from the University of Southern California, Dr. Forshey has supervised research activities under several Bilateral Agreements and provided cooperative consultation to Great Britain, France West Germany, Poland, Hungary, and South Korea. He is the author or co-author of over 40 technical publications, holds two patents, and is the recipient of several awards including the Department of the Interior's Meritorious Service Award in 1980.

DeGABRIELE, R. M. began his employment in The Cleveland-Cliffs Iron Company's Mining Department as a junior mining engineer. From there he transferred to Cliffs Shaft Mine for a short tenure as an operating engineer, returning to the Mining Department as an underground superintendent for a period of three years. Following this assignment, he was transferred to the Ore Improvement Plant as an operating engineer and plant superintendent, receiving seven years experience in this department. He was then transferred to the Project Engineering Department where his assignments varied from Project Engineer, Chief Project Engineer, Chief Engineer, to Manager, Engineering and Construction. His present assignments are Vice President of Cliffs Engineering, Inc., as well as, General Manager, Western Operations.

GRAHAM, RICHARD is Manager of Minerals Technology for Gulf Research and Development Company in Harnarville, Pennsylvania. He is responsible for development programs in coal, oil shale and uranium.

Recent programs carried out by his organization include a major field project in underground coal gasification for DOE, design and construction of a five ton per day oil shale retorting pilot plant for the Rio Blanco Oil Shale Company, uranium milling and mining support for the Mt. Taylor project, coal beneficiation and resource assessment projects for Pittsburgh and Midway Coal Company and process support for oil shale production.

Following education at the Rensselaer Polytechnic Institute and the University of Washington and service as a military meteorologist, he has been employed with the Allis Chalmers Manufacturing Company, the U.S. Atomic Energy Commission and the General Electric Company prior to joining Gulf Oil in 1967.

HECKARD, JOHN M. is a partner with Dames and Moore. He has directed environmental impact studies for a variety of facilities including nuclear and fossil-fueled power stations, pipelines, coal gasification facilities, deep-water port, water resource projects, mines and numerous smaller facilities. He has served as technical or project advisor to numerous environmental and geological programs and has

supervised several site selection surveys.

HENRIE, THOMAS A. a Bureau of Mines scientist and research administrator from Reno, Nevada, served as Associate Director--Mineral and Materials Research and Development from October 1974 until August 1979, when he assumed the full responsibility of Chief Scientist. As Chief Scientist, he is responsible for defining the Bureau's role within the context of the Nation's materials policy as well as responding to national problems as they arise; developing new avenues of minerals research and cooperating with the minerals industry in generating minerals knowledge and technology.

Author of numerous reports and papers, Dr. Henrie holds many patents in the field of extractive metallurgy. He is a member of the American Institute of Mining, Metallurgical and Petroleum Engineers (AIME), the Mining and Metallurgical Society of America, the American Association for the Advancement of Science, the Society of Mining Engineers, and the Utah Chapter of Sigma Xi. He has been very active in AIME work--past Chairman of its Extractive Metallurgy Division, past President of the Metallurgical Society and has also served as Vice President of AIME.

JAWOROWSKI, RAYMOND J. is Assistant Vice President, International Operations. He is responsible for the sales, marketing and technical activities of the Apollo Technologies International Division, especially in the areas of Southeast Asia, South America and Canada.

Prior to his employment with Apollo Technologies he was Technical Director for the Air Correction Division of Universal Oil Products - involved in research and development, air pollution control equipment, such as electrostatic precipitators, scrubbers and incinerators.

JONES, RONALD B. is a Process Engineer for Paraho Overseas Corporation. He has over five years experience with the Paraho Technology and has worked both on western oil shales of the U.S.A. and oil shales from deposits in other parts of the world.

Mr. Jones received a Bachelor's degree in Chemistry and a Masters degree in Chemical Engineering from Colorado State University and has published several papers on oil shale.

Current activities are devoted to the application of the Paraho Technology to processing oil shales from different deposits.

JONES, JOHN D., JR., is the President and Founder of Paraho Overseas Corporation, and the inventor of the Paraho Technology. He has over thirty-five years of experience in oil shale processing technology and has worked extensively on both the western oil shales of the U.S.A. and the Paraiba Valley and Irate oil shales of Brazil. Investigations are now in progress on oil shales from other deposits in different parts of the world.

Mr. Jones received a Bachelor's degree in Chemical Engineering from Oklahoma State University in 1942. In 1980 he was installed in the Hall of Fame of the Division of Engineering, Technology and Architecture at Oklahoma State University. He is a member of the American Institute of Chemical Engineering and a Registered Professional Engineer in the State of Colorado. He has 19 patents plus other inventions in varying stages of patent application and has published several articles on processing of oil shale and other minerals.

Current activities include the scale-up of the Paraho technology to commercial size plants for western oil shale and determining the feasibility of using the technology on oil shale from other deposits.

KIMEL, EGON A. is Senior Supervising Engineer in the Power Technology Division of Burns and Roe, Inc. He is responsible for conceptual designs and studies of power generation facilities, with particular emphasis on advanced methods of coal utilization. Mr. Kimel has 25 years of experience in power plant engineering. He has managed the engineering and design of nuclear and fossil fired projects and has conducted numerous studies in these fields. He was the principal investigator for the conceptual design of several lignite fired atmospheric fluidized bed boilers. Mr. Kimel obtained a bachelors degree in mechanical engineering in Bucharest, Rumania, and a masters degree from Columbia University, New York.

KINSEY, FORREST W. has a background of twenty-five years in planning and commercial development, process research and development, process agglomeration and beneficiation facilities, and process development of oil shale retorting. As principal engineer and senior development engineer, Mr. Kinsey had process engineering responsibility for all Dravo sintering plants.

Presently, Mr. Kinsey is Technical Manager-Oil Shale. As such, he is responsible for development of oil shale related technology, process engineering and supervision of oil shale retorting pilot plant operations and laboratory pot tests.

Mr. Kinsey has a B.S. in Metallurgical Engineering from Drexel University and an M.S. in Metallurgical Engineering from Wayne State University.

KRANKER, RICHARD has a BBA degree in International Trade. He combines ten years of private sector export merchant experience in the ferrous and non-ferrous metals business with more than fifteen years of international trade related assignments in AID including the commercial import program in Viet Nam and almost four years as the USAID Laos representative in Thailand.

His present post as Assistant Director for Asia in The U.S. Trade and Development Programs which he has held for the last two years has allowed him to apply his considerable experience towards furthering cooperation between the U.S. private sector and developing countries in Asia. The Thailand-United States Oil Shale/Lignite Symposium is a direct result of Mr. Kranker's professional and personal interest in expanding this cooperation.

with alternate energy fuels for over twenty years. He has chaired, organized and directed many successful symposia. He is the author of technical papers, has several patents and is the author/editor of many books; including: "Heavy Oil Gasification"; "Synthetic Fuels Processing: Comparative Economics"; "Coal Conversion Technology: Problems and Solutions"; and "History of Western Oil Shale."

PETERSON, PETER M. is presently senior Geologist for Dravo Engineers and Constructors in Denver, Colorado. Mr. Peterson has over 13 years of experience on geologic projects. He worked for six years with coal projects in various areas of the United States. For over seven years, he was employed in industrial mineral exploration in the western United States and was involved with numerous commodities.

PHILLIPS, H. is a graduate of Penn State University January 1949 with a B.S. degree in Mechanical Engineering. In February 1949, he joined Foster Wheeler's Training Program as a Field Service Engineer for the start-up of marine and stationary steam generators. In 1952, he transferred to the Research Division as a Project Engineer and became Assistant Director of Research in 1959. In January 1977, he was made President of Foster Wheeler Development Corporation.

PITROLO, AUGUSTINE A. is Director of the Morgantown Energy Technology Center, United States Department of Energy (DOE). The Center is responsible for DOE's R&D in Coal Gasification, Fluidized-Bed Combustion, Unconventional Gas Recovery, Components, Combined Cycles, and Gas Stream Cleanup.

Mr. Pitrolo began his professional career with the Joy Manufacturing Company in design and development of underground mining equipment. He then joined General Electric as a power plant engineer involved in the design and development of aircraft gas turbines. Subsequently he served as systems manager in various advanced space programs, followed by manager of G.E.'s space nuclear radioisotopic thermoelectric generator (RTG) programs. He managed the research, technology, development, and production of SNAP-27 RTG's flown and deployed on each Apollo flight. He later became involved in the design and development of commercial gas turbines.

He joined the Energy Research and Development Administration as Director of the Morgantown Energy Research Center in 1975, where he is engaged in research and technology development of coal conversion into synthetic gas and oil, direct coal combustion, and extraction of oil and gas. From October 1977 (activation of DOE) to June 1978, Mr. Pitrolo had a dual role--continuing his duties as Director, Morgantown Energy Technology Center, and serving as Acting Deputy Program Director for Fossil Energy. In this capacity he was involved with directing the DOE's Fossil Energy research, development, and demonstration efforts.

Mr. Pitrolo is the author of a number of papers, their subjects ranging from systems for auxiliary devices to heavy duty gas turbines. He was awarded the NASA Public Service award in 1972. He is a graduate engineer of West Virginia University (1952).

RAJ, RISHI received his BS from Punjab University, India and his MS from P F University, Moscow USSR. He earned his Ph.D from The Pennsylvania State University.

He is Associate Professor in the Mechanical Engineering Department at the City College of New York. He is also consultant to a number of industries. He has written a book and published several technical papers.

RAJ, SWADESH received her BS and MS with Gold Medal from Agra University, and Ph.D on Coal Structure from The Pennsylvania State University. She has worked as a Research Assistant in the Material Science Department of the Pennsylvania State University and as a Research Associate in the Chemical Engineering Department of The City College of New York.

Currently, she is working as a Coal Specialist to the development group of Ebasco Services Incorporated. She has also offered basic courses in Fuel Technology at the Graduate and undergraduate levels at various colleges. She has written a number of technical papers.

REED, JOHN G. is a partner in the law firm of White & Case. He has served in that capacity since 1967. His current field of special interest involves questions relating to the selection of projects for financial assistance by the United States Synthetic Fuels Corporation under the Energy Security Act of 1980. He has acted as a consultant to the United States Synthetic Fuels Corporation with respect to project selection criteria and other matters, (February to June 1981).

His practice has involved matters with a number of government departments and agencies, including the Departments of Commerce, Defense, Justice and Treasury, the Federal Reserve Board, Federal Home Loan Bank Board, Federal Savings and Loan Insurance Corporation, Comptroller of the Currency, the Securities and Exchange Commission and the Federal Energy Regulatory Commission.

ROBERTSON, R. L. is Manager of TRW Resource Development Operations in McLean, Virginia. He has pioneered in advancing major innovative energy programs in underground coal gasification, oil shale, coalbed methane, geopressured methane, western gas sands, geothermal and in-situ minerals recovery.

Over the past six years, Mr. Robertson has built an organization of over 100 professionals skilled in program management of major energy projects, engineering and economic evaluations of energy systems, resource assessment, field test design and evaluation, in-situ instrumentation systems and software, and design, construction and operation of field projects. He established new TRV field offices in Denver, Colorado; Morgantown, West Virginia; Rifle, Colorado; and Las Vegas, Nevada.

In addition to managing TRV's Resource Development Operations, Mr. Robertson served as Program Manager for TRV's Naval Oil Shale Predevelopment Program with the U.S. Department of Energy. He also served as project manager for TRV's support contract for the ERDA/DOE Fossil Energy Program.

SCHOENFELDER, CHARLES J. has five years of mining engineering experience. As a Senior Mining Engineer, he is responsible for performing mine design work including equipment evaluation and selection, pit planning, and scheduling. Projects he has been involved in include expansion of a multiple seam surface coal mine in Colorado and feasibility studies for a surface coal mine in Wyoming.

Before joining Morrison-Knudsen, Mr. Schoenfelder was an engineer with Peter Kiewit Sons at a four-million-ton-per-year coal mine. Earlier, he worked as an engineer at a ten-million-ton-per-year surface coal mine, also operated by Peter Kiewit Sons.

SCHORA, FRANK C. is responsible for commercialization of newly developed technology, and of energy-related studies. As Senior Vice President, he serves as an advisor to the President of GDC, Inc., assisting in general reviews and formulation of plans for overall GDC operations. He is engaged in commercialization and licensing activities for GDC, Inc. in several major areas of commercialization. Mr. Schora has served as Senior Vice President since his appointment by GDC Directors in 1978.

Mr. Schora was recently made President of the HYCRUDE Corporation, a subsidiary of GDC, Inc. devoted to the commercialization and licensing of the HYTORT Process which has been developed to process oil shales that do not respond adequately to the thermal processes.

The international nature of GDC, Inc. operations has carried Mr. Schora to 20 foreign countries during 1979 and 1980, either directly or through the direction of special corporate missions abroad. He is also well known in international circles through his activity in the International Gas Union, where he serves as the U.S. representative on Committee B, and on two separate subcommittees (High-Btu gas and Intermediate-Btu Gas) of Committee B -- Manufactured Gases. Mr. Schora's contributions to international technical literature total about 100 titles, including papers, book contributions, and encyclopedic works. In addition, he has been granted 18 patents and several other patent disclosures are in various stages of review.

SEIBEL, RICHARD J. has worked for the U.S. Government since 1970. He has held various technical, supervisory and staff positions in mining research for both the Bureau of Mines and the Department of Energy. Since 1979, Mr. Seibel has been the Chief of Mine Waste Management. He has responsibility for the overall management, development, evaluation and analysis of mine waste and special environmental problems and programs. With respect to the environmental programs and with respect to the minerals environmental programs, he manages research that covers the mining and processing spectrum of premine planning, mine waste, tailing stability and seepage control, mine hydrology, noise and vibration and fugitive dust. Holder of a BA in math, Mr. Seibel has done graduate work at Penn State University and the University at Pittsburgh. Mr. Seibel has supervised research under a bilateral agreement with Poland and has provided cooperative consultation to Great Britain, West Germany and Poland. He is author or co-author of numerous publications.

SHANG, Jer-Yu is the Deputy Director of the Technology Development and Engineering Division at the Morgantown Energy Technology Center, U.S. Department of Energy. His current responsibility involves the provision of technical support to DOE-sponsored Fluidized-Bed Combustion (FBC) programs and directing in-house FBC research and development work. He is a graduate of the Polytechnic Institute of Brooklyn with majors in Chemical Engineering and minors in Physical Chemistry and Applied Mathematics. He previously was employed by MITRE Corporation, Dravo Corporation, William's Steam Engine Company, Sun Oil Company, Dorr Associates, and Chinese Petroleum Corporation in various assignments including fluidized-bed combustion, hot gas cleanup, oil shale retorting, biomass, advance power cycle, coal gasification, steam-powered automobile, gasohol, lead-free gasoline, catalysis, combustion, and grass-root petroleum refining operations.

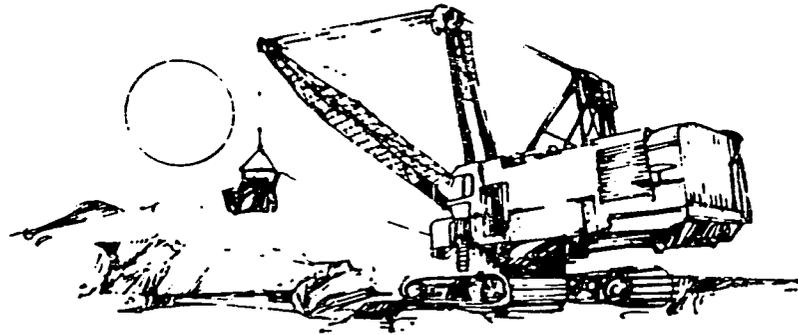
Dr. Shang has 12 U.S. patents and 20 publications. He is a member of Sigma Xi, Phi Lambda Epsilon, AIChE and ACS, and is an adjunct associate professor at West Virginia University and has presented invited lectures at George Washington University.

STEPHEN, DOUGLAS R. is involved in-situ processing, energy systems studies high pressure chemistry, solid state physics, and geophysics. Initial work lay in analysis of potential in-situ processing ideas and in high temperature thermal conductivity work. Started high pressure experimentation in 1962. First work led to creation of the LLL High Pressure Group of ten scientists and technicians. Research included phase diagrams, melting curves, electrical resistance, compressibility, sintering, critical point msmt. and high pressure rock mechanics. This group provides primary support for the LLL program of peaceful uses of nuclear explosives. Led this group from 1962 to 2/72. Became project leader of the LLNL In-Situ Coal Gasification Program in Feb., 1972.

TINSTMAN, ROBERT A. has more than ten years of mining engineering and operations experience. As General Manager of Engineering, he has overall responsibility for all mining studies, design, and engineering activities of Morrison-Knudsen's Mining Group. Activities of the group under his direction include open-pit and underground mine and facility design. To date, the group's work has involved development of coal, uranium, oil shale, phosphate, and other mineral properties.

Earlier, Mr. Tinstman served Morrison-Knudsen as an Assistant Manager of Mining Engineering, responsible for engineering and management of coal mining studies. His assignments as Project Manager included two major coal exploration and search studies. Other studies executed under his direction included two expansion projects of the Kemmerer Coal Company in Wyoming; an open-pit uranium mine in Texas; a phosphate strip mine in Florida; and a large-scale coal project, including preliminary mine plan, to supply a future coal gasification plant in Wyoming.

**THAILAND-
UNITED STATES
OIL SHALE/LIGNITE
SYMPOSIUM**



THAI PARTICIPANTS

ABSTRACT

BIOGRAPHIC DATA

THAILAND'S ENERGY POLICY

Speaker : Mr. Pravit Ruyabhorn
Secretary-General
National Energy Administration

Thailand currently imports about 75% of its energy requirements, mostly in the form of crude oil and refined petroleum products. The total import cost of petroleum was estimated to be 3,000 million U.S. dollars in 1980. This amount is equivalent to about 43% of the country's total value of exports or 30% of the total import value. As the prices of imported petroleum are expected to increase gradually, and in order to avoid the heavy foreign exchange burden, a national energy policy and programme has been formulated and is now being implemented in the 5th National Economic and Social Development Plan covering a 5 year period from 1982 to 1986. In the Plan, measures will be implemented to reduce the average annual energy consumption growth rate to 4.8% from the current rate of 5%. In addition, plan goals are to reduce the dependence on imported oil from 75% to 46% by increasing the utilization. These indigenous Thai energy resources include natural gas, hydro-power and lignite. Efforts will include development of effective and economical non-conventional energy sources as well. Energy conservation, in the industrial and transportation sectors is one of the main plan objectives in an effort to reduce dependence on imported oil. The total investment in the energy sector, as provided in the Plan, is about U.S. \$ 5 billion.

BIO-DATA

Name and Address : Mr. Pravit Ruyabhorn
Secretary-General
National Energy Administration
Rama 1 Road, Bangkok, Thailand

Education Background :

B.Sc., Chulalongkorn University, Thailand, 1950

D.I.C., London University, England, 1952

M.S.B., University of Michigan, U.S.A., 1954

Special Training Certificates Held :

Water Resources Planning, US. Bureau of Reclamation, USA, 1955

Power Planning and Development, Electricite de France, France, 1960

General Project Course, Economic Development Institute, (IBRD)
USA, 1967

National Defence College, Thailand, 1973

Present Position :

Secretary General: National Energy Administration, Ministry of Science,
Technology and Energy

EGAT LIGNITE DEVELOPMENT

Speaker : Mr. Rawi Corsiri

Electricity Generating Authority
of Thailand

The availability of lignite deposits in Thailand have been known since 1917. Utilication of these reserves originated from a policy of King Rama the sixth to preserve the forest by using lignite as fuel by the Railway Authority. As a result of the King's initiative lignite deposits were found in the North (Mae Moh) and in the South (Krabi and Kiansa) of Thailand.

The lignite development in the Mae Moh and Krabi basins has continued over the years, but with very limited production, supplying only two facilities, a 12.5 MW power plant (from 1960 to 1979) and a 60 MW power plant (from 1965 to date) in Mae Moh and Krabi respectively.

Following the oil crisis in 1973, the development and exploration

for lignite deposits, as well as the construction of additional power plants, became even more important and work was accelerated on these projects.

In Mae Moh, three units of a 75 MW lignite fired thermal power plant were installed by EGAT and two units of 150 MW are presently under construction. Run-off mine lignite production has increased to 6,000 tons per day. Meanwhile geological exploration has been carried out covering the rest of the basin. As a result of this exploration there are indications that reserves of at least 451.6 million tons of lignite could be recovered under current economic conditions. The reserves are sufficient to supply power plants totalling 2,000 MW for the life of the plants.

In Krabi, the mine, producing 1,200-1,500 tons per day, supplying to the existing power plant, has been in operation since 1965. Gravity and Seismic exploration work, covering the main part of the basin, was recently completed. The drilling programme is underway.

In addition to the Mae Moh and Krabi projects, EGAT, in 1981, established an exploration program called the "Lignite Exploration for Power Generation Project" in order to prospect for more suitable Lignite deposits for mining and power generation development. According to the DMR's surface geological mapping report, there are more than 20 potential lignite areas which have not been adequately investigated in detail. EGAT, in co-operation with DMR, has done preliminary coal-geology exploration in 5 basins (mainly in the North). Two of these basins were not promising. Exploration of the other three is underway.

In both the private sector and governmental offices, coal exploration and mining activities are minimal. It has been suggested that high costs of investment, lack of know-how, and problems of utilization have prevented new and larger projects.

In the future, EGAT will actively participate in lignite exploration while developing known deposits at Mae Moh. The RTG's goal is to increase mining production to its maximum rate of feasible output.

The Electricity Generating Authority of Thailand will follow the nation's policy to generate electricity using domestic natural fuel to better serve the public's demand.

The main purpose of the government's current activity is to produce coal for industry, i.e. cement factories, tobacco curing, etc. Only three small mines, namely Li, Mae Tuen and Mae Tip are in operation but with a total production of not more than 300- 500 tons per day.

Lignite is one of the main fuels now being considered to implement EGAT's and the nation's goals.

BIO-DATA

Name : Mr. Rawi Corsiri
Education Background : B.S. in Geology
Training certification in coal mining &
Geology (Adab Australia)
Present Position : Senior Geologist, Acting Assistance
Chief of Solid Fuel Geology Division and
Head of Drilling Section, Lignite Mine
Department, Electricity Generating Authority of Thailand

Oil Shale Development Project and Investment Policy

Speaker : Dr. Sunt Rachdawong
Department of Mineral Resources

A large deposit of oil-shale was found some time ago and subsequently investigated by the Department of Mineral Resources. The deposit is located within the basin of Mae Sot district in Tak province of northern Thailand. Preliminary studies indicated that the oil-shale

could perhaps contribute significantly to the country's much needed energy requirements.

In view of the country's dependence on foreign oil imports, the government in 1980 set up a Committee for the Speeding-up of Oil-Shale Development chaired by the Minister of Industry. The Committee, the private sector is invited to participate in the development project in which a private investor is allowed to hold a majority of shares in the equity. Although production of energy is accorded the priority, the investor is also encouraged to exploit the fuel resource for other applications.

In attracting investors to join in the oil-shale project, a number of incentives is offered by the government. These incentives are in the form of special benefits and privileges stipulated in the Industrial Promotion Act.

The paper also gives details on the relevant matters associated with the oil-shale development project.

BIO-DATA

Name : Dr. Sunt Rachdawong
Education Background : B.Sc. in Mining Engineering from Chulalongkorn University, Thailand
Ph.D. in Mineral Engineering (Coal Utilization) from Birmingham University, U.K.
Present Position : Director of Economic and Information
Division, Department of Mineral Resources

Geology of Mae Sot Oil Shale and Lignite Deposits

Speaker : Mr. N. Mantajit
Department of Mineral Resources

Mae Sot basin is one of the important Tertiary basins found in northern Thailand which yields large deposits of oil shale. The basin covers an area of 500 square kilometers. Geologically the Tertiary beds found are unconformably underlain by basement rocks of the marine Triassic to Permian age. The Tertiary sequence comprises oil shale and subordinate lignite. Regarding the lignite deposit, they are generally found in the northern part of the Mae Sot basin near Mae Ramat district. However, no firm data on the lignite deposits has been developed and published.

The Bouguer anomaly map reveals that the Mae Sot basin comprises two major sub-basins, namely the northern sub-basin and the southern sub-basin. The northern sub-basin occupies Mae Ramat north of Mae Sot and the southern sub-basin occupies almost Mae Sot area. The latter is larger basin. Oil shale is found abundantly and widely deposited in the southern basin. Two interested areas have been selected from the southern basin, namely Area A and Area B covering areas of 24 km² and 29 km² respectively. Drilling work has already been implemented, in the preliminary stage of exploration, to a depth ranging from 300-2,000 ft. The results show that approximately 26 oil shale beds of 4-99 ft. thick have been found. Oil yields range from 2.5 to 10 percent, by weight, and give an average value of 5 percent by weight.

The estimated reserve the Area A is 8.156 million short tons or 96.294 million US gallons. In the Area B, the estimated reserve is 11,985 million short tons or 155,646 million US gallons by using an average oil yield of 5 percent by weight. The average calorific value of the oil shale is approximately 2,690 kcal/kg.

-62-

BIO-DATA

Name : Nopadon Mantajit
 Education Background : B.Sc. from Chulalongkorn University
 M. Phil. Manchester University

Present Position : Senior Geologist
 Chief, Office of Director
 Geological Survey Division
 Department of Mineral Resources
 Associate Secretary
 Technical Committee on Oil Shale

Infrastructure of the Mae Sot Region

Speaker : Mr. Prakong Palahan
 Department of Mineral Resources

The Mae Sot Basin lies in Tak, a northern province, 420 km from Bangkok, bordering Burma. The valley is predominantly intermontane basins separated by gorges. A fifth of the Basin is cleared and cultivated land, and the rest of the valley is thick forest. The climate is consistently warm, with about 70 inches of rain each year. The area is rich in hardwood. Water is abundant, from the Moei River, throughout the year. Electricity problems do, however, exist. The oil shale rich region also lacks a number of other features for sustaining large scale industrial development. The area is most easily accessible by car, and less so by plane.

BIO-DATA

Name : Mr. Prakong Palahan
 Education Background : M.Sc. in Geology and Geological Prospecting
 for Fossil Fuels Deposits, Moscow State
 University U.S.S.R.
 Certificate in Geochemical Methods for
 Searching & Prospecting Fossil Fuels Depo-

sits, Moscow State University, U.S.S.R.

Present Position

: Director of Mineral Fuels Division, Department of Mineral Resources
Secretary to Petroleum Committee

APPENDIX IV
SYMPOSIUM AGENDA



THAILAND-UNITED STATES OIL SHALE/LIGNITE SYMPOSIUM

BANGKOK, February 1-6, 1982



Technical Program

Monday 1 February, 1982

07.30 - 09.00 hrs.

Registrations

09.00 - 09.45 hrs.

Opening session

Welcoming Addresses

- H.E. Ambassador John Gunther Dean, U.S. Ambassador to Thailand
- Mr. Thomas A. Henrie, Chief Scientist, U.S. Department of Interior
- Mr. Richard Kranker, Associate Director, U.S. Trade and Development Programs
- Dr. Prabhas Chakkaphak, Director-General, Department of Mineral Resources, Ministry of Industry, Thailand

Opening Address

- H.E. Major General Chatichai Choonhavan, Minister of Industry, Chairman of National Committee on Oil Shale, Thailand

09.45 - 10.05 hrs.

Coffee break

10.10 - 10.45 hrs.

Technical Session I

Thailand's Energy Policy

- Pravit Ruyabhorn, Secretary-General, National Energy Administration, Ministry of Science, Technology and Energy, Thailand

10.45 - 11.20 hrs.

The Oil Shale Development Project and Investment Policy

- Sunt Rachaduwong, Director, Economics and Information Division, Department of Mineral Resources, Ministry of Industry, Thailand

11.20 - 12.00 hrs.

The Lignite Development Project

- Rawi Corsiri, Senior Geologist, Ass. Chief of Solid Fuel, Geology Division, Head of Drilling Section, Electricity Generating Authority of Thailand

12.00 - 14.00 hrs.

Lunch break

14.00 - 14.40 hrs.

Geology of the Mae Sot Oil Shale and Lignite Deposits

- Nopadon Mantajit, Senior Geologist, Geological Survey Division, Department of Mineral Resources, Ministry of Industry, Thailand

14.40 - 15.15 hrs.

Infrastructure of the Mae Sot Region

- Prakong Palaharn, Director, Natural Fuels Division, Department of Mineral Resources, Ministry of Industry, Thailand

15.15 - 15.35 hrs.

Coffee break

15.40 - 16.20 hrs.

Lignite Exploration

- Peter Peterson, Senior Geologist, Dravo Engineers and Constructors, U.S.A.

16.20 - 17.00 hrs.

Project Selection Criteria

- John G. Reed, Partner, White & Case, U.S.A.

18.30 - 20.30 hrs.

Receptions

- Hosted by H.E. Major General Chatichai Choonhavan, Minister of Industry and H.E. Wing Commander Thinakorn Bhandhugravi, Minister of Science, Technology and Energy

Tuesday 2 February, 1982

Technical Session II - Mining

- 09.30 - 10.00 hrs. Mining of Oil Shale in the Eastern and Western United States
- R.M. DeGubrielle, General Manager, Western Operations, Cleveland-Cliffs, Vice-President, Cliffs Engineering Inc., U.S.A.
- 10.00 - 10.30 hrs. Surface and Underground Lignite Mining Methods
- R.A. Tinstman, General Manager of Engineering and Charles Schoenfelder, Senior Engineer-Mining Morrison-Knudsen Company, Inc., U.S.A.
- 10.30 - 10.45 hrs. Coffee break

Technical Session III - Processing

Oil Shale

- 10.45 - 11.30 hrs. Paraho Oil Shale Technology - A Progress Report
- Donald B. Jones, Process Engineer and John B. Jones Jr., President Paraho Overseas Corporation, U.S.A.
- 11.30 - 12.00 hrs. Processing Rich or Lean Foreign Oil Shales - Tosco's Work in Morocco and China
- Donald C. McCullum, Director of Licensing, Tosco Corporation, U.S.A.
- 12.00 - 12.45 hrs. The Dravo Traveling Grate Process for Oil Shale Retorting
- Forrest W. Kinsey, Technical Manager, Oil Shale; Louis J. Colaianni, Process Manager, Oil and Gas-Oil Shale Dravo Engineers and Constructors, U.S.A. and Peter Peterson, Senior Geologist, Dravo Engineers and Constructors, U.S.A.
- 12.45 - 14.00 hrs. Lunch break
- Processing - Oil Shale (Continued)
- 14.00 - 14.30 hrs. Batch Retorting
- Chang Yul Cha, Assistant Vice President, Science Applications, Inc. U.S.A.
- 14.30 - 15.00 hrs. Progress Report on the Geokinetics Horizontal In-Situ Retorting Process
- Mitchell A. Lekas, President Geokinetics, Inc., U.S.A.
- Lignite
- 15.00 - 15.30 hrs. The U-Gas Process
- F.C. Shora, Senior Vice-President, Gas Development Corporation, U.S.A. and J.G. Patel, Institute of Gas Technology, U.S.A.
- 15.30 - 15.45 hrs. Coffee break
- Processing - Lignite (Continued)
- 15.45 - 16.15 hrs. A Workable Lignite Pelletizing Process
- Eric W. Blaustein, Manager, Engineering, Acres American, Inc., U.S.A.
- 16.15 - 16.45 hrs. Special Considerations for Lignite Handling Systems
- Lee Bation, Consulting Engineer, Ebasco Services, Inc., U.S.A.
- 16.45 - 17.15 hrs. Underground Coal Gasification - A Leading Contender in the Synfuels Industry
- D.R. Stephens, Project Director, In-Situ Coal, Lawrence Livermore Laboratory, U.S.A.
- 17.15 - 17.45 hrs. Underground Coal Gasification in the United States, Rawlins I & II
- Richard H. Graham, Manager, Minerals Technology Gulf Research and Development Co., U.S.A. and R.L. Robertson, Manager, TRW Resource Development Operations, U.S.A.

18.30 - 20.30 hrs. Reception
- Hosted by the American Embassy

Wednesday 3 February, 1982

Technical Session IV - Combustions

- 09.00 - 09.30 hrs. Direct Combustion of Oil Shale and Lignite Fuels
- H. Philips, President, Foster Wheeler Development Corporation, U.S.A.
- 09.30 - 10.15 hrs. The Application of Fluidized Beds in the Combustion of Low-Grade and Fluidizing-Bed Retorting of Low-Grade Oil Shale
- J.Y. Shiang, Deputy Director, Technology Development and Engineering Division; J.E. Notestein, Director, Technology Development and Engineering Division and A.A. Pitrolo, Director, Morgantown Energy Technology Center, U.S. Department of Energy, U.S.A.
- 10.15 - 10.30 hrs. Coffee break
- 10.30 - 11.00 hrs. Alternative Means of Firing Lignite in Large Boilers
- W.J. Bradley, Manager, Fossil Fuel Technologies and E.A. Kimel, Project Manager, Senior Supervising Mechanical Engineer, Burns and Roe, Inc.
- 11.00 - 11.30 hrs. Lignite/Tar Sands - Handling and Combustion Problems
- Raymond J. Jaworowski, Assistant Vice President, International Operations, Apollo Technologies Inc., U.S.A.
- Technical Session V - Environmental Aspects
- 11.30 - 12.00 hrs. Management of Oil Shale and Lignite Waste Products
- John M. Heckard, Partner, Dames & Moore, U.S.A.
- 12.00 - 12.30 hrs. Legislative Constraints to Oil Shale and Lignite Utilization
- David R. Forshey, Director, Division of Minerals Environmental Technology, Bureau of Mines, U.S.A.
- 12.30 - 13.00 hrs. Environmental Concerns of Surface Mining Oil Shale
- Arnold H. Pelofsky, President, AER Enterprises, U.S.A.
- End of Technical Session
- 14.30 hrs. Depart on field trip for Tak
Overnight at the Viang Tak Hotel
Due to arrive at the hotel by 21.00 hrs.



APPENDIX V

LISTS OF PARTICIPANTS



THAILAND-UNITED STATES OIL SHALE/LIGNITE SYMPOSIUM

BANGKOK, February 1-6, 1982



LIST OF PARTICIPANTS

- Dr. Charan ACHALABHUTI
Deputy of Governor for Natural Gas Operation
Petroleum Authority of Thailand
Vibhavadi Rangsit Road, Bangkok 9
THAILAND
- Mr. Maen AMORASIT
Associate Professor
Department of Chemistry, Faculty of Science
Chulalongkorn University, Bangkok
THAILAND
- Dr. Payome ARANYAKANON
Senior Expert Geologist
Department of Mineral Resources
Rama VI Road, Bangkok 4
THAILAND
- Mr. Chanvit ARAYANGKOOL
Quarry Manager
Siam Cement Co., Ltd. - Thung Song Plant
812 Tejavanich Road, Bangkok
THAILAND
- Mr. Anurath ARKARANGGOON
Geologist
Electricity Generating Authority of Thailand
Lignite Mine, Krabi
THAILAND
- Mr. Woraphat ARTHAYUKTI
Assistant Professor
Department of Chemical Engineering
Chulalongkorn University, Bangkok
THAILAND
- Mr. Payungyuth ATIVITAVAS
Senior Engineer
Electricity Authority of Thailand
Bangkroui, Nontaburi
THAILAND
- Mr. Ongart AUAPINYA
Mine Manager
Prae Lignite Co., Ltd.
209 Prayatai Road, 2nd Floor United Finance
Bldg., Siam Square, Bangkok
THAILAND
- Mr. Metee AUAPINYAKUL
Deputy Managing Director
Prae Lignite Co., Ltd.
209 Prayatai Rd., 2nd Fl. United Finance Bldg.
Siam Square, Bangkok
THAILAND
- Mrs. Gannigar BANSIT
Associate Professor (Lecturer)
Chulalongkorn University, Bangkok
THAILAND

Dr. Shooshat BARAMEE
Assistant Professor
Department of Chemical Technology, Faculty of Sci.
Chulalongkorn University, Bangkok
THAILAND

Mr. Lee Bation
Consulting Engineer
Ebasco Services Inc.
2 World Trade Center, NYC 10038
U.S.A.

Mr. Itthi BIJAYENDRAYODHIN
Principal Engineer
National Energy Administration, Bangkok
THAILAND

Mr. Eric BLAUSTEIN
Manager of Engineering
Acres American Inc.
717 Liberty Ave
Pittsburgh, PA 15222
U.S.A.

Mr. Sanga BOONCHOM
Geologist
Electricity Generating Authority of Thailand
Mae Moh Mine, Lampang
THAILAND

Mr. Decha BOONCHOOCHUAY
Deputy Secretary-General
Board of Investment of Thailand
88 Mansion 2, Rajadamnern Ave., Bangkok
THAILAND

Mr. Saksit BCONNAM
Quarry Manager
Siam Cement Co., Ltd.
814 Techavanij, Bangkok
THAILAND

Mr. Robert BOYDA
Business Development Specialist
Davy McKee
6200 Oaktree Bldg., Cleveland, Ohio
U.S.A.

Dr. Chang Yul CHA
Engineer
Science Applications, Inc.
1726 Cole Bldg. Suite 350, Golden, Col. 80401
U.S.A.

Mr. Niran CHAIMANEE
Geologist
Geological Survey Division, Department of
Mineral Resources, Rama VI Road, Bangkok
THAILAND

Dr. Prabhas CHAIKAPHAK
Director-General
Department of Mineral Resources
Rama VI Road, Bangkok 4
THAILAND

Mr. Samnao CHAIPITAK
The Siam Cement Co., Ltd.
814 Techavanit, Bangkok
THAILAND

Dr. Surawat CHAIVIRAT
Instructor
Department of Mechanical, Chulalongkorn Univ.
THAILAND

Mr. Ard CHANA
Principal Geologist
Mineral Fuels Division
Department of Mineral Resources, Bangkok
THAILAND

Mr. Kasem CHANCHAROONPONG
Geologist
Department of Mineral Resources, Bangkok
THAILAND

Mr. S.P. CHANDRA
Economic Affairs Officer
UN ESCAP, Rajadamnern Avenue, Bangkok
THAILAND

Mr. Prachon CHAROENSRI
Senior Geologist
Department of Mineral Resources, Bangkok
THAILAND

Mrs. Benjawan CHARUKALAS
Geologist
Economic Geology Division, Dept. of Mineral
Resources, Rama VI Road, Bangkok
THAILAND

Mr. Punya CHARUSIRI
Lecturer
Dept. Geology, Faculty of Science
Chulalongkorn University, Bangkok
THAILAND

Mrs. Boonsiri CHARUSIRI
Geologist
Department of Mineral Resources
Rama VI Road, Bangkok 4
THAILAND

Mr. Sutee CHELGIPPHAT
Investment Promotion Officer
Office of the Board of Investment
88 Rajadamnern Ave., Bangkok
THAILAND

Mr. Siri CHITCHOB
Chief of Mine Planning Division
Electricity Generating Authority of Thailand
Nonthaburi
THAILAND

Mr. Kumnuan CHUDASRI
Deputy Plant Manager (Production)
Jalaprathan Cement Co., Ltd.
Takli, Nakornsawan
THAILAND

Mr. Samroeng CHULPASARS
Mining & Mineral Processing Engineering
Mineral Resources Region 3, Dept. of Mineral
Resources, Huay Kaew Road, Chiang Mai
THAILAND

Mr. Prasert CHUMROUM
Director Lignite Mine Department
Electricity Generating Authority of Thailand
Nonthaburi
THAILAND

Mr. Rawi CORSIRI
Senior Geologist
Electricity Generating Authority of Thailand
Bangruay, Nondburi
THAILAND

Mr. Enrique CRESPO, Jr.
Manager International Operations
Burns and Roes, Inc.
550 Kinderkamack Road
Oradell, N.J. 07649
U.S.A.

Mr. Thawisak DANUSAWAD
Director of Economic Geology Division
Department of Mineral Resources
Rama VI Road, Bangkok
THAILAND

Dr. Somsak DAMRONGLERD
Associate Professor
Department of Chemical Technology
Faculty of Science, Chulalongkorn Univ.
THAILAND

Mr. Veerote DAORERK
Instructor
Dept. of Geology, Faculty of Science
Chulalongkorn University, Bangkok
THAILAND

Mr. R.M. DeGABRIELE
Vice President & General Manager, Western Operations
Cliffs Engineer, Inc.
Subsidiary of Cleveland Cliffs Iron Co.
P.O. Box 1211, Rifle Colorado 81650
U.S.A.

Mrs. Yaowaluk DISSARA
Faculty of Science, Prince of Songkhla Univ.
THAILAND

Mr. John DYNI
Geologist
U.S. Geological Survey
M.S. 939, Bldg. 25, Denver, Colorado 80301
U.S.A.

Dr. Arun EKACHAI
Ass. Professor
Prince of Songkla University, Haad Yai
THAILAND

Mr. James FEIGL
Area Director
Ebasco, P.O. Box 1026 MCC
Makati Metro Manila
PHILIPPINES

Dr. David FORSHEY
Division Director
U.S. Bureau of Mines
2401 E St. NW, Washington DC 20241
U.S.A.

Mr. T.S. GILL
Chief Engineer (Dev. Planning)
National Elect. Board, Kuala Lumpur
MALAYSIA

Mr. G. D. GOULD
Manager of Oil Shale Programs
Becheel Group Inc.
50 Bealr Street, Sanfrancisco CA
U.S.A.

Mr. Suwardi GUNAWAN
Technical Manager
PT Pupuk Sriwidjaja (Pusri)
P.O. Box 084, Palembang, Indonesia
INDONESIA

Mr. David K. HANEMAN
Project Manager
Rheinbraun Consulting USA Inc.
7700 East Arapahoe Rd., Suite 240
Englewood Colorado 80112
U.S.A.

Mr. Robert J. HARRIS
Manager Far East Sales
C.F. Braun & Co.
1000 S. Fremont Av., California 91802
U.S.A.

Mr. John HECKARD
Partner
Dames & Moore, 1/50 W. 8th St.
Cincinnati, Ohio
U.S.A.

Mr. T.A. HENRIE
Chief Scientist
Bureau of Mines, 2401 E St. NW, Washington DC
U.S.A.

Mr. Chat HONGTIAMCHANT
Mining Engineer
Department of Mineral Resources
Rama VI Road, Bangkok 4
THAILAND

Mr. Robert HITE
Geologist
U.S. Geological Survey
Denver Federal Center, Denver, Colorado 80005
U.S.A.

Mr. Paiboon INNACHITRA
Lecturer
Prince of Songkla University, Haad Yai
THAILAND

Dr. Malcolm JANSEN
Manager Australian Operations
Ralph M. Parsons, 100 Miller St.
North Sydney, N.S.W.
AUSTRALIA

Mr. Raymond JAWOROWSKI
Assistant Vice President
Apollo Technologies, 1 Apollo Drive
Whippang N.J. 07960
U.S.A.

Mr. Kriengrit JIAJANPONG
Eff. Engineer
Electricity Generating Authority of Thailand
Mae Moh Power Station, Lampang
THAILAND

Mr. Kreetha JITRAPATIMA	Deputy Director-General Department of Mineral Resources Rama VI Road, Bangkok 4 THAILAND
Mr. Chaya JNACATE	Chief Special Energy Division Electricity Generating Authority of Thailand Nonthaburi THAILAND
Mr. Donald JONES	Process Engineer Parako Overseas Corporation 101 S. Third Suite 300, Colorado 81501 U.S.A.
Mr. Sa-ngob KAEWBADHOON	Deputy Director-General Department of Mineral Resources Rama VI Road, Bangkok THAILAND
Dr. Smith KAMPERMPOOL	Governor Thailand Institute of Scientific & Tech. Research 196 Paholyathin Rd., Bangkok THAILAND
Mr. Prasart KANCHANACHONGKOL	Geologist Electricity Generating Authority of Thailand Krabi Lignite Mine, Krabi THAILAND
Mr. Surindr KANJANOPHAS	Lignite Mine Dep. Electricity Generating Authority of Thailand Nonthaburi THAILAND
Dr. Chaiyudh KHANTAPRAB	Assist. Professor Geology Dept., Chulalongkorn University THAILAND
Mr. Usoe KHAW	Chief of Mineral Resources Section Natural Resources Division , UN ESCAP THAILAND
Mr. Vinai KHOO-AROON	Mining Engineer Department of Mineral Resources Rama VI Road, Bangkok 4 THAILAND
Mrs. Soobpawan KLAIPONGPANTA	Senior Geologist Electricity Generating Authority of Thailand Nonthaburi THAILAND
Mr. Pracha KLINKLAO	Officer Department of Industrial Promotion Rama VI Road, Bangkok THAILAND
Mr. Wichai KOKCHAROENSUP	Senior Geologist Department of Mineral Resources, Bangkok THAILAND

Mr. Chumporn KOMSARTRA	Ass. Chief Mine Technical Div. Electricity Generating Authority of Thailand THAILAND
Mr. R. KRANKER	Asst. Director Trade & Development, Washington D.C. U.S.A.
Mr. Wirash KRITTAPHOL	Plant Manager The Siam Cement Co., Ltd. 814 Techavanich Rd., Bangkok THAILAND
Mr. Chumpon KUENTAG	Senior Geologists Department of Mineral Resources, Bangkok THAILAND
Mr. Sermsakdi KULVANICH	Project Director, Offshore Exploration Project Department of Mineral Resources Rama VI Road, Bangkok 4 THAILAND
Mr. Prasert KUMANCHAN	Economic Geology Division Department of Mineral Resources Rama VI Road, Bangkok 4 THAILAND
Mr. Robert LAING	Manager, Pacific Division Sales Unit Rig & Equipment Co. 10909 NE 4th St., Bellevue, Washington DC 98007 U.S.A.
Mr. Tavorn LEEKPAI	Geologist Jalaprathan Cement Co. Jalapathan Bldg., New Pethburi Rd. THAILAND
Mr. J.P. LEGRAND	Vice President Tosco Corp., 74 Av. Paul Doumer, Paris FRANCE
Mr. Mike LEKAS	President Geo Kinetics, Inc. 875 Douner Way Apt. 405, Salt Lake City Utah, U.S.A.
Mr. Thomas LENTINE	Technical Sales Engineer Economics Laboratory (Singapore) Co., Ltd. 7 Fourth Lok Yang Road, Jurong SINGAPORE
Dr. Tavee LERTPANYAVIT	Head Dept. of Mechanical Engineering Faculty of Eng., Chulalongkorn Univ., Bangkok THAILAND
Mrs. Puengjai LIMCHAREON	Senior Scientist Department of Mineral Resources Rama VI Road, Bangkok 4 THAILAND

Mr. Jarun LIMPANANONT	Engineer Petroleum Authority of Thailand Limchaleon Bldg. Viphavadirangsit Rd , Bangkok THAILAND
Mr. Chanchai LIMPIYAKORN	Instructor Mechanical Engineering Dept. Chulalongkorn University, Bangkok THAILAND
Mr. Songkeat LIMSIRI	Engineer Electricity Generating Authority of Thailand Nonthaburi THAILAND
Mr. William L. LINDEMANN	Geological Associate Esso Eastern Inc., P.O. Box 1415 Houston, Texas 77001 U.S.A.
Dr. Douglas LOOTENS	Partner, Director, Intl Mining Dames & Moore, 4321 Directors Row Houston, TX 77092 U.S.A.
Mr. Larry MACHESKY	Economic Affairs Officer ESCAP United Nations Bldg., Rajadamnern Ave. THAILAND
Mr. Thongchai MAKERD	Electricity Generating Authority of Thailand Nonthaburi THAILAND
Mr. MARZUAN	Head of Techno Economic Sub Directorate, Directorate General of Oil and Natural Gas, Department of Mines and Energy JL. Thamrin No. 1, Jakarta INDONESIA
Mr. Donald McCULLUM	Director Technology Licensing Tosco Corporation 10100 Santa Monica Bldg., Los Angeles 90067 U.S.A.
Dr. Lursuang MEKASUT	Assistant Professor Faculty of Science, Chulalongkorn University THAILAND
Mr. Prasonk MONGKOLSIRI	Head of Quarry Division Siam City Cement Co., Ltd. Keangkoi, Saraburi THAILAND
Mr. Somporn MOOTUTANONDH	Investment Promotion Officer Board of Investment, 88 Mansion 2 Rajadamnern Ave., Bangkok 2 THAILAND
Mr. Arturo MORI	Senior Geologist Bureau of Energy Development, Ministry of Energy Merritt Rd., Fort Bonefacio, Metro Makati

Mr. Araya NAKANART	Petroleum Geologist Department of Mineral Resources Rama VI Road, Bangkok THAILAND
Mr. Boonthian NARACH	Quarry Department Manager The Siam Cement Co., Ltd. Saraburi Factory Thailand THAILAND
Mr. Jayant NARKSWASDI	Engineer Electricity Generating Authority of Thailand Nonthaburi THAILAND
Mr. Chalerm NARUPAVES	Chief Engineer Metallurgy Division, Dept. of Mineral Resources Rama VI Road, Bangkok 4 THAILAND
Dr. Sununta NATENUJ	Mineral Resource Planning Sector Office of the National Economic and Social Development Board, Bangkok THAILAND
Mr. Sittichai NILKAMHAENG	Lignite Mine Dept. Electricity Generating Authority of Thailand Nonthaburi THAILAND
Mr. Chaw NIVATPUMIN	Senior Engineer Policy & Planning Dept., Petroleum Authority of Thailand C.S. Buldq., Vibhavadi Rangsit Rd., Bangkok THAILAND
Mr. Vudhi NUALSKUL	Mining Engineer Regional Mineral Resources Center 2 Department of Mineral Resources, Phuket THAILAND
Mr. Kiattisak NUTALAYA	Chief Chemist Electricity Generating Authority of Thailand Nonthaburi THAILAND
Dr. Somchai OSUWAN	Associate Professor Chemical Technology Dept. Chulalongkorn University, Bangkok THAILAND
Mr. Heiko OTERDOOM	Geologist Thai Shell NETHERLANDS
Mr. Chadap PADMASUTA	Associate Professor, Head Dept. of Mining Engineer & Mining Geology Chulalongkorn University, Bangkok THAILAND

Dr. Pichai PAMANIKABUD	Environmental Specialist The Office of Natural Environment Board Rama VI Road, Bangkok 4 THAILAND
Mr. Sal PAMICO	Engineering Specialist Burns & Roe Inc., 185 Crossways Park Dr. Woodbury, New York 11731 U.S.A.
Mr. Jim PATEL	Director Institute of Gas Technology 3424 S. State St., Chicago Ill. 60616 U.S.A.
Mr. Sarithdej PATHANASETHPONG	Lecturer Department of Engineering, Chulalongkorn Univ. Bangkok THAILAND
Mr. Paichit PATHNOPAS	Mining Engineer Ground Water Division, Dept. of Mineral Resources Rama VI Road, Bangkok 4 THAILAND
Mr. Gawee PERMPOON	Chief of Mineral Dressing Section Department of Mineral Resources Rama VI Road, Bangkok 4 THAILAND
Mr. Peter PETERSON	Senior Geologist Dravo Engineers & Constructions 1250 14th Street U.S.A.
Mr. Serm PHADUNGPOTE	Engineer The Siam Cement Co., Ltd. Bangsue, Bangkok THAILAND
Dr. Phathana PHAVANANTHA	Associate Professor Faculty of Science, Chulalongkorn University Bangkok THAILAND
Mr. Henry PHILLIPS	President Foster Wheeler Development Corporation 110 S. Drange Ave., Livingstone, NJ 07039 U.S.A.
Mr. Sumpun PHUPHAIBUL	Mining Engineer Mineral Resources Department Rama VI Road, Bangkok 4 THAILAND
Dr. Suraphol PHUVICHIT	Lecturer Department of Mining Engineering Chulalongkorn University, Bangkok THAILAND

Dr. Somboon PHUVORAVAN	Maintenance Manager Siam City Cement Co., Ltd., Bangkok THAILAND
Mr. Vorapoj PIENPITAK	Sales Manager International Heavy Equipment Co., Ltd. 2257 New Petchaburi Road, Bangkok THAILAND
Dr. Nara PITAKARNNOP	Director of Energy Research Division Thailand Institute of Scientific and Technological Research, Bangkok 9 THAILAND
Mr. Tassana PITAKARNNOP	Lecturer Mining Department, Faculty of Engineering Chulalongkorn University, Bangkok THAILAND
Mr. Paitoon PITAYACHAWAN	Head of Environmental Policy & Planning Section Electricity Generating Authority of Thailand Nonthaburi THAILAND
Mr. Chana PLIPAT	Engineer Siam Cement Co., Ltd. Bangkok THAILAND
Mr. Surachai POKCHAINUN	Geologist Economic Geology Division, Dept. of Mineral Resources Rama VI Road, Bangkok THAILAND
Mr. Thammasak PONGPRASERT	Mineral Processing Engineer Regional Mineral Resources Center 1 Songkla THAILAND
Mr. Pongpunt PRUANGKORN	Mining Engineer Dept. of Mineral Resources Rama VI Road, Bangkok THAILAND
Dr. Wasant PONGSAPICH	Assistant Professor Chulalongkorn University Bangkok THAILAND
Mr. Suparb POBRASERT	Department of Geology, Chulalongkorn University THAILAND
Dr. Thanakorn POOLTAVEE	Mining Engineer Lignite Mine, Electricity Generating Authority of Thailand THAILAND
Mr. Chavalit PORNPONGSURIYA	Geologist Electricity Generating Authority of Thailand Nonthaburi THAILAND

Mr. Pramote PORNKATTANAPITAK	Geologist Mae Moh Mine, Electricity Generating Authority of Thailand, Lampang THAILAND
Dr. Pattarapan PRASASSARAKICH	Instructor Department of Chemical Technology Chulalongkorn University, Bangkok THAILAND
M.L. Nathchark PRAMOJ	Visva Co., Ltd. 2/4 Soi Ari 5, Bhoholjotin Road, Bangkok THAILAND
Dr. Piyasan PRASERTHDAM	Instructor Department of Chemical Engineering Chulalongkorn University, Bangkok THAILAND
Mr. Manod PUNTHAYANGKOOL	Chemist Electricity Generating Authority of Thailand Nonthaburi THAILAND
Mr. Sujit PUWAKOOL	Director of Regional Mineral Resources Center 3 Chiang Mai THAILAND
Dr. Sunt RACHDAWONG	Director of Economic & Information Division Department of Mineral Resources Rama VI Road, Bangkok THAILAND
Mr. Silpachai RAKTHAM	Manager Siam City Cement Co., Ltd. Bangkok THAILAND
Mr. Jaiyadat RAKVANIJ	Sales Department Bangkok Motor Works Co., Ltd. 1200 Phaholyothin Road, Bangkok THAILAND
Mr. Sahai RAKYAO	Mine Manager Krabi Lignite Mine, Electricity Generating Authority of Thailand, Krabi THAILAND
Mr. Somchai RASSAMIMAN	Chief of Quality Control Department Siam City Cement Co., Ltd. Kang-Koi, Saraburi THAILAND
Mrs. Benjavun RATANASTHIEN	Assis. Professor Dept. of Geological Science, Faculty of Science Chiang Mai University, Chiang Mai THAILAND
Mr. Pakdee RATANAWICHIEEN	Siam Cement Co., Bangkok THAILAND

Dr. Sempul RATASUK	Deputy Governor Thailand Institute of Scientific & Tech. Research Bangkok THAILAND
Mr. John REED	Partner White & Case, 1747 Pennsylvania Ave. Washington DC 20006 U.S.A.
Mr. Francisco T. REYES	Manager Phil. National Oil Co., Pnoc-cc, Fort Bonifacio Metro, Manila PHILIPPINES
Mr. Jumpol RITTHICHAJ	Quality Control The Jalaprathan Cement Co., Ltd. Cha-am Plant, 112 Petchkasam Rd., Cha-am THAILAND
Mr. Somphong RODPHOTHONG	Head of Geophysics Section Economic Geology Division, Dept of Mineral Resources Rama VI Road, Bangkok THAILAND
Mr. Chumpol ROJANACHAN	Geologist Petroleum Authority of Thailand Bangkok, THAILAND
Mrs. Pallapa RUANGRONG	Mineral Resources Planning Sector Office of the Natural Economic & Social Development Board, Bangkok THAILAND
Mr. Charu-udom RUANGSUWAN	Director of Mining Concession Division Dept. of Mineral Resources, Rama 6 Rd., Bangkok THAILAND
Mr. Sujja SAIROTPANT	Environmental Technologist The Natural Environmental Board Bangkok, THAILAND
Dr. Virat SAKORNVIMOL	Instructor Department of Chemical Technology Chulalongkorn University, Bangkok THAILAND
Mr. Tinnakon SAKSAWANGCAN	Milin Chemicals, 33/22 Soi Pradu 1, New Road Bangkok, THAILAND
Mr. Bancha SAMANUPAWIN	Geologist Petroleum Authority of Thailand Bangkok, THAILAND
Mr. Suvit SAMPATTAVANISA	Chief of the Offshore Prospecting Section Department of Mineral Resources Rama VI Road, Bangkok 4, THAILAND
Mr. Suddhisakdi SAMREJPRASONG	Head of Building Materials Laboratory Thailand Institute of Scientific and Tech. Research Bangkok, THAILAND

Mr. Somchai SANGIEMSAK	Economic Geology Division, Dept. of Mineral Resources Bangkok, THAILAND
Mr. Somchai SARIRAT	Mining Engineer Lignite Mine, Electricity Generating Authority of Thailand, Nonthaburi, THAILAND
Mr. Pairat SATHIANVONGNUSAR	Lecturer Department of Mining Engineering Prince of Songkla University, Haad Yai THAILAND
Mr. Manit SATRAVAHA	Production Engineer Siam City Cement, Kaeng-koi, Saraburi THAILAND
Mr. Sunya SARAPIROME	Geologist Department of Mineral Resources Rama VI Road, Bangkok, THAILAND
Mr. John SAVAGE	Partner Jo-Jo Oil Shale Co., 1122-293 Road Rifle, CO 81650, U.S.A.
Mr. Frank SCHORA	Sr. Vie Pres. GDC Inc., 10 W. 35th St., Chicago, Ill. 60611, U.S.A.
Mr. Richard SEIBEL	Chief of Branch of Mine Waste Management US Bureau of Mines, 2401 E. St. NW Washington DC 20241, U.S.A.
Mr. Kyaw Kyaw SHANE	Economic Affairs Officer UN ESCAP, Bangkok, THAILAND
Dr. Jer Yu SHANG	Deputy Director of Technology Development & Engi- neering, US Dept. of Energy, Morgantown Energy Technology Center, P.O. Box 880 Morgantown W. Va 26505, U.S.A.
Mr. Anan SIRIPONG	Technical Manager Thai Asahi Caustic Soda Co., 1014 Rama IV. Rd. Bangkok, THAILAND
Mr. Chalee SIRIRATANAMONGKOL	Geophysics Petroleum Authority of Thailand Bangkok, THAILAND
Dr. Norkun SITTHIPHONG	Lecturer Faculty of Engineering, Chiang Mai University Chiang Mai, THAILAND
Mr. Ekawat SITTHITHAWORN	Geologist Economics Geology Division, Dept. of Mineral Res. Bangkok, THAILAND
Mr. Kovit SKULSANGJUNTR	Engineer Diethelm & Co., Ltd., 1692 Petchaburi Rd., Bangkok, THAILAND

Mr. Sathian SNANSIENG	Geologist Department of Mineral Resources Rama VI Road, Bangkok, THAILAND
Mr. James Jack SNIPES	Consultant Synthetic Fuels Associates Inc. Two Palo Alto Square Suite 528 Palo Alto CA 94304, U.S.A.
Mr. Sompong SRIPHYAK	Senior Engineering Geologist The Natural Energy Administration Bangkok, THAILAND
Mr. Thalerngsok SNITWONGSE	Promotion Officer Board of Investment, Bangkok, THAILAND
Mr. Chatchai SOMSIRI	Lecturer Department of Metallurgical Engineering Faculty of Engineering, Chulalongkorn Univ. Bangkok, THAILAND
Mr. Thongjati SOPONDISYA	Electricity Generating Authority of Thailand Nonthaburi, THAILAND
Mr. Somchai SRIISRAPORN	Instructor Dept. of Geology, Faculty of Science Chulalongkorn Univ., Bangkok, THAILAND
Dr. Douglas STEPHENS	Project Leader Lawrence Livermore Laboratory, P.O. Box 808 Livermore, CA 94550, U.S.A.
Dr. Prasom STHAPITANONDA	Professor of Chemical Engineering Chulalongkorn University, Bangkok, THAILAND
Mr. Boonrod SUCONTANIKORN	Mining Engineer Electricity Generating Authority of Thailand Nonthaburi, THAILAND
Dr. Sanarm SUENSILPONG	Principal Geologist Geological Survey Division, Dept. of Mineral Res. Rama VI Road, Bangkok 4, THAILAND
Mr. Sathien SUKONTAPONGPOW	Geologist Department of Mineral Resources, Rama VI Road, Bangkok, THAILAND
Mr. Bambang SULASMORO	Head of Mineral Technology Development Centre Minister of Mines & Energy Jalan Jenderal Sudirman N 623, Bandung INDONESIA
Mr. Swai SUNDHAROVAT	Associate Professor Dept. of Geology, Faculty of Science Chulalongkorn Univ., Bangkok, THAILAND
Mr. Thiva SUPAJANYA	Dept. of Geology, Faculty of Science Chulalongkorn University, Bangkok, THAILAND

Mr. Srichai SUWANAATH
Chief of Regional Mineral Resources Centre 1
Songkhla, Department of Mineral Resources
THAILAND

Mr. Akanit SUWANASING
Principal Economic Geologist
Department of Mineral Resources, Rama VI Road,
Bangkok, THAILAND

Mrs. Prakmard SUWANASING
Senior Scientist
Department of Mineral Resources, Rama VI Rd
Bangkok, THAILAND

Dr. Anant SUWANAPAL
Mining Engineer
Department of Mineral Resources, Rama VI Rd.
Bangkok, THAILAND

Mrs. Nuansri SUWARNAPRADIP
Scientist
Department of Mineral Resources, Rama VI Rd.
Bangkok, THAILAND

Mr. Dhanit SUVARNASIRI
Geologist
Electricity Generating Authority of Thailand
Nonthaburi, THAILAND

Mrs. Malatee TAIYAKUPT
Lecturer
Department of Geology, Faculty of Science
Chulalongkorn University, Bangkok, THAILAND

Mr. Tanong TANTIDEERAVIT
Environmental Engineer
The National Environmental Board
Bangkok, THAILAND

Mr. Worawoot Tantiwanit
Senior Geologist
Department of Mineral Resources, Rama VI Rd.
Bangkok, THAILAND

Mr. Charn TANTISUKRIT
Head of Department of Geological Sciences
Faculty of Science, Chiang Mai University
Chiang Mai, THAILAND

Dr. Pienpak TASAKORN
Associate Dean for Academic Affairs
Faculty of Science, Chulalongkorn University
Bangkok, THAILAND

Miss Valai TAWAYTIBHONGS
Geologist
Department of Mineral Resources, Rama VI Rd.
Bangkok, THAILAND

Mr. Chub TESCHAREON
Coal Research & Development Manager
Prae Lignite Co., THAILAND

Mr. Surapon THANOMSAP
Oil Shale Geologist
Department of Mineral Resources, Rama VI Rd.
Bangkok, THAILAND

Dr. Varunee THIRAMONGKOL
Scientist
Ministry of Science, Technology & Energy
Bangkok, THAILAND

Dr. Chow THUPVONGSE	Eff. Engineer Electricity Generating Authority of Thailand Nonthaburi, THAILAND
Mr. Robert TINSTMAN	General Manager Morrison-Knudsen, P.O. Box 7808 Two Morrison-Knudsen, Boise, Idaho, U.S.A.
Mr. Pornsak TIPSUKONTORN	Engineer The Siam Cement Co., Ltd., 814 Techavanich Rd Bangkok, THAILAND
Mr. Ake TIRAVAT	Assist. Eff. Control Office Electricity Generating Authority of Thailand Nonthaburi, THAILAND
Mr. Suwat TIYAPAIRACH	Geological Survey Division, Dept. of Mineral Resources, Bangkok, THAILAND
Dr. Steven J. TOROK	O-I-C, Energy Resources ESCAP, UN Bldg., Bangkok, THAILAND
Mr. Yongyut TRANGCOTCHASAN	Geologist Mineral Fuels Division, Dept. of Mineral Resources Rama VI Road, Bangkok, THAILAND
Mr. Pongsethien TUCHINDA	Chief of Mine Technical Division Lignite Mine Department, Electricity Generating Authority of Thailand, Nonthaburi, THAILAND
Mr. Chalor TUNYONG	Mining Engineer Department of Mineral Resources, Rama VI Rd. Bangkok, THAILAND
Mr. Chamlong UCHUKOMOL	Chief of Division Lignite Mine Department, Electricity Generating Authority of Thailand, Nonthaburi, THAILAND
Mr. Yongyuth UKAKIMAPAN	Geologist Department of Mineral Resources, Rama VI Rd. Bangkok, THAILAND
Mr. Vicharn UPATISING	Senior Mining Engineer Department of Mineral Resources, Rama VI Rd. Bangkok, THAILAND
Mr. Wutti UTTAMO	Instructor Department of Geological Science, Chiang Mai Univ. Chiang Mai, THAILAND
Dr. Sutham VANICHSENI	Assistant Professor Department of Chem. Engineering Chulalongkorn University, Bangkok, THAILAND
Mrs. Samornrat VATANATHAM	Professor Prince of Songkhla University, Haad Yai THAILAND

Mr. Sun VITHESPONGSE	Programme Officer Department of Technical and Economic Cooperation 962 Krung Kasem Rd., Bangkok, THAILAND
Mr. Chanin VONGKUSOLKIT	Managing Director Prae Lignite Co., Ltd., 209 Prayatai Rd., 2nd Fl. United Finance Bldg., THAILAND
Miss Supatra VUDHICHATIVANICH	Geologist Department of Mineral Resources, Rama VI Rd. Bangkok, THAILAND
Mr. Songserm VUTIPITAYAMONGKOL	Mining Engineer Electricity Generating Authority of Thailand Nonthaburi, THAILAND
Mr. H.W. ZAKARIA	Geologist Petronas, P.O. Box 2444, Kuala Lumpur MALAYSIA
Miss Sukanya WANNAKASEM	Lecturer Geological Science Department, Khonkaen Univ. THAILAND
Mr. Pipob WASUWANICH	Senior Geologist Department of Mineral Resources, Rama VI Rd. Bangkok, THAILAND
Miss Nipaporn WATCHARASIN	Environment Scientist The National Environmental Board Bangkok, THAILAND
Mr. Harold WILSON	Vice President Bechtel International, Bangka III, No. 9 Jakarta, INDONESIA
Mr. Siridej WUDHAPITAK	Engineer Electricity Generating Authority of Thailand Nonthaburi, THAILAND
Mr. Sukum YENYING	Mining Engineer Department of Mineral Resources, Rama VI Rd. Bangkok, THAILAND
Mr. Werapong YEOPHANTONG	Mining Engineer Mineral Resources Center II Phuket Phuket, THAILAND
Mr. Sombat YUMUANG	Instructor of Department of Geology Faculty of Science, Chulalongkorn University Bangkok, THAILAND
Mr. Bing Xi ZHANG	Chief of Natural Resources Division UN ESCAP Bangkok, THAILAND
Mr. Robert ZIMMERMAN	Senior Engineer Paraho Overseas Corporation 300 Enterprise Bldg., 3rd & Main Streets Grand Junction Colorado

THAILAND - UNITED STATES OIL SHALE LIGNITE SYMPOSIUM

February 1-6, 1982

BANGKOK, THAILAND

REGISTRATION LIST

U.S. EMBASSY

Mr. Brooks Ryno
Counselor for Commercial Affairs

Mr. Lee Barnes
Commercial Officer

MALAYSIA

Mr. Tara Singh Gill
Chief Engineer (Development Planning)
National Electricity Board of Exploration

SINGAPORE

None

PHILIPPINES

Mr. Arturo Mori
Senior Geologist
Bureau of Energy Development

Mr. Francisco Reyes
Exploration Manager
Pnoc-Coal Corporation

Mr. A. V. Del Rosario
Deputy Minister of Energy of Philippines

INDONESIA

Mr. Ir. S.T.H. Simanjutak

Mr. Bambang Sulasmoro
Head of the Minerals Technology Development Center
Directorate General of Mining
Bandung

BATION, L.T.
 Consulting Engineer
 Ebasco Services, Inc.
 Two World Trade Center
 New York, New York 10048

BELAICHE, Djelloul
 Deputy General Manager
 Procofrance S.A.
 Tour Fiat
 92084 Paris-La-Defense/France

BLAUSTEIN, Eric W.
 Manager of Engineering
 Acres American Inc.
 717 Liberty Ave., Clark Bldg. - Suite 900
 Pittsburgh, Pennsylvania 15222

BOYDA, R.B.
 Business Development Specialist
 Davy McKee
 6200 Oaktree Blvd.
 Cleveland, Ohio 44131

CHA, Chang Yul
 Assistant Vice President
 Science Applications, Inc.
 1726 Cole Boulevard, Suite 350
 Arvada, Colorado 80401

CRESPO, Jr., Enrique
 Manager - International Operations
 Burns and Roe, Inc.
 550 Kinderkamack Road
 Oradell, New Jersey 07649

DeGabriele, Robert M.
 General Manager, Western Operations
 Cliffs Engineering, Inc.
 P.O. Box 1211
 Rifle, Colorado 81650

DYNI, John
 Geologist
 U.S. Geological Survey
 Bldg. 25, Federal Center
 Box 25046, Ms. 939
 Denver, Colorado 80225

FEIGL, James L.
 Area Director
 Ebasco Services Int'l Inc.
 107 Esteban Street, Legaspi Village
 Makati-Metro Manila, Philippines

FORSHEY, David R.
 Director, Div. of Min. Env. Tech.
 U.S. Bureau of Mines
 2401 E. Street, N.W.
 Washington, D.C. 20241

GILL, T.S.
 Deputy Chief Engineer
 National Electricity Board of the
 States of Malaysia
 129 Jalan Bangsar
 P.O. Box 1003
 Kuala Lumpur 22-06
 Selangor, Malaysia

GOULD, G.D.
 Manager, Oil Shale Programs
 Bechtel Group, Inc.
 50 Beale Street
 San Francisco, California 94105

HANEMAN, David K.
 Project Manager
 Rheinbraun USA, Inc.
 7700 Arapahoe Road, Suite 210
 Englewood, Colorado 80112

HECKARD, John
 Partner
 Dames & Moore
 1150 W. 8th Street
 Cincinnati, Ohio 45200

HENRIE, Thomas A.
 Chief Scientist, Bureau of Mines
 Bureau of Mines - USDI
 2401 E. Street, N.W.
 Washington, D.C. 20241

HITE, Robert J.
 Geologist
 U.S. Geological Survey
 Bldg. 25, Federal Center
 Denver, Colorado 80225

JANSEN, J.L.
 Manager Australian Operations
 Ralph M. Parsons
 100 Miller Street
 North Sydney, NSW Australia 2060

JAWOROWSKI, Raymond J.
 Assistant Vice President - Int'l Operations
 Apollo Technologies Inc.
 One Apollo Drive
 Whippany, New Jersey 07981

JONES, Donald B.
 Paraho Overseas Corporation
 300 Enterprise Bldg.
 Grand Junction, Co 81501

KIMEL, Egon A.
 Sr. Supervising Engineer
 Burns and Roe Inc.
 800 Kinderkamack Road
 Oradell, New Jersey 07649

KRANKER, Richard
 Assistant Director
 The Trade & Development Programs
 TDP/IDAC Dept. of State, SA-12 Rm. 912
 Washington, D.C. 20523

LAING, Robert
 Manager, Pacific Division Sales
 Unit Rig & Equipment Co.
 10909 Northeast Fourth St. (West Coast Off.)
 Bellevue, Washington 98004

LEGRAND, J.P.
 Vice President
 Tosco Corp.
 74, Ave. Paul Doumer
 75016 Paris, France

LEKAS, Mitchell
 President
 Geokinetics, Inc.
 391 Chipeta Way
 Salt Lake City, Utah 84108

LENTINE, Thomas M.
 Technical Sales Engineer
 Apollo Division
 Economics Laboratory (Singapore) Pte. Ltd.
 7 Fourth Lok Yang Road
 Jurong, Singapore 2262

LINDEMANN, William L.
 Geological Associate
 Esso Eastern Inc.
 P.O. Box 1415
 Houston, Texas 77001

LOOTENS, Douglas
 Partner
 Dames & Moore
 4321 Directors Row
 Houston, Texas 77092

MARZUAN
 Directorate General of Oil and
 Natural Gas
 Jl. M.H. Thamrin No. 1
 Jakarta Pusat, Indonesia

McCULLUM, Donald
 Director, Technology Licensing
 Tosco Corp.
 10100 Santa Monica Blvd.
 Los Angeles, California 90067

PANICO, Salvatore, P.E.
 Engineering Specialist
 Fossil Fuel Technologies
 Burns and Roe, Inc.
 185 Crossways Park Dr.
 Woodbury, N.Y. 11797

PATEL, Jim
 Associate Director
 GDC, Inc.
 10 West 35th Street
 Chicago, Illinois 60616

Pelofsky, Arnold H.
 President
 AER Enterprises
 P.O. Box 454
 E. Brunswick, New Jersey 08816

PELOFSKY, Loretta K.
 Meetings Coordinator
 AER Enterprises
 P.O. Box 454
 E. Brunswick, N.J. 08816

PETERSON, Peter M.
Senior Geologist - Mining
Dravo Constructors and Engineers - USA
1250 14th St.
Denver, Colorado 80202

PHILLIPS, Henry
President
Foster Wheller Dev. Corp.
110 S. Orange Ave.
Livingston, New Jersey 07039

REED, John G.
Partner
White & Case
1747 Pennsylvania Ave., N.W. Suite 500
Washington, D.C. 20006

SAVAGE, John
Partner
Jo-Jo Oil Shale Dev. Co.
1122-293 Road
Rifle, Colorado 81650

SCHORA, Frank C.
Senior Vice President
GDC, Inc.
10 West 35th St.
Chicago, Illinois 60616

SEIBEL, Richard J.
Acting Chief, Branch of Mine Waste Mgmt.
Bureau of Mines
U.S. Department of the Interior
2401 E. Street, N.W.
Washington, D.C. 20241

SHANG, Jer-Yu
Deputy Director, Tech. Dev. & Engr. Div.
U.S. Depart. of Energy
P.O. Box 880
Morgantown, West Virginia 26505

SNIPES, James C. (Jack)
Consultant
Synthetic Fuels Associates, Inc.
Engineering & Economic Consultants
2429 North Lincoln
Arlington, Virginia 22207

STEPHENS, Douglas R.
Project Director, In-Situ Coal Program
Lawrence Livermore National Laboratory
P.O. Box 808 (L-367)
Livermore, California 94550

SULASMORO, Ir. Bambang
Director Mineral Technology Dev. Centre
Directorate General of Mines
Jln. Jend. Sudirman 623
Bandung, Indonesia

SUWARDI, Gunawan
Chemical Engineer
Technical Manager
Pusat Produksi
Jl. Sei Selayur
P.O. Box 084
Palembang

TINSTMAN, Robert A.
General Manager - Engineering
Morrison-Knudsen Company, Inc.
P.O. Box 7808
Boise, Idaho 83729

WILSON, H. M.
Senior Regional Representative and
Vice President
Bechtel International, Inc.
Jalan Menteng Raya 8
Tromol Pos 467
Jakarta, Indonesia

Zakaria, Wan Hason H.W.
Geologist, Exploration Department
Wisma Peladang
P.O. Box 2444
Jalan Bukit Bintang, Kuala Lumpur 06-24

ZIMMERMAN, Robert V.
Senior Engineer
Paraho Development Corporation
300 Enterprise Bldg.
Grand Junction, Co. 81501

HARRIS, Robert J.
Manager, Sales Far East
C.F. Braun
1000 S. Fremont Ave.
Alhambra, Ca.

APPENDIX VI
FIELD TRIP ITINERARY

Provisional Excursion Program
Bangkok-Tak-Mae Sot-Tak-Bhumibol Dam-Mae Moh-Chiang Mai
3-6 February, 1982

Wednesday 3 February, 1982

14.30 hrs. Depart Siam Intercontinental Hotel for Tak
Accommodation at Viang Tak Hotel, due to arrive at
Viang Tak Hotel at 21.00 hrs.

Thursday 4 February, 1982

07.30 hrs. Depart Viang Tak Hotel for Mae Sot by coach
Due to arrive in Mae Sot at 09.30 hrs.

09.30 - 14.00 hrs. Visit Oil Shale Deposit at Huai Ka Lok by Land Rover

15.00 hrs. Leave Mae Sot for Viang Tak Hotel
Accommodation at Viang Tak Hotel

Note : Ladies' Program will be arranged to visit Thailand's Ancient City at Sukhothai

Friday 5 February, 1982

07.00 hrs. Leave Viang Tak Hotel for the Bhumibol Dam
Breakfast at the Bhumibol Dam, EGAT

09.00 - 10.00 hrs. Due to arrive at 08.00 hrs.
Visit hydroelectric power plant at the Bhumibol Dam

10.00 hrs. Leave the Bhumibol Dam for the Mae Moh Lignite Mine

12.30 hrs. Arrive at the Mae Moh Lignite Mine
Lunch at the EGAT
Guest House at the Mae Moh Lignite Mine

13.30 - 14.30 hrs. Visit Lignite Mine and power plant at Mae Moh

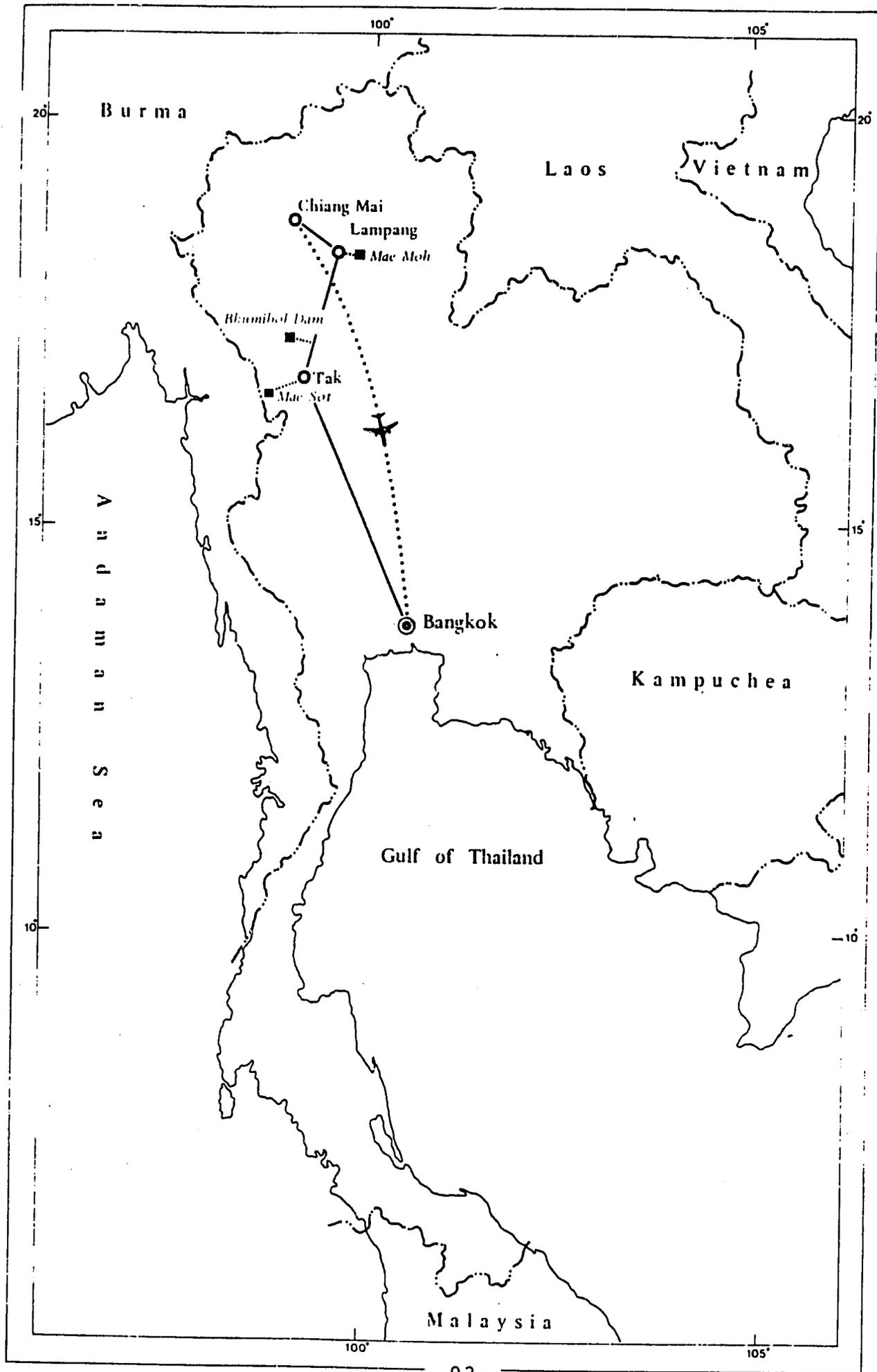
15.00 hrs. Leave Mae Moh for Chiang Mai

18.00 hrs. Arrive in Chiang Mai
Accommodation at Chiang Inn Hotel

Saturday 6 February, 1982

All day free

19.00 hrs. Leave Chiang Mai for Bangkok by Thai Airways flight TH 107
Due to arrive at Don Muang International Airport at 20.00 hrs.



APPENDIX VII

NEW ITEM

February 5, 1982

WYCOAL GAS REVAMPED TO INCLUDE SYN-GASOLINE IN PRODUCT SLATE

The Wycoal Gas Project, which had been conceived as a substitute natural gas venture similar to Great Plains, has undergone a major restructuring to include synthetic gasoline among its products, *SynFuels* has learned. A Wycoal Gas official said the plant, which was being planned to produce about 150-million cubic feet/day of pipeline-quality gas from coal using a Lurgi gasifier, will now include the Mobil methanol-to-gasoline process to make 11,000 barrels/day of gasoline, with the SNG volume being cut to 70-million cubic feet/day. In addition, the project is likely to use the Lurgi methanol synthesis process plus a Texaco gasifier to convert liquid by-products of the Lurgi technology into gasoline.

With the U.S. Synthetic Fuels Corp. aiming for diversity of technologies in its program (*SynFuels*, 22 Jan., 1), Wycoal Gas officials see their revamped proposal — among the 11 remaining under the SFC's first solicitation — as being more consistent with the corporation's overall objectives, said one senior executive. He added, however, that there are also a number of other reasons why the Wycoal Gas sponsors have made this dramatic change in the project. "We think this is the most efficient way to get marketable and distributable products from coal," the official said. "Also, we think this approach is cheaper" in terms of the energy cost per unit when compared with a project producing either SNG or synthetic gasoline alone. Finally, the official explained, this new plan for Wycoal Gas will provide "flexibility" of product, enabling the sponsors to shift production among gas, methanol and gasoline depending on the demands of the marketplace.

Meanwhile, Wycoal Gas is still searching for more partners, following the withdrawals late last year of Ruhrgas and Pacific Gas & Electric. "We are talking to some people now," said the official, who added that he didn't want to name anyone at this time. The Wycoal Gas plant's capital costs, as a result of the restructuring, have risen about \$180-million, which brings it close to the \$3-billion in total capital requirements. The sponsors are still seeking price supports and a loan guarantee from the SFC.

KRUPP-KOPPERS SEEKING PARTNER FOR 1,000-TON/DAY DEMO PLANT

Krupp-Koppers of Essen, West Germany, is negotiating with several international firms about participation in a 1,000-ton/day demonstration plant for the coal gasification process developed in cooperation with Shell Oil, according to German industry sources. Its former partner, Shell Oil, is currently negotiating with the West German government for assistance for a demonstration plant also using the Shell-Koppers process (*SynFuels*, 23 Oct. '81, 1).

Thus far, Krupp-Koppers has held discussions with several potential partners, who indicate "great interest" in the proposed \$50-million to \$80-million (U.S.) project, says one source close to the negotiations. The Shell-Koppers process was developed by the international oil company and engineering firm from 1974 to mid-1981 in a pilot plant having a throughput capacity of 150-tons/day of coal, note the sources. Based on the information from the pilot, Krupp-Koppers believes that the technology is feasible and under certain circumstances can be economic, say the sources. Therefore, the Essen-based engineering firm is seeking to proceed without government funding, since this would require that parts of the process be made publicly available, they elaborate. Krupp-Koppers expects to have engineering for the demonstration plant finalized in 1982; construction is expected in 1983. The plant will be sited in the Ruhr area. The process is expected to be applicable to a broad range of coals. The technique of entrained bed gasification under pressure is particularly attractive because it enables the processing of coal fines, the proportion of which is expected to increase in modern mechanized extraction methods, note the sources. Krupp-Koppers officials in Essen were out of town as *SynFuels* went to press and could not comment on the negotiations.

AUSTRALIA REPORTEDLY AGREES TO JAPANESE EXPORT OF ACCOR COAL LIQUIDS

The Australian government has reportedly agreed in principle to allow a Japanese trading house to export 50% of the product from a proposed 65,000 barrel/day Sasol-type coal liquefaction plant to be built in Queensland, according to Australian industry sources. This approval has enabled the British investment firm, Morgan Grenfell, to raise the necessary capital for the \$2.8-billion (U.S.) project being proposed by the Australian Coal Corp. (ACCOR), say the sources. No announcement has been made by the Australian government on this agreement to date, and the name of the Japanese firm has not been made public, they note.

The synfuels plant, which will produce gasoline, diesel and jet fuel, is expected to be operational 340

days a year, the sources say. It is expected to be highly profitable. The coal liquids from the plant are estimated to cost about 54 Australian cents a gallon (1982 prices), compared to the current \$2.00 per gallon price for gasoline. Fluor is the managing contractor for the project. Construction is expected to begin in the latter part of 1983. A large oxygen company, as yet unidentified, has agreed to finance an oxygen plant, note the sources. The sponsors of the project are National Mutual Life, Peki-Wallsend Ltd., Oil Co. of Australia, Resources Development Corp., and a group of clients organized by Morgan Grenfell.

Meanwhile, the Australian government has announced that it has given approval under its foreign investment policy to the establishment by the Japanese government of a brown coal liquefaction pilot plant in the Latrobe Valley in Victoria. The pilot plant will be developed by New Energy Development Organization (NEDO), with the actual construction and operation being contracted out to a consortium of Japanese companies known as Nippon Brown Coal Liquefaction Co. The pilot plant will be based on local brown coal and Japanese technology. It is estimated to cost \$190-million, to be funded by the Japanese government and to operate from 1983 to 1987. This would be a precursor to a demonstration and commercial coal liquids project in about 8 to 10 years which could produce 100,000 barrels of liquid fuels per day, say Australian government officials. The government's decision to approve the establishment of the pilot plant is subject to conditions that Australians be offered 50% equity if the project proceeds beyond the pilot stage, and that Australians be afforded access to the technology developed by the plant on reasonable terms and conditions, say the officials.

SFC STAFF HAS MET WITH MOST OF THE 11 MATURE PROJECTS' SPONSORS for an in-depth review of their projects in preparation for a report to the corporation's board on how those projects match up with SFC "strength" criteria, SFC officials said earlier this week. Officials would not say how many of the projects appeared to be strong enough to enter into Phase II, the negotiating phase. "They all have relative strengths and weaknesses," said one SFC official, adding: "There is not one of them that isn't capable of being strengthened." After initial board consideration of the projects for strength at its February 16 meeting, the SFC is expected to decide which projects will enter Phase II at its following meeting on March 2.

THAILAND OFFERING BROAD INCENTIVES FOR SHALE AND OTHER ENERGY PROJECTS

The Kingdom of Thailand plans to update regulations and laws and modify its royalties and tax systems in a broad effort to attract Thai national and foreign interests to invest in shale and other energy projects in the nation. Senior Thai officials, speaking this week at an oil shale/lignite symposium in Bangkok sponsored by the U.S. and Thai governments, also said that certificates of investment promotion will be given to any investor interested in the development of Thailand's shale deposits, estimated to contain about 6-billion barrels of recoverable oil. The officials stressed that the government has no intention of nationalizing any natural resource development activities owned by private industry.

Specifically, Thailand's plans for incentives include: permission for the entry of foreign experts and workers; exemptions from import duties on machinery to be used in a project; the elimination of income taxes for three to eight years; and the reduction of business taxes on the sale of products. In addition, the project would be permitted to deduct two times the cost of transportation and electricity in computing its income taxes. Thailand is aiming to reduce its dependence on imported oil from 75% to 46% of its total energy requirements by its various measures and incentives and, also, through the use of natural gas and condensate recently discovered in the Gulf of Thailand.

WILKINS SUPPORTS HAY RECOMMENDATIONS ON SFC COMPENSATION

U.S. Synthetic Fuels Corp. board member C. Howard Wilkins, chairman of the SFC's compensation committee, told *SynFuels* this week that he personally found the Hay Assoc. study on SFC compensation to be "an excellent piece of work" and that he generally supported its recommendations. Wilkins said the committee hoped to meet in the next week to address the remaining few loose ends concerning the Hay study (*SynFuels*, 29 Jan., 1), as a prelude to the board considering the compensation recommendations at its February 16 meeting.

The Hay report found in general the salaries for senior SFC executives were uncompetitive with the private sector and needed to be raised to attract quality personnel. Despite recent reports out of the SFC that the board might want to pay even higher salaries than Hay recommended for two currently vacant jobs — senior v.p., projects and v.p., finance — Wilkins said that "while we need people with strong credentials in those jobs," he was generally satisfied with the Hay recommendations. Hay had suggested that senior v.p., projects be paid \$113,831 (plus or minus 25%), and v.p., finance be paid \$85,990 (plus or minus 25%).

At the compensation committee meeting just prior to the January board meeting, SFC sources say that the committee was "adamantly" opposed to an SFC staff "alternative" which proposed that most senior executive salaries instead be kept within the general government pay cap of just under \$70,000. Wilkins this week noted that his committee had requested the staff to draw up an "alternative" to the Hay report and that it should not be construed as a staff "recommendation."

ONLY THREE WEEKS REMAIN TO REGISTER FOR
Science & Technology of Synfuels: I

"The Science and Technology of Synfuels: I" will be a three-day meeting from March 1 to 3, 1982, at the Broadmoor Hotel in Colorado Springs. This meeting will include discussions of new concepts, emerging technologies and developing technologies in the areas of coal gasification, liquefaction, oil shale and tar sands. It is aimed at individuals interested in applied research as well as the status of ongoing synthetic fuels programs currently being considered for commercialization.

The general chairman of the conference will be Arnold H. Pelofsky, president of AER Enterprises. The co-chairman for the three days will be, respectively, Dr. Sun Chun, director of DOE's Pittsburgh Energy Technology Center, who will head the program on new concepts; Prof. Larry Anderson, University of Utah, who will preside over the discussion of emerging technologies; and Prof. Irving Wender, of the University of Pittsburgh, who will orchestrate the talks on developing technologies.

To register by phone: Call Peggy Collins at 212-997-6410 or 800-223-6180.
For further information, see the conference brochure enclosed with this issue.

REPS. KEMP, LOTT, OTTINGER COSPONSOR BROWN BILL TO ABOLISH SFC

Rep. Hank Brown (R-Colo.) introduced this week his bill to abolish the U.S. Synthetic Fuels Corp. (SynFuels, 29 Jan., 4) and in so doing was able to point to influential members from both the right and left in Congress as cosponsors. Included among those signing on to the Brown measure were leading Conservatives Jack Kemp (R-N.Y.), House Republican Whip Trent Lott (R-Miss.), and Liberal Energy subcommittee chairman Richard Ottinger (D-N.Y.). Despite this show of strength, however, Congressional sources still see the bill as having little chance of enactment.

In a "Dear Colleague" letter sent around to members of Congress prior to introduction of his bill, Brown noted a majority of all the commercially recoverable oil shale was located in his fourth Congressional district. He added that while "about a dozen" energy firms have expressed interest in seeking SFC subsidies to develop shale in his district, "I do not feel we can justify corporate welfare to major energy companies when our nation faces huge federal budget deficits." Brown's letter did not mention, however, that two firms in his district that have already received aid — Tosco and Union — would be untouched by his bill. Under the Brown measure, handling of these two contracts and the Great Plains guarantee would remain at DOE.

The SFC, for its part, was taking a low public profile concerning the nullification legislation. SFC Chairman Ed Noble, in a statement released through a spokesman, said, "We are here to carry out a law passed by Congress. If Congress now decides to change that law, that is the purview of Congress and not the Synthetic Fuels Corporation. We do not intend to lobby for or against any particular bill of this nature. We will, however, testify about our experience in trying to carry out the law if asked."

Other members of Congress also co-sponsoring the Brown bill are Reps. Marjorie Holt (R-Md.), Edwin Forsythe (R-N.J.), and Denny Smith (R-Ore.).

THE SOVIETS WILL NEGOTIATE DIRECTLY WITH WEST GERMAN CORPORATIONS for a proposed coal liquefaction project, according to West German industry sources. A consortium, led by Imhausen Chemical Engineering and Plastics Group, had been negotiating for two years with the Soviets to study the feasibility of a synfuels plant producing mainly gasoline, diesel fuel and liquefied petroleum gas (SynFuels, 31 July, 1).

At the last Imhausen meeting with the Soviets, in December 1981, the authorities told the German consortium that at the moment they were not interested in further discussions, but they would be talking directly with German firms offering coal liquefaction technologies. In West Germany, Ruhrkohle, Rheinbraun and Saarkohle offer such technologies, the sources note.

OAK RIDGE GROUP LOBBIES CAPITAL FOR TENN. SYNFUELS ASSOC. PLANT

A "broad-based" group of about 70 people from five counties in East Tennessee were planning to visit Washington, D.C. late this week to lobby on behalf of the Tennessee Synfuels Assoc.'s syn-gasoline project, according to officials of the Oak Ridge Chamber of Commerce. Irked by Sen. Howard Baker's recent comment that the Memphis coal gasification project may have a better chance of gaining U.S. Synthetic Fuels Corp. aid than the Koppers-Cities Service plant in Oak Ridge (SynFuels, 29 Jan., 3), area politicians, labor leaders, and businessmen have organized the trip to let Baker, other members of the Tennessee congressional delegation and the SFC know that the project has strong local support, said one chamber official. "The trip resulted from that [Baker's] comment," she said. "We're not really going up there to fight the Memphis plant. We'd like to see both plants get funded."

In addition to Baker, the group plans to meet with Rep. Albert Gore (D-Tenn.), Rep. John Duncan

(R-Tenn.), Rep. Jimmy Quillen (R-Tenn.) and Sen. James Sasser (D-Tenn.), the official said. The Oak Ridge official said the group expected Baker to ask a representative of the SFC to be present at the meeting, but a press aide to the Senate majority leader said that the office did not plan to contact SFC on the matter. The Oak Ridge group is expected to include coal operators, realtors, bankers and elected officials from the area, including Major A.K. Bissell.

A spokesman for Koppers in Pittsburgh said TSA did not plan to have any officials accompany the group. "We'd certainly respond to any government official's request for us to be there," he said, adding that no request has been made. Asked if the sponsors had tried to dissuade the group from the public lobbying that SFC officials have insisted will not affect their decision making, the Koppers official said, "We welcome any community support. We really can't comment on another group's activities. Any plant this size, this new . . . you've really got to get community sentiment out front. We want a clear path in front of us" if the plant gets the go-ahead, he said.

Baker press aide Katie Barksdale said the senator planned to hear the group out and probably would make a statement after the meeting. She said the senator was aware that the group was upset about his remarks, which she said, had resulted in "some confusion" about the intent of the senator's remarks. His remarks were not an endorsement of one project over the other, she said, but rather an observation about the status of the project application. Meanwhile, a coalition of environmentalists, Group Against Synfuels Pollution (GASP), says it is planning a trip to Washington Feb. 10 to counter the lobbying by the proponents. They also have asked for a meeting with Baker and the SFC.

PARAHO AND DAVY MCKEE WILL JOINTLY DEVELOP AND MARKET detail design engineering for commercial facilities to produce oil and gas from shale using Paraho's process. The joint undertaking, Paraho/Davy McKee Shale Oil System, will be based at Paraho's corporate headquarters in Grand Junction, Colo. Davy McKee, with headquarters in Cleveland, Ohio, has participated and assisted in the development and design of the Paraho retorting process since 1973.

The Paraho retort, an above-ground vessel, includes gravity feed, a counter current flow heat exchange system and the direct combustion of carbon to recover additional heat from the processed shale. Paraho said more than 110,000 barrels of shale oil have been produced in long, continuous runs at high thermal efficiency. Much of this crude shale oil has been refined into high quality petroleum products in modern commercial refinery equipment, Paraho said.

GREAT PLAINS TO PAY FFB FEE OF 7/8%, ABSORB ADDITIONAL ENVIRONMENTAL COSTS

Great Plains Gasification Associates, under terms of the final \$2.02-billion loan guarantee contract signed late last week with DOE, has agreed to pay an additional fee of 7/8% for the "flexible" financing it will get through the Federal Financing Bank. In addition, Great Plains has agreed to absorb all the costs of additional environmental studies DOE wants performed — beyond those required by licensing and permitting procedures — up to a cap of \$12-million.

The level of the FFB financing fee — which is in addition to a 1% loan guarantee fee to be paid DOE — and the question of who would pay for the additional environmental studies had been the last two significant issues holding up a formal signing. Earlier this year, agreement was reached to limit the consortium's liability in excess of their equity to \$100-million (SynFuels, 8 Jan., 3). One loose end concerning the Great Plains loan guarantee, DOE officials said this week, was how much it would be "leveraged" by DOE — whether three-to-one or two-to-one. The higher leverage ratio would result in an additional \$325-million of "interim" synfuels money becoming available to the U.S. Synthetic Fuels Corp. once the SFC has been declared operational.

As to the flexible financing, the additional FFB fee of 7/8% was set for two "early call" options that had been requested by Great Plains, in addition to one such option capable of being exercised by DOE. The options will allow Great Plains to:

- "Double up" on its semi-annual principal payments if it desires to.
- Pay off the loan entirely after ten years. For example, should the plant prove to be especially successful, DOE officials noted, Great Plains might want to pay off the loan early, and arrange for private financing to boost its capacity (the current loan guarantee limits plant production to 125-million cubic feet per day of synthetic gas).

In addition, under the contract DOE has the option after 10 years — if it determines that the plant is financially viable — to require Great Plains to pay off the remainder of the loan and seek private financing. If Great Plains is unable to secure private financing within another two years, DOE could then tack on an additional fee of 1%. Great Plains will be conducting six environmental studies requested by DOE which are not required under current licensing and permitting procedures. DOE officials said this week that the \$12-million cap should be adequate to cover the costs for the additional studies, which include tests of water quality standards, pollution control equipment effectiveness, and health impacts on workers.

PARAHO'S REVENUES INCREASE SEVEN FOLD TO OVER \$11.3-MILLION IN 1981

Paraho's 1981 revenues amounted to a record \$11,310,423, almost a seven-fold increase over 1980 revenues of \$1,676,326, according to the 1981 annual report released by the Grand Junction, Colorado-based corporation. Most of this increase is attributable to a DOE cooperative agreement for preparation of engineering designs and cost estimates to commercialize Paraho's oil shale technology, the report notes.

The company's net profit after taxes in 1981 was \$1,330,263. This compares with a loss of \$602,422 in 1980. Interest income of \$722,625 accounted for about half of Paraho's total income before taxes, the report adds. In December 1981, Paraho completed a project for DOE including detailed engineering design and cost estimates for a full-size Paraho retort and a conceptual design and cost estimate for the oil shale mine and auxiliary equipment required to make it operational. Revenues from the design project during fiscal 1981 and 1980 were \$6,322,879 and \$530,531 respectively.

Paraho is completing this month work for DOE for a commercial feasibility study to determine the investment and operating costs and the economic attractiveness of expanding the proposed Paraho commercial size module into a multi-retort commercial oil shale plant. Revenues generated during fiscal 1981 for this study amounted to \$1,562,960. Revenues amounting to \$2,685,152 came from privately funded research programs, including the shale fragmentation program and preparations for the Marathon oil shale retorting program using modified Paraho retorting equipment. Paraho's basic work at the Anvil Points facility has been completed and the lease on the federal government facility is scheduled to expire in May 1982, the report notes. An extension has been requested to permit several small projects to continue for a limited period of time. Paraho is currently studying alternative sites for possible relocation of its research and development activities, the report notes.

KENTUCKY PANEL APPROVES RULE GOVERNING PERMITS FOR SHALE PLANTS

Kentucky's Administrative Regulation Subcommittee has approved a rule governing the issuance of permits for oil shale processing plants. In doing so, though, it deleted from consideration two portions of that regulation: one setting the fee for permits at \$50 per acre; the other limiting the life of permits to five years. The legislative subcommittee also declined to act on other regulations affecting the oil shale industry. The regulations were submitted to the subcommittee by the Kentucky Dept. for Natural Resources and Environmental Protection. The body's approval is required prior to implementation. The matter is expected to be considered again sometime this month, after the subcommittee schedules a hearing on the topic.

Kentucky's Dept. for Natural Resources and Environmental Protection began writing rules governing the development of the state's oil shale resources after it was ordered to do so by the 1980 Kentucky General Assembly. The first draft of those regulations was issued in July 1981. Following public and industry comment, a number of changes were made to the rules. They are now ready for consideration by the legislature.

In a related development, legislators have been told that Gov. John Brown Jr.'s proposed budget contains no funds for the enforcement of the oil shale rules. Speaking before the House Natural Resources Committee, the secretary of the state natural resources department, Jackie Swigart said, "No money is targeted for oil shale regulation." She added that it "is difficult to know how much to budget for an industry which isn't here." Mrs. Swigart's department did request — through the Office for Policy and Management — that the governor allocate \$500,000 over the next two years for regulation of the oil shale industry.

BRAZIL'S ENERGY MINISTER WANTS PILOT TO TEST NEW TENENGE SHALE PROCESS

Brazil's third largest engineering firm, Sao Paulo-based Tenenge, has developed a new method for shale oil retorting that is simpler and less expensive than the well-known Petrosix technology created by Petrobras, according to Mines and Energy Minister Cesar Cals. Cals wants to install a pilot plant to produce oil from shale at Tremembe in the shale-rich Paraiba Valley, some 200 kilometers from the city of Sao Paulo. Partners in the venture would be Tenenge, Petrobras, the Mines and Energy Ministry and the state-owned Mineral Resources Exploration Company (CPRM), he says. Brazil is also interested in attracting private Brazilian and foreign firms into oil shale development, he added. According to Cals, shale oil would cost \$33/barrel produced by the Tenenge method, while the cost would be \$39/barrel using Petrobras' Petrosix process.

The proposed pilot plant would consume 80 metric tons (mt) per day of shale and yield 40-barrels/day of oil, a Tenenge official told *SynFuels*. He said no construction schedule has been set yet, but that a timetable will be drawn up in the next few weeks. The Tenenge process differs from that of Petrobras in that gas is heated indirectly, not entering into contact with the furnaces, he said. "The greatest difference is that Petrosix has already been proved in a prototype plant and is moving towards an industrial-scale [project]," the head of Petrobras oil shale project, Gilberto Sobrino Marques d'Oliveira, said. "I think the Tenenge process is still in the very experimental research stages and I don't believe you can tell yet that it will be cheaper [than Petrosix]."

Petrobras has been running a 1,000-b/d shale oil prototype plant south of Sao Paulo in Parana State since 1972 and is planning a two-module commercial plant to produce 54,000-b/d of shale oil. The engineering project for the first half of the \$2-billion plant was completed in December and Petrobras is waiting for the

federal government to release the \$40-million allocated under the energy mobilization program for the oil shale project in 1982, d'Oliveira said. The World Bank is also studying the Petrobras project in detail for a possible loan, he added. Brazil's reserves of 7-billion mt of pyrobituminous oil shale are considered to be the second largest in the world. In the Paraiba Valley, where the Tenenge unit will be built, reserves cover an area 60-km long and 6-km wide.

ALSANDS SEES CONSORTIUM INTACT DESPITE 2 — PERHAPS 3 — WITHDRAWALS

Despite the withdrawal early this week of two U.S. oil companies from the proposed \$13-billion (Canadian) Alsands project, and the strong possibility that a 20% partner, Shell Explorer will drop out (SynFuels, 22 Jan., 1), the terms and conditions of the agreement will allow the consortium to remain intact, Alsands officials said. The remaining companies will decide this month whether to go forward with the synfuels project under the commercial terms recently proposed by the Federal and Alberta governments, they add. Shell Explorer officials said that they were still in the consortium, but declined to confirm or deny reports in the press and from other consortium members that they intend to withdraw.

Alberta's energy minister, Mervin Leitch, said he was not overly surprised that Chevron Standard and Amoco Canada had decided to withdraw their 8% and 10% participations. "There were indications that they were doubtful since the start," he said. The Alberta government is now awaiting the decision of the other 82% of the partnership. Alsands is negotiating with several companies that have expressed interest in taking a position in the tar sands project, and the other consortium members might elect to take an enhanced stake, he noted. If the consortium were to decide to abandon the project, Alberta may consider making further changes in the commercial terms it has been offering, one key Alberta official told *SynFuels*. In Ottawa, a federal government official said that no further offers could be expected.

At Amoco, a marketing official said that the oil company leaves the project after "having spent \$10-million, thousands of man hours of work, and hundreds of hours in negotiations and discussions." The principal reason for the decision is "the inability of the project sponsors to negotiate commercial terms acceptable to Amoco Canada that would adequately reflect a recognition of the risk and cost of the project in today's terms," he noted. Amoco Canada no longer has its former capacity to generate capital either internally or quite probably externally as a result of the national energy program and the general state of the Canadian economy, he said. "The uncertainties with respect to oil prices, the escalating costs of capital and construction and the technological risks still inherent in this project justify a considerably higher level of earnings by the project than the governments are prepared to allow, and therefore, we do not consider that Alsands is an attractive investment," the official elaborated. When the project was initiated in 1978, the consortium stated that it needed a 20% rate of return. Interest rates at that time were about 10%. "Despite the fact that interest rates are currently hovering around 18% and reached 22% last year, we still have not been offered a 20% rate of return," he said.

At Chevron, an official said that the return on investment was not sufficiently attractive in view of the risk involved. Chevron believes that there is great risk that crude prices could be significantly lower than many sources have estimated and that there is also the likelihood of higher than predicted rates of inflation.

ASHLAND AFFIRMS COMMITMENT TO H-COAL COMMERCIAL AND PILOT PLANTS

Ashland Oil, Inc., remains committed to the development of a commercial-scale synfuels industry in the U.S., according to Paul W. Chellgren, a senior v.p. and group operating officer for the firm. Speaking at the firm's annual meeting in Ashland, Ky., last week, Chellgren said: "In their first solicitation due this past March 31, the [U.S. Synthetic Fuels Corp.] received 63 submissions. Last week, we received notice that the SFC has determined that 11 of these projects are sufficiently mature to progress to Phase II of review and evaluation. The Breckinridge project is the only coal liquefaction project on this short list. While the costs and uncertainties of developing a commercial synfuels industry are staggering, we continue to believe that developing this capability is a valuable security policy for America." Ashland's proposed commercial-scale H-Coal plant in Breckinridge County, Ky., would produce 50,000 barrels of liquid hydrocarbons daily from 18,000 tons of coal and would cost more than \$3-billion. Its partner in the venture is Bechtel.

On a related subject, Chellgren said Ashland's pilot-scale H-Coal plant, erected adjacent to the firm's Catlettsburg, Ky., refinery, will resume operation in late February, processing Wyoming sub-bituminous coal. The facility completed its most recent run on December 11, processing Illinois No. 6 coal. "The pilot plant had an eventful year. It could be characterized as one of significant successes internally and frustrations externally," Chellgren commented, describing the external difficulties as a decline in federal government "interest and support" for synfuels. He continued: "We have been told by the U.S. Department of Energy that we should not expect any financial support for the pilot plant once the funds already appropriated have been expended. Depending on expenditure rate, that will occur by the end of calendar 1982. We are pursuing alternatives to maintain operation of the pilot plant past the end of 1982. It is difficult to assess the likelihood of that occurring."

GILLETTE, WYO. MAYOR WANTS INVESTIGATION OF HAMPSHIRE WATER PLAN

The Mayor of Gillette, Wyoming, and a citizens' group have asked the Wyoming State Engineer to investigate the effect of Hampshire Energy's plans to use up to 5.5-million gallons/day of water for its synthetic fuels plant. City officials are offering to sell Gillette waste water to Hampshire to reduce the company's use of ground water from the Lance-Fox Hills Formation.

About 30% of the city's waste water is now used by Pacific Power and Light Co. for its Wyodak coal-fired power plant. Pacific Power, which has the option to use twice as much water if it constructs a second plant, pays part of the operations costs on the waste water plant and a fee for the amount of water it uses. Sewage water is treated by the city, treated again by Pacific Power and then turned to steam in the plant boilers. The city's proposal does not allay the fears of the Citizens for Responsible Development, a group composed primarily of subdivision residents. A spokesman for the group says too much water would still have to be taken from the aquifer. He said no one has enough information to know the effects on other aquifers, which are the only source of water for many area communities, ranches, and industries. Hampshire, which plans to produce syn-gasoline and other by-products from coal, has not yet responded to the city's offer.

Hampshire Energy is a partnership of Kaneb Services, Koppers, Standard Oil of Ohio, Northwestern Mutual Life Insurance Co. and Metropolitan Life Insurance. The project is among the eleven being considered by the U.S. Synthetic Fuels Corp. for backing under its first solicitation.

PAULA HERZMARK TO RESIGN AS EXEC. DIRECTOR OF COLO. LOCAL AFFAIRS DEPT. Herzmark, who became embroiled in the controversy over entrepreneur Kenneth Good's move to take over Tosco Corp., said she is quitting Feb. 28. The reason, she said, is partly because of debts she accumulated during her personal relationship with Good and during Tosco's lawsuit against Good, which brought into question his association with her.

Herzmark was linked in the attempt by Good to acquire Tosco when the oil shale company accused her of leaking confidential information from state files to her suitor. However, the allegation was never proven and U.S. District Judge Robert Takasugi of Los Angeles eventually dismissed that section of the Tosco lawsuit, which is still pending in court. Herzmark said the Tosco situation did not directly lead to her resignation but she acknowledged her involvement in the situation last summer caused her to want to get out of government. She said the personal financial burden arising from the Tosco matter is part of the reason for her decision to resign from the \$50,000 a year state job. She said the main reason she's resigning is because she has accomplished the goals she set when she took the position four years ago. The department "needs a new kind of person," she said. Herzmark has not secured another job and she will spend the next few months looking for a new career, she said. Gov. Richard Lamm said Herzmark "has been a strong department head, a cornerstone of this administration and a trusted personal friend."

SHALE INDUSTRY NEEDS SEEN RAISING COLO. RESIDENTS' ELECTRIC BILLS

The construction of new electrical generating plants to supply Colorado's burgeoning oil shale industry may cause sharp rate increases for Colorado residential, commercial and industrial consumers, the Colorado Energy Advocacy Office claims. However, Public Service Co. of Colorado said the utility, which will serve most of the growth associated with the synthetic fuels plants, has no intention of placing the burden of the new service on existing customers. The advocacy office said if all customers pay for oil shale's electrical demands, a potential subsidy of the required generating capacity would amount to \$417-million a year. That would translate, the office said, into \$75 to \$100 a year more for the average residential electricity bill, \$1,000 a year more for average commercial consumers and an additional \$25,000 annually for industrial customers.

The advocacy office, a consumer group funded by federal and state agencies, based its conclusions on a study by George Sterzinger, staff economist for the National Consumer Law Center in Boston. "If new policies are used, the result will be massive, and presumably unintended, subsidy of the oil shale industry by present Colorado consumers," Sterzinger said. But PSC countered with this statement: "It is and has been our corporate policy that the cost of new supplies will be paid for by that industry, the oil shale companies. We feel it would be inappropriate to place so great a burden on our residential customers. Our philosophy is that growth pays for itself. From our perspective, the industry itself will have to bear the cost of extending service to them."

Robert Burns, PSC spokesman, said the utility has been conducting discussions over several years with the oil shale companies to assess their electrical requirements and decide how to meet them. The Colorado Energy Research Institute, as well as PSC, has suggested shortages of electric power may be a constraint on oil shale development in sparsely populated western Colorado. D. Bruce Coles, an energy consumer advocate with the Legal Aid Society of Metropolitan Denver, told a news conference that PSC and the oil shale companies "have been trying to work it out for 20 years" but have not solved such problems as where the needed power will come from or how generating facilities will be financed.

Sterzinger's report said about 200-megawatts of power will be needed for each 50,000-barrels/day of

shale oil produced. On that basis, a 900,000-b/d shale oil industry would require an additional 3,600-mega-watts of generating capacity. Statewide generating capacity now is about 6,020-megawatts. Coles claimed Colorado's Public Utilities Commission "has been largely oblivious to the whole problem . . . no serious investigation has been undertaken by the PUC." Besides doomtowntown and environmental questions of oil shale development, Coles said, "it is becoming clear that the other major issue is the impact on electricity rates."

EXXON DOUBLES PROJECTION OF COLONY'S CONSTRUCTION WORK FORCE

The peak construction work force at the Colony Development's oil shale project will total 6,992 in 1985, more than double the employment projections made about 18 months ago. Representatives of Exxon, owner of 60% of Colony and operator of the project near Parachute, Colo., presented their revised employment estimates to Garfield County officials to assist them in planning for the influx of workers. "We're not pushing our schedule up," said Exxon spokesman Red McGehee. "We're just finding that more people are needed for the same work we used to think less people could accomplish."

Construction on the mine and facilities to process 50,000-barrels/day at the nation's first full size commercial shale oil plant is running about six months behind schedule. Exxon officials blamed the slippage on the severe winter and design changes. The company said it still expects to meet the target of 1986 for startup of the plant. Garfield County Commissioner Jim Drinkhouse said the new figures "tell me we are going to be overwhelmed in terms of providing services for those people." Oil shale companies are required under permits issued by Garfield County to demonstrate that housing exists for 80% of the work force. Exxon and Tosco, 40% partner in the venture, have joined in developing Battlement Mesa, an entirely new community near Parachute. Exxon officials said they are confident sufficient housing facilities will be available at Battlement Mesa. More than 200 apartments are scheduled to be completed in April and 500 apartments and 250 other housing units are planned to be ready by the end of the year. About 1,500 persons live there now.

MARION COUNTY, ORE., PICKS TRANS-ENERGY TO BUILD WASTE-TO-ENERGY PLANT

Oregon's Marion County has selected Trans-Energy Systems, a Bellevue, Wash. firm with French affiliations, to build and operate a waste burning, electric generating facility. Negotiations on the contract are under way, according to Walt Kluver, the county's solid waste director. The county's consultant, Brown and Caldwell of Walnut Creek, California, representatives of the Oregon Dept. of Environmental Quality, and Merrill Lynch are involved in the talks. Trans-Energy, which has built 12 garbage-to-energy plants in the U.S. is a subsidiary of Rockcor of Richmond, Wash., and Compagnie Generale de Chauffee of Lille, France. Kluver said the firm was selected over two other competitors because of its experience and the quality of its financial plan.

Jerry Carter, Marion County solid waste coordinator, said the \$30-million plant, which will burn 120,000 tons of garbage to produce 12-megawatts/year of power, will be financed entirely by Trans-Energy. The company will have a 20-year operating agreement with Marion County permitting the firm to sell the electric power. Among the potential buyers are Portland General Electric Co., Pacific Power and Light and the Bonneville Power Administration. In addition, Trans-Energy has been talking with two unnamed aluminum companies interested in buying power from the plant. Carter said the schedule calls for construction to start this year, completion of the plant in December 1984 and power-on-line January 1, 1985. Carter said Kluver has been on a European-U.S. tour inspecting waste burning-electrical generation facilities constructed by the present French firm and Trans-Energy.

SHELL AUSTRALIA AND CSR SUCCESSFULLY TEST GASOLINE/ETHANOL BLEND at Mackay in North Queensland, but the co-venturers believe "early introduction of such a fuel appears unlikely." Shell and CSR, Australia's largest sugar producer, said their joint market tests for petranol, a blend of 90% super-grade gasoline and 10% ethanol, was a complete success.

Besides reports from many motorists of improved vehicle performance, the program "confirmed there were no significant technical barriers to commercial-scale blending, storage, distribution and use of such a fuel in Australia. "Petranol's long-term future in Australia will be decided by the economics of the market place. The use of petranol would reduce Australia's dependence on imported oil, but, given the current short and mid-term forecasts for plentiful crude oil supply and less steeply rising prices, the early introduction of such a fuel appears unlikely," the two firms said.

TELEPHONES	<i>SynFuels</i> is published every Friday by McGraw-Hill, Inc., 1221 Avenue of the Americas, New York, N.Y. 10020. Officers of the Corporation: Harold W. McGraw, Jr., Chairman and Chief Executive Officer; Joseph L. Dionne, President and Chief Operating Officer; Robert N. Landes, Senior Vice President and Secretary; Ralph J. Webb, Treasurer.		
Subscription information: Call (212) 997-6410 or Toll-free (800) 223-6180	Alexandra Holubowich Associate Editor	Kevin J. Hamilton Chief Editor	Mark Hendrickson Washington Editor
News offices: New York (212) 997-6310 Washington (202) 624-1274	Subscription rates: \$400 per year in U.S. and Canada; \$425 elsewhere (air mail delivered). © Copyright 1982 by McGraw-Hill, Inc. All rights reserved. Reproduction in any form whatsoever forbidden without express permission of the copyright owner. SYNFUELS is Reg. U.S. Pat. Off.		
			ISSN 0194-0244

APPENDIX VIII

CRITIQUES BY DR. HENRIE AND
MR. BROOKS RYNO



United States Department of the Interior

BUREAU OF MINES
2401 E STREET, NW.
WASHINGTON, D.C. 20241

March 5, 1982

Dr. Arnold Pelofsky
AER Enterprises
12 Redcoat Drive
East Brunswick, New Jersey 08816

Dear Arnie:

I enjoyed very much the opportunity of participating with you on another symposium organized by the U.S. Trade & Development Program of the U.S. International Development Cooperation Agency and the Bureau of Mines with foreign governments. I thought the Oil Shale Lignite Symposium in Thailand was especially productive. Our Ambassador to Thailand and Minister Chatichai both made significant contributions and outlined the need of this symposium. I believe that the objectives were reached.

Even though my ideas may not agree with most of the others, I would like to specifically comment on a concept or two that may help their energy situation. It was mentioned in several conversations that more electrical generation was a major need. An earnest pursuit of increasing the availability of coal is surely in order. Their oil shale also should be utilized if they are going to meet their goals of decreasing their dependence of petroleum imports from 75 percent to 46 percent.

As stated in the meeting, Thailand is relatively poor with a need for more jobs. It appears to me that their industrial development at this stage should be developed along the lines that would sacrifice sophistication for jobs. The oil shale processing technology in this country over the many years has reached a stage of being highly sophisticated both in design and operation, even though we have not reached real production of oil from this generation of systems. Our production, years ago, came from a simpler mining and retort design.

I would recommend that perhaps the more simplified systems be considered for Thailand to some of the skillfully designed carefully controlled systems that are within our grasp.

As an example for mining--they have relatively thin seams of highly stratified shale that averages medium, but not high grade. Surely a large mining operation would be difficult to develop with the resource and even if they had thick seams it would be difficult technically. If we put together a batch retort and a relatively small mining operation, we could easily visualize a 10,000 ton/day shale production, utilizing some modern equipment with a good supply of manpower including hand cobbing where necessary. A fairly good uniform grade of ore could be supplied by this technique.

This would require then about 10 batch retorts each holding 5,000 tons of ore with a 5 day turn around. This would allow some size separation with an equal split of fines and course material and thereby better fluid flow through each retort. There could be two banks of 5 pairs of retorts--charged by belt at the top and discharged by belt at the bottom. A common manifold system with proper valving to use waste heat from operating retorts to heat the fusible charged retort.

This system would supply about 5,000 barrels of oil per day. A four-inch pipeline would be sufficient to transport the oil from Mai Sot to the river near Tak where a medium size powerplant could be built. The four-inch pipeline could handle about a two-fold expansion. Because this size pipe can be easily handled by hand and could even be threaded steel pipe the pipeline would not have to be a big deal. A few pumping stations would suffice.

Even though the mining operation may produce a greater tonnage of fossil fuel than the mine we observed near Pangyang. The overburden problems are not as great so the mining operation should be within their present capability. The retorts would be about 45 feet in diameter and 80 or so feet high with charging cones on top and discharging cones on the bottom.

It seems that this system is both practical and workable and would fit into the Thai system without too much sacrifice. They could build on the system as the mining develops and as the experience and financial capability within the country develops.

I hope that you are satisfied with the success of the symposium, and feel repaid for the untiring effort and anxious moments in arranging a meeting like this in a foreign country.

Sincerely yours,



T. A. HENRIE
Chief Scientist



United States Department of the Interior

BUREAU OF MINES
2401 E STREET, NW.
WASHINGTON, D.C. 20241

AIR MAIL

April 26, 1982

Mr. Brooks Ryno
American Embassy
Commercial Office
Shell House
Wireless Road
Bangkok, Thailand

Dear Mr. Ryno:

On behalf of the Bureau of Mines and the Trade and Development Program, I want to thank you for the help and assistance that you provided during the recently-completed Symposium on Oil Shale and Lignite. The success of the Embassy-sponsored reception in Bangkok and the three-day field trip was due in a large degree to your guidance on organization and arrangements and your coordination with representatives of the Department of Minerals Resources in Thailand.

We are interested in your evaluation of the Symposium in terms of how well it met the expectations of your office and those of the Royal Thai Government. Could you send me your views on the Symposium concerning benefits, what was accomplished, stimulation of contacts on commercial ventures, etc.?

Thanks in advance for your evaluation and, once more, my personal thanks for your help.

Sincerely,

David R. Forshey
Special Assistant



EMBASSY OF THE
UNITED STATES OF AMERICA

Bangkok, Thailand

May 13, 1982

Mr. David R. Forshey
Special Assistant
United States Department of the
Interior
Bureau of Mines
2401 E Street, NW.
Washington, D.C. 20241

Dear Mr. Forshey:

Please refer to your letter dated April 26, 1982, about the Symposium on Oil Shale and Lignite.

Since I was heavily involved in this activity, which took place shortly after my return to Thailand after a ten year absence, I am happy to give you my views.

I have had considerable experience in organizing and running symposiums. Also, I had a particular interest in how this one was run. In sum, I have consistently used it as an example of how an activity of this type should be carried out. The logistics, the papers, the field trips, the planning were all superb. The whole thing went off without a hitch, which is the way to make American and Thai participants feel good about events like this. In very large part, this was directly the result of professional work done by Dick Kranker in the Trade Development Program and the obvious professional expertise of Dr. Arnold H. Pelofsky and his wife. Things have a way of getting fouled up and out of hand unless there is a very strong and capable organizer. Dr. Pelofsky met this requirement with no negative marks whatsoever.

No one has yet reached any firm conclusions about the long term benefits flowing from the symposium. What can be said, however, is that a very close and professional rapport was developed between the Thais and the Americans and this can only lead to bigger and better cooperation in this field. The Thais went all out to welcome their American colleagues and were obviously impressed with the high caliber of the American participants.

2.

Dr. Thomas A. Henrie, Chief Scientist, Bureau of Mines, received high marks from everyone in representing your own Bureau and we would welcome his return at any time. So would the Thais.

To sum up, not all symposiums come off as well as this one. I have recently had an opportunity to observe several other missions in Thailand which were less well organized.

Let me know if I can be of further assistance.

Sincerely,

Brooks Ryno
Counselor for Commercial Affairs

cc: Ms. Linda S. Droker, Country Specialist - Thailand,
Office of Pacific Basin
Ms. Susan Blackman, Office of Pacific Basin
Mr. Roger Severance, Office of Pacific Basin
Mr. William McDonald, TDP, Washington, D.C.
Dr. Pelofsky, President, AER Enterprises
Dr. Thomas A. Henrie, Bureau of Mines